

Salvage Excavation Reports

No. 9

Sonia and Marco Nadler Institute of Archaeology  Tel Aviv University



An Early Islamic Industrial Site at Ramla (South)
The 2008 Excavation Season

Authors: Elisabeth Yehuda and Yitzhak Paz

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THE 2008 EXCAVATION SEASON

Authors: Elisabeth Yehuda and Yitzhak Paz

Contributions by

N. Amitai-Preiss and R.E. Jackson-Tal

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Elisabeth Yehuda, 2015

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CHAPTER 1

INTRODUCTION

Elisabeth Yehuda

The excavation site of Ramla South is located approximately 500 m south of the modern city of Ramla on the building ground of Highway 431 from Ramla to Rehovot, south of Road 40 and north of Moshav Matzliah. Due to a broadening of the trace designated to carry Highway 431, a salvage excavation (License No. B-326–2008) was conducted under the auspices of the Sonia and Marco Nadler Institute of Archaeology of Tel Aviv University. The excavation lasted six weeks (from January 14 to March 4, 2008) and was directed by I. Paz, E. Yehuda and T. Harpak. Area Supervisors were A. Volvovsky (Area M) and A. Keinan (Area N). D. Porotzky and S. Pirsky were responsible for the measurements and drawing of the architectural plans. Finds were registered by K. Kaminski and photos were taken by P. Shrago.

Two excavation areas were laid out, stretching in two long and narrow strips flanking the highway trace on the north and south. The southern strip was excavated by the IAA under the direction of A. Gorzalczany (Gorzalczy 2009b), while the northern strip was excavated by Tel Aviv University.

The Tel Aviv University excavation area extended in two rows of squares (A and B) from southeast to northwest, covering an area of 1,106 sq m (Fig. 1.1). Sixty-six squares were opened and divided into two areas: a western area (M) including squares A5–8, B5–8, A11–18, B11–18, A22–24 and B22–24 and an eastern area, Area N, including Squares A25–42 and B25–42.

The finds can be assigned to an Early Islamic site whose remains were first excavated in 2004 (Gorzalczy 2006) (Fig. 1.2).¹ In that excavation, carried out by A. Gorzalczany on behalf of the Israel Antiquities Authority, 62 squares were opened,

which covered an area of approximately 1,000 sq m. Following the trial excavation, three areas were excavated in 2005: Area A in two seasons, 2005 and 2006, by Tel Aviv University (Tal and Taxel 2008), Area B by A. Onn on behalf of the Israel Antiquities Authority (unpublished) and Area C by S. Riklin on behalf of Bar-Ilan University (unpublished). During March 2006 a salvage excavation was conducted in Area C (Gorzalczy 2008). Another salvage excavation followed in October/November 2006 west of Area B (Gorzalczy and Spivak 2008). From June to August 2007 two more salvage excavations were conducted on behalf of the Israel Antiquities Authority, the earlier one north of the trace of Highway 431—Area C1 (Gorzalczy, Yehuda and Torge 2010) and the later one immediately below the former trace of Road 4304 (Gorzalczy 2009a). From May to June 2008 Area T was opened on behalf of the Israel Antiquities Authority on the southern side of the trace of highway 431, south of the IAA excavation from January 2008 (Gorzalczy and ‘Ad 2010).

All excavations revealed parts of a large, densely built-up area roughly 500 m south of the White Mosque. Numerous storage installations, pottery kilns, presses for oil and wine, cisterns, tabuns, channels and vats for processing flax into fibers and dyeing installations were found in close proximity to each other, attesting to the industrial nature of the site. An exception to those usual features was revealed by A. Onn’s excavation, which uncovered a large complex dating to the Fatimid period that probably served as a khan.

The finds unearthed during the various excavations show roughly the same settlement phases:

- An earlier, late Byzantine–early Umayyad settlement that shows agrarian installations such as oil and wine presses, as well as industrial installations, such as pottery kilns, plastered vats, glass workshops and work areas.

¹ Tal and Taxel carried out extensive research on the history of excavations at Ramla, including the area of Ramla South and the area of the modern city of Ramla (2008: 7–12).

- A later, late Umayyad–Abbasid phase that shows exclusively industrial installations such as plastered vats, cisterns, channels and work areas.

The existence of both phases in all excavation areas suggests roughly the same extent of the late Byzantine–early Umayyad and late Umayyad–Abbasid structures. Concerning the extent of the built-up Early Islamic site, thorough examination using mechanical equipment of the area south of Road 40 and north of the excavation site conducted on behalf of the Israel Antiquities Authority revealed that the site did not reach the southern

boundary of Road 40, let alone the southern fringes of Umayyad Ramla. Thus, it must be assumed that the industrial site of Ramla South was not spatially connected to the Umayyad and Abbasid city of Ramla.

The finds and artifacts, but especially the architectural remains, identify the site of Ramla South as an Early Islamic industrial area. Such an industrial complex is so far unparalleled in the history of excavations in Israel and its formation and development, as well as its relation to the city of Ramla, will receive special attention in this excavation report.



Fig. 1.2: General Plan of the Early Islamic Site of Ramla South (after Gorzalczy)

CHAPTER 2

STRATIGRAPHY AND ARCHITECTURE

Yitzhak Paz

The configuration of the excavation area was characterized by the drastically varying depth of the archaeological layers. Toward the western and eastern ends of the excavation area the layers are 1.5–2.0 m deep, while at the center (Squares A–B 24–37) some layers reached a depth of 4–5 m and even 6 m. Thus, the excavation area resembles a steep ‘bowl’ of virgin soil filled with archaeological remains.

The excavated squares revealed a variety of archaeological remains dating from the Roman to the Abbasid periods, whose stratigraphical designation is complicated by the following factors:

- The extremely elongated excavation area did not in most cases allow the structures to be unearthed in their entity.
- Many archaeological features were heavily disturbed by recent construction work due to their location close to the surface. Trenches and pits containing recent waste were found all over the excavation area.
- The extensive use and reuse of the area and its features during the Early Islamic period resulted in a high density of archaeological layers, with the later layers disturbing the earlier ones. Walls and installations of previous phases were also found to have been robbed in antiquity.

These conditions dictated a rather incomplete stratigraphical reconstruction, which combines vertical as well as horizontal stratigraphy. In fact, a full horizontal stratigraphic sequence of the excavated area could be reconstructed only for the deepest squares, as will be described below.

Thus, the general stratigraphic sequence can be reconstructed as follows:

- Stratum IV (Roman period): Scant remains from the Roman period were located at the eastern end of the excavation area (Area N, Square B40) in the form of a pit. In Square

B32 a floor fragment was also assigned to the Roman period.

- Stratum III Late Byzantine–early Umayyad period, 7th century CE): Extensive architectural remains and waste pits of pottery kilns were located at the western side of the excavation (Area M, Squares 5–8, 11–17). The nature of those remains seems to be more domestic than the remains of Stratum II (below).
- Stratum II (late Umayyad–Abbasid periods 8th–10th centuries CE): Mainly the squares of the eastern area (Area N), but also the eastern squares of Area M (Squares 18–28) contained various structures identified as industrial installations that could be ascribed to the late Umayyad–Abbasid periods.
- Stratum I (post-abandonment period): This period is characterized by robber trenches that disturbed and destroyed Abbasid structures. No direct building activities could be assigned to this period.

As will be shown below, the stratigraphical sequence presented above is by no means homogeneous or complete in each area. The remains of the various periods are dispersed according to the topography of the site and its occupancy in antiquity. The following description deals with the periods from the earliest to the latest.

STRATUM IV (ROMAN PERIOD) (FIG. 2.1)

Remains from the Roman period were very scanty and concentrated in the easternmost part of the excavation area. In Square B32 a fragment of a slab floor (Floor 10209) was found below layers dating to the Abbasid period (Pool 10179) at elev. 79.82 m asl. The floor was adjoined on its southern side by a large ashlar that may have been a remnant of a wall abutting the floor. Body sherds found on top of the floor may date to the first century CE—the Roman period.

In Square B40, the easternmost part of the excavation area (Pit 10134/10135 was found (Fig. 2.1), which was dug into the virgin soil. The pit was ca. 2.00 m in diameter and 0.42 m deep (elev. 80.91–81.33 m asl). It contained gray soil mixed with large amounts of body sherds of cooking-pots and storage jars dating to the first century CE. A round millstone was also found.

Curiously, the remains of the Roman period are located at the highest point of the excavation area. The slope, composed of orange *hamra* soil on which all the settlement layers were founded, reached its crest precisely where the Roman features were located, thus creating an archaeologically upside-down situation where the earliest finds are situated on higher ground (approximately 81 m asl) than the later, Early Islamic features (between 78 and 80 m asl). Obviously different areas of the site were used during one period and neglected during another.

STRATUM III (LATE BYZANTINE–EARLY UMAYYAD PERIODS) (FIG. 2.2)

The following description of the remains will start from the westernmost square: In Square A5, two rows of stones were found, oriented northwest–southeast, too flimsy to reconstruct their exact dimensions. A plaster floor (Floor 9120), probably related to those rows, was excavated as well. On top and below this floor, late Byzantine/Early Islamic pottery (7th century CE) was found.



Figure 2.1: Square B40, Pit 10134/10135a.

Possible remains of this building were also found in Square A6, but they are too meager to be reconstructed.

More substantial architectural remains were detected in Square B5. A large wall segment (W9386), oriented east–west, was found close to the southern baulk. Four courses of well-built large stones set in two rows were preserved to a height of 1.15 m. The wall was 4.4 m long and 0.7 m thick. The wall segment may have been the northern enclosing wall of a large structure extending southward. Unfortunately, this southern continuation is located beyond the borders of the excavation area.

Wall 9386 was built directly on virgin soil and no clear construction date can be discerned from the pottery that was related to it (Locus 9375). Due to its construction on virgin soil it probably dates to the late Byzantine–early Umayyad period.

Another wall segment oriented north–south appeared in Square B6 (W9203). It was fragmentary, made of two courses of small to medium-size stones 0.8 m long and 0.4 m wide. The few pottery sherds that were collected from both sides of the wall did not enable a clear construction date to be determined for it.

In Squares A8 and A7, segments of a pavement (Floors 9288 and 9289) were found. The pavement was made of flat, irregular stones and pebbles laid horizontally at elev. 77.74–77.78 m asl. The pavement was laid on top of brown silty soil and the pottery that could be related to it dates to the late Byzantine–early Umayyad periods (7th–8th centuries CE).

The most extensive architectural finds dating to the late Byzantine–early Umayyad period were located between Squares B11 and A–B 15–17, where two superimposed building complexes (B11 and A–B 15–17) were found.

REMAINS OF BUILDING COMPLEXES

Complex B11

In Square B11 a large north–south oriented wall segment (W9312/W9372, elev. 78.99–79.62 m asl) was found (Fig. 2.3). Another very badly preserved segment (W9229), probably the northern continuation of this wall, was found in Square A11.

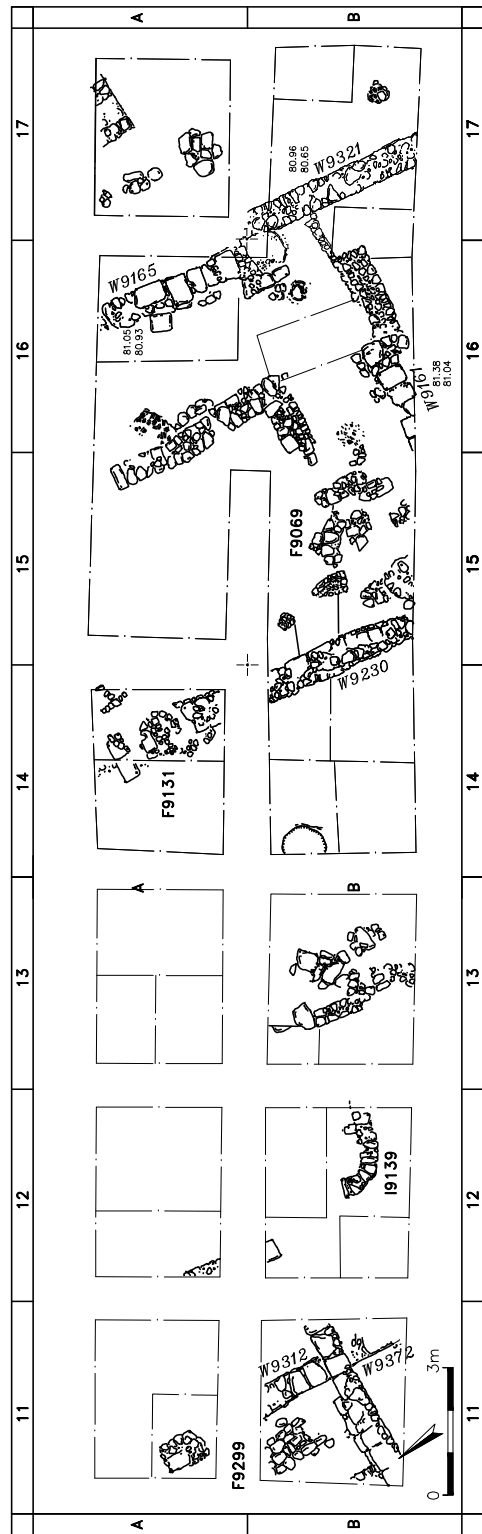
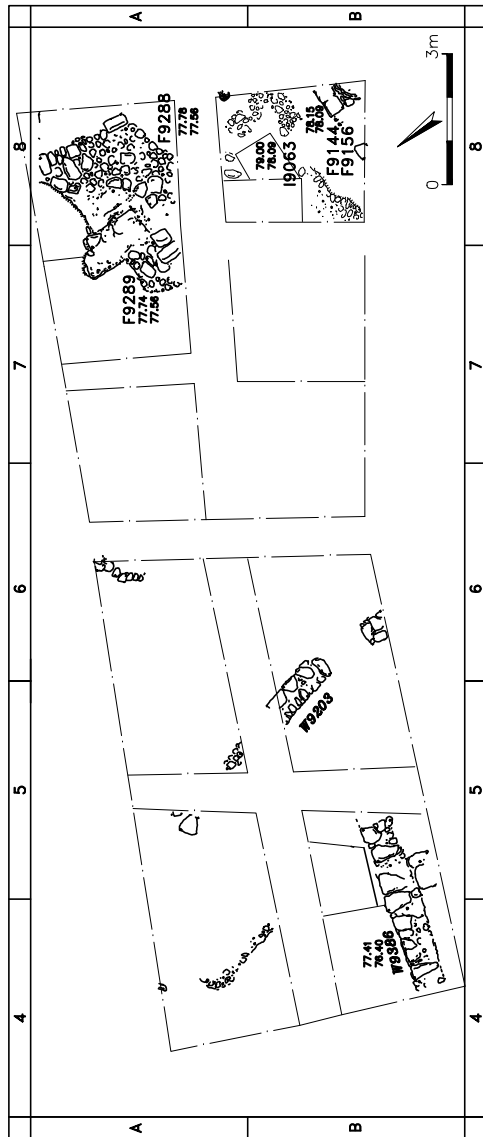


Figure 2.2: Squares 4–17.

Wall 9312 was 0.6 m wide, 1.8 m long and well built of large, hewn stones (average size 0.35–0.40 m in diameter). Only one course of stones was preserved. W9312, was attached at right angles to a fragment of a large, east–west oriented wall (W9219a) of which only four stones were preserved. It seems that the two walls were part of a structure whose northern continuation (Area C, Square C23, W625) was excavated by the IAA in May–June 2007 (Gorzalczany, Yehuda and Torge 2010).

Floor 9299, made of irregular, midsized stones was excavated in the corner formed by W9312 and W9219a (elev. 78.94–79.13 m asl). Only a small

segment of this floor was preserved, and did not adjoin either of the two walls directly. Fill layers related to these walls were Locus 9318 situated east of W9312 and Locus 9313 situated west of W9372. All three loci (Loci 9313, 9318 and Floor 9299) are considered contemporaneous with W9312, W9372 and W9219a and contained pottery that assigns this phase of the complex to the 7th–8th centuries CE.

It was impossible to associate the walls from Square A11–B11 with other architectural remains within a wider spatial frame because those architectural features were quite isolated.

Building A–B 15–17 (Fig. 2.4)

This large, north–south oriented building was the most extensive architectural feature in the eastern part of Area M. The building clearly had at least two construction phases, both following the same layout. Its remains were excavated immediately below the surface, and recent refuse pits had caused massive disturbance of walls and floors. However, despite its poor state of preservation, the building was excavated to an extent that enabled the structure and use to be reconstructed. The building measured 10.25 m east–west; the north–south extension could not be detected.

EARLIER PHASE

The earlier construction phase of the building (Fig. 2.5) could be distinguished from the later one, among others, by the use of small, irregular stones for the construction of the walls.

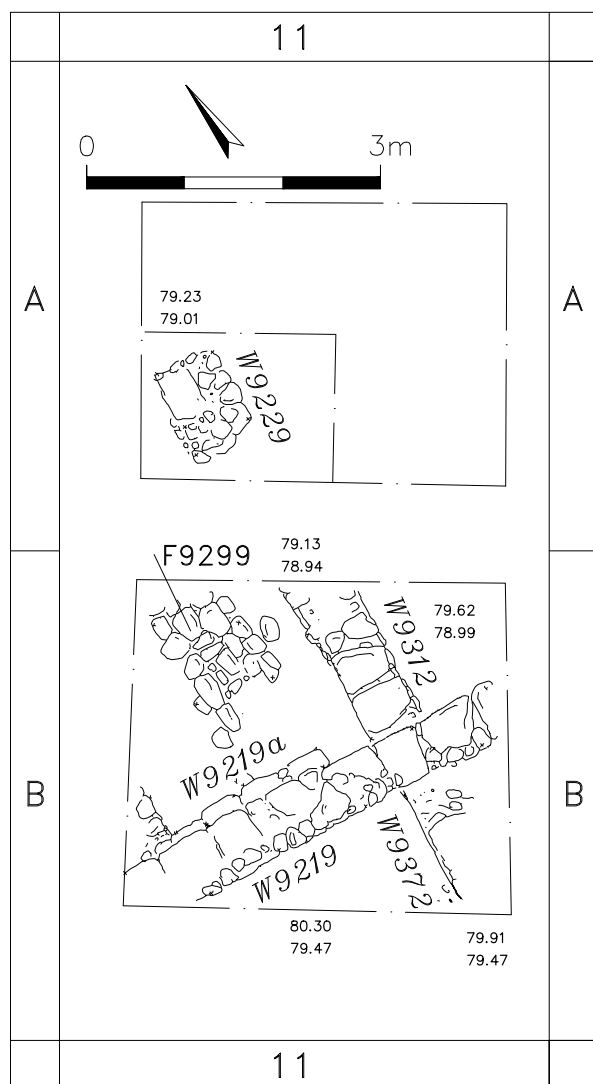


Figure 2.3: Squares A11 and B11.



Figure 2.4: Squares B15 and B16 Floor 9069a.

The earlier building was a rectangular structure, of which only the eastern and western enclosing walls were excavated. The western enclosing wall, W9230 was ca. 6.0 m long and 0.8 m wide made of medium to large stones (ca. 0.4 m in diameter), of which four courses were preserved. A possible entrance, 1 m wide, was discerned in the northern part of the wall.

The eastern enclosure wall, W9321 was ca. 0.7 m wide, 4.2 m long and constructed in the same manner as W9230, although the stones used for its construction were smaller (0.20 m–0.25 m in diameter). Only two courses of this wall were preserved, to a height of 0.25 m.

Despite its fragmentary exposure, the excavated walls allowed a reconstruction of the division of the space. The rooms thus discerned are described below.

Northwestern Room 9202 is located in the corner formed by southern W9162 and eastern W9163. Both walls were 0.70–0.75 m wide and made of a variety of stone types and sizes. Wall 9162 was comprised of ashlars, unhewn stones and rubble, as well as of basalt stones that could have originated from an earlier installation. Wall 9163 was also constructed of a wide range of stone sizes, from very large (more than 1 m in diameter) to medium

and small stones (0.2 m–0.4 m in diameter). The wall was built in at least three conjoined segments.

Only one course of these walls (elev. 80.65–81.18 m asl at most) was preserved and both were adjoined by a simple soil layer (Layer 9202), which contained pottery dating to the late Byzantine–early Umayyad period.

Southwestern Room 9198, found south of Room 9202, is bounded by W9162 in the north, W9387 in the south and W9321 in the east. Southern partition W9387 (elev. 80.81–81.00 m asl) abutted W9321 and must have been built in the earlier phase of the complex. Unfortunately, the northern side of W9387 was robbed in antiquity, leaving only a thin, (ca. 0.2 m) fragment of the northern wall face, constructed of small to mid-sized stones. Wall 9157, which was built over it (elev. 80.97–81.12 m asl), was preserved only in a segment measuring 0.7 × 2.2 m. A gap of 1.2 m between W9157 and W9321 may represent a doorway between Rooms 9189 and 9202.

The 0.35 m thick soil accumulation in the room (Layer 9198, elev. 80.65–81.00 m asl) was composed of soft, light-brown soil into which the walls were set and under which virgin soil was detected.

Northeastern Room 9167 was discerned north of Room 9198 and east of W9163. Within it, a soil

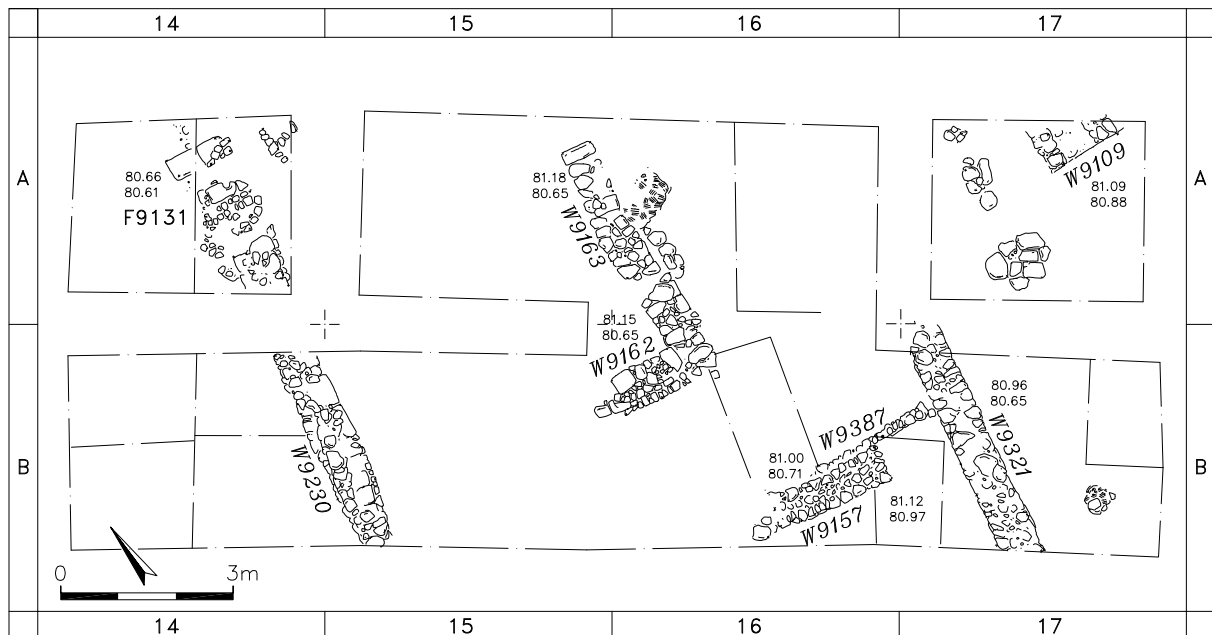


Figure 2.5: Earlier Phase Squares A-B 15–17.

layer (Layer 9167) was detected, composed of red-brown soil mixed with kiln material and a large quantity of pottery sherds.

South of W9387 was probably another room, which was beyond the limits of the excavation area and was therefore not excavated.

Outside the boundaries of the building, west of enclosing W9230 the remains of a plaster floor (Floor 9131, elev. 80.64–80.66 m asl) were detected. The relation between Floor 9131 and W9230 is not clear. The floor sealed kiln waste (see below), W9230 and seems to have been constructed above Floor 9131. On the other hand the pottery found in the accumulation above the floor (Locus 9115) is the same as the pottery related to the early phase of the building. Under these circumstances, the chronological gap between Floor 9131 and W9230 may be negligible.

LATER PHASE

The changes and adjustments assignable to the later phase of use of the building complex (Fig. 2.6.) can be described as follows:

The northern part of the eastern enclosing W9321 went out of use or was destroyed and a new wall, W9165 (Fig. 2.7), was added on its northern

side. It did not continue the course of W9321 but was moved 0.5 m to the west. Wall 9165, which was 0.7 m wide and excavated to a length of ca. 3.5 m, was constructed of large ashlar (ca. 0.4 × 0.7 m) with a fill of small fieldstones. Only one course was preserved (elev. 80.93–81.05 m asl).

The southernmost inner wall of the earlier phase (W9157) was partly destroyed and went out of use. It was covered by Floor 9069 (see below) and replaced by W9161, from which only one 2.7-m-long segment was detected. Wall 9161 continued into the area exceeding the borders of the excavation area southward. Wall 9161 was constructed in the same manner as W9165: large, carefully set ashlar (0.4 × 0.7 m), preserved to a height of 0.34 m (elev. 81.04–81.38 m asl).

It seems that the inner division of the earlier phase, which was defined by W9162 and W9163, was abandoned during the later phase,¹ leaving one large space within the building. A plaster floor

¹ The builders of the later phase reused and rebuilt only the massive enclosure walls but did not reconstruct the original inner divisions. The building was probably already in such a ruinous state that the rebuilding of the inner walls would not have been worth the effort.



Figure 2.6: Later Phase Squares A-B 15-17.

(Floor 9069) covered it and sealed W9157 as well as, probably, W9162 and W9163. Floor 9069 extended over all of Square B16 and probably further north. It was found between elevations 81.04 m and 81.16 m asl and adjoined W9161. An assemblage of 11 restorable pottery vessels was found (Fig. 2.8) on the surface of Floor 9069. Among the vessels were cooking-pots, casseroles, storage jars and jugs, all dating to the late 7th–8th centuries CE (the late Byzantine–early Umayyad periods) and produced in nearby local kilns.

Other alterations may have been made inside the complex but if so, they were not detected during our excavation.

The orientation and wall-building technique of the complex unearthed in Squares A–B 15–17 were the same as that from A11–B11; thus, they could have been part of the same complex. However, the lack of direct spatial relation makes such an assumption speculative.

REMAINS OF POTTERY PRODUCTION

In the northeastern part of Area M, mainly in Squares A12–15, traces were discerned of extensive activities that could have been related to pottery production. Deep pits (up to 3 m) were dug into virgin soil, and industrial waste from pottery kilns was deposited in them. Those pits featured a red-brown fill merged with burnt clay material and vast amounts of pottery sherds. Remnants found in Square A15 may be those of a pottery kiln. Here, red-orange material and a round structure were found at elev. 80.68–81.14 m asl, right below the surface. Modern disturbances had extensively damaged this feature rendering impossible the reconstruction of its full layout. Additional kilns and pits for kiln waste were discovered during a previous IAA excavation (Gorzalczany, Yehuda and Torge 2010: Square C21) northwest of Area M.

The indicative sherds found in the kiln waste date to the 7th–8th centuries CE and the variety of pottery types produced in the kilns was restricted to cooking-pots, frying pans, storage jars and lids. Vessels of identical forms and clay as the ones found in the layers of kiln waste were discovered on Floor 9069 in Square B16. This chronological overlap of kiln waste and construction layers of the building



Figure 2.7: Square A16, Wall 9165a.



Figure 2.8: Square B15, Detail Floor F9069a.

in Squares A–B 15–17 hints at their coexistence. As noted above, Floor 9131 in Square A14 and Floor 9198 in Square B16 were constructed on top of massive layers containing kiln waste as much as 2 m thick (elev. 78.55–80.45 m asl), thus pointing to the possibility that pottery production was already in full sway when the building was constructed.

The building activities of the Umayyad period can be put in the following chronological order:

1. Pottery kilns were constructed on the western side of the excavation area and, according to the production waste they created, were in use for a remarkably long time.
2. Despite the stratigraphical evidence, which shows that the buildings were erected above the layers of kiln waste, the pottery types retrieved from the kiln layers and those from the floors in the complex in Squares A–B 15–17 strongly suggests that these pottery types were contemporaneous. It can thus be assumed that the kilns were in use both during and after the building was erected.

The late Byzantine–early Umayyad building remains revealed during other excavations at Ramla South (Gorzalczany and Spivak 2008; Tal and Taxel 2008; Gorzalczany, Yehuda and Torge 2010) are similar in their lack of heavy industrial installations, which is typical of the late Umayyad–Abbasid periods. The late Byzantine–early Umayyad phase is characterized by features that point to agrarian activities such as oil presses and wine presses. Other features such as channels, bell-shaped pits, basins and kilns testify to heavier, more industrial undertakings.

STRATUM II (LATE UMAYYAD–ABBASID PERIOD) (FIG. 2.9)

During the late Umayyad–Abbasid periods (8th–10th centuries CE) the industrial area of Early Islamic Ramla reached its peak. The results of several excavations, including our own, confirm this assumption. During the 2008 season most remains dating to Stratum II were discovered in the eastern portion of the excavation site (Areas M and N, Squares A–B 18–38), but dispersed Stratum II remains could be found as far west as Square B8.

Topography must have been an important factor in deciding on the location of the different complexes during the late Byzantine–early Umayyad and late Umayyad–Abbasid periods. While the buildings dating to Stratum III are located mainly in the western part of the excavation area and their walls were constructed on virgin

soil (elev. 79.00–80.50 m asl), during Stratum II the built-up area not only moved eastward but partially expanded to the western slope of a low hill where a Roman pit (Pit 10134/10135) was excavated (Square B40).

The remains of Stratum II attest to a large variety of industrial activities, most of which were associated with and dependent on the supply of water, as shown by the numerous cisterns, channels and wells. Also abundant were cesspits that were probably part of a drainage system. However, the most common features were plastered pools. No less than 10 undisturbed pools were excavated, while at least two others were destroyed in antiquity. The pools and their associated features, walls and floors underwent various changes, and it seems that each pool complex had its individual stratigraphy and history of use. Even adjacent pools showed sequences of use that differed markedly from each other. Since the pottery assignable to the various installations dates exclusively to Stratum II, no chronological distinction could be made on the basis of typology. Thus, it is difficult to compile a unified stratigraphy for the whole area. It was therefore decided to present the individual stratigraphy of each complex of installations or even of single installations.

The westernmost architectural features that could be dated to the late Umayyad–Abbasid periods were fragments of two isolated floors (Floors 9144 and 9156) (Fig. 2.10) in Square B8. They were located approximately 0.4 m lower than the two previously described floors of adjoining Squares A7 and A8. Those pavements were made of densely laid pebbles. No walls related to the pavements could be detected but a rectangular cesspit (Pit 9063) was found north of the floors and might be related to them. The floors were dated to the Umayyad–Abbasid periods by means of the large amount of partially restorable late Umayyad–Abbasid pottery that was found in the fills above Floor 9156.

REMAINS OF BUILDING COMPLEXES

In Square B11, W9219 superimposed W9219a and W9312 of the earlier late Byzantine–early Umayyad building described above. The new wall was oriented east–west and ran through

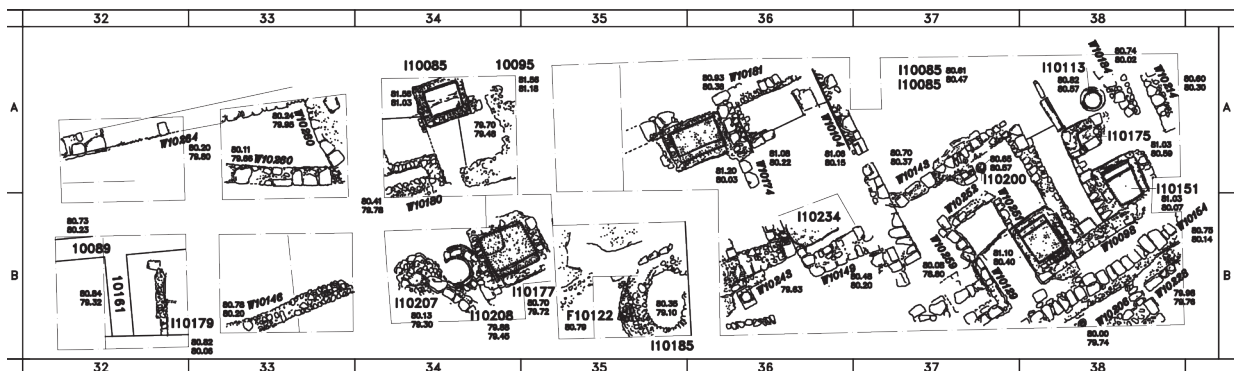
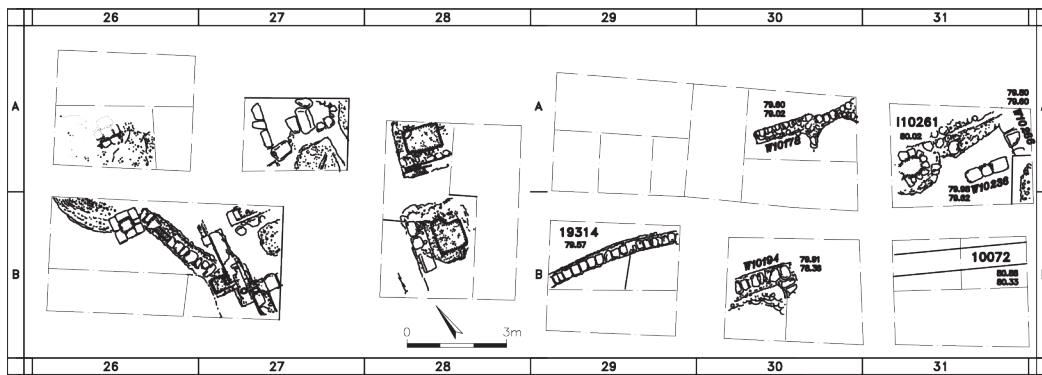
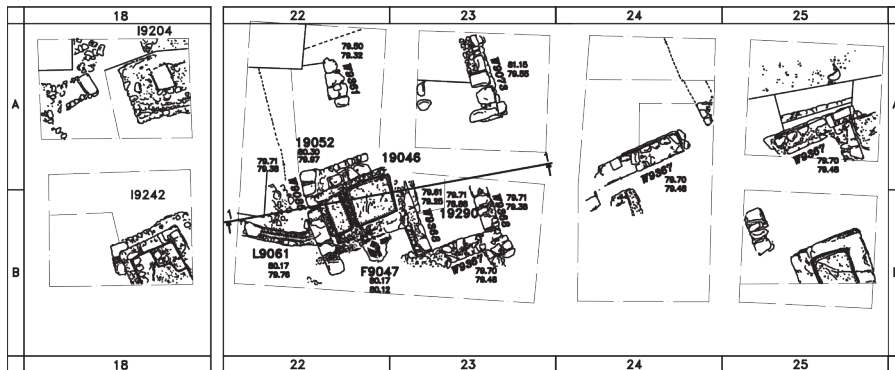


Figure 2.9: Squares 18–38.



Figure 2.10: Square B8, Floors F9144 and F9156 (bottom right).

the whole square. Unfortunately it could not be detected in the eastern adjoining Square B12 and the squares west of B11 were not excavated; thus, the excavators were left with a segment measuring

0.5 × 4.4 m. Wall 9219 was made of large hewn stones (ca. 0.5–0.6 × 0.3–0.5 m) and resembled the technique used in the later phase of the building in Square B16.

Two complexes could be assigned to Stratum II, Building A31–33 and Building A25. In both cases the function and use of the complexes remain unclear.

Remains of a poorly preserved, rectangular building, Building A31–33 (Fig. 2.11), constructed on virgin soil, were excavated in Squares A31–33. More substantial remains of this structure were found only in Square A33, where three walls were excavated. Northern W10264 was excavated in Squares A32 and A33 (elev. 79.80–80.20 m asl). Its length measured 7.5 m, but since the wall reached into the north section of both squares, its width was impossible to detect. Eastern enclosing W10257, which bonds with W10264, was excavated at elev. 79.95–80.24 m asl. It was 0.42 m wide and 2.90 m

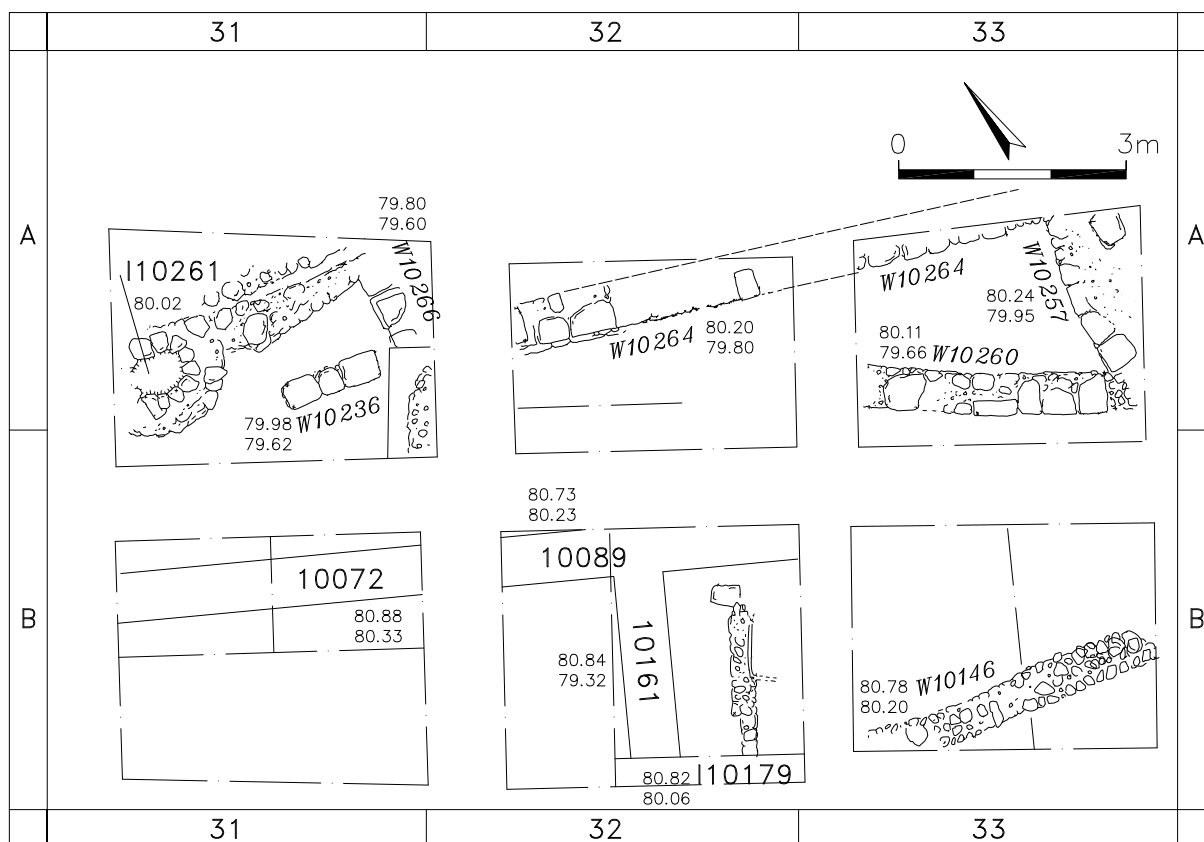


Figure 2.11: Squares 31–33.

long. The third wall, W10260, abutted W10257 on its southern end at an acute angle, which indicates that W10260 was built later than W10264 and W10257. Wall 10260 (elev. 80.11–79.66 m asl) was oriented east–west and was 0.52 m wide and 3.60 m long. Although the walls were quite massively built, only W10260 was preserved with more than one course of stones. The walls enclosed a space (Locus 10256), which yielded no datable pottery.

Wall 10236 revealed in Square A31, may have been the continuation of W10264. Wall 10266, which abutted W10264/10236, was also excavated in Square A31. This wall was adjoined by a channel related to Installation 10261 (Fig. 2.12). Installation 10261 was not fully exposed and therefore its exact function remains unknown. It may have been a cistern, with an opening 0.7 m in diameter. It was adjoined on its eastern side by a channel-like installation, similar to the one excavated in Square B27.

In Square B33 the remnants of a southwest–northeast-oriented wall (W10146, elev. 80.20–80.78 m asl) were exposed to a length of 3.55 m. Its width

was 0.6 m and only one course of small to medium-sized stones was preserved. Because its elevation was higher than that of W10260, and due to its appearance—small stones instead of large ashlar as in W10260—a relation between W10146 and W10260 can be rejected.

In Squares B31 and B32 three robber trenches (Trench 10072 in Square B31, Trench 10189 and Trench 10161 in Square B32) were detected that attest to the existence of building remains in these squares. The orientation of the robber trenches enables a reconstruction of the orientation of the robbed walls. Southeast–northwest-oriented Trench 10072 in Square B31 is the continuation of Trench 10189 in Square B32 while northeast–southwest-oriented Trench 10161 in Square B32 adjoined Trench 10189 at a right angle. All three trenches are the result of robbery from walls that belonged to the same building. Unfortunately, this building cannot be assigned to the still-standing walls of Building A31–33 because the orientation of the robber trenches was clearly different.

Trenches 10161 and 10189 enclosed a probable roofed space in which Pool 10179 (elev. 80.06–80.82 m asl) was located. Only the eastern wall of the installation was preserved, showing the same orientation as Trench 10161.

Two floors, which can be probably assigned to the wall robbed out by Trench 10161, as well as to Pool 10179, were found east of Trench 10161 (Floor 10099) and west of it (Floor 10167). Both floors were made of plaster and both were at elev. 80.83 m asl).

BUILDING A25 (FIGS. 2.13–2.15)

Another attempt was made to reach virgin soil in Square A25, and the lowermost trench reached an elevation of 76.50 m asl, approximately 6 m below the surface. During this attempt, W9383, a remnant of a wall that might be assignable to the earliest levels, was found. The wall was preserved to a length of 2.7 m and a width of at least 0.3 m. Five courses of medium-size stones measuring 0.25 × 0.30 m were preserved. Wall 9383 was situated below two fragments of perpendicular ashlar walls, which most likely constituted the corner of a building belonging to a later phase.



Figure 2.12: Square A31, Installation I10261.

The corner consisted of two walls, east–west-oriented W9245 and north–south-oriented W9301. Wall 9245 was 3.5 m long and 0.7 m wide and was preserved to a height of five courses, which were comprised of large ashlars measuring up to 0.4 × 0.6 m. The south side of W9245 seems to have been robbed. The wall face was irregular and the soil fill looked like the typical fill of robber trenches in this area—gray, powdery and loosely mixed with a great many mortar lumps. Wall 9245 bonded on its east side with W9301, a north–south oriented wall of which only a 1-m-long segment was excavated.

A well-preserved floor made of fine plaster (Floor 9276, elev. 78.77–78.94 m asl) adjoined W9245. A broken grinding stone in secondary use was found within the plaster of Floor 9276. A storage jar (see Fig. 3.10: 3, Chapter 3) dating from the late 6th–8th centuries CE, was found embedded in Floor 9276 (Fig. 2.14). The upper part was missing; the jar thus may have served as a pit-like installation. Additional pottery found in relation to Floor 9276 was insufficient to establish a more accurate date than the early Abbasid period for floor and walls.

Floor 9260, which was laid above Floor 9276, probably marks the latest stage of use excavated in this square (Fig. 2.15). The floor was made of a mixture of soft brown soil, plaster and ash and had an unusual dark gray color. It adjoined W9245 as well and was probably a renovation of W9276.

It might be possible to associate W9245 with W9233, which was discovered in Square A24–B24. Wall 9233 was visible on the surface (elev. 80.05 m asl); it was 3 m long and 0.7 m wide and preserved to a height of ca. 1 m. Like W9245, W9233 is oriented east–west and was constructed using a similar technique. Although W9233 is located only 0.75 m north of W9245, it is possible that both walls belonged to the same building.

REMAINS OF CESSPITS (FIGS. 2.16, 2.17)

The expansion of the industrial area during the 9th–10th centuries CE necessitated a sufficient drainage system. Indeed, two well-preserved cesspits were excavated while the remains of another, ruined in antiquity, were detected in Squares A30 and B30.

In Square B8, at the western edge of the excavation area, a convex cesspit (Pit 9063, Fig. 2.16) was built

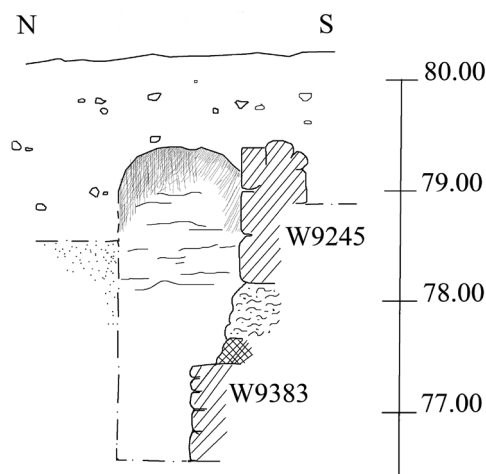


Figure 2.13: Section Square A25 (Section B).



Figure 2.14: Square A25, Floor F9276.



Figure 2.15: Square A25, Floor F9260a.

on fill that covered the stone pavement (Floor 9144) of Stratum III. The cesspit, made of small stones, measured 1.5×2.0 m, and was fully preserved to a height of ca. 1 m (elev. 78.09–79.00 m asl). Unlike cesspits found during other excavations of this same industrial area (Tal and Taxel 2008: 100–123), this pit was completely devoid of finds, while typical Abbasid pottery, such as Buff Ware, was found in the fill above it and on Floor 9156.

In Square A18 another cesspit (9204) (Fig. 2.17) was excavated of the same type as Cesspit 9063, above. Measuring 2×2 m, it was also fully preserved, to a height of 0.86 m (elev. 79.45–80.31 m asl). A narrow opening was found at its top, which formed a gap between two ashlar. This pit was also devoid of finds. Therefore its dating to Stratum II could be established only by means of its relation to the Abbasid installation at the adjacent Square B18 and the pottery from its immediate environment.

PLASTERED POOL SYSTEMS

The most common architectural features in the excavated area were plastered, rectangular pools. They all may be connected to industrial activities that required water, such as the flax industry (see, e.g., Tal and Taxel 2008), fabric and leather-dyeing or dye production. The pool systems vary in size, number of pools per complex and number of phases (some complexes reflect more than one construction phase).

A total of 11 pools were unearthed during our excavation. They were generally built of small fieldstones bonded with cement. Walls and flat bottoms were plastered with whitish mortar. In most cases, the outer plaster layer of the pools contained pottery sherds.

Most pools showed similar inner dimensions. The smallest of these, Pool 9052 (Square B22), measured 0.5×1.1 m while most other pools were twice that size. Pool 10061 (Square B38) and Pool 10151 (Square B38) both measured 1.0×1.1 m. Pool 10085 (Square A34), Pool 9273 (Square B28) and Pool 9324 (Square A28) were 1.00 m long; their width varied from 0.70 m to 0.85 m. The biggest pools in this group were Pool 9051 (Square B22–B23), at 1.15×1.30 m, Pool 10130 (A35–A36) at 0.95×1.40 m and finally, Pool 10177 (B34–B35) at 1.25×1.50 m.



Figure 2.16: Square B8, Cesspit I9063a.



Figure 2.17: Square A18, Cesspit I9204.

The largest of these pools found was Pool 10234 in Squares A36–B36. It measured 2.5×5.0 m—three times the average size of the pools in Areas M and N.

Two more pools—Pool 9264 (Square B25) and Pool 9242 (Square B18) (Fig. 2.18)—exceeded the boundaries of the excavation area and their final dimensions were therefore not determined. But both seem to belong to the group of larger pools, since even their incomplete measurements were as much as 1.4×1.5 m (Pool 9242) and 1.0×1.1 m (Pool 9264).



Figure 2.18: Square B18, Pool I9242.

In some of these pools—Pools 10151, 10061, 10530, 10177, 10085 and 9242—a narrow step was constructed along the longer wall. The width of the step was the same in all the pools—0.2 m.

Other pools (Pools 10177 and 9324) had a small settling tank in one corner. The tank in Pool 10177 measured 0.5×0.6 m and the one in Pool 9324 measured 0.2×0.2 m.

Semicircular steps measuring 0.2×0.5 m and 0.6×0.7 m were found in the northeastern corners of two other pools (Pools 9273 and 9242).

Three pool complexes are discussed in detail below.

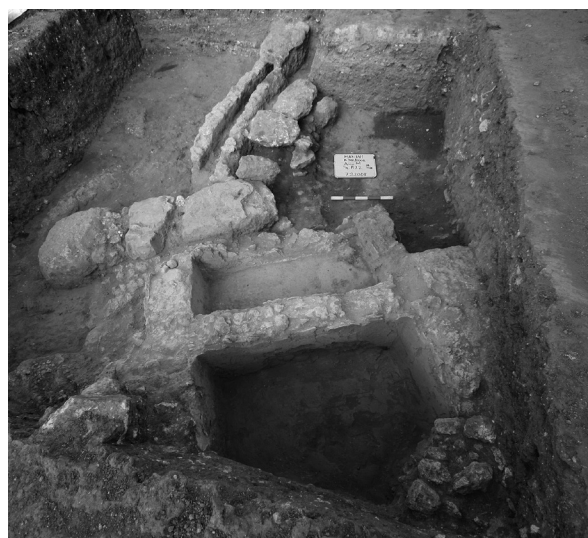


Figure 2.19: Squares A-B 22–23, Pool Complex.

POOL COMPLEX A-B 22–23

Squares A–B 22–23 revealed a complex composed of twin pools and other installations of an industrial nature such as channels and a mosaic floor (Figs. 2.19, 2.20). The complex was used in at least two phases, an earlier and a later phase.

The earlier phase (Fig. 2.21) featured large installations divided into a western part containing pools and a channel and an eastern part composed of built installations. In the western part a double pool (Pools 9051 and 9052) dominated the area (Fig. 2.22). Another pool was probably originally attached to the southern side of this double pool, but it was poorly preserved and during the later phase it was covered by a mosaic floor (see below). The western side of the pool was adjoined by

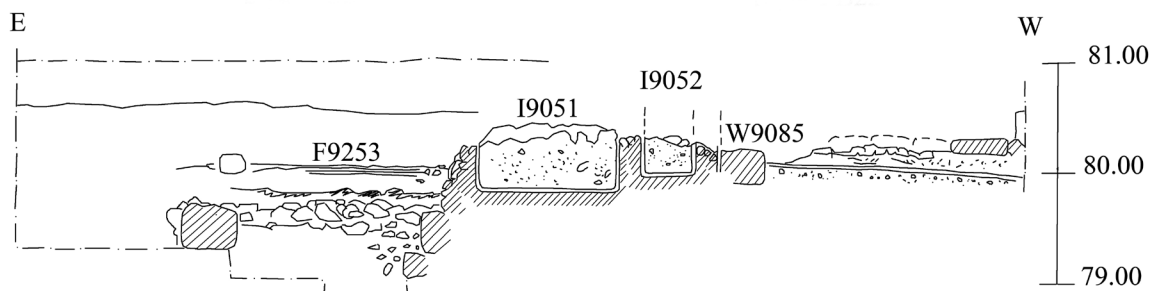


Figure 2.20: Section Squares B22 and B23 (Section A).

a northwest–southeast-oriented water channel (Locus 9061, elev. 79.95–80.31 m asl, Fig. 2.23), which was made of upright stones covered by flat slabs measuring 0.30×0.43 m. The channel was excavated along a length of 2.50 m and it probably continued in a northwesterly direction beyond the borders of the excavation area. Its inner width measured 0.10 m; it was 0.12 m deep.

In the eastern part of the complex only a central installation (Installation 9290), of unknown function, was relatively well preserved. It was defined by carefully built walls, W9360, W9367 and W9366, each more than 0.5 m wide, which enclosed a rectangular space measuring 1.7 m east to west. The north–south extension could not be detected since the fourth, northern, wall was missing. The western wall, W9360, was bonded with the eastern wall of Pool 9051 thus indicating contemporaneous construction of both installations. The floor of Installation 9290 was detected at 79.61 m asl.

Just east of the installation, a floor fragment (Floor 9334, elev. 79.55–79.66 m asl) made of thick, leveled plaster was found, and was probably related to Installation 9290.

The connection between Channel 9061 and Pools 9051 and 9052 as well as between rectangular Installation 9290 and Pools 9051 and 9052 assigns those features to an earlier phase of use, probably to the earlier phase of the Abbasid period.

During the later phase of this complex (Fig. 2.24) the double pool complex was enclosed on its western side by a 0.5-m-wide ashlar wall (W9085, elev. 79.76–80.48 m asl), which cut Channel 9061.

A mosaic floor (Floor 9047, elev. 80.18–80.12 m asl) made of coarse, white tesserae, measuring 1.00×1.50 cm, was detected just south of Pools 9051 and 9052 and covered what was left of the southern pool.

In the eastern part, Installation 9290 was completely covered by a thick plaster floor (Floor 9253, elev. 79.94–80.14 m asl), in which *Tabun* 9254 (elev. 79.71–80.14 m asl) was installed (Fig. 2.25). The *tabun*, 0.6 m in diameter, was surrounded by small stones forming support for the oven revetment. It may have been related to the renewed double Pool 9051 and 9052, but such a possibility is uncertain because Floor 9253 does not adjoin the eastern wall of the pool.

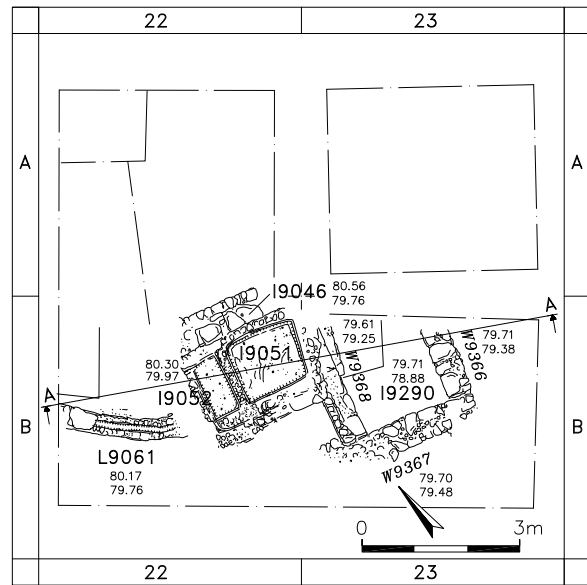


Figure 2.21: Earlier Phase Squares A-B 22–23.



Figure 2.22: Squares B 22 and B23, Double Pool 19051/19052.



Figure 2.23: Square B22, Channel I9061.

Wall 9073 in Square A23 and W9361 in Square A22 might be related to the later phase. Wall 9073 measured 0.7×3.0 m and W9361 measured 0.7×1.2 m. Both were built on a north–south axis. They were made of stones of varying sizes, some of them quite large, and their construction was similar to that of W9085.

Construction over some of the industrial installations such as Installation 9290 apparently reveals that the industrial activities underwent a change or reduction during the later phase. It seems that during the later phase a change or reduction of industrial activities took place, as the overbuilt pools prove.

2.3.3.2. POOL COMPLEX A–B 34 (FIGS. 2.26–2.30)

In Squares A–B 34, a complex sequence of four phases of pools and installations was detected (Fig. 2.26–2.30). The date of each phase is by no means clear due to the scarcity of datable finds. Thus this sequence reflects only a process of alterations and by no means a change of period or epoch. The stratigraphic situation, consisting of four phases is described below, from the earliest to the latest.

Phase IV

In Square B34 a square pool (10177, elev. 79.36–80.70 m asl) could be ascribed to the first of these four phases, Phase IV. The southern inner side of the pool featured a step (elev. 79.74–80.21 m asl) running along the entire length of the pool's southern side. In the northwestern corner, a plastered settling tank was built. It was 0.38 m deep (elev. 79.36–79.74 m asl).

At 79.28–79.88 m asl and immediately west of Pool 10177 a large *tabun* (*Tabun* 10208) was installed whose circular walls were made of clay with fills of small stones. The outer diameter of the *tabun* measured 1.2 m and the inner diameter 0.8 m.

Two north–south wall segments assignable to Phase III were found in Squares A–B34 at 79.95–80.46 m asl: W10180 in Square A34 and W10221 in Square B34. The segment in Square B34 adjoined Pool 10177 and probably also *Tabun* 10208.

Brown soil from the west and the east side of W10180 (Locus 10189, Locus 10190) contained a meager amount of pottery that could be dated to the late Umayyad–Abbasid periods (Stratum II).

Phase III

In Phase III of this sequence, 1 m west of Pool 10177, circular Installation 10207, elev. 79.10–80.13 m asl) was discovered. Built of mid-sized to large fieldstones, and surviving to a height of

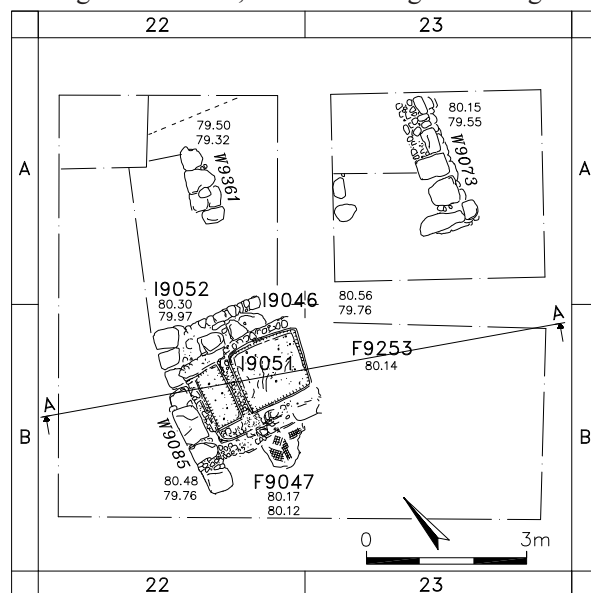


Figure 2.24: Later Phase Squares A–B 22–23.



Figure 2.25: Square B23, Floor F9253 and Oven I9254.

six courses, this installation could probably be identified as a pit or cistern. Its opening was at the same height as the step in Pool 10177. This cistern cut into the east side of *Tabun* 10208 and thus took it out of operation; however, Cistern 10207 could well have served together with remaining Pool 10177.

A row of flat, slab-like stones reached the opening of Cistern 10207 from the southern side. This row of stones might have been a channel whose side walls and cover stones were destroyed.

Phase II

Remains dating to Phase II were detected only in Square A34. Here, a rectangular pit (Pit 10188, elev. 79.05–79.90 m asl), which could have been a cesspit, cut into the northern part of W10180. The pit's exact dimensions are unknown, but its northwest extension measured at least 1.5 m. Its walls were made of small stones set in relatively regular courses. Pottery found inside the grayish fill of the pit dates to the 9th–10th centuries CE (Stratum II).



Figure 2.26: Square A34 Pool I10085.

The remains of Phase II were covered by an accumulation or fill of light brown soil more than 1 m thick (Loci 10031, 10057 and 10066), that could have served to level the underground area for the installations of Phase I.

Phase I

Phase I was detected in both Squares A–B34. In B34, a fragment of a plaster floor (Floor 10017, elev. 81.82 m asl) was detected on the southwestern side of the square. It might have originally covered the entire square and can probably be assigned to a surface of densely laid small stones (Locus 10039) which probably served as the foundation of Floor 10017. A similar stone layer was detected



Figure 2.27: Square B34, Installations I10177, I10207 and I10208.

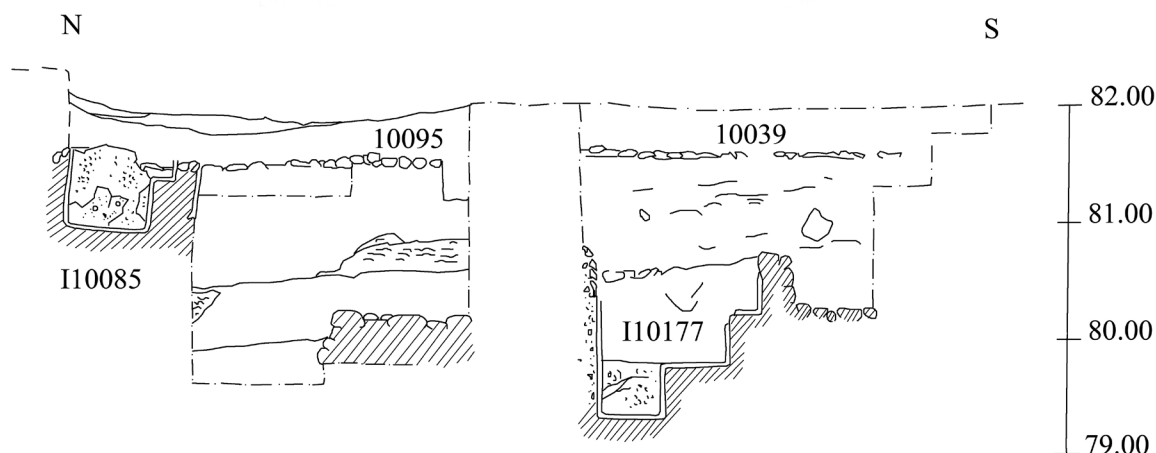


Figure 2.28: Section Square A B 34 (Section D).

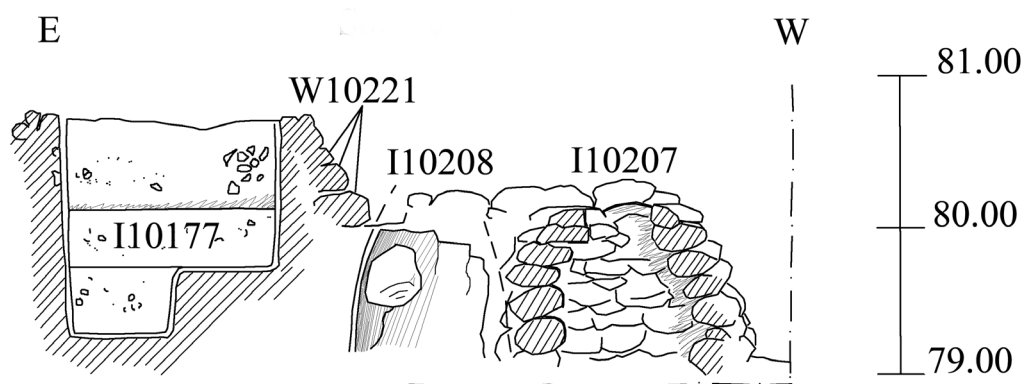


Figure 2.29: Section Square B34 (Section E).

in Square A34 (10095) at elev. 81.18–81.56 m asl (Fig. 2.31). Another floor fragment (Floor 10268) was excavated during the removal of the baulk between Squares B34 and B35. According to its character and surface elevation (81.90 m asl) this floor fragment might be part of Floor 10017.

In Square A34, in its northern part, a plastered pool was found (Pool 10085) with a depth of 0.7 m. The pool was plastered from the outside as well as from the inside, where pottery sherds were added to the plaster layer. A 0.3-m-high step (elev. 80.85–81.29 m asl) ran along the inner southern side of the pool.

The uppermost architectural features in Square B34 were disturbed by a robber trench (Trench 10065), which can be assigned to the period after the area was abandoned (see below, the post-abandonment period).

POOL COMPLEX A–B 36–38 (FIGS. 2.32, 2.33)

The most impressive and well-preserved pool complexes were found in Squares A–B 36–38. This area can be roughly divided into two architectural zones: an eastern one and a western one. In both zones installations and walls are oriented in the same general north–south direction.

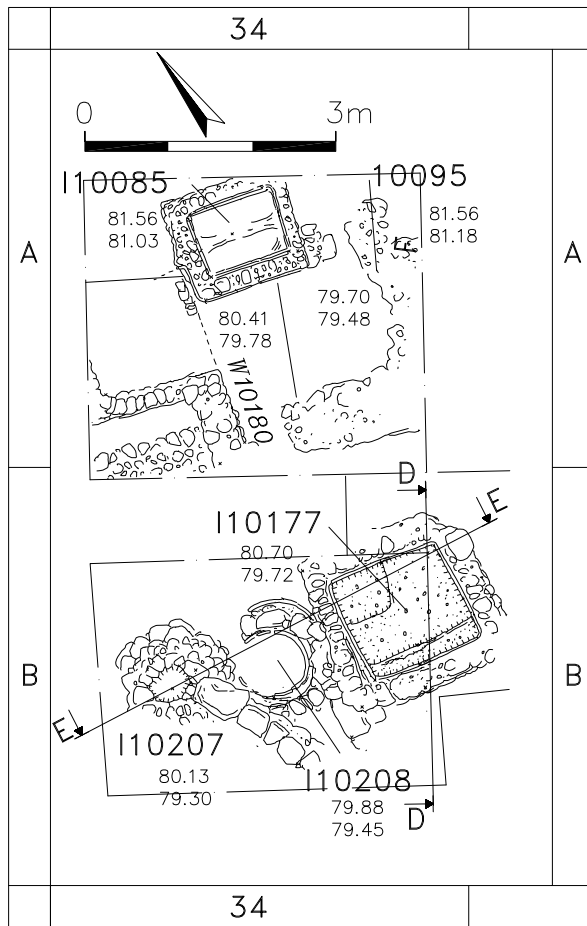


Figure 2.30: Square A B 34.

Western complex

The western complex is located in Squares A–B 36. It consisted of at least two rectangular pools and was enclosed by massive walls, of which northern W10181, eastern W10104 and part of western W10174 were preserved.

The central element of the western complex was Pool 10234. At 1 m deep, it was the largest pool found during the excavation (Fig. 2.34).

Wall 10104 was the pool's western wall. It was made of medium to large stones, some of which were hewn. It was 0.5 m wide and was preserved to the considerable height of 0.9 m. A thick plaster layer covered the northern part of the wall, which seems to have extended southward without plaster. In the upper course of the wall, midway along its length, two halves of Olynthus millstones were found in secondary use (see Fig. 6.5 and Fig. 6.6, Chapter 6).



Figure 2.31: Square A34, Stone Layer 10095.



Figure 2.32: Squares A-B 36–38, Pool Complex.

Wall 10174 was the western enclosing wall of the pool. It was built using the same technique as W10104, but was more poorly preserved.

The northern enclosing wall (W10181) was also only partly preserved. It consisted of five courses of small (0.09×0.11 m) to mid-sized (0.21×0.25 m) stones and was 0.60 m wide.

Wall 10149 could have formed the southern enclosing wall of the pool (Fig. 2.35) but its position and construction gives reason to believe that it was

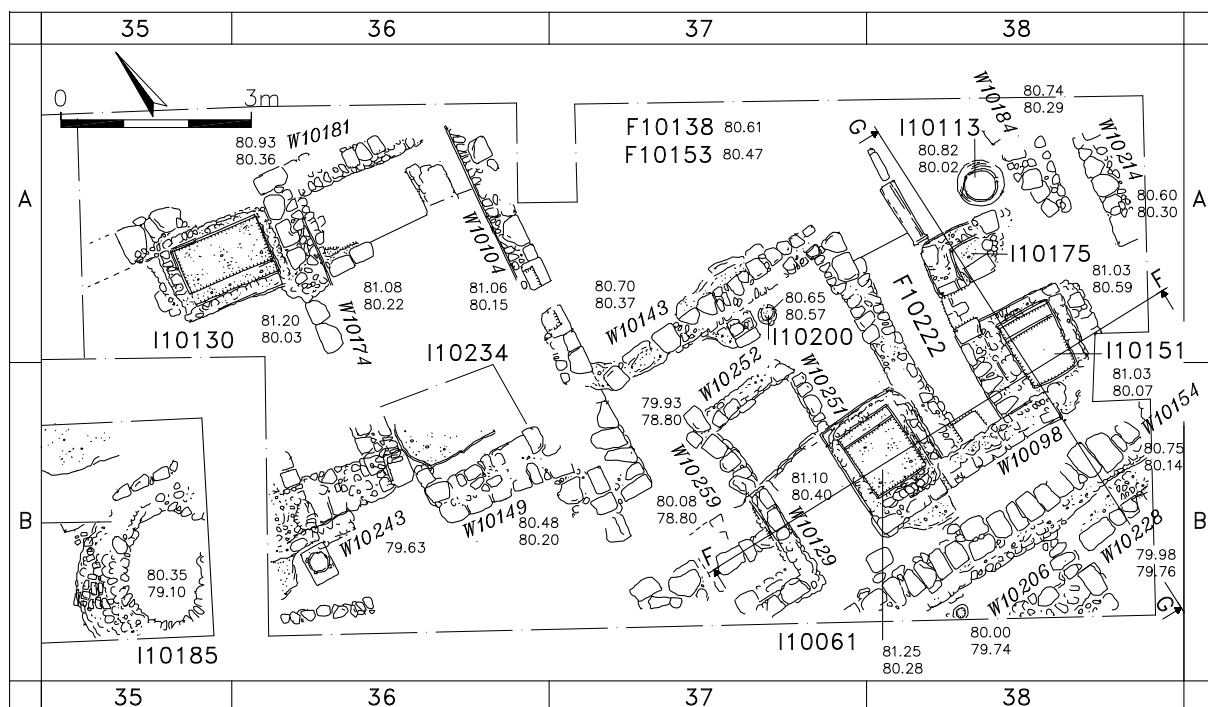


Figure 2.33: Squares A-B 36–38, Pool Complex.

added at a later stage. Its width varied from 0.7 m to 1 m. Wall 10149 was constructed of stones of varying sizes, and was preserved to a height of 0.25 m (two courses).

The pool, which was fully coated with thick, yellowish-white plaster showed semicircular corners in the southwest and southeast. The floor of the pool (Floor 10183, elev. 80.62 m asl) was covered by the same plaster, which rose slightly in the south, probably to manage the fluids processed inside.

A trial probe was opened on the northern side of the pool, cutting through its floor. A wall fragment was found below Floor 10183 (W10182, elev. 80.27–80.61 m asl), measuring 0.49 × 0.75 m, preserved only to a height of one course. A complete storage jar was found nearby (see Fig. 3.20: 4, Chapter 3), which dates the wall to the late Umayyad–Abbasid periods.

Pool 10234 was joined by Pool 10130 on its western side. Pool 10130 possessed a layout typical of most pools excavated at the site: The elevation of its floor was detected at 80.22 m asl. A 0.2-m-wide step ran along the southern side of the pool.

Notably, most of the pool systems in Squares A36–B36 were constructed directly on virgin soil,

or rested on top of walls that were themselves built on virgin soil without any datable finds. Therefore no pre-Abbasid remains can be ascribed with certainty to this area.

Eastern complex

The eastern complex, located in Squares A–B 37–38, reveals a finer subdivision (Fig. 2.36). It measured 6 × 9 m, with the eastern boundary artificially created by the eastern section of Squares A38 and B38. It seems that the eastern complex was functionally related to the western complex described above.

This complex was composed of a series of walls and installations that were associated with the central element—two similar and parallel pools (Pools 10061 and 10151) separated by a corridor-like space. Over the course of time alterations were made to the installations, which are described below.

Phase III

Phase III is the only stage where clear evidence of architecture that pre-dated the pool complex was found: two structures, located ca. 4 m apart. The



Figure 2.34: Squares A-B 36–37, Western Complex Pool I10234.



Figure 2.35: Square B36, Walls W10149 and W10243.

first structure was a U-shaped setting of three walls. Wall 10252 (elev. 79.93–78.80 m asl), measuring 0.3×1.5 m and running east–west, was abutted on its eastern side by north–south-oriented W10251 (elev. 78.80–79.79 m asl) measuring 0.23×0.90 m and by north–south-oriented W10259 (elev. 78.80–80.08 m asl) measuring 0.5×1.5 m, on its western side. The structure was detected below the occupation level contemporary with the main complex of Pools 10061 and 10151 (Locus 10220). The fill (Locus 10254) found within the boundaries of the three walls contained no datable pottery.

The eastern wall of this U-shaped structure was aligned with the western wall of Pool 10061 and its western wall was aligned with W10129 (Fig. 2.37). The orientation and appearance of the structure give reason to believe that structures of Phase III, which were probably overbuilt by the complex of Pools 10061 and 10151 of Phase II, had the same dimensions.

Approximately 4 m southeast of the U-shaped structure, two very partially preserved perpendicular walls were found. The north–south-oriented W10206 (elev. 79.75–80.00 m asl), and the east–west oriented-W10228 (elev. 79.76–79.98 m asl) were constructed directly on virgin soil.

Both walls could be exposed only in a very fragmentary way since they were located precisely in the southeastern corner of Square B38. It can be assumed that both walls continued beyond the borders of the excavation area. Unfortunately, no datable pottery was found here either; thus, the dating of the structure must rely on comparisons to later installations constructed in the same area.



Figure 2.36: Squares A-B 36–37, Eastern Complex Pool.

Phase II

Phase II is represented by a central complex which was composed of various walls, installations and pools. The general orientation of the structures was identical to that of the western complex.

The wall system in this complex can be divided into two types: enclosing walls, which were free-standing and did not bound with the installations and inner walls that joined various installations.



Figure 2.37: Square B37, Wall W10129.

Wall 10154 (elev. 80.14–80.75 m asl), which can be considered the southern enclosing wall of double Pool 10151 and 10061, was situated on a bedding of small stones set on virgin soil. Wall 10154 was preserved to a length of approximately 6 m while its width measured 0.7 m. The wall was single-faced, built of boulders and ashlar measuring up to 0.5×0.7 m.

Wall 10143 (elev. 80.37–80.70 m asl), which can be considered the northern enclosing wall of the double pool complex, adjoined the eastern wall (W10104) of Pool 10234. It was up to 0.6 m wide and 4.5 m long, made of two rows of medium to large stones. The corner formed by W10104 and W10143 may have been an open plastered space. Two subsequent plaster floors were found here, which adjoined the northern side of W10143: Floor 10153, on a lower elevation of 80.47 m asl, and Floor 10138 on a higher elevation of 80.61 m asl. The earlier Floor 10153 probably adjoined the floor that was located between the two main pools of the complex (see below, Floor 10222, elev. 80.47 m asl).

The double pool complex (Fig. 2.38) was comprised of two completely preserved, symmetric pools (Pool 10061 and Pool 10151) and additional installations of unknown functions. Pool 10061 (elev. 80.07–81.25 m asl) formed the western pool (Fig. 2.39), the outer dimensions of which were 1.5×2.0 m. It probably had at least two stages of construction and use, but none can be dated accurately. The pool was carefully plastered, and along its northern side ran a step measuring $0.20 \times 0.90 \times 0.55$ m. Small holes were pierced in the

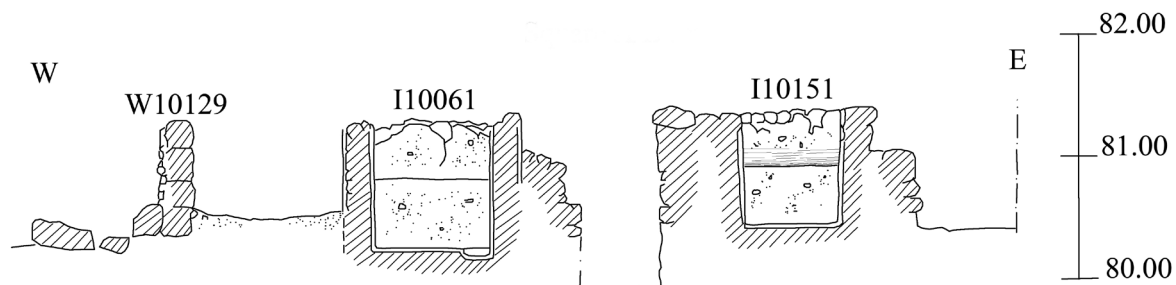


Figure 2.38: Section Square A-B 38 (Section F).

northwestern and southeastern corners of the pool to enable fluids to drain.

Pool 10151 (elev. 80.27–81.03 m asl) was the eastern of the two pools (Fig. 2.40). Its outer dimensions measured 1.40×1.47 m and it was built the same way as the western pool, with a narrow inner step at the southern edge. Both pools were bound on their south side by W10098 (elev. 80.92–81.19 m asl).

Just south of and adjoining W10098 the remains of a plaster floor (Floor 10097, elev. 81.02



Figure 2.39: Squares B 37–38, Western Pool I10061.

m asl) were found. This floor was 0.27 m higher than the upper level of the southern enclosing W10154 of the complex, which may hint at a later construction date of the double pools and their adjoining walls.

Pool 10151 was bound on its western side by W10227 and Pool 10061 was bound on its eastern side by W10237. Between these walls, which ran parallel, a small corridor-like space was formed. The two walls were bi-facially built and were ca. 0.5 m wide. It seems that they could have been used as kind of revetment or podium into which the pools were constructed.

The corridor-like space was paved by plaster Floor 10222; elev. 80.47 m asl), which covered the whole area between the two walls (Fig. 2.41). Floor 10222 seems to be contemporaneous with the earlier northern adjoining Floor 10153 since it had the same elevation and construction style as the latter. Floor 10153 spread northward and widened into a courtyard-like space.

The corridor-like space is bordered on its northern side by a fallen pillar in secondary use (Fig. 2.42). The orientation of the pillar matches the line of the western wall of Installation 10175 (see below). It is therefore possible to conclude, that the corridor continued further north than Installation 10175 and led into the open space covered by Floor 10153.

The corridor-like space between the pools seems to have been created to allow easy access to or supply of the pools. An entrance with a width of 0.5 m was found in W10227, which enabled access to the corridor-like space. The northern side of the

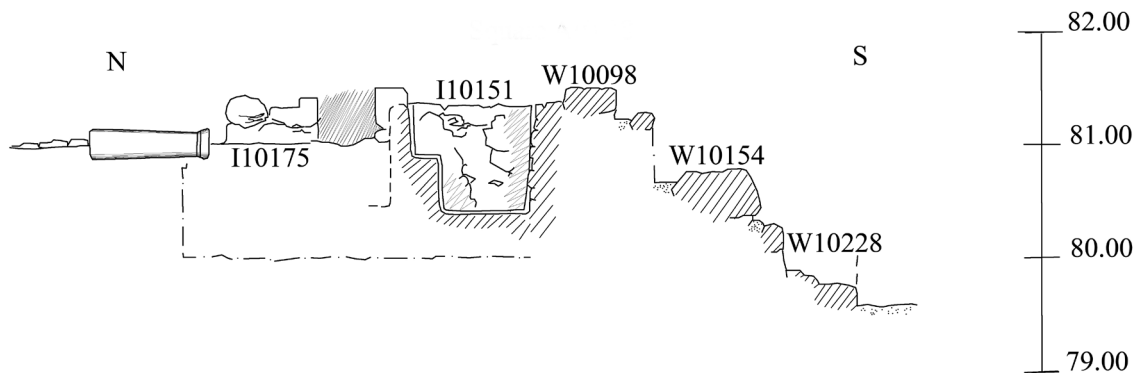


Figure 2.40: Section Squares A B 38 (Section G).

entrance was bordered by Installation 10175, which was only partly preserved and measured 1.0×1.5 m, at elev. 80.59–81.03 m asl.

Installation 10175 was probably a pool, erected during an earlier stage—possibly as early as Phase III—which went out of use in Phase II. Its remains were subsequently used as the northern boundary of the entrance into the corridor-like space.

The narrow ‘path’ coming from the west from Floor 10222 made a right angle northward towards a large, round oven (*Tabun* 10113, elev. 80.02–80.82 m asl) measuring 0.85 m in diameter.

Phase I

During Phase I, as noted, Pool 10061 may have been reconstructed and repaired. The higher Floor 10138 north of W10143 may belong to that phase. The above-mentioned description reflects dynamic usage and change in the very same complex. The rapid changes that may have occurred over a rather short time span are certainly not reflected

in the material culture, i.e., the pottery. As a matter of fact, the scarce quantities of pottery found in the large complex described above can provide us only with a general 9th–10th-century CE date (Stratum II). This information does not help answer our question as to whether the early walls found in this area below the pool complex reflect pre-Abbasid architecture or only an earlier stage of Abbasid construction.

ISOLATED POOLS

Other plastered pools disconnected from architectural structures may be described as follows:

Pool 9264 was discovered in Square B25. Only its northern part was excavated, revealing the outer length of the east–west extension measuring 2.2 m, with an inner length of 1.2 m.



Figure 2.41: Squares A-B 38, Corridor F10222.



Figure 2.42: Square A-B 38, Corridor F10222.

Pool 9273 (Fig. 2.43) was found in Square B28. It measured ca. 2.5×2.5 m (exterior) and 0.8×1.2 m (interior). The inner, northeastern corner featured a small, rectangular step.

Pool 9324 (Fig. 2.43), which was located in Square A28, was only partly preserved. Its interior measured 0.8×1.2 m and the northwestern corner revealed a small, 0.13 m deep settling tank.

DISCUSSION

All 11 of the excavated pools belong to one main type, which was defined by Tal and Taxel as Type 2, the “open square pool” (Tal and Taxel 2008: 100). Although their details are dissimilar, the 34 pools of this type excavated by Tal and Taxel and the 11 pools unearthed during our excavation reflect the same construction characteristics, such as the addition of pottery sherds to the plaster of the inner pools, steps on the pools’ long sides and settling tanks in the corners of some of the pools. The square (or more accurately, rectangular) open pools seem to comprise the vast majority of plastered pools in various excavations conducted over the years at Ramla South (Gorzalczy 2006; Gorzalczy and Spivak 2008; Tal and Taxel 2008; Gorzalczy 2009a; 2009b; Gorzalczy, Yehuda and Torge 2010). The rectangular shape of the pools may have been more practical for the planning of industrial compounds, which included various installations within a compound enclosed by walls. The best example of such a pool can be seen in our excavation in Squares A–B 36–38.

WATER MANAGEMENT FACILITIES

Features related to the collection, transport and distribution of water or other fluids were unearthed in several squares. The architectural and stratigraphical relationship between these features is in many cases unclear.

CISTERN, SQUARE B35 (FIG. 2.44)

Square B35 revealed a vaulted, oval cistern (Cistern 10192/10185, elev. 79.10–80.35 m asl). It was located west of the western Pool 10234 and was certainly related to it. It was ca. 2.5 m wide and its maximal length measured more than 3 m. The oval opening



Figure 2.43: Squares A-B 28 Pool I9273 (foreground) and Pool I9324 (background).



Figure 2.44: Square B35, Cistern I10192/I10185.

in its upper course measured 1.2×1.8 m. It was built of small stones that created a vault over the cistern. Large amounts of burnt material, including

animal bones and pottery, were found inside the cistern. It can be dated according to pottery to the Abbasid period.

Close to the southern section of Square B35 a fragment of a floor (Floor 10122, elev. 80.79 m asl) was detected, which was made of marble slabs (Fig. 2.45). This floor might mark the original horizon of use for the cistern and the adjoining Pool 10234.

WATER SYSTEM IN SQUARES A26 AND B26–27 (FIGS. 2.46, 2.47)

The most complex water system was revealed in Squares A26 and B26–27 (starting at elev. 79.17 m asl). A round cistern was found (Cistern 9236), at least 4 m in diameter, roofed with a vault built of a mixture of stone and plaster. Two rectangular openings located ca. 2 m apart, one in Square A26 and one in Square B26, gave access to the cistern. They measured 1 × 1 m and were made of hewn stones. The southern opening was better preserved, and had an opening measuring 0.4 × 0.4 m. The upper part of the opening featured a circular recess into which a cover could be set (Fig. 2.48).

The cistern was adjoined by a plaster floor 10–12 cm thick (Floor 9239, elev. 78.97–79.26 m asl) that covered the surface of Squares A26 and B26–27 and reached the openings of the cistern.



Figure 2.45: Square B35, Floor F10122.

Below Floor 9239, in Square B27, the drainage system of the complex was excavated (Fig. 2.49). A channel built of stones (Channel 9391, elev. 78.43–78.77 m asl, measuring 3.50 × 0.45 × 0.40–0.50 m) and covered with stone slabs led from the cistern southeastward into a small settling pool (Pool 9394, elev. 78.72–78.89 m asl). The pool measured 0.42 × 0.42 m and was thickly plastered. It was adjoined on its eastern side by a ceramic pipe (diameter 0.14–0.16 m). The pipe was embedded in a north–south oriented wall (W9261).

This part of the system was badly disturbed by recent activities and its continuation northward could not be traced. The small quantity of pottery collected that could be clearly associated with to the water system can generally be dated to the Abbasid period. The same type of system, a vaulted cistern with a rectangular opening connected to



Figure 2.46: Squares A-B 26–27, Water System.

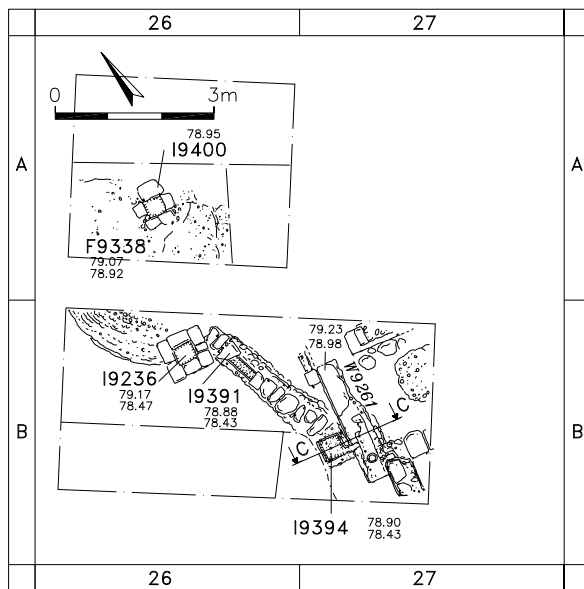


Figure 2.47: Squares A-B 26–27, Water System.



Figure 2.48: Square B26, Cistern I9236.

various channels, was excavated by Tal and Taxel (2008: 84–87).

Another water management system, very similar to the one we excavated, was unearthed at the site of Kefar Sava (Ayalon 1998) and was dated by the excavator to the Byzantine period.

An isolated water channel (Channel 9314, elev. 79.20–79.59 m asl) was discovered in Square B29. It was constructed of upright stones covered by

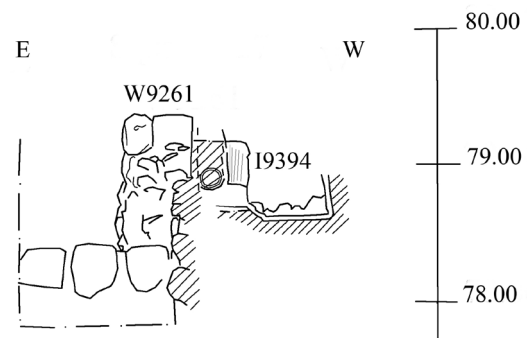


Figure 2.49: Section Square B27 (Section C).

slabs. Oriented east–west, it was 0.3 m wide. The channel was presumably connected to the network of installations and pools that was found in the excavation area.

STRATUM I (POST-ABANDONMENT AND LATE ABBASID REMAINS)

No architectural remains were found in the excavated area that could securely be ascribed to the period after the area was abandoned. The major destruction of the excavation area (mainly its eastern part) by recent activities probably destroyed all remains dating to a later period.

The only ancient remains that are of late Abbasid or post-Abbasid date could be the robber trenches excavated in Squares B31 (Locus 10072), B32 (Locus 10089, Locus 10161), A32 (Locus 10087) and B34 (Locus 10065). Especially the trenches in Squares B31 and B32 reached a considerable depth.

More robber trenches may well have been dug in ancient times to obtain stones from ruined walls, but because of the major destruction in this area their proper detection was impossible.

No datable pottery from within the robber trenches or even from the soil covering them could confirm our suggestion of a late Abbasid date for these trenches, but they seem to have been dug shortly after the abandonment of the industrial area.

A small quantity of pottery dating to the Fatimid period was found scattered over the excavation area and testifies to a sporadic and non-invasive Fatimid presence.

CHAPTER 3.1

POTTERY

Elisabeth Yehuda

This chapter is divided into two main parts: an examination of the stratigraphic context followed by a detailed typological analysis of the pottery found at the excavation site of Ramla South. The first part of the typological analysis deals with assemblages deriving from clearly defined architectural-archaeological contexts (selected loci) and the second part treats those sherds assigned typologically to one of the chronological groups.

In order to determine the dating of the pottery as securely as possible, all selected sherds were examined in relation to their stratigraphical context.

Several basic observations were made:

- Of the pottery sherds identified by typological considerations as late Byzantine–early Umayyad (Stratum III), 80% were found in the western part of the excavation area while only 20% were discovered in the eastern part of the excavation area, either in the earliest layers or in fill layers. In Square B16 an assemblage of 11 restorable vessels was found on a beaten-earth floor. These vessels are believed to date to the transition period between the late Byzantine and early Umayyad period.
- In Square B16 an odd phenomenon was observed. Among the sherds found in Fill 9198 below Floor 9069, which dates to the late 7th–8th centuries CE, were sherds of glazed pottery (Fig. 3.1.14: 5) from the 8th century CE or later. To avoid what would have been an impossible stratigraphic reversal, we dated the pottery from Floor 9069 as late as possible—to the 8th century CE—and the pottery from below Floor 9069 as early as possible—to the 8th century CE. Thus the chronological crossing point of the pottery from Square B16 was ca. mid-8th century CE. However, a sherd of a cooking-pot (Fig. 3.1.25: 2), which definitely did not appear earlier than the 10th–11th centuries CE, turned up in the same locus (Locus 9198) below Floor 9069, contradicting the above assumption. So another explanation for the reverse stratigraphy had to be found. We settled on the possibility that these specific late Byzantine–early Umayyad vessels were used beyond their commonly accepted span of use, into the late Abbasid period.
- Of the pottery sherds identified by means of typological considerations as dating to the late Umayyad–Abbasid periods (Stratum II), 69% were found in the eastern part of the excavation area while 31% were found in the western area. Many of the late Umayyad–Abbasid pottery sherds present in the western area were found in layers close to the surface and prove that interference by Abbasid-era people in that area was negligible. In the case of Squares B8 and A11 a larger quantity of Abbasid pottery and the complete absence of Umayyad pottery attest to a more massive change of existing architectural structures by the Abbasid people. The same can be said in the case of Square B11 where quite a homogeneous assemblage of pottery dating to the late Umayyad–Abbasid periods (Stratum II) was found.
- The few sherds typologically identified as dating to the late Abbasid–Fatimid periods were not found in any specific area. Some were retrieved just below or within what was defined as the surface layer. On the other hand, two complete vessels (Fig. 3.1.25: 1 and Fig. 3.1.26), assigned to the late Abbasid–Fatimid periods, were unearthed. Fig. 3.1.26, a sugar pot, was found in Square A38 almost 1 m below the present-day surface in the fill of Tabun 10113. A complete cooking-pot (Fig. 3.1.25: 1) was found almost 4 m below the present-day surface level in Fill 9044 of Square B27, east of W9261. In the same square the sherd of a celadon bowl (Fig. 3.1.23: 2) was also found, 2.7 m below the present-day surface. In the case of Figs. 3.1.25,

3.1.26 and 3.1.23: 2, the vessels were found in the fill layers in or above the latest architectural remains. The presence of such late complete vessels testifies to meager and spatially restricted Fatimid activities in this area.

The clear distribution of late Byzantine-early Umayyad pottery mainly in the western area and late Umayyad-Abbasid pottery in the eastern area is paralleled by distinct architectural differences between the western and eastern areas.

We established several criteria for choosing vessels and sherds as part of the pottery assemblage. The excavation report of the 2005–2006 seasons presented in-depth examinations of the pottery assemblages (Tal and Taxel 2008: 76–77, 125–165), which are very similar to the types excavated during the 2008 season. In order to avoid repetition, we chose to include only complete vessels, vessels that belonged to special assemblages and fairly atypical vessel types in our presentation.

While there were only a few sherds, and among them only one that was indicative, from the Roman period, all other pottery excavated at Ramla South dates to the Early Islamic period. The pottery deriving from the Early Islamic period can roughly be divided into three groups: late Byzantine-early Umayyad, late Umayyad-Abbasid and Abbasid-Fatimid. This division picks up Tal and Taxel's classification in their excavation report on Ramla South (Tal and Taxel 2008).

It is reasonable to assume that previous types were not immediately replaced by new ones when a new era started. In terms of the pottery of Ramla South, this means that pottery considered typically Byzantine was also produced during the Umayyad period and pottery considered typically Umayyad continued to be produced during the Abbasid period.

THE ROMAN PERIOD (STRATUM IV)

Although two places with archaeological remains from the Roman period were detected during the excavation (Pit 10134/10135 in Square B40 and Floor 10209 in Square B32), only one rim sherd, from the pit in Square B40, was retrieved. The sherd belongs to a thinly potted storage jar (Fig. 3.1.1) made of light gray clay fired to cream buff on the surface.

The neck of this vessel widens mildly on top and the simple, rounded rim is slightly out-turned. The lower part of the neck is ridged. The shoulders are undecorated and relatively wide. Similar exemplars were found during the 2005–2006 season at Ramla (Tal and Taxel 2008: Fig. 3.4: 7).

THE LATE BYZANTINE-EARLY Umayyad PERIODS (STRATUM III)-ARCHAEOLOGICALLY DEFINED CONTEXTS (SELECTED LOCI)

Within the general pottery assemblage a number of assemblages could be isolated. These were composed of many restorable or semi-restorable vessels found at the same location. They are an assemblage of kiln waste from Squares A-B 12–16 and an assemblage of restorable pottery from Building A-B 15–17. Those two assemblages are presented below.

KILN WASTE IN SQUARES A-B 12-16

Between Squares A-B 12–16 large amounts of kiln debris were found. The layers were the most massive in Squares A12–15 and reached Complex B15–17 where they thinned out. Sherds of the same vessel types as in the kiln waste were present on Floor 9069 and below it in Fill 9198. Thus it can be assumed that the kiln waste and the sherds from Floor 9069 date roughly to the same time span. No corresponding kiln was exposed during the 2008 season but during the IAA's excavation in 2007 (Gorzalczany, Yehuda and Torge 2010) a kiln was found very close to the squares opened during the 2008 season (see Chapter 2, Stratigraphy p. 17–18). It can thus be concluded that the kiln waste excavated in 2008 and the kiln excavated in 2007 represent one unit.

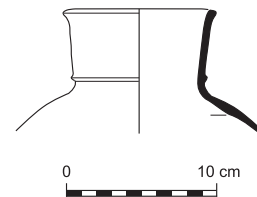


Figure 3.1.1: Pottery from the Roman period (Locus 10025, Basket 100428).

The kiln waste shows that four types of vessels were produced: Casseroles/frying pans, lids, cooking-pots and storage jars.

Most of the vessel types retrieved from the layers of kiln waste were made of a gritty, orange-red to red-brown clay except for most of the storage jars, which were made of a lighter (light orange-brown), less gritty clay.

Casseroles/Frying Pans

Deep frying pans or casseroles were the most common types of vessels in the assemblage. They show a tapering body with slightly rounded base or a hemispherical shape (Fig. 3.1.2: 1–11). The outside is plain or features fine or coarse ribbing. The rim is simple and slanted. Frying pans/casseroles similar to the ones found in the kiln waste were assigned by Magness to the later exemplars of Form 1 starting during the late 6th century and decreasing during the 8th–9th centuries CE (Magness 1993: 211–212). At Tiberias such hemispherical casseroles were dated to Stratum IV, the early Abbasid period (Stacey 2004: 123–124). In the excavation north of the White Mosque similar casseroles were retrieved but with rather horizontal handles. These vessels were dated from the late 7th–early 8th centuries to the 9th–10th centuries CE (Cytryn-Silverman 2010: 112–113, Fig. 9.6: 8–12). At Caesarea these casseroles were dated from the late 7th to the first half of the 8th centuries CE (Arnon 2008: 74).

Lids

A less common vessel type is the group of lids (Fig. 3.1.2: 12–14) whose size matches that of the casseroles. They have round walls and straight or slightly out-turned rims and the outside is commonly decorated with fine ribbing. Similar lids were excavated north of the White Mosque and dated until the 9th–10th centuries CE (Cytryn-Silverman 2010: 112–113, Fig. 9.6: 5–7).

Cooking-pots

Fewer cooking-pots than frying pans were found in the kiln waste (Fig. 3.1.2: 15, 16). Their bodies feature wide, slanting shoulders with the lower part tapering into a slightly conical base. Large loop handles spring from the upper part of the neck and

end on the middle of the shoulders. The neck is short and straight or slightly convex and the rim is always simple and rounded. Similar cooking-pots were assigned by Magness to cooking-pots of Type 4C (Magness 1993: 219–220), dating them from the 5th to the early 8th centuries CE. At Caesarea these cooking-pots were dated from the late 7th to the first half of the 8th centuries CE (Arnon 2008: 73). Similar cooking-pots were also found during excavations at Ramla, such as the excavation at Opher Park (Kletter 2005: 77, Fig. 18: 1–3) and north of the White Mosque (Cytryn-Silverman 2010: 112, Fig. 9.6: 1, 2).

Storage Jars

One storage jar, a less common type among those unearthed in the kiln waste, is made of the same clay as the frying pans/casseroles and cooking-pots. This storage jar (Fig. 3.1.2: 17) shows thinner walls than the following group, a swollen neck, a hooked rim and a fine-ribbed body. According to Magness, storage jars with swollen neck and hooked rim appeared for the first time in the late 7th century and were produced until the 9th–10th centuries CE (Magness 1993: Form 7, 230–231). At Caesarea, a jar of the same form was assigned from the late 7th to the first half of the 8th century CE (Arnon 2008: 80, Type 814a).

The most common type of storage jars uncovered in the kiln waste is the southern Palestinian bag-shaped type (Fig. 3.1.2: 18–21). It is made of light orange-brown clay and features relatively thick walls and a short neck with straight and pointed rims. Fine ribbing decorates the body at the height of the loop handles while the lower body shows broad ribbing. Southern Palestinian bag-shaped storage jars have been dated from the late 6th to the early 8th century CE (Magness 1993: Form 5A, 226). Similar storage jars are assigned at Caesarea from the late 7th until first half of the 8th century CE (Arnon 2008: 74–76, Type 811 Southern Palestinian Storage Jar).

Typology indicates that most vessel types from the pottery kilns at Ramla South continue late Roman–Byzantine pottery traditions and were also produced during the Early Islamic period. An exception is the type of storage jar with swollen neck and hooked rim, which started to appear only in the late 7th century CE.

THE POTTERY ASSEMBLAGE FROM COMPLEX A–B 15–17

The kiln waste can be more specifically dated by taking a closer look at an additional assemblage unearthed in Squares A–B 15–17, which is in close proximity to the layers of kiln material discussed above. On a beaten earth floor (Floor 9069) bordered by W9230 in the west, W9321 in the east, W9387 in the south and W9162 in the north, various complete vessels were excavated. According to clay type and shape they were produced in the kiln nearby.

The assemblage includes 11 restorable vessels (Fig. 3.1.3 and Fig. 3.1.4) among them are two

storage jars, a wine jug, a lid, two casseroles and five cooking-pots.

Casseroles

The complete casseroles (Fig. 3.1.3: 1, 2) have a hemispherical or slightly carinated body with fine ribbing and horizontal loop handles.

Lids

The lid in Fig. 3.1.3: 3 is identical to the ones unearthed in the kiln waste layers. It was made of gritty, red-brown clay and fits the casseroles from the assemblage. It shows a ribbed body and a slightly slanted, simple rim.

Figure 3.1.2: Kiln waste squares A-B 12–16

No.	Locus	Basket	Elevation	Type	Comments
1	9069	90670	81.11	Casserole/frying pan	Coarse, orange-red clay
2	9069	90670	81.11	Casserole/frying pan	Coarse, orange-red clay
3	9138	90686	81.01–81.04	Casserole/frying pan	Coarse, orange-red clay
4	9198	90746	80.90–81.04	Casserole/frying pan	Coarse, orange-red clay
5	9198	90746	80.90–81.04	Casserole/frying pan	Coarse, orange-red clay
6	9115	90401	80.45–81.10	Casserole/frying pan	Coarse, orange-red clay
7	9115	90401	80.45–81.10	Casserole/frying pan	Coarse, orange-red clay
8	9069	90670	81.11	Casserole/frying pan	Coarse, orange-red clay
9	9069	90670	81.11	Casserole/frying pan	Coarse, orange-red clay
10	9069	90639	81.05	Casserole/frying pan	Coarse, orange-red clay
11	9198	90686	81.01–81.04	Casserole/frying pan	Coarse, orange-red clay
12	9115	90401	80.45–81.10	Lid	Coarse, orange-red clay
13	9069	90664	81.11	Lid	Coarse, orange-red clay
14	9069	90638	80.95	Lid	Coarse, orange-red clay
15	9069	90670	81.11	Cooking-pot	Coarse, red-brown clay
16	9069	90639	81.05	Cooking-pot	Coarse, red-brown clay
17	9115	90401	80.45–81.10	Storage jar	Coarse, orange-red clay
18	9198	90746	80.90–81.04	Storage jar	Coarse, orange-red clay
19	9198	90746	80.90–81.04	Storage jar	Coarse, orange-red clay
20	9115	90401	80.45–81.10	Storage jar	Coarse, orange-red clay
21	9173	90729	79.35	Storage jar	Coarse, orange-red clay

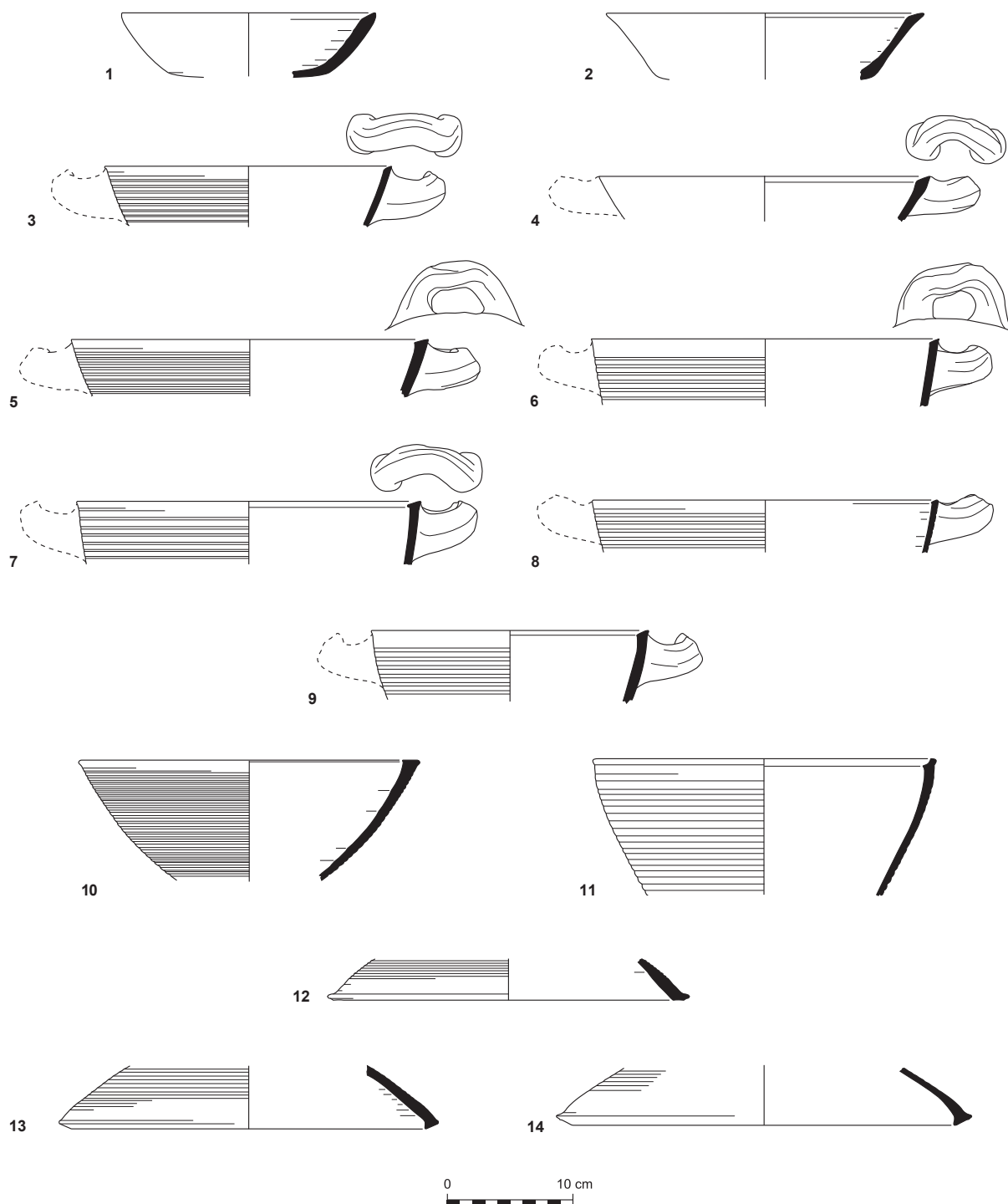


Figure 3.1.2: Pottery from kiln waste Squares A-B 12-16.

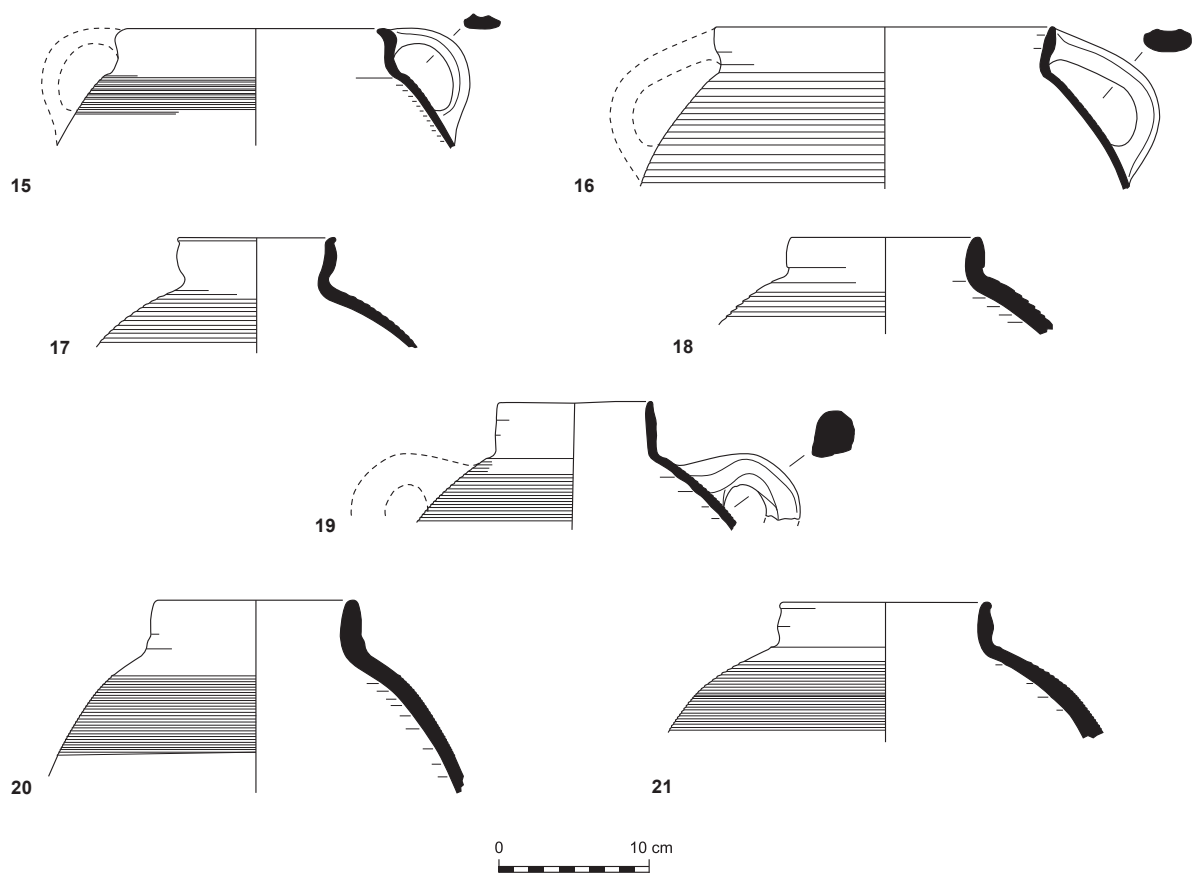


Figure 3.1.2: pottery from Kiln waste Squares A-B 12-16 (cont.).

Figure 3.1.3: Pottery assemblage from Complex A-B 15-17

No.	Locus	Basket	Elevation	Type	Comments
1	9069	90639	81.05	Casserole/frying pan	Coarse, orange-red clay
2	9069	90665	81.11	Casserole/frying pan	Coarse, orange-red clay
3	9069	90670	81.11	Lid	Coarse, orange-red clay
4	9069	90660	81.11	Cooking-pot	Coarse, red-brown clay
5	9069	90661	80.55	Cooking-pot	Coarse, red-brown clay
6	9069	90662	81.12	Cooking-pot	Coarse, red-brown clay
7	9069	90665	81.11	Cooking-pot	Coarse, red-brown clay
8	9069	90662	81.12	Jug	Coarse, red-brown clay
9	9069	90638	80.95	Storage jar	Coarse, orange-red clay
10	9198	90687	81.01-81.04	Storage jar	Coarse, orange-red clay
11	9069	90662	81.12	Storage jar	Coarse, orange-red clay

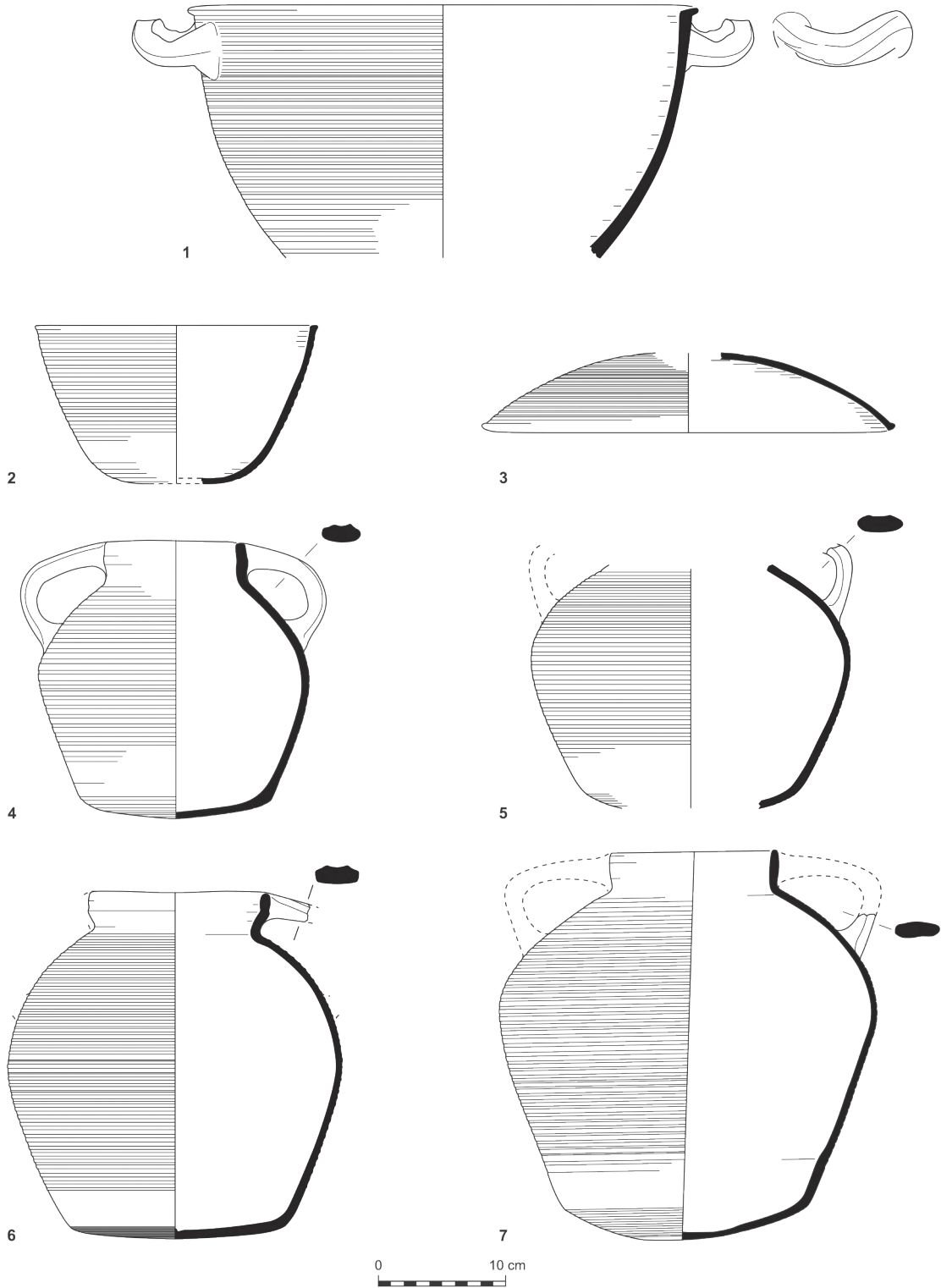


Figure 3.1.3: Pottery assemblage from Complex A-B 15-17.

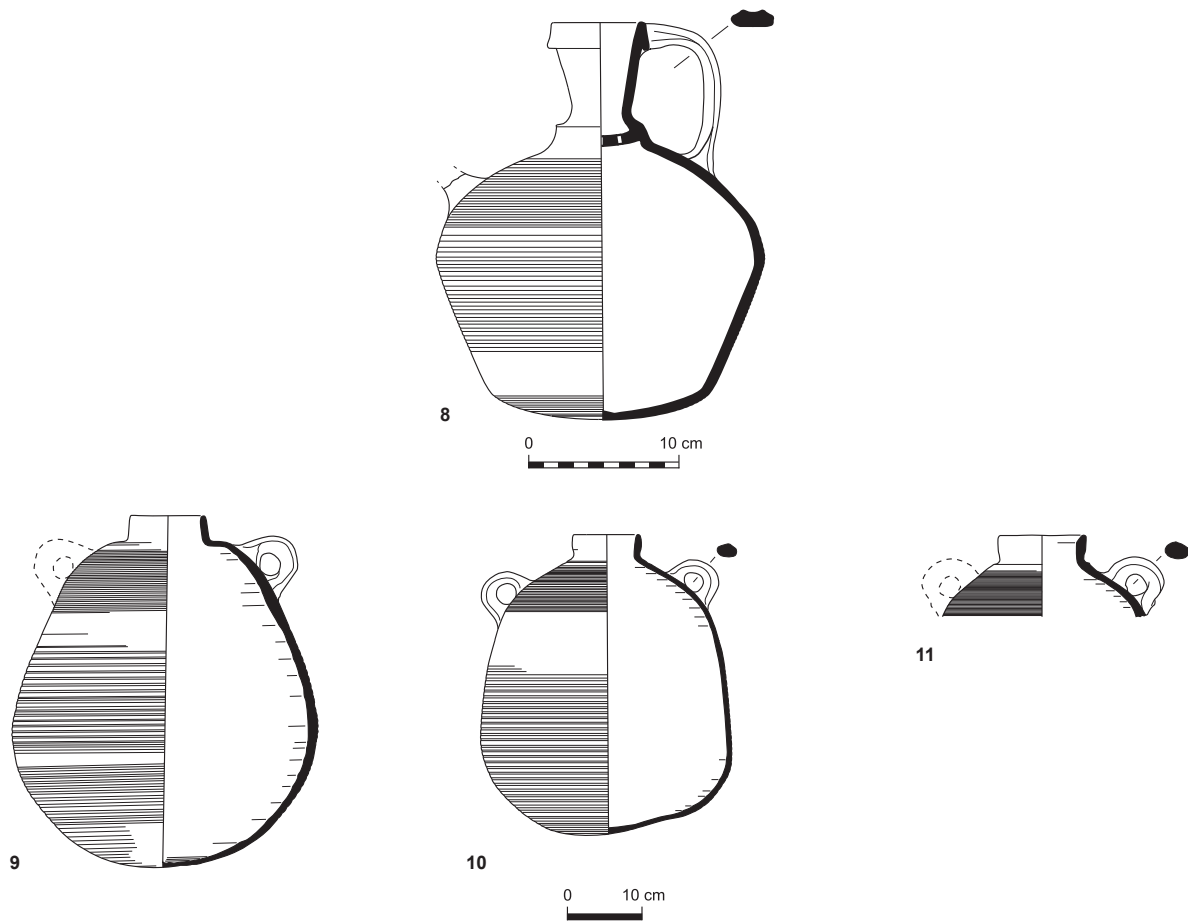


Figure 3.1.3: Pottery assemblage from Complex A-B 15-17 (cont.).



Figure 3.1.4: Pottery assemblage from Complex A-B 15-17.

Cooking-pots

The cooking-pots (Fig. 3.1.3: 4-7) found in this complex are identical to the ones found in the kiln material. They feature a carinated body with a tapering lower part and a convex base. Two large

loop handles are attached to a simple, straight or slightly tapering rim and end at the broad shoulders. The cooking-pots excavated in the kiln waste layers and in Complex B15-17 are similar, but not identical, to numerous other parallels. While cooking-pots from previous excavations at Ramla South (Tal and Taxel 2008: 76, Fig. 5.42: 4, 5), north of the White Mosque (Cytryn-Silverman 2010: 112, Fig. 9.6: 1, 2) and at Opher Park (Kletter 2005: 77, Fig. 18: 1-3) show a distinctive triangular rim and a rather concave or tapering neck, the cooking-pots from the 2008 season feature a distinctive simple rim above a convex or straight neck. This form was unearthed only in the 2008 season at Ramla South and can thus be considered merely a local variant of cooking-pots that were produced in the kiln nearby and circulated only in the vicinity of its area of production. Cooking-pots with large, horizontal

loop handles disappear during the early 8th century CE (Arnon 2008: 73). Thus, our assemblage of cooking-pots and casseroles should be dated from the late 7th to the first half of the 8th century CE.

Wine jug

The wine jug in Fig. 3.1.3: 8 has a carinated body with a slightly conical base. It is decorated with fine ribbing on the shoulders and coarser ribbing on the lower part. The neck is tapered and ends in a filter with four holes arranged in a rectangular pattern. The jug shows an out-folded rim to which a vertical loop handle is attached. The handle ends on the shoulder. Interestingly, the lower part of the wine jug shows the same characteristics as those of the cooking-pots and casseroles, a carinated shape with a slightly rounded base, a fact that emphasizes that all of these vessels were produced on the same pottery wheel.

Storage jars

Of the two complete storage jars from Complex A–B 15–17, one shows the typical southern Palestinian bag-shaped form with a straight rim, two loop handles, fine ribbing on the shoulders and broader ribbing on the lower body (Fig. 3.1.3: 9) (Magness 1993: Form 5A, 226). The second storage jar (Fig. 3.1.3: 10) is bag-shaped as well, but the lower body area is more carinated than round. The body, like that of the above-mentioned storage jar (Fig. 3.1.3: 9), is divided in two zones of ribbing—finer ribbing on the shoulders and broader ribbing on the lower part (Magness 1993: Form 6A, 228). Of a similar storage jar, only sherds were found (Fig. 3.1.3: 11). Storage jars with swollen neck appear only at the end of the 7th century CE (Magness 1993: 230–231; Arnon 2008: 74–75). There are no vessel types whose first appearance can be dated after the beginning of the 8th century CE. The types of cooking-pots and casseroles presented here are long-lasting. Hemispherical casseroles were dated at Tiberias to the Abbasid period (Stacey 2004: 123–124) and those from the Jerusalem area are thought to have continued into the 10th century (Magness 1993: 211). It is difficult to detect clear typological development of the casseroles. However, it seems that the slightly slanted and upwardly curved loop handles of the casseroles dating from the late 7th

to the first half of the 8th century CE straightened over the course of time and became, from the mid-9th century onward, exclusively horizontal, a development that can be seen on the casseroles from Caesarea (Arnon 2008: 74, 151–153, 217). The above evidence leads to the conclusion that the assemblage from Complex A–B 15–17 should be dated precisely between 700 and 750 CE

THE LATE BYZANTINE–EARLY Umayyad PERIOD (STRATUM III)—UNSPECIFIED CONTEXTS

Plain unglazed bowls

Only plain, unglazed bowls were present in the assemblage from the above mentioned period, and within this category, only one type was present (Fig. 3.1.5)—a bowl of Fine Byzantine Ware. It is made of semi-fine, light brown clay. The body has straight walls and the rim is offset and tilts downward. Bowls of this type are assigned by Magness to Fine Byzantine Ware Type 2c and are dated from the mid-7th to the 9th–10th centuries CE (Magness 1993: 198–200).

Casseroles/Frying pans

One exemplar of a casserole belongs to this group (Fig. 3.1.6). It is made of red-grayish, gritty clay. The rim is slanted, and the walls are thickly potted and steep, ending in a convex base. These casseroles were common from the late third–early fourth until the 8th–9th centuries CE (Magness 1993: Casserole Form 1) although the earlier examples were commonly thinner-walled.

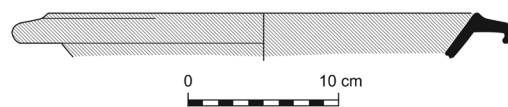


Figure 3.1.5: Plain unglazed bowl (Locus 9220, Basket 91045).

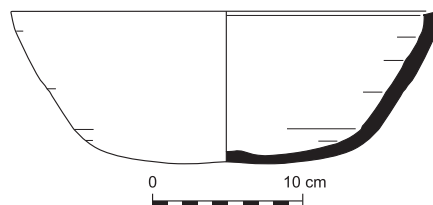


Figure 3.1.6: Casserole/frying pan (Locus 9379, Basket 91281).

Cooking-pots

The cooking-pot presented in Fig. 3.1.7 belongs to the same type as the ones excavated in the kiln waste layers and in the assemblage from Complex A–B15–B17; however, in contrast, this type of cooking-pot shows a globular upper body. The lower body most likely featured a carination that ended in a convex base. Magness assigned this type of cooking-pot to Form 4C (Magness 1993: 219–220).

Antilya jar

Despite the large number of cisterns only one exemplar of an Antilya jar was found (Fig. 3.1.8). It is made of light reddish-brown and gritty clay fired partially to buff on the surface. Its form, which shows a straight, relatively short neck, simple rim and widened lower body with a low carination and a conical base, is more similar to an exemplar presented by Avisar and Stern (2005: Fig. 43. Type 3.1: 11) than to the Early Islamic examples (Tal and Taxel 2008: 6.96). Nevertheless, according to its stratigraphical context—below the late Byzantine–Early Islamic Floor 9069 (Fig. 3.1.9.)—this Antilya jar should be dated exclusively to the Umayyad period.

Storage jars

The storage jars of the late Byzantine–early Umayyad period can easily be identified as the southern Palestinian bag-shaped jar produced as early as the late Byzantine period (see storage jars retrieved from the kiln waste and A–B 15–17, except for Fig. 3.1.2: 17). The storage jars all belong to the same type but can be divided into three types:

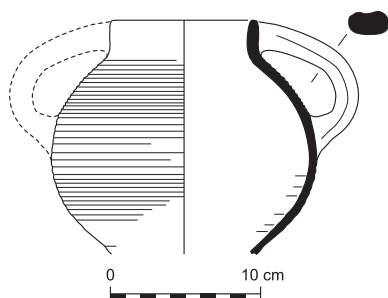


Figure 3.1.7: Cooking-pot.(Locus 9288, Basket 91198).

SJ 1.1

This type of storage jar (Fig. 3.1.10: 1) shows a slightly out-turned rim and a thickened, short neck. The clay is rather coarse and light brown. Vessel Fig. 3.1.2: 21 from the kiln material in Square A14 is similar to SJ 1.1 but larger.

An identical storage jar was found during the excavations north of the White Mosque (Cytryn-Silverman 2010: 100–101, Fig. 9.18: 1) and was assigned to Ware 1 of the Early Islamic period. At Caesarea this storage jar was dated from the late 7th to the first half of the 8th centuries (Arnon 2008: 75, Type 811a).

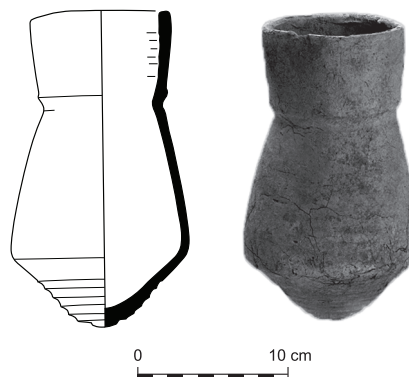


Figure 3.1.8: Antilya jar (Locus 9353, Basket 91260).



Figure 3.1.9: Square B16, antilya jar in Locus 9353.

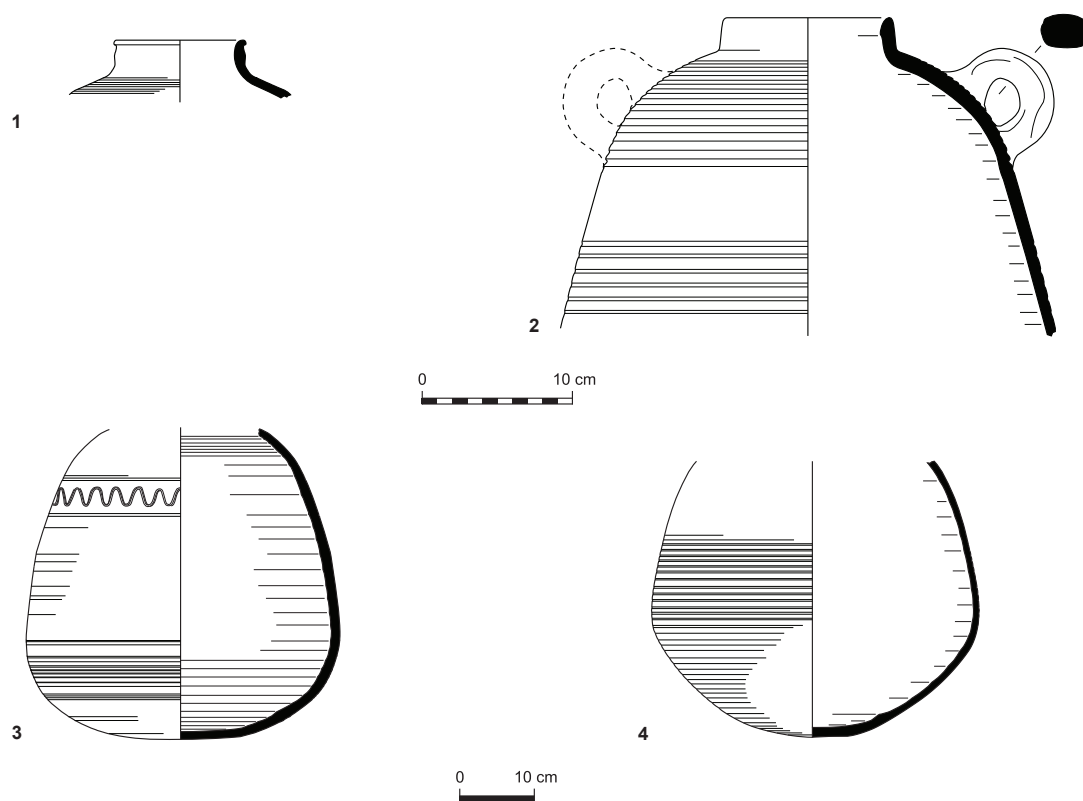


Figure 3.1.10: Storage jars.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9190	90655	80.07–80.47	Storage jar	SJ 1.1	Coarse, red clay
2	9003	90564	81.04–81.06	Storage jar	SJ 1.2	Coarse, red clay
3	9276	91153	78.57–78.94	Storage jar	SJ 1.2	Coarse, red clay
4	9103	90414	81.02	Storage jar	SJ 1.3	Coarse, light orange clay

SJ 1.2

This type (Fig. 3.1.10: 2, 3) shows the same clay, rim and neck as SJ 1.1, but differs from it in the shape of the body, which is less ovoid and rather low and carinated. The body also revealed decorations of combed, wavy lines. The storage jars of this variant are similar to the storage jar in Fig. 3.1.3: 10 from the assemblage found in Squares A–B 15–17, although the latter was more thinly potted. Storage jars with a similar body shape and decoration, albeit with a prominent ridge on the neck, were assigned by Magness to Group 6A (Magness 1993: 227–229) and dated, like the following group, from the late 6th to the 8th century CE. Storage jar Fig. 3.1.10: 3 was

found embedded in Floor 9276 (Fig. 2.14, Chapter 2). Its upper part was missing and it may be speculated that it was used as a pit-like storage device.

SJ 1.3

This type (Fig. 3.1.10: 4) is made of light reddish, light orange or pink, coarse, thickly potted clay, with an ovoid or bag-shaped body. The body was separated into different zones of ribbing—coarse ribbing on the lower body and fine ribbing on the upper body. The neck is usually short and straight and the rim is simple and pointed or rounded. The vessel presented is similar to Magness (1993: Form 5A, 226, dated from the late 6th to the 8th century CE).

Storage Jar Stoppers

Only one type of stopper was found (Fig. 3.1.11), which shows the shape of a small bowl with rounded base and out-turned rim. The clay is medium brown and fine. This type could have served simultaneously as small bowls and stoppers. Magness assigns them to Form 1 (Magness 1993: 247, Form 1, especially Form 1: 3) and dates them from the 6th to the mid-8th centuries CE. During the various excavations at Ramla an exemplar similar to Fig. 3.1.11 was found during the excavations north of the White Mosque (Cytryn-Silverman 2010: Pl. 9.4: 21) and dated to the Early Islamic period.

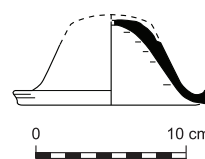


Figure 3.1.11: Storage Jar Stopper (Locus 9066, Basket 90220).

and four restorable jugs. Sherds of additional bowls, jugs and a storage jar were found. Most vessels were made of cream buff clay. Only three jugs (Fig. 3.1.12: 12–14), among them two restorable exemplars, were made of light brown or light red, fine clay.

THE LATE Umayyad–Abbasid Periods (Stratum II-Archaeologically Defined Contexts)

The Pottery Assemblage from Square B8 (Loci 9091, 9056)

In Square B8 an assemblage of restorable and semi-restorable vessels was found in Fill 9091 above pebble Floor 9156 east of Cistern 9063 (Fig. 3.1.13). Additional pottery was found in Fill 9056 above Fill 9091. The assemblage yielded two restorable bowls

Bowls

The group of bowls can be divided into plain unglazed bowls, monochrome glazed bowls and polychrome glazed bowls.

Plain Unglazed Bowls: The plain unglazed bowls (Fig. 3.1.12: 1–4) range in size from small to mid-sized vessels. A small bowl (Fig. 3.1.12: 1) made of pale cream clay, belongs to the assemblage from Fill 9091. It has a short neck with a slightly out-turned rim and a rounded body. A similar vessel, albeit with a more carinated profile, was unearthed at Tiberias (Stacey 2004: Fig. 5.51: 4). Identical

Figure 3.1.12: Pottery assemblage from Square B8

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9091	90426	78.24–78.58	Bowl		Pale cream clay
2	9056	90189	78.95–79.00	Bowl		Pale cream clay
3	9091	90426	78.24–78.58	Bowl		Pale cream clay
4	9091	90426	78.24–78.58	Bowl		Pale cream clay
5	9091	90426	78.24–78.58	Bowl		Pale cream clay, inside light green, crackled glaze
6	9091	90426	78.24–78.58	Bowl		Pale cream clay, inside green and opaque light blue glaze
7	9091	90426	78.24–78.58	Bowl		Pale cream clay, inside glaze composed of yellow dots and light blue decoration separated by thin black lines
8	9091	90426	78.24–78.58	Jug	JU 2.1.A	Pale cream clay
9	9091	90426	78.24–78.58	Jug	JU 2.1.A	Pale cream clay
10	9091	90426	78.24–78.58	Jug	JU 2.1.B	Pale cream clay
11	9091	90426	78.24–78.58	Jug	JU 2.1.B	Pale cream clay
12	9091	90426	78.24–78.58	Jug	JU 2.2.A	Fine, light red clay
13	9091	90426	78.24–78.58	Jug	JU 2.2.A	Fine, light brown clay
14	9091	90426	78.24–78.58	Jug	JU 2.2.B	Fine, light red clay and white wavy lines
15	9091	90426	78.24–78.58	Storage jar		Pale cream clay

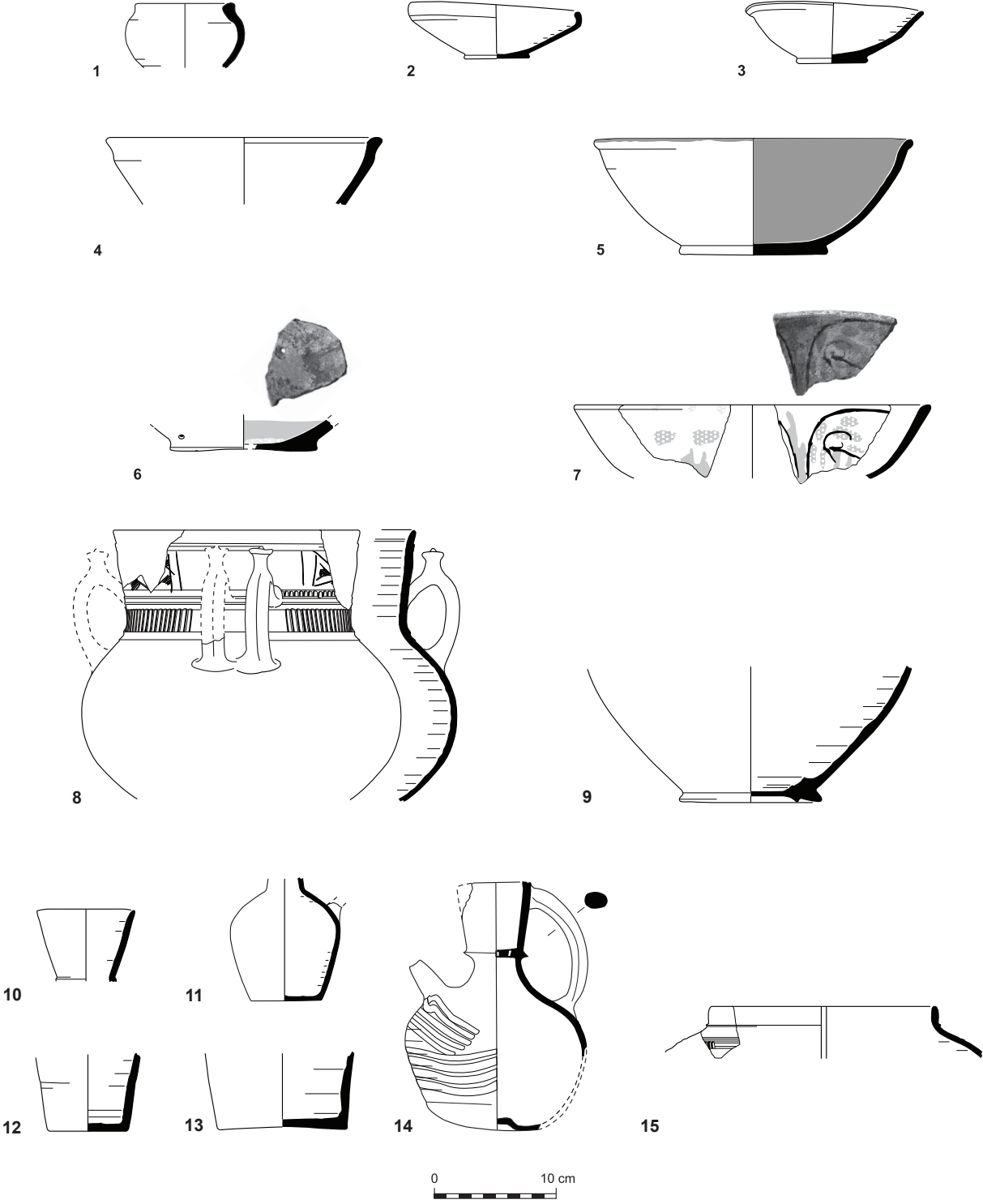


Figure 3.1.12: Pottery assemblage from Square B8.



Figure 3.1.13: Selection of vessels from assemblage in Square B8 Fill 9091.

bowls were excavated in Ramla south of the White Mosque (Cytryn-Silverman 2010: Photos 9.5 and 9.6, Pl. 9.24: 11), next to Mahané Maʿashiyyahu/Ramla (Sion 2004: 82, Fig. 14: 82) as well as at Opher Park (Kletter 2005: 77, Fig. 17: 4) and dated to the Early Islamic period. According to Avissar this type of bowl or cup was frequently found in assemblages from sites in the Shephelah (Avissar 2007: 92*, Fig. 2: 9).

The second bowl (Fig. 3.1.12: 2) is carinated with a disk base, which can also be observed on the third bowl (Fig. 3.1.12: 3). The latter bowl features a rounded profile and a plain rim. Body and rim are twisted as if this bowl was a waster. A similarly twisted bowl was found in the excavation north of the White Mosque dating to the late Islamic period (Cytryn-Silverman 2010: Photo 9.29, Pl. 9.34: 4).

The fourth bowl (Fig. 3.1.12: 4) also has a rounded profile and a slightly out-turned, simple rim. All bowls are made of pale cream ware. Similar bowls made of pale cream clay were excavated at Kh. al-Mafjar (Baramki 1944: Fig. 8: 1–13, 15). A similar group of bowls was also identified at Yoqneʿam (Avissar 1996: Fig. XIII. 67. Type 4) but the clay of these bowls is light

brown or light orange-brown. At the excavation north of the White Mosque similar carinated buff ware bowls were unearthed (Cytryn-Silverman 2010: Pl. 9.5: 1–8) and assigned to the Early Islamic period. The excavation at Opher Park also showed an assemblage of buff-ware bowls with incurved rims or straight sides (Kletter 2005: 69, Fig. 1–3, 5, 6).

Monochrome Glazed Bowls: The only plain glazed bowl found in the assemblage (Fig. 3.1.12: 5) was made of the same pale cream clay as the unglazed bowls. It has a hemispherical body, a slightly out-turned rim and disk base. The inside of the bowl is entirely covered by a pale green, crackled glaze. Similar bowls were excavated at Yoqneʿam (Avissar 1996: Fig. XIII.12. Type 12 “tin glazed bowls”) where they were dated to ca. mid-8th century. At Abu Gosh they were dated to before the beginning of the 9th century CE (De Vaux and Steve 1950: Pl. A: 10).

Polychrome Glazed Bowls: Two bowls represent this group. The first (Fig. 3.1.12: 6) is made of pale cream clay. It shows a disk base that is coated inside by white slip onto which green glaze was applied in random patterns. Part of the glaze changes color into opaque light blue. The outside is unglazed.

Next to the foot of the base an approximately 3 mm wide hole was drilled through the already burned bowl, probably to repair a break. Only a rim piece of the second bowl (Fig. 3.1.12: 7) was preserved, revealing a simple, rounded shape, simple rounded rim and a slightly carinated body. The inside of the bowl is coated with white slip onto which yellow dots and light blue—originally green—glaze were applied. The different areas of color were separated by black streaks and tendrils. The outside of the bowl remained largely unglazed other than occasional dots of glaze. Bowls of this type are described by Avissar as “splashed and mottled ware” and dated from the 9th century CE onward (Avissar 1996: Fig. XIII.6. Type 6). At Tiberias such bowls were assigned to the “Local Polychrome Splash-Ware” (Ware IXa) (Stacey 2004: Figs. 5.25: 1–5 and 5.27) and dated to the 9th–10th centuries. During the 2005–2006 seasons at Ramla similar bowls were excavated (Tal and Taxel 2008: 128–129 “Polychrome splash-glazed”). Vessels of that type were also unearthed at the excavation north of the White Mosque (Cytryn-Silverman 2010: 111).

Jugs

The jugs belonging to this assemblage can all be assigned to the group of table jugs. According to the clay of which the jugs are made, two groups can be distinguished:

Table Jugs Group I: (Fig. 3.1.12: 8–11) is made of cream buff clay. This group includes two types JU 2.1.A (Fig. 3.1.12: 8, 9) and JU 2.1.B (Fig. 3.1.12: 10–11).

JU 2.1.A is comprised of jugs described as “cream ware drinking jugs” (Stacey 2004: 130–132, Fig. 5.41) or jugs with incised decoration (Tal and Taxel 2008: Fig. 6.91: 5–8, Jug Type 2; Avissar 1996: Fig. XIII.131, Type 5; Arnon 2008: 208–209, Types 531i).

In Tiberias those jugs are dated to the late 8th–9th century and continued into the 11th century CE. At Caesarea they are assigned to the pottery from the mid-9th to the mid-10th centuries CE while at Yoqne‘am they are dated mainly to the Umayyad period. The first jug (Fig. 3.1.12: 8) has a wide, straight neck with simple or pointed rim and a spherical, slightly carinated body. A double knob handle is attached to the middle of the neck and

ends on the shoulder. The neck is fully decorated with incised patterns of horizontal and vertical grooves and triangles. The second jug (Fig. 3.1.12: 9) features a ring base with a groove and a spherical body. Ramla and Tiberias are considered production centers for this type of jug (Stacey 2004: 130). Incised, decorated buff ware of this type, excavated north of the White Mosque, is dated to the mid- to late 8th century (Cytryn-Silverman 2010: 107, Fig. 9.20: 8).

JU 2.1.B shows a flaring neck sometimes with two grooved, horizontal lines, a body with wide shoulders, a tapering lower body and a simple flat base. The neck can be fairly wide, as seen in the first jug (Fig. 3.1.12: 10), or rather narrow as in the case of the second jug (Fig. 3.1.12: 11). Similar jugs were found at Yoqne‘am (Avissar 1996: Fig. XIII. 129. Type 3), Kh. al-Mafjar (Baramki 1944: Fig. 5: 4), Caesarea (Brosh 1986: white jugs, Fig. 1: 8, 10–12), Caesarea (Arnon 2008: 129 Type 521b and c, 202–205, Type 531d and f) and Abu Ghosh (De Vaux and Steve 1950: Pl. C: 19, 21–24). Such jugs were also excavated north of the White Mosque at Ramla (Cytryn-Silverman 2010: Fig. 9.4: 6 and 9, 9.17: 8 and 11, Photos 9.7. and 9.9). These jugs are dated from the 8th to the 9th centuries and continued to be produced during the mid-10th century CE. They first appeared during the late Umayyad period but became more common during the Abbasid period.

Table Jugs Group II: The jugs of the second group JU 2.2.A and JU 2.2.B are made of light cream brown, light brown, or light red, fine clay. Here again two types can be distinguished:

JU 2.2.A (Fig. 3.1.12: 12–13) is identical in form to JU 2.1.A. Only the lower parts of the vessels are preserved; they show the same tapering form and a simple base.

The walls of these vessels are slightly thicker than those of JU 2.1.A

JU 2.2.B (Fig. 3.1.12: 14) consists of one vessel, with a flaring neck and a simple rim, carinated body and omphalos base. The body is made of light red clay and decorated with white wavy lines applied with a brush. A horizontal handle is pulled from the rim and ends at the middle of the shoulders. A spout is attached on the opposite side of the body. Similar vessels were found at Tiberias (Stacey 2004: Fig. 5.39: 4) where they were dated

to the Umayyad period and continued into the early Abbasid period. Jugs made of a similar clay, also decorated with white paint but featuring a different range of shapes, were found at Caesarea (Arnon 2008: 68–69, Type 513 “White Painted Jugs and Juglets”) and were dated from the late 7th to the first half of the 8th centuries CE. Similar jugs were found also during the 2005–2006 season at Ramla (Tal and Taxel 2008: 6.91: 21, Type 8). According to Tal and Taxel these jugs were locally produced in Ramla. These jugs can be considered predecessors of the jugs with swollen neck that became common in the 13th century CE during the Ayyubid period.

Storage Jars

The only storage jar found in this assemblage (Fig. 3.1.12: 15) features a short, wide neck with a simple rim. The body has broad ribbing starting on the shoulder. This jar seems to be most similar to jars of pale cream ware found at Tiberias (Stacey 2004: Fig. 5.45: 1, 2, 4, 6), which were dated to the late 8th–9th centuries CE.

According to the dating of the various vessels found in Square B8, a chronological average can be determined that points to a date of appearance not before the second half of the 8th century. Some vessels were produced not only during the Abbasid period but continued also into the Fatimid period.

The uniformity of the dating as well as the uniformity of the material of which the vessels were made indicates that the vessels from Square B8 were all produced in the same local kilns.¹ The twisted body of Bowl Fig. 3.1.12: 3, which might have been a result of faulty firing, would further argue for nearby production of the vessels. Thus the pale ware vessel types from Square B8 should be considered local types.

¹ This assumption has already been made in the case of the jugs with incised decorations (Stacey 2004: 130) and the White Painted Jugs (Tal and Taxel 2008: 139–140). Cytryn-Silverman also states that the buff-ware vessels of the Early Islamic period were locally made (2010: 110). According to Kletter, wasters found at the excavation at Opher Park testify to the local production of buff ware (Kletter 2005: 77).

THE LATE UMAYYAD–ABBASID PERIODS (STRATUM II)—UNSPECIFIED CONTEXTS

Bowls

This group of bowls can be divided into unglazed plain bowls, unglazed decorated bowls, monochrome glazed bowls and polychrome glazed bowls.

Unglazed plain bowls.

Unglazed bowls can be divided into two types

UBO 2.1: The bowl assignable to this type (Fig. 3.1.14: 1) is, no larger than a cup and has slightly rounded walls and a simple pointed rim. Two horizontal handles are attached at the middle of the body. The clay is light brown-orange and sandy. Such bowls mirror the body form, rim shapes and handle placement of the deep casseroles dating from the late Byzantine to the Umayyad periods. Such small bowls have no parallels outside of Ramla, but the 2005–2006 excavations at Ramla South unearthed a relatively large quantity of them (Tal and Taxel 2008 6: 84: esp. 3); accordingly they were assigned to the late Umayyad–Abbasid periods. Petrographical analyses performed on a number of bowls revealed that the clay composition was identical to that from the Gezer region. Accordingly the bowls are thought to have been produced locally in Ramla (Tal and Taxel 2008: 132).

UBO 2.2: This type (Fig. 3.1.14: 2) is represented by a small bowl with a simple flat base, a carinated body and slightly out-turned rim. The clay is fine, and beige and buff/pink on the surface. Similar bowls, made of light brown clay and featuring burnished bands on the outside, were found at Yoqne’am (Avisar 1996: Fig. XIII.67. Type 4) where they were dated to the Early Islamic period. Bowls of similar shape and material were found at Kh. al-Mafjar (Baramki 1944: Fig. 8: 2, 5, 6), where they were dated from 750 to 800 CE (Whitcomb 1988a: 55). Relatively large quantities of this type of bowl were also unearthed during the 2005–2006 season at Ramla South (Tal and Taxel 2008: Fig. 6.79: 2), dated to the late Umayyad–Abbasid period.

Unglazed decorated bowls

Two vessels decorated in the Kerbschnitt technique could be assigned to this group. The first vessel is a small cup (Fig. 3.1.14: 3) with one vertical loop

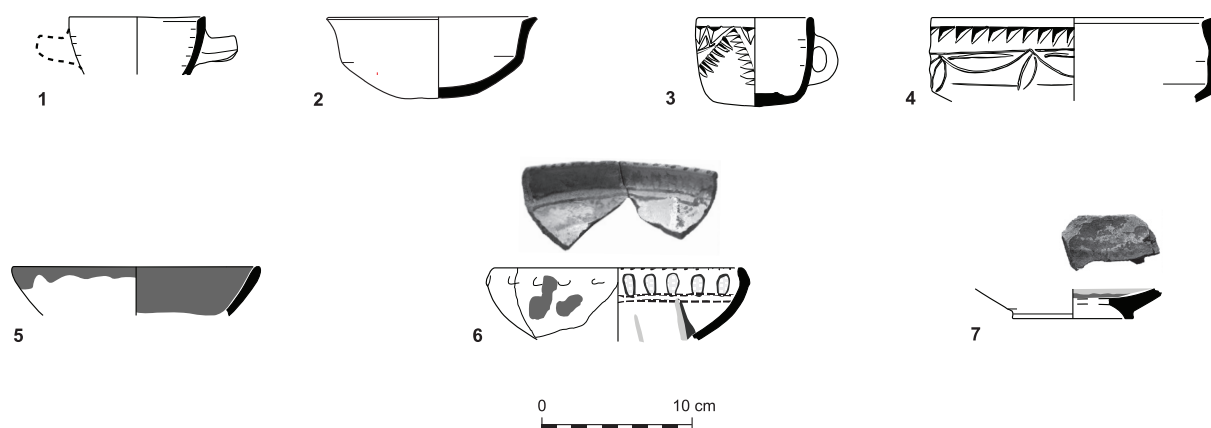


Figure 3.1.14: Bowls from the late Umayyad-early Abbasid period.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9190	90655	80.07–80.47	Bowl	UBO 2.1	Sandy, light brown-orange clay
2	10259	100809	80.02–80.82	Bowl	UBO 2.2.	Fine, beige clay, buff-pink surface
3	9082	90544	80.37–80.47	Bowl		Red-brownish clay
4	10107	100504	80.00–80.18	Bowl		Brown clay
5	9198	90732	80.90–81.04	Bowl		Light reddish-brown clay, inside, glossy, light yellowish-green glaze, outside gritty glaze
6	9150	90556	80.60–80.79	Bowl		Fine, pinkish clay, inside blobs of opaque, light blue glaze and thin black lines
7	9198	90732	80.90–81.04	Bowl		Coarse, cream clay, inside broad streaks in yellow and bluish-green glaze

handle attached to the middle of the body. The walls are slightly rounded and the base is slightly lens-shaped. Similar cups but without the Kerbschnitt decoration were found during the 2005–2006 seasons at Ramla South (Tal and Taxel 2008: Fig. 6.86). The second vessel (Fig. 3.1.14: 4) is a bowl made of brown clay with straight walls and a low carination. The rim is simple and pointed and the body is decorated in the Kerbschnitt technique. Such bowls are reported from Yoqne'am (Avisar 1996: Fig. XIII: 74 Type 11), Caesarea (Brosh 1986: Fig. 1: 9), Kh. al-Mafjar (Baramki 1944: Fig. 4: 7, Fig. 6: 20–25 and Fig. 9: 20, 21) and dated from the Umayyad period to the Abbasid period. At Caesarea bowls with Kerbschnitt start to appear not before the late 8th century and are absent in

Stratum VI (mid-9th to the mid-10th centuries CE) (Arnon 2008: 100, Type 127a).

Monochrome glazed bowls

The sherd of a plain glazed bowl (Fig. 3.1.14: 5) can be paralleled to the Monochrome ware of Yoqne'am (Avisar 1996: Fig. XIII.8, Type 8). The clay is fine and light reddish-brown. The glaze is yellowish-green and glossy on the inside. On the outside, the glaze, when preserved, is rather gritty (Avisar 1996: 78). Monochrome glazed bowls began to appear in the second half of the 8th century CE.

Polychrome Glazed Bowls

Rim fragments of two polychrome glazed bowls could be assigned to this type. This bowl (Fig. 3.1.14: 6) is an exemplar of early semi-glazed ware.

It features a slightly inturned rim and rounded walls. The clay is pinkish and fine. The rim is decorated with short streaks applied with a thin brush. Regular blobs of light blue opaque glaze were applied below the rim, each one encircled by thin black circles. Two concentric lines separated the upper and the lower body of the vessel. The lower part of the vessel is decorated by what appear to be triangles bordered by thin black lines and filled with small black dots. The areas between the triangles shows traces of a mother-of-pearl-like shiny glaze. Parallels were found at Tiberias (Stacey 2004: 104–105; Coptic ware or semi-glazed ware Fig. 5.17) and were dated between 775 and 800 CE.

The second bowl (Fig. 3.1.14: 7) belongs to the polychrome splashed ware group (Fig. 3.1.12: 6 and 7) and is the same vessel type as Fig. 3.1.12: 6. The clay is cream and rather coarse. The glaze applied on the inside of the bowl shows two broad streaks of color, one yellow and one bluish-green.

The two examples presented here should be dated to the early Umayyad period. Although parallels to Fig. 3.1.14: 5 and Fig. 3.1.14: 7 were dated in Tiberias and Yoqne‘am to the 9th–10th centuries CE (Stacey 2004: 5.25: 1–5 and 5.27; Avissar 1996: 78–81), the Ramla bowls were found in the layer below Floor 9069 in Square B16, the pottery assemblage of which was dated to the late Byzantine–early Umayyad periods.

Basins (Fig. 3.15)

The basins are represented by two large bowls made of brown, relatively fine clay. The first bowl (Fig. 3.1.15: 1) has a slightly rounded wall and is decorated with straight and wavy combed bands. The rim is incurved and two vertical loop handles are attached to the top of the vessel. The second bowl (Fig. 3.1.15: 2) has straight walls and two vertical handles placed at the middle of the upper body. The rim is incurved and knob-like and the transition between rim and body is marked by a deep groove. The outer part of the rim is decorated with a wavy line. The body is also decorated in the form of straight and wavy incised lines. Similar exemplars have been found at Tiberias (Stacey 2004: Fig. 5.15: 7) and were dated to the Early Islamic period. Magness grouped such bowls under “incurved-rim basins” and dated them from

the 8th to the 10th centuries CE (Magness 1993: 210–211, Incurved-Rim Basins). At Yoqne‘am these bowls were assigned to large bowls of the late Byzantine–early Umayyad periods (Avissar 1996: Fig. XIII. 79, Type 26). During the excavations north of the White Mosque at Ramla similar basins were found and dated to the Early Islamic period (Cytryn-Silverman 2010: 99, Fig. 9.3: 2–3; 9.23: 1). At Caesarea basins similar to Fig. 3.1.15: 1 were assigned to Type 425d (Arnon 2008: 128) and basins similar to Fig. 3.1.15: 2 were assigned to Type 425a (Arnon 2008: 127). Both types were dated from the late 8th to the early 9th centuries. Such bowls were found at Kh. ‘Adasa north of Jerusalem (Avissar and Khalaily 2008: 101–102, Fig. 8: 5, 6) where they were dated to the Umayyad period. During the excavation near Mahané Ma‘asiyyahu and Opher Park in Ramla bowls similar to Fig. 3.1.15: 1 were also found (Sion 2006: 71, Fig. 9: 1–4, Kletter 2005: 69, Fig. 13: 3, 4).

Jugs

A number of sherds of unglazed and glazed jugs (Fig. 3.1.16) were found. They all date to the Early Islamic period.

Unglazed jugs

Three types of unglazed jugs were represented in the assemblage.

JU 2.3: This type forms the largest group of unglazed jugs (Fig. 3.1.16: 1–5), consisting of jugs with a carinated body and a flat base made of cream buff clay. Some exemplars reveal a more rounded lower body (Fig. 3.1.16: 2 and Fig. 3.1.16: 4 as well as Fig. 3.1.12: 11 from the assemblage in Square B8) while others feature a more conical lower shape (Fig. 3.1.16: 3). The neck is long and flaring and occasionally decorated with two horizontal grooved lines at its upper (Fig. 3.1.16: 1) or lower part (Fig. 3.1.16: 3, 4). The neck can be relatively wide (Fig. 3.1.16: 1–3) or relatively narrow (Fig. 3.1.16: 4). Similar jugs (Fig. 3.1.12: 10–13) were found in the pottery assemblage from Square B8. Parallels were found at Yoqne‘am (Avissar 1996: Fig. XIII. 129, Type 3), Kh. al-Mafjar (Whitcomb 1988a: Fig. 62: 12; Baramki 1944: Fig. 5: 4) and Caesarea (Brosh 1986: white jugs, Fig. 1: 8, 10–12) as well as at the

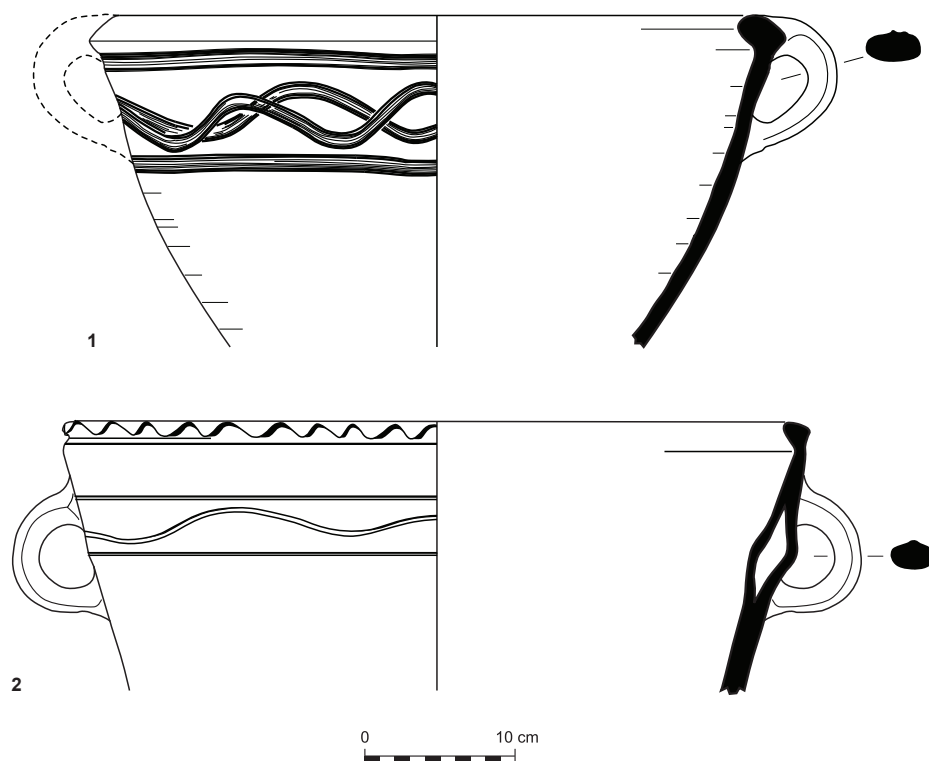


Figure 3.1.15: Basins from the late Umayyad–early Abbasid period.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9140	90424	80.72–80.73	Basin		Fine brown clay
2	10094	100462	80.69–81.05	Basin		Fine brown clay

excavation north of the White Mosque (Cytryn Silverman 2010: Fig. 9.11: 2, 3). They are commonly dated to the 8th–9th centuries CE. At Caesarea these jugs are dated from the mid-9th to the mid-10th centuries CE (Arnon 2008: 202–205, Types 513a–f). The jug in Fig. 3.1.16: 5 is also similar to vessels from the assemblage of Square B8, especially Vessel Fig. 3.1.12: 14 but does not have the white painted decorations, nor does it have a spout. The color of the clay tends to cream-light brown.

JU 2.4: This type is represented only by a handle made of cream buff clay (Fig. 3.1.16: 6) which shows a knob attached at the handle's highest point. Identical handles have been found at Yoqne'am (Avisar 1996: Fig. XIII. 138: 7 Type 12: 7) and at Kh. al-Mafjar (Baramki 1944: Fig. 16: 1, 2). They are dated to the 8th and 9th centuries CE and later.

JU 2.5: This small jug is represented by a single sherd (Fig. 3.1.16: 7). Only the neck is preserved, revealing a slightly out-turned and flattened rim and a bulging neck. The clay is light brown-pinkish, fine and hard-fired. Larger jugs of similar material were found during the 2005–2006 seasons at Ramla (Tal and Taxel 2008: Fig. 6.91: 28–38, Jug Type 9).

Glazed Jugs

Two body sherds of alkaline glazed jugs were found. The first one (Fig. 3.1.16: 8) was made of cream clay. The inside was coated on the outside with a white-opaque glaze while the outside was glazed in white-opaque and light blue. The outside shows a thumb-impressed decoration. The second sherd (Fig. 3.1.16: 9) is a piece from the shoulder. The outside of this

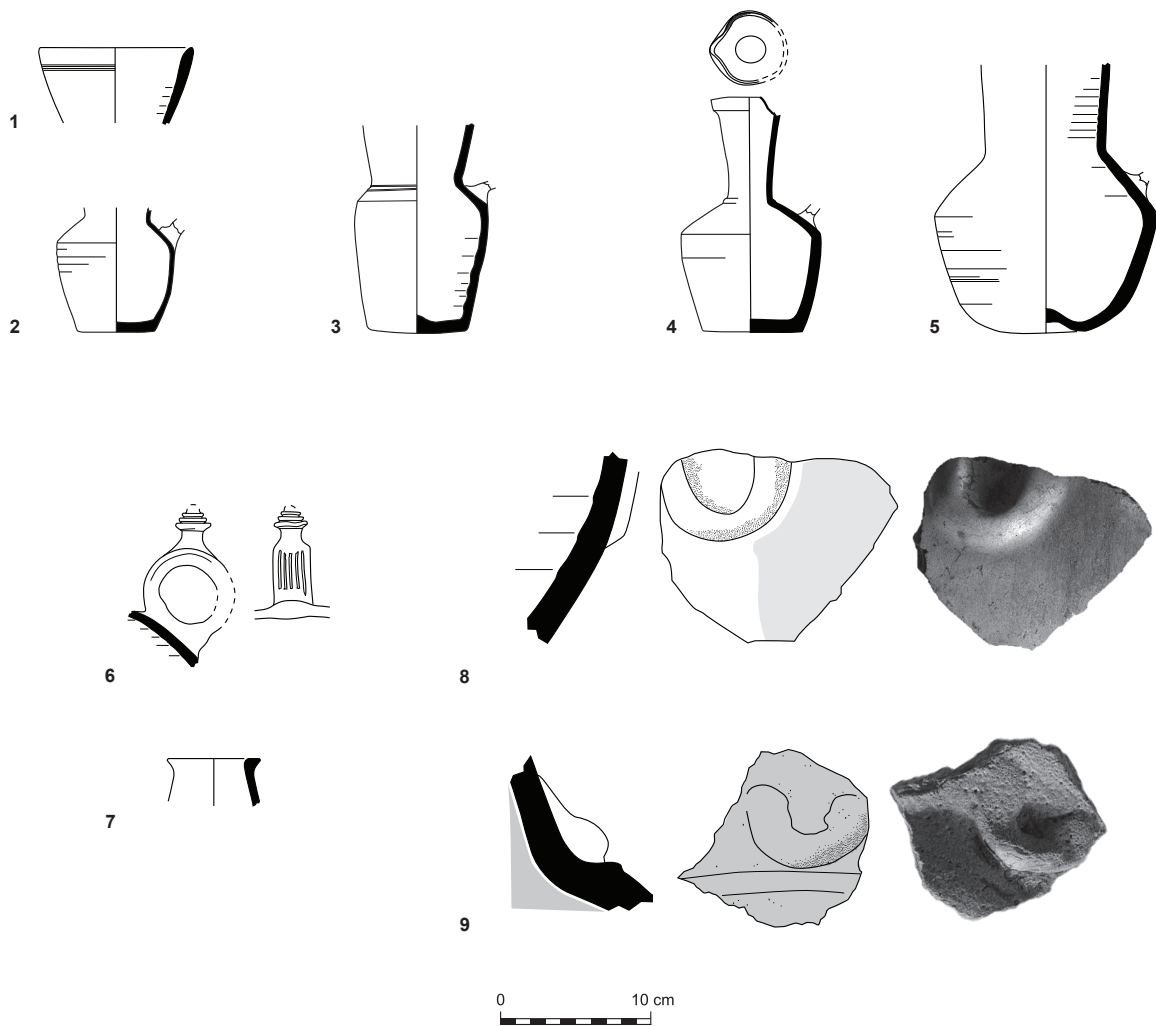


Figure 3.1.16: Jugs from the late Umayyad–early Abbasid period.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9082	90544	80.37–80.47	Jug	JU 2.3	Cream buff clay
2	9186	90663	80.55	Jug	JU 2.3	Cream buff clay
3	9201	90789	80.96	Jug	JU 2.3	Cream buff clay
4	9140	90513	80.61	Jug	JU 2.3	Cream buff clay
5	9268	91025	79.27	Jug	JU 2.3	Cream buff clay
6	9294	91088	79.57–80.06	Jug	JU 2.4	Cream buff clay
7	10223	100732	80.85–81.00	Jug	JU 2.5	Fine, light brownish-pink clay
8	9082	90544	80.37–80.47	Jug		Cream buff clay, inside opaque, white glaze, outside opaque white and light blue glaze
9	9209	90781	78.96–79.39	Jug		Gritty buff clay, inside and outside, thick blistering light blue glaze

sherd features a decoration in the form of a small loop handle, the so-called blind handle. The sherd was made of gritty buff ware. A light blue, blistering glaze thickly coated both the inside and outside of the vessel. Sherds of similar jugs were found during the excavations north of the White Mosque (Cytryn-Silverman 2010: 109, Fig. 9.5: 17 and 18). Especially sherd 9.5: 18 shows similar thumb impressions, like Fig. 3.1.16: 8. Large alkaline glazed jugs of this type were classified by Whitcomb as “Arab Sasanian” wares (Whitcomb 1988b: Fig. 3: a and b, 212) and dated to the 9th–10th centuries CE. They were used to transport liquids such as syrup or honey.

Small and Miniature Jugs

A small jug (Fig. 3.1.17: 1) was made of light brown, fine clay. One vertical handle was attached to the rim and ends on the rounded shoulder. The lower body is rounded and the base flat. This type of jug was dated by Magness to the 3rd–8th centuries CE (Magness 1993: 246 jugs and juglets, Form 6). Similar jugs and dippers made of reddish clay were found at Kh. al-Mafjar (Baramki 1944: Fig. 14: 18) and dated 750–800 CE. At Tiberias later jugs of this type were found and dated to the second half of the 10th century CE (Stacey 2004: 5.61: 2, 12 [pottery from Squares B11 and B39]).

A miniature jug was found in the western part of the excavation area (3.1.17: 2). It was made of the same material as jugs of type JU 2.2 in the assemblage of Square B8—light red, fine clay. The vessel resembles a storage jar in form, with a

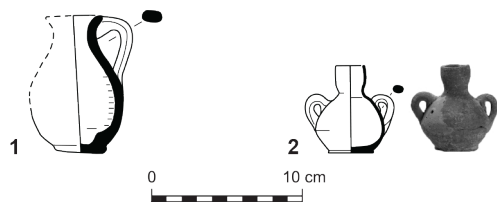


Figure 3.1.17: Small and miniature vessels from the late Umayyad–early Abbasid period.

No.	Locus	Basket	Elevation	Type	Type No.
1	9342	91215	80.02	Small jug	fine, light brown clay
2	9256	91006	80.91	Miniature vessel	fine, light red clay

slightly bulging neck, loop handles on the shoulders, a round body and a flat base. Similar small vessels, described as “small pots,” were found in Room III and the vaulted hall at Kh. al-Mafjar (Baramki 1944: Fig. 15: 12, 16 and Fig. 15: 2) but they were made of soft cream or buff ware. A similar juglet, but slightly bigger, made of a well-fired reddish-brown ware was found at Caesarea and assigned to the wares from the mid-10th to the early 11th centuries CE (Arnon 2008: 244, Type 542a). During the excavations north of the White Mosque the handle of a red slip ware juglet was found that resembles our juglet. Its production was identified as being local and it was dated to the 8th century CE (Cytryn-Silverman 2010: 108–109, Fig. 9.9: 17).

Spheroid Vessel

Two fragments of a spheroid vessel made of brown-reddish, gritty clay were found (Fig. 3.1.18). The vessel neck is short and narrow with a slightly thickened rim. The body is globular and shows a thick, convex base. Many such vessels were found during the 2005–2006 excavations at Ramla South (Tal and Taxel 2008: Fig. 6.92: 14–16) and during the excavation north of the White Mosque (Cytryn-Silverman 2010: 116–117). The earliest assemblage yielding a spheroid vessel was dated to the late 8th–early 9th centuries CE.

At Caesarea sphero-conical vessels were found in the assemblage dating from the late 7th to the first half of the 8th centuries (Arnon 2008: 72, Type 516) as well as in the assemblage dating from the late 8th–early 9th centuries CE (Arnon 2008: 160, Type 824), but the earlier vessels differ from our vessel in their clay and surface treatment. At Tiberias an assemblage of ten spheroid vessels was excavated on a plaster floor in the eastern round tower (Stacey 2004: 138–139, Fig. 5.52) and dated to the early 9th century CE. The vessels found during the

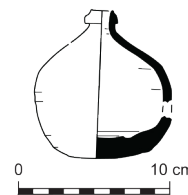


Figure 3.1.18: Spheroid vessel from the late Umayyad–early Abbasid period (Locus 10039, Basket 100387).

excavations north of the White Mosque as well as the ones from Caesarea and Tiberias have a conical base rather than a convex base. Given that spheroid vessels with a convex base were found only in the area of Ramla South it may be assumed that they comprise a type that was produced exclusively in the industrial area of Ramla South.

A jug with a similar lower part as the spheroid vessel in Fig. 3.1.18 was found, made of orange-brown, fine clay. The lower body is globular with a flat thick base. A vertical handle is attached to the shoulders and probably reached up to a neck that was not preserved. Similar bases were found during the 2005–2006 seasons at Ramla South (Tal and Taxel 2008: Fig. 6.92: 10, Juglet Type 2).

Small and Miniature Vessels

The vessel belonging to this group (Fig. 3.1.19) is a small, thick-walled pot made of pale buff ware and glazed outside with drips of light-green glaze. The shape is globular with pronounced carination at two points—close to the flat base and close to the rim. The short rim was made to carry a lid, which was not preserved. The base is heavy and firm. A similar vessel, but unglazed, was found at Tiberias and called a “small ointment pot” (Stacey 2004: 5.51: 4). A similar glazed vessel, with thinner walls and less compact shape was found at Kh. Deiran (Avisar 2007: 100*, Fig. 5: 6) and dated to the 9th century CE.

Storage Jars

The storage jars of the late Umayyad–Abbasid period can be divided into five types.

SJ 2.1: This type (Fig. 3.1.20: 1) belongs to a group of white painted storage jars which show a rim slightly thickened on the inside and a straight, relatively long neck. The clay is gray and the shoulder area is decorated with white, wavy lines applied with a

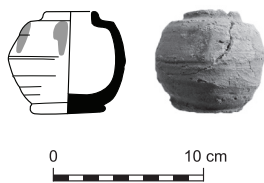


Figure 3.1.19: Small and miniature vessels from the late Umayyad-early Abbasid period (Locus 9021, Basket 90026).

brush. White painted storage jars were produced as early as the Byzantine period but at that time they featured a shorter neck. During the Umayyad period they seemed to have developed a longer neck, like our example. Similar storage jars were excavated at Yoqne'am (Avisar 1996: Fig. XIII: 114, Type 4) where they were dated to the Umayyad period. In Tiberias, white painted storage jars were found in the 749 CE earthquake-destruction layer in the Umayyad shops (Stacey 2004: Fig. 5.34: 1, 2). At Caesarea this type of storage jar is assigned to the late 8th and early 9th centuries CE (Arnon 2008: 154, Type 821a).

SJ 2.2: The second type is represented by a storage jar (Fig. 3.1.20: 2, 3) similar to the previous type because of the profile of its inwardly thickened rim. It is most similar to storage jars of Type 2 excavated during the 2005–2006 seasons at Ramla South (Tal and Taxel 2008: 146, Fig. 6.94: 6–9), which were generally dated to the late Umayyad–early Abbasid period. Another storage jar of this type (Fig. 3.20: 3) has a plain neck that narrows slightly toward the top. The clay is light brown and rather fine. It is similar in shape to Tal and Taxel's Type 2 storage jar (2008: 6.94: 5). Magness lists similar storage jars as Form 6B (1993: 230) and dates them from the 6th–7th centuries to the 8th century CE. At Caesarea, storage jars of this type are dated from the late 8th–early 9th centuries CE (Arnon 2008: 156–157, Type 821h).

SJ 2.3: This type is represented by a small storage jar (Fig. 3.1.20: 4; Fig. 2.35) made of red-brown clay with a gray core. The body is ovoid and features only coarse ribbing. The neck is long, slightly swollen and has a ridge at its base. The rim is turned slightly inward and is rounded and identical in form to Fig. 3.1.20: 2. The clay is dark red-gray and fine and the outside is fired to red. Parallels, which can be found in Magness (1993: 230–231, Form 7), do not have a ridge on the neck and are dated from the 7th to the 9th–10th centuries CE. An exemplar of comparable size but with a rather straight neck was found at the excavation at Opher Park (Kletter 2005: 79, Fig. 19: 9).

SJ 2.4: This type shows a wide and short neck decorated with short incisions (Fig. 3.1.20: 5). The clay is pinkish-brown fired to buff on the outer surface. A parallel showing a neck with thumb nail impressions was found during the 2005–2006

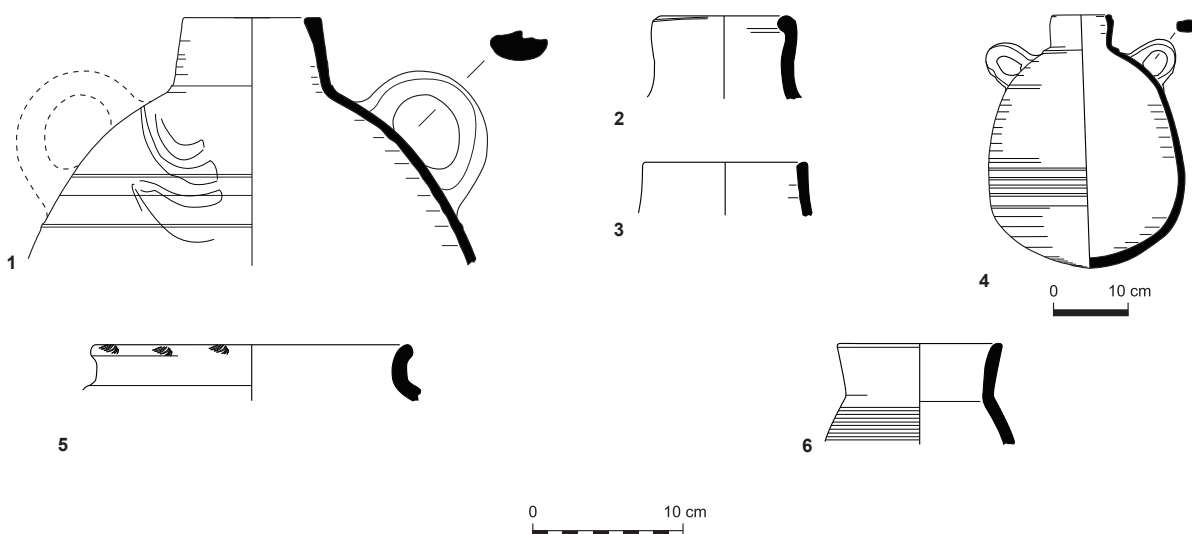


Figure 3.1.20: Storage jars from the late Umayyad–early Abbasid period.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	10082	100581	80.32–80.81	Storage jar	SJ 2.1	Gray clay, white brush-painted decorations
2	10223	100732	80.85–81.00	Storage jar	SJ 2.2	Fine, light-brown clay
3	10223	100732	80.85–81.00	Storage jar	SJ 2.2	Fine, light-brown clay
4	10234	100872	80.42	Storage jar	SJ 2.3	Red-brown clay with gray core
5	9209	90781	78.96–79.39	Storage jar	SJ 2.4	Pinkish-brown clay with buff surface
6	10117	100393	81.09–81.64	Storage jar	SJ 2.5	Red-brown micaceous clay

seasons at Ramla (Tal and Taxel 2008: 147, Fig. 6.94: 30). An almost complete exemplar of such a pithos or storage jar was excavated at Opher Park Ramla (Kletter 2005: 79, Fig. 19: 1).

SJ 2.5: The last type (Fig. 3.1.20: 6) is a rather special type of storage jar, the “small Egyptian bag-shaped jar” (Tal and Taxel 2008: 151) or “Red-Brown Ovoid Amphora” (Watson 1995: 318–319; Taxel and Fantalkin 2011: 79–90) named after its place of origin in Egypt. The clay is red-brown or red-gray and micaceous. The vessel shows a slightly tapering neck with a simple, pointed rim. The body has fine ribbing and small shoulders. The inner transition between neck and shoulders is pronounced. Because of their presence in Abbasid contexts, jars of this type are thought to have been imported to Ramla at least until the 9th–10th centuries CE (Tal and Taxel 2008: 151), although they are believed to have been most widely circulated before the end of the mid-8th century CE (Taxel and Fantalkin 2011: 89–90).

Storage Jar Stoppers

The relatively large number of storage jar stoppers found during the excavation show that the storage jars carried contents more valuable than water. The group of stoppers can be divided into five types.

ST 2.1: The most common are thickly potted and conical with the upper part forming a massive knob (Fig. 3.1.21: 1–5). The clay is coarse and varies from cream to red-brown to dark gray. Stoppers of Type 1 are reported from Ramla (Tal and Taxel 2008: Fig. 6.97: 1, 2) and dated to the late Umayyad–Abbasid periods and from Kh. al-Mafjar where they are described as lids for small pots (Baramki 1944: Fig. 13: 19).

ST 2.2: This object is a stopper in the form of a small bowl with out-turned and flattened rim and a flat base (Fig. 3.1.21: 6). The clay is light brown or buff and fine. At Tiberias an exemplar similar to Fig. 3.21: 6 was dated to the late 8th–9th centuries CE (Stacey 2004: Fig. 5.33: 4). More such stoppers

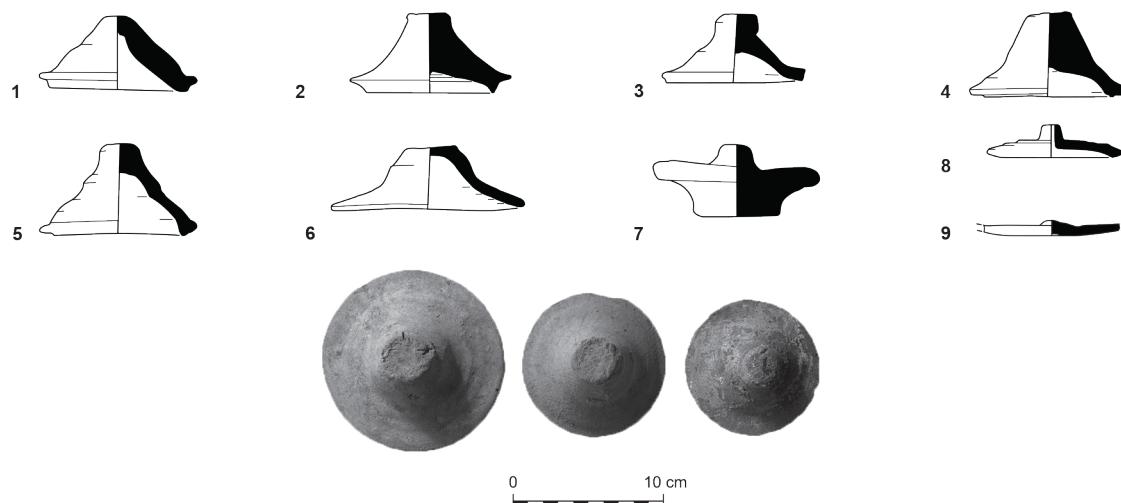


Figure 3.1.21: Storage jar stoppers from the late Umayyad-Early Abbasid period.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1		90108	surface find	Stopper	ST 2.1	coarse, red-brown clay
2	9228	90840	79.24	Stopper	ST 2.1	cream clay
3	9292	91190	79.79	Stopper	ST 2.1	coarse, red-brown clay
4	9249	90988	79.36	Stopper	ST 2.1	coarse, red-brown clay
5	9256	90991	80.07–80.96	Stopper	ST 2.1	coarse, red-brown clay
6	9008	90143	surface find	Stopper	ST 2.2	fine, light brown clay
7	9184	90708	81.15	Stopper	ST 2.3	fine, brown clay
8	9170	90833	79.37	Stopper	ST 2.4	fine, brown clay
9	9041	90145	78.17	Stopper	ST 2.5	coarse, dark gray clay

were excavated at Opher Park in Ramla (Kletter 2005: 82, Fig. 20: 4, 5).

ST 2.3: This vessel is represented by one exemplar that has the shape of a small bowl with straight, tapering walls and a small knob handle in its middle (Fig. 3.1.21: 7). The clay is brown and fairly fine. Similar examples were reported from Kh. al-Mafjar (Baramki 1944: Fig. 12: 27) and described as bowls with a knob in the middle. Magness dates these stoppers from the 6th–mid-8th centuries CE (Magness 1993: stoppers Form 2).

ST 2.4: No parallels were found for this type (Fig. 3.1.21: 8). The lid is only slightly convex with a small straight handle attached to the upper part. The clay is brown and fairly fine. Because of its fragility this stopper seems to fit better on small bowls or cups than on storage jars.

ST 2.5: This is the base of a storage jar turned into a stopper by breaking away the redundant parts (Fig. 3.1.21: 9). The clay is dark gray and relatively coarse. It could be from a white painted storage jar described as Type 1 above.

Pipe Segments

Two segments of pipe were found south of Pool 9394 (Fig. 3.1.22: 1, 2). They were part of a channel that led liquids in a northwesterly direction into Pool 9394. Both pipe segments were made of fine reddish clay burned to buff on the outside. One side featured a simple rim while the other side tapered and was carinated. In this way an unlimited number of such pieces could be interlocked to form a conduit of any length for water or other liquids.

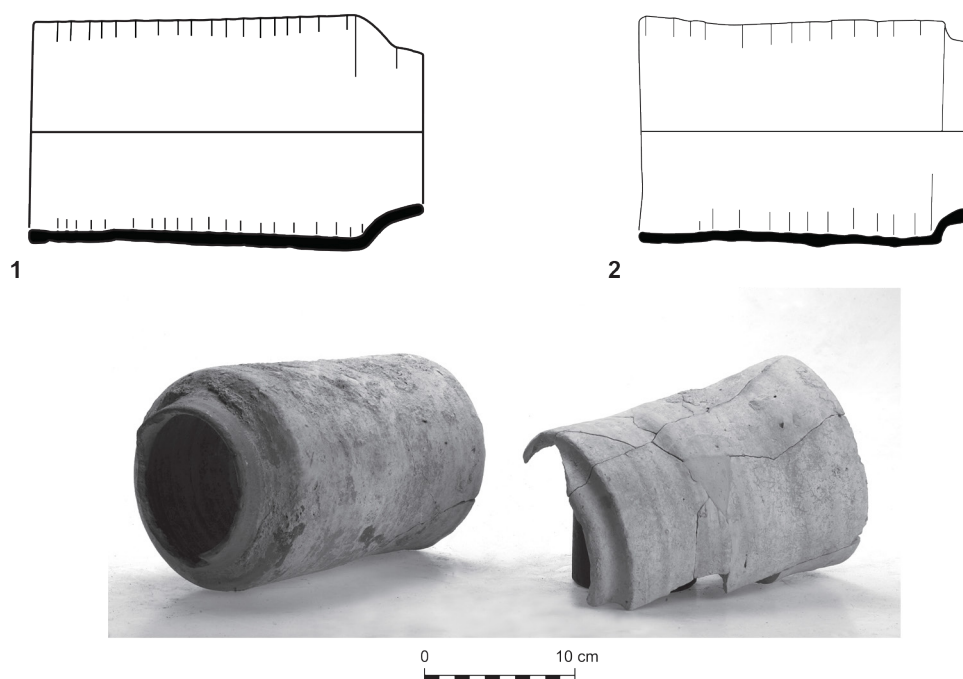


Figure 3.1.22: Pipe segments from the late Umayyad-early Abbasid period.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9044	90115	77.51	Pipe		Fine, reddish clay
2	9044	90094	76.68	Pipe		Fine, reddish clay

THE LATE ABBASID–FATIMID PERIODS (STRATUM I)–UNSPECIFIED CONTEXTS

While the majority of vessels date to the Umayyad–Abbasid periods; only a small quantity of vessels datable to the Fatimid period was retrieved from the excavation. It is interesting to note that some of the vessel types represented did not correspond to the industrial installations excavated, for example, a sugar pot (see below).

Plain unglazed bowls

The type represented (Fig. 3.1.23: 1) is a mid-sized bowl with a rounded body. The rim is flattened and protrudes inside and out. The clay is light brown and well fired. Similar exemplars were found in Tiberias (Stacey 2004: Fig. 5.13: 5–7, pink ware basins) and were dated to the 11th century CE. Similar bowls were reported from Yoqne‘am (Avisar 1996: Fig. XIII. 83. Fig. 30: 1) where they were dated to the Crusader period.

Monochrome glazed bowls

A piece of the base of a celadon ware bowl imported from China was found (Fig. 3.1.23: 2). The clay is well levigated and grayish-brown. The bowl is covered inside and out by a gray, glossy, cracking glaze. The inside of the bowl reveals a rosette with a five-pointed star in its center and regular pedals representing a lotus flower. The fragment of an identical bowl was published by Scanlon (1970: Pl. XIII: a) who identified it as “Chekiang ware” and dated it from the 11th–12th centuries CE. Another identical exemplar was found at Sohar in the Persian Gulf region (Rougeulle 1991: 36–37 Fig. 11: 5) and during an excavation south of the southern fringes of planned Highway 431 in May–June 2008 (Gorzalczany and ‘Ad 2010).

Casseroles/Frying pans

Only one casserole type could be assigned to this pottery group (Fig. 3.1.24). It features slanting

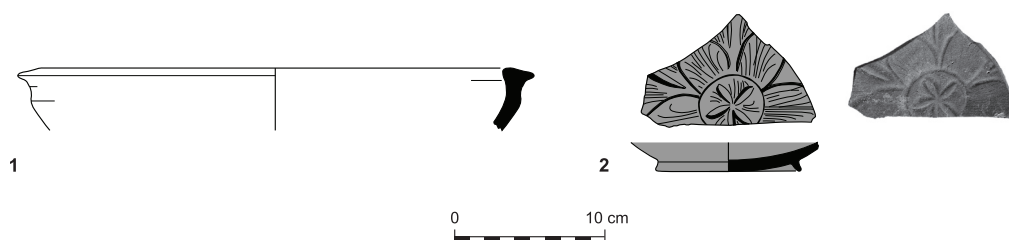


Figure 3.1.23: Bowls from the late Abbasid-Fatimid period.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9190	90655	80.07–80.47	Bowl		Metallic, light brown
2	9262	91007	78.72–78.84	Bowl		Well levigated, grayish-brown clay, inside and outside glossy gray glaze

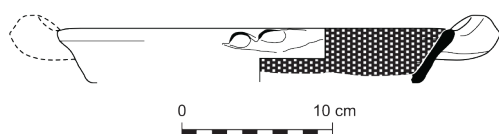


Figure 3.1.24: Casseroles/frying pans from the late Abbasid-Fatimid period (Locus 9190, Basket 90655).

walls, a simple rounded rim and two horizontal loop handles attached just below the rim as well as two small, thumb-impressed ledge handles placed right below the rim. The clay is red and gritty. The inside of the casserole/frying pan is covered with a thick, dark, red-brown glaze. Although our example does not have an out-folded rim it should be paralleled to frying pans from Yoqne‘am (Avisar 1996: Fig. XIII. 100: 1–4 Type 13), Tiberias (Stacey 2004: Fig. 5.32: 14–15) and vessels from the 2005–2006 season at Ramla (Tal and Taxel 2008: Fig. 6.89: 1). These casseroles/frying pans are unanimously thought to have appeared not before the late 9th century and to have become increasingly common during the Fatimid period, during which a triangular rim was more prevalent than a simple rim (Yehuda 2007: Fig. 10: 2–4). A similar casserole was found at Caesarea and dated from the late 10th–first half of 11th centuries CE (Arnon 2008: 303, Type 753c).

Cooking-pots

Two types of cooking-pots were found in the assemblage.

CP 3.1

The first type (Fig. 3.1.25: 1, 2) features a simple rim and globular body. The complete exemplar (Fig. 3.1.25: 1) is made of red, gritty clay. The bottom of the inside is covered with dark brown glaze. Two broad and pitched strap handles are attached to the middle of the body. The neck is short and has a flat, simple rim. Cooking-pots of this type were reported from Tiberias (Stacey 2004: 5.32: 16, 17, CP Type 5) and dated to the early 11th century. The cooking-pots from the Crusader period reported from Yoqne‘am (Avisar 1996: Fig. XIII.94: 3 CP Type 7) are the later continuation of this type. Similar cooking-pots were common in the Fatimid assemblage at Kh. al-Khurrumiya (Yehuda 2007: Fig. 10: 7). The second cooking-pot (Fig. 3.25: 2) of Type 3.1 has a very short neck and a rounded rim. The pot is made of red-brown clay and at least its upper part was unglazed. Similar exemplars were found at Yoqne‘am (Avisar 1996: Fig. XIII.92. Type 5) and dated to the 10th–11th centuries. This type of cooking-pot was at Caesarea, dated from the late 10th–first half of the 11th centuries CE (Arnon 2008: 301–302, Type 752o).

CP 3.2

The second type is a thin-walled vessel with a presumably globular body (Fig. 3.1.25: 3). The clay is gray and contains a large amount of silver-mica. It was metallic fired to light red-brown on its outer surface, which gives a shiny and metallic appearance due to wet smoothing.

The vessel has a broad, slightly out-folded ledge rim with three shallow grooves. Cooking-pots from the “Main Middle Byzantine series” found during the excavations at Saraçhane in Istanbul show the greatest similarity to the cooking-pot found at Ramla South (Hayes 1992: 57, Ware 6) and were dated from the 10th–12th centuries CE. Thus our cooking-pot must be considered an import from Byzantium.

Sugar pot

A sugar pot (Fig. 3.1.26) was retrieved from the fill of Tabun 10113. Made of red, gritty clay, it is conical with a rounded base. The rim is simple and slightly rounded. Three holes arranged in the form of a triangle were drilled into the base after firing. Sugar production is attested as early as the 10th–11th centuries CE from the excavation at El-Kabri (Smithline 2004), where similar sugar pots were found. The sugar pot from Ramla South should thus be dated accordingly, to the 10th century. Although the excavated industrial installations do not support sugar production for the industrial area of Ramla, neither can it be ruled out.

Amphora

Only one exemplar of an amphora was found at the excavation (Fig. 3.1.27). The clay is dark red and shows small black inclusions. Two handles are attached to the rounded rim and on sharply carinated shoulders that narrow to a relatively short neck with broad ribbing. This amphora was an import from Byzantium. A large number of such imported amphorae was found at Caesarea (Arnon 2008: 308–309, Type 853) and assigned to the late 10th and first half of the 11th centuries CE. An identical amphora was found during the 2005–2006 season at Ramla. Vessels found in modern Turkey were dated from the 9th–10th centuries to the 11th century, while the examples found in Palestine were dated to the 11th–12th centuries CE (Tal and Taxel 2008: 151, Fig. 6.95).

SUMMARY OF POTTERY

The pottery assemblage from Ramla South covers a time span from the late 7th–early 11th centuries CE, with the majority dating to the late Umayyad and Abbasid periods. A smaller amount of the

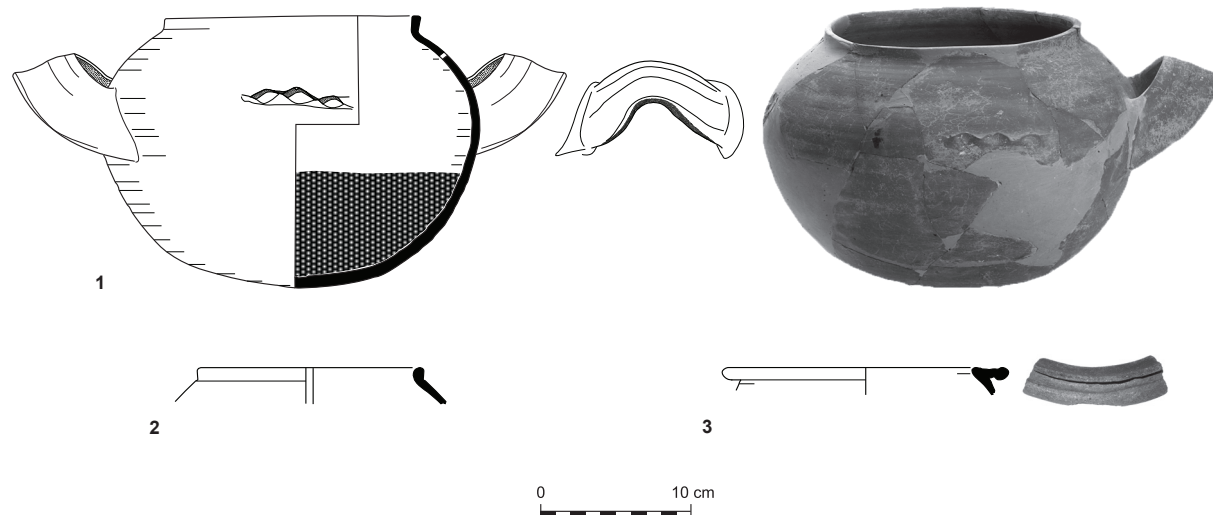


Figure 3.1.25: Cooking-pots from the late Abbasid-Fatimid period.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9044	90115	77.51	Cooking-pot	CP 3.1	Gritty, red clay
2	9198	90732	80.90–81.04	Cooking-pot	CP 3.1	Gritty, red clay
3	9003	90490	81.06–81.22	Cooking-pot	CP 3.2	Gray micaceous clay

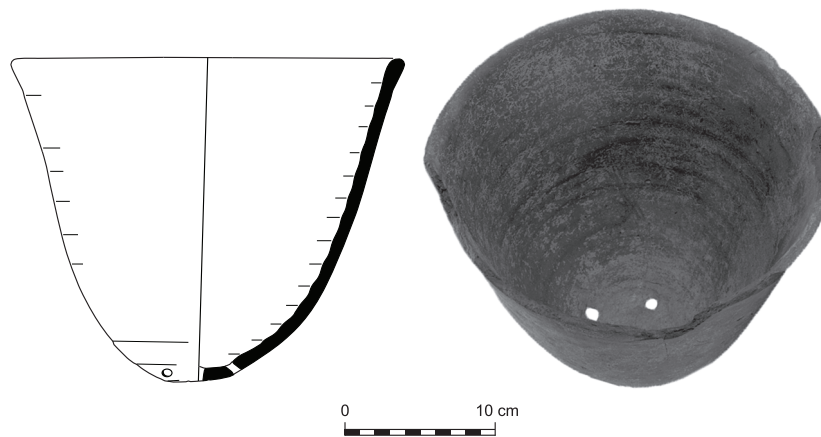


Figure 3.1.26: Sugar pot from the late Abbasid-Fatimid period. (Locus 10230, Basket 100809).

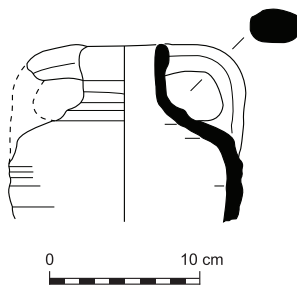


Figure 3.1.27: Amphora from the late Abbasid-Fatimid period (Locus 10075, Basket 100253).

pottery was assigned to the late Byzantine–early Umayyad periods, and only a few sherds could be dated to the late Abbasid–Fatimid periods.

A clear lack of continuity appears between the late Byzantine–early Umayyad pottery and that of the late Umayyad–Abbasid pottery. The break occurred at the end of the first half of the 8th century, which coincides with the region’s second devastating earthquake in 749 CE.

Although the assemblage derives from an industrial site, its composition is most similar to major administrative centers during the Early Islamic period, such as Tiberias and Caesarea. This seems logical considering the similar political status enjoyed by at least Tiberias and Ramla during the Early Islamic period. Despite all similarities, some pottery types appear only at Ramla South and should therefore be considered locally produced Ramla ware. These are:

- Small bowls with horizontal loop handles (UBO 2.1, Fig. 3.1.14: 1)
- Small cups with Kerbschnitt decoration (Fig. 3.1.14: 3)
- Cooking-pots with convex neck and simple rim (Figs. 3.1.2: 15–16, Fig. 3.1.3: 4–7)
- Jugs made of fine reddish clay with white decoration, omphalos base and spout (JU 2.2.B, Fig. 3.1.12: 14)
- Jugs made of buff clay with incised decorations (JU 2.1.A, Fig. 3.1.12: 8, 9)

CHAPTER 3.2

LAMPS

Elisabeth Yehuda

Like the pottery, the lamps found at Ramla can be dated roughly to two periods—the Byzantine–early Umayyad and the Early Islamic periods. The few lamps from the Byzantine–early Umayyad period all belong to the same stylistic group while the Early Islamic lamps can be divided into several subtypes.

BYZANTINE–EARLY UMAYYAD LAMPS (STRATUM III) LA 1.1

Four exemplars of lamps were identified as “candlestick” lamps and dated to the Byzantine–Umayyad periods. All of them were found in the western part of the excavation area; three were retrieved from the domestic Complex A–B 15–17 between W9230 in the west and W9321 in the east. The latter three lamps were found below Floor 9069, which marks the late Byzantine–early Umayyad occupation period.

All three of the above lamps were made of reddish or pinkish coarse clay with white inclusions. All of them were mold-made with a pear-shaped body and low ring base, short nozzle and round filling hole. Two of the lamps feature simple decorations consisting of radial lines surrounding the filling hole (Fig. 3.2.1: 1, 2). The third shows a more elaborate pattern consisting of bundles of radial lines interrupted by five-leaved, stylized palm branches (Fig. 3.2.1: 3). These three lamps belong to the type of radiated, large candlestick lamps (Magness 1993: 246–250, Form 3A and 3B, Adler 2004: Type BYZ.2). Radiated candlestick lamps appeared throughout Israel but are concentrated in the center of the country around Jerusalem (Magness 1993: 175, Fig. 12) and are dated from the 5th to the 7th or 8th centuries CE (Adler 2004: Type BYZ.2).

The fourth lamp (Fig. 3.2.1: 4) is inscribed with letters belonging to an inscription reading: “The light of Christ shines for all” (ΦΩΣ ΧΥ ΦΕΝΙ ΠΑΣΙΝ) (Naveh 1988: 36; Magness 1993: 176; Naveh and

Shaked 1985: 31). A similar lamp has been found at the excavation of Ḥorvat ʿIllin (Greenhut 2004: Fig. 10: 16) where it was dated from the 6th–end of the 7th centuries CE (Magness 1993: 251–252, Form 3C). Another exemplar was found at the excavation of Kafr Jinnis near Lod (Messika 2006: 94, Fig. 19: 3).

The preserved letters on the lamp from Ramla are ΧΥ ΦΕ and the first part of an Ν. It appears that either the whole inscription was mirror-inverted or the letter Υ was turned upside down. Two explanations are possible for this phenomenon.

The first one is that the potter simply inscribed the mold with the inscription the way he would have read it, which meant that a lamp made in such a mold showed a mirror-inverted inscription that would have had to be read from right to left. The practice of mirror-writing is known from Greek, Jewish, Samaritan and Syro-Palestinian inscriptions and was used to conceal the text from laymen or demons as well as imbuing the inscription with magical powers (Naveh 1988: 42–43).

The second explanation could be that the potter manufactured the inscription in the mold correctly, which means mirror-inverted. Most letters of the inscription excluding the Ω, Ν, Π and Α—are letters that are symmetrical along a horizontal axis and thus do not demand special concentration. The letter Υ in contrast is non-symmetrical on a horizontal axis. The potter could have confused the non-symmetrical Υ and turned it upside down.

A fact supporting the second explanation is that the fragment of the letter Ν following the Ε shows that the middle line leading from upper left to lower right is in the right place on our lamp. Had the inscription been mirror-inverted, this line would have led from lower left to upper right.

Similar distortions noticeable in other such inscriptions are apparently not a result of chronological development but seem to have been deliberate (Magness 1993: 176).

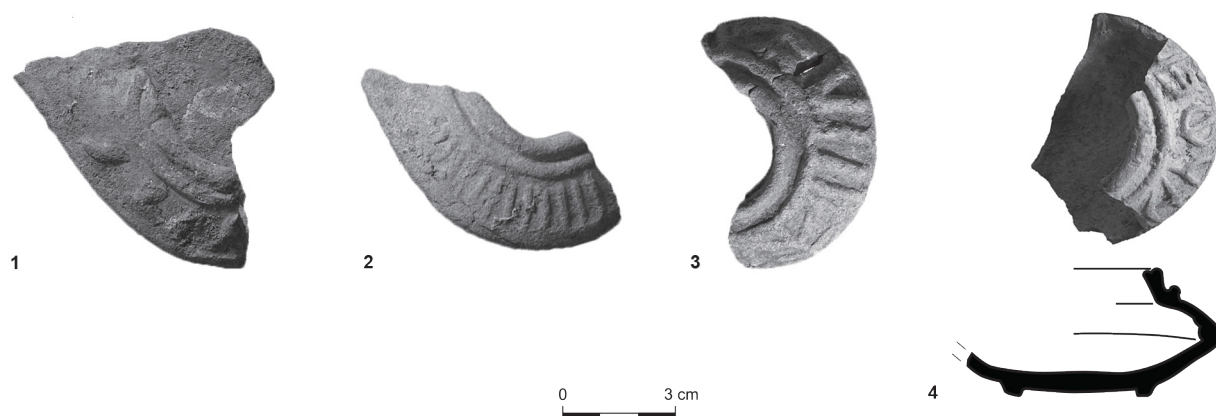


Figure 3.2.1: Byzantine=early Umayyad lamps Type LA 1.1.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9198	90891	80.9	Lamp	LA 1.1	Coarse, reddish clay
2	9215	90881	80.35	Lamp	LA 1.1	Coarse, reddish clay
3	9205	91309	80.65	Lamp	LA 1.1	Coarse, reddish clay
4	9038	90124	78.07	Lamp	LA 1.1	Coarse, pinkish clay

Lamps with Greek inscriptions are associated with the Greek Orthodox ceremony of the Holy Fire held at the Church of the Holy Sepulchre and pilgrimage to that church in Jerusalem (Clermont-Ganneau 1900: 41–43; Magness 1993: 176). This interpretation somewhat contradicts the abovementioned idea of mirror writing for secretive reasons. Since the inscribed lamp and the ones with simple radial lines show the same clay and distribution it is speculated that the simpler ones without inscriptions were cheaper versions of the inscribed ones, but attest in the same way to the pilgrimage to the Holy Sepulchre (Magness 1993: 177).

EARLY ISLAMIC LAMPS (STRATA II AND III) LA 1.2

Mold-made lamps dating to the Early Islamic period dominate the assemblage of lamps. Three types (LA 1.2.1–LA 1.2.3) can be isolated, two of which (Types LA 1.2.1 and LA 1.2.2) clearly predominate.

LA 1.2.1

This type is of the late Samaritan type, which is the second largest type of Early Islamic lamps (Adler

2004: Type S7). Lamps of this type are commonly dated to the Byzantine period, to the 6th–7th centuries CE (Adler 2004: S.7, Sussman 2002: 339) but continue in use until the end of the Umayyad period (Hadad 2002: 74–78). This type can be divided into two subtypes.

In Subtype LA 1.2.1.a. (Fig. 3.2.2), the clay is in most cases reddish with white or grayish inclusions fired to red on the surface. The body is pear shaped with a flat, almond shaped base. Where the handles are preserved they are slightly upturned and tongue-like (Fig. 3.2.2: 1–9). The filling holes, as far as they are preserved, are horseshoe shaped. Those lamps differ in their decoration from the following subtype. All the lamps without exception are geometrically decorated with parallel lines forming herring bone patterns interspersed with triangles, rhomboids and circles often with a dot in the center. The area between nozzle and filling hole is also decorated with geometrical figures, a circle filled with an additional circle or a dot and a triangle filled with a dot below the circle—a mirror-shaped object according to Tal and Taxel (2008: 154)—the most common decoration (Fig. 3.2.2: 1–3). Another lamp features a hexagram

on its nozzle² (Fig. 3.2.2: 4) and yet another has two triangles filled with a dot and radial lines emerging from the upper triangle (Fig. 3.2.2: 5).

The lamps of the second subtype (LA 1.2.1.b) (Fig. 3.2.3: 1, 2) are identical in shape and clay to the first subtype, although the decoration differs. The shoulders of these lamps bear a pattern of delicate, diagonal lines interrupted by a band decorated with triangles arranged in an offset pattern. A similar, complete lamp was found during the 2005–2006 season at Ramla (Tal and Taxel 2008: Fig. 6.101: 1).

LA 1.2.2

This type belongs to the largest group of Early Islamic lamps, described as Early Islamic Channel-Nozzle lamps (Avisar 1996: 191, Type 1). Lamps of this type are dated to the Abbasid period, from the 8th to the 10th or the 11th centuries CE (Avisar 1996: 191, Type 2; Magness 1993: 258–259, Form 5, Adler 2004: IS.2; Hadad 1999: 212). This type of lamp can also be divided into two subtypes.

The lamps of the first subtype (LA 1.2.2.a) (Fig. 3.2.4: 1–8) are made of buff, pinkish or reddish clay with white inclusions. They are ovoid with an almond-shaped, flat base. The handle is pulled up and tongue-shaped. The filling hole is surrounded by a double ridge and the outer ridge continues down to the wick hole, creating a channel on the

2 Another lamp decorated with a six-pointed star on its base was found in the 2005–2006 season at Ramla (Tal and Taxel 2008: Fig. 6.105: 2). A seal in the form of a hexagram on the handle of a jar or pot was reported from the Vilna Street excavation in Ramla (Gudovitch 2010).

nozzle, which is decorated with a herring-bone pattern, triangles or spirals. The lamps of this type range in size from 8.0 cm to 10.5 cm.

Most decorations on this type of lamp found at Ramla are floral dominated by clusters of grapes, leaves, spirals³ and medallions surrounded by tendrils. The decorations are arranged in recurrent patterns surrounding the filling hole.

Lamps of the second subtype (LA 1.2.2.b) (Fig. 3.2.5: 1, 2) are similar in shape and clay to the previous subtype, but the decoration differs. The shoulders of the lamps feature simple net patterns. These lamps should be dated to the same time frame as the previous group.

LA 1.2.3

This type contains two exemplars of mold-made lamps that could not clearly be assigned to the types of the previous Early Islamic groups. The clay is fine, reddish and fairly thin. They are pentagonal in shape and have a high, narrow tongue handle (Fig. 3.2.6: 1, 2). The wick hole is circular and surrounded by a square double band whose corners are filled with triangles. The shoulders of the lamps are decorated with a geometrical net pattern with the rhomboids created by intersecting lines filled with dots. The area between nozzle and wick hole of both exemplars is decorated with a plant with heart-shaped leaves. The sides are decorated with filled tendrils.

3 The spiral decoration was the most popular decoration on lamps with loop handles produced in the Ayyubid kiln at al-Kurum.

Figure 3.2.2: Early Islamic lamps Type LA 1.2.1.a.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	10256	100898	79.98 - 79.86	Lamp	LA 1.2.1.a	Orange clay with white inclusions
2	9293	91244	79.52	Lamp	LA 1.2.1.a	Orange clay with white inclusions
3	10199	100918		Lamp	LA 1.2.1.a	Orange clay with white inclusions
4	10224	100813	81.00 - 80.36	Lamp	LA 1.2.1.a	Orange clay with white inclusions
5	9226	90880	79.8	Lamp	LA 1.2.1.a	Orange clay with white inclusions
6	10203	100917		Lamp	LA 1.2.1.a	Orange clay, beige surface, with white inclusions
7	10123	100920		Lamp	LA 1.2.1.a	Orange clay with white inclusions
8	10269	100913	81.56 - 81.33	Lamp	LA 1.2.1.a	Orange clay with white inclusions
9	9207	91304	78.55	Lamp	LA 1.2.1.a	Orange clay with white inclusions

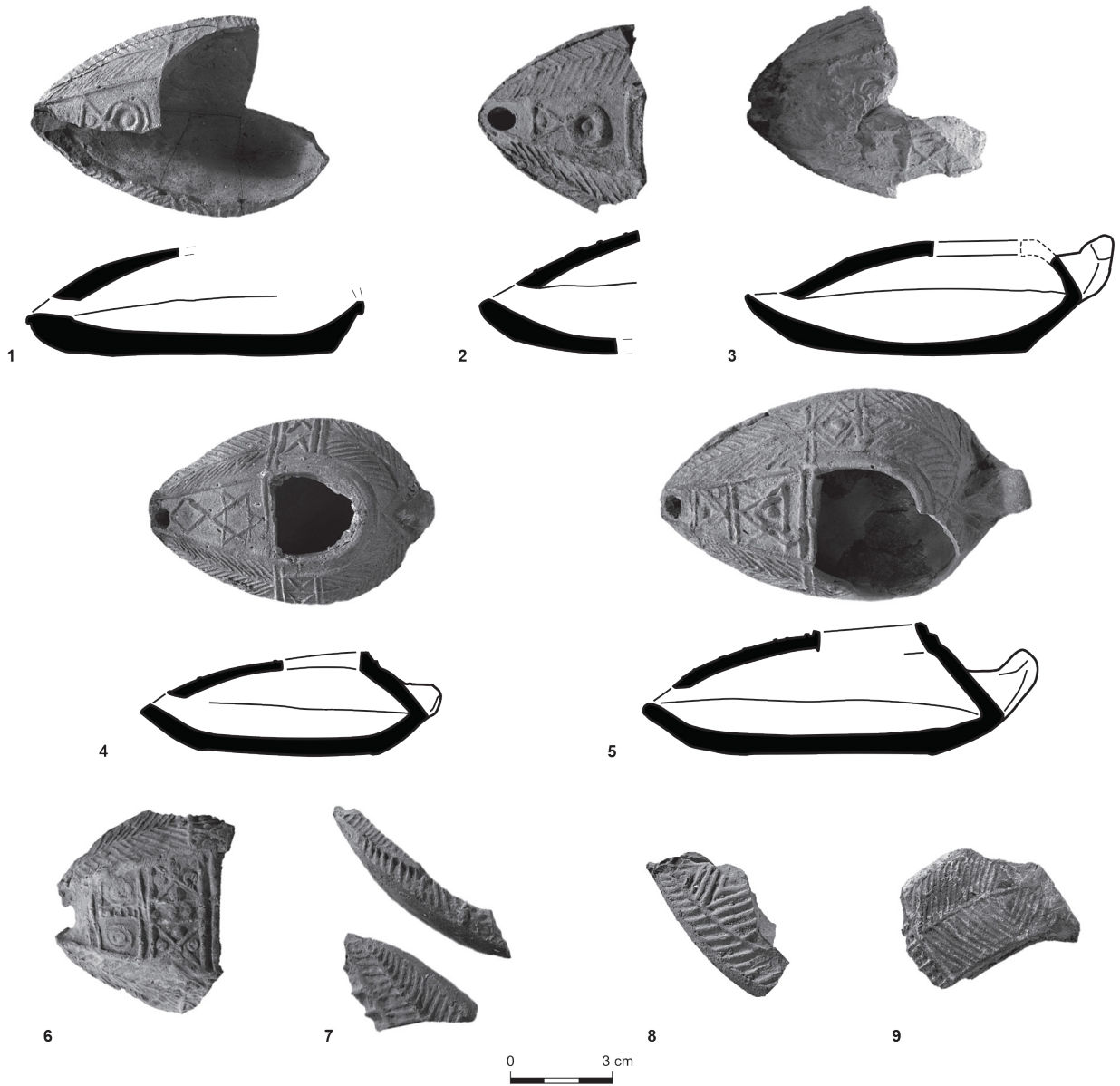


Figure 3.2.2: Early Islamic lamps Type LA 1.2.1.a.

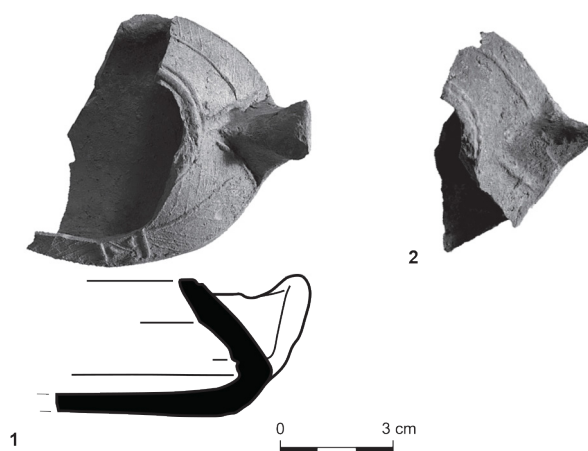


Figure 3.2.3: Early Islamic lamps Type LA 1.2.1.b.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	10004	100031	81.34–81.40	Lamp	LA 1.2.1.b	Orange clay with white inclusions
2	10199	100900	79.32–79.35	Lamp	LA 1.2.1.b	Reddish clay with white inclusions

A mold for a lamp of this type has been found at Beth-Shean but was only roughly dated between the 8th and the 11th centuries CE (Hadad 1999: 212, Fig. 8: 23). Two pentagonal miniature lamps were found at Tiberias, where they were dated to the 9th century CE (Stacey 2004: 157–158, Fig. 6.11: 1, 2 Form 2B). In Caesarea pentagonal lamps were described as forming one of the four new lamp types that appeared only after the mid-8th century CE and lasted until the beginning of the Fatimid era (Arnon 2008: 15, Fig. 9, Type MF). A lamp identical to the two lamps described above was excavated at Ramla South along Highway 431 (Gorzalczany and Marcus 2010) and another exemplar was found at an excavation on Marcus Street northeast of the White Mosque and was dated to the 8th–9th centuries CE (Toueg 2006).

SUMMARY AND DISCUSSION OF LAMPS

The lamps found in Ramla show two peculiarities. Firstly, the variety of lamps detected at the site of Ramla South was limited, with two types (LA 1.2.1 and LA 1.2.2) clearly dominant. Secondly, the decorations on the two predominant types are limited in their variety.

A spatial plotting of the lamps, in the attempt to help identify a chronological gap between the two predominant types revealed that although lamps of both types could be found in Squares A–B11 to A–B38 it seems that lamps belonging to the same type appeared in clusters. Lamps LA 1.2.2 clustered in the industrial complex of Squares A–B 37–38 and further west in Squares A13, 14, 15 and 18 where they were found mainly in the surface layers and in a modern disturbance. Lamps LA 1.2.1 clustered in the area between Squares A31 and A–B34 where they were found mainly in the fills above the Abbasid walls and installations. Thus it can be stated that lamps LA 1.2.2 were found with greater frequency in later levels while those of Type LA 1.2.1 were found more frequently in earlier levels. Beyond that, no clear stratigraphic assignment for either type could be established and it must be assumed that there is no remarkable chronological difference between them. Thus it appears that lamps of the Samaritan Type (LA 1.2.1), which had previously been dated mainly to the Umayyad period, continued with unchanged popularity into the Abbasid period, as had already been assumed by Tal and Taxel (2008: 154).

Based on the above, it can be speculated that the absence of two predominant lamp types is not an

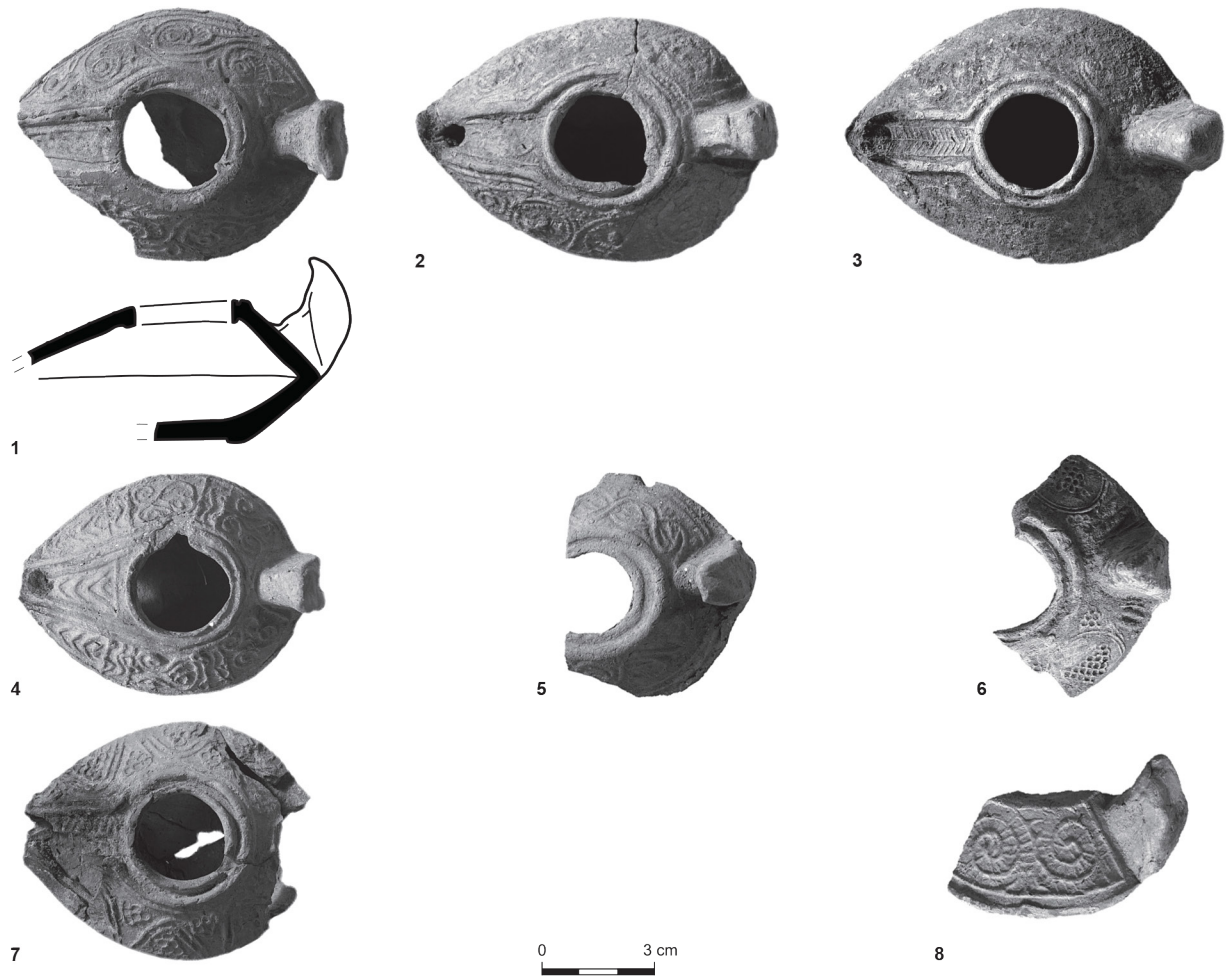


Figure 3.2.4: Early Islamic lamps Type LA 1.2.2.a.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	10220	100859	79.78 - 79.77	Lamp	LA 1.2.2.a	Beige clay
2	9023	90106	80.71	Lamp	LA 1.2.2.a	Buff clay
3	9008	90122	80.14	Lamp	LA 1.2.2.a	Buff clay
4	10060	100177	80.88 - 80.65	Lamp	LA 1.2.2.a	Orange clay
5	9133	90432	80.87	Lamp	LA 1.2.2.a	Brick red clay
6	10030	100359	81.42 - 81.35	Lamp	LA 1.2.2.a	Buff clay
7	9077	90226	81.39 - 81.09	Lamp	LA 1.2.2.a	Cream clay
8	9006	90040	80.34	Lamp	LA 1.2.2.a	Light orange clay



Figure 3.2.5: Early Islamic lamps Type LA 1.2.2.b.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	9220	90854	80.07	Lamp	LA 1.2.2.b	Beige clay
2	10071	100916		Lamp	LA 1.2.2.b	Orange clay

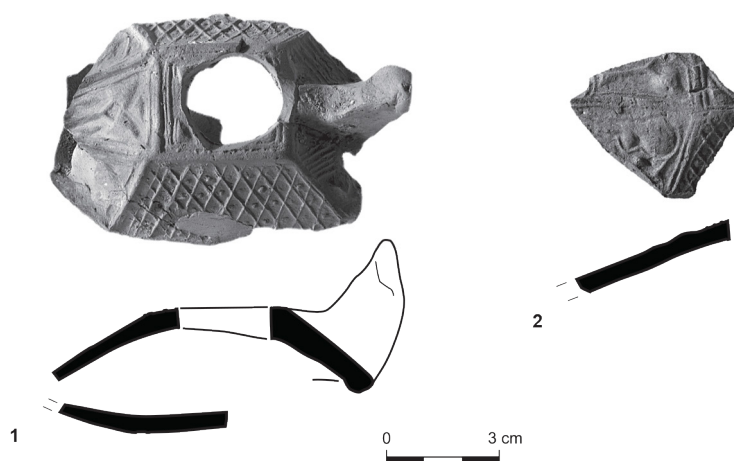


Figure 3.2.6: Early Islamic lamps Type LA 1.2.3.

No.	Locus	Basket	Elevation	Type	Type No.	Comments
1	10044	100162	81.33	Lamp	LA 1.2.3	Fine, reddish clay
2	10003	100009	81.28 - 81.59	Lamp	LA 1.2.4	Fne, reddish clay

expression of chronological development but rather may indicate an ethnic or cultural difference. But before pursuing this possibility, some background information should be presented.

Dyeing of fabrics is one industrial activity in the Lod and Ramla area that is unanimously attested to by written sources and archaeological evidence. Even before the Roman–Byzantine periods the Lod area was famous for its high-quality dye and was known as center of the textile industry (Schwartz 1991: 171–174). During the Byzantine period, Lod’s industrial importance began to rise until Ramla was built and Lod’s inhabitants were relocated there

(Yb., 116, in Le Strange 1890: 303). It seems that Ramla then adopted the industrial occupation that had predominated at Lod. An Early Islamic source from the 9th century CE refers to the importance of the dyeing industry by mentioning that among the first buildings Sultan Sulaymān erected in Ramla was the Medieval sources hint at the ethnic identity of the dyers. Al-Muqaddasī states that “In this province of Syria, also for the most part, the assayers of coin, the dyers, bankers, and tanners are Jews, ...” (Muk., 182–183 in Le Strange 1890: 22). Almost 200 years later, Benjamin of Tudela listed the Jews he found living in the Holy Land

and said they were dyers (Benjamin of Tudela 1990: 36, 41, 52–55).⁴

Looking back at the lamps found in the Early Islamic industrial area of Ramla, no symbols could be found on them that marked them as likely to have been used by Jews or by people of any other specific ethnicity or religion. In fact, the Early Islamic lamps excavated at the industrial area of Ramla lack symbols of any kind.⁵

Since the decoration of the lamps did not prove helpful in assigning them to a specific ethnic group, another spatial examination was made, taking into account the distribution of lamp types found at various excavations in and around the modern city of Ramla. The basic premise for this line of investigation was that Ramla, as the Umayyad capital of Jund Filastin, attracted different ethnic groups that most likely lived in different areas within the city. It can be assumed that Muslims engaged in different occupations and lived in different areas than did Christians, Samaritans and Jews, and that centers of habitation by different groups should be reflected in the assemblages of lamps unearthed.

The spatial distribution of lamp types within the area in and around the Early Islamic city revealed the following: Excavation carried out mainly in the area northeast and northwest of the White Mosque, in the neighborhoods of HaShoftim Zafon and Mashkanot (Gudovitch 2010a; Gudovitch 2010b; Sion 2009; Sion 2010; Nagorsky 2009; Zelinger 2007, Sa'ad 2006; Toueg 2006; Arbel 2005; Torge 2005; Kogan-Zehavi 2004) and close to the Mahané Ma'asiyyahu, northeast of ancient Ramla (Sion 2004) yielded mainly lamps of Type LA 1.2.2. Only the excavations at HaGedud HaIvri Street and north of the White "House of the Dyers" (Yb, 116, in Le Strange 1890: 303; Rosen-Ayalon 1996: 251). The importance of the textile industry at Ramla is further emphasized in later Arabic sources that mention dyers (Yâk, ii. 817, in: Le Strange 1890: 307–308; Muk., 181 in Le Strange 1890: 22) and

the selling of clothes in Ramla (Muk., 181 in Le Strange 1890: 16). Mosque revealed lamps of Type LA 1.2.1 (Samaritan-type lamps) (Shmueli and Arzi 2006; Cytryn-Silverman 2010), the excavation at Opher Park revealed only one exemplar of such a lamp (Kletter 2005: 82–83).

In contrast, all the excavations in the Early Islamic industrial area south of modern Ramla revealed lamps of Type LA 1.2.2 as well as of Type LA 1.2.1 (the Samaritan type), with the latter representing one of the largest groups (Gorzalczany and Marcus 2010; Gorzalczany and Spivak 2008; Gorzalczany and 'Ad 2010; Gorzalczany, Yehuda and Torge 2010; Tal and Taxel 2008).

Samaritan lamps (LA 1.2.1) thus seem to have been concentrated in the Early Islamic industrial area south of modern Ramla, while the Early Islamic channel-nozzle lamps (LA 1.2.2) appeared to be distributed over the whole area of the modern city of Ramla and its southern neighboring areas. It may be concluded that the population in the industrial area of southern Early Islamic Ramla differed from that of the northwestern and northeastern areas of the city in that period. Taking this thought somewhat further, it can be assumed that the members of a specific ethnic or religious group who worked in the southern industrial area of Early Islamic Ramla did not necessarily live or work in the northwestern and northeastern parts of Ramla.

Due to the absence of clear ethnic or religious symbols on the lamps, the ethnicity or religion of such a group remains unspecified.⁶ The textual evidence speaks of 1) Jews' extensive involvement in the textile industry; 2) Arabs, Greeks and Samaritans as commonly living in Ramla; and 3) the personal interest Sulaymān took in the dyeing industry. Thus, it seems logical to conclude that a) because of their tradition of working as dyers Jews would have been employed at the dyeing installations of the southern industrial area of Ramla; and b) because of the Arab rulers' interest in dyeing, their Arab subjects engaged in the dyeing industry as well.

4 The general ethnic composition of 9th-century Ramla is described as including Arabs, Greeks and Samaritans (Yb., 116 in Le Strange 1890: 303).

5 In contrast, many of the lamps excavated in the Abbasid quarter north of the valley street at Beth-Shean bore Kufic inscriptions, testifying that the inhabitants of that quarter practiced Islam (Hadad and Khamis 1998).

6 See here Tal and Taxel's explanation about the ethnicity of the manufacturers and inhabitants of Ramla South 6 (2008: 212–213). Their main conclusions are that flax was cultivated at the industrial site of Ramla South and flax production was dominated by Samaritans.

CHAPTER 3.3

SPECIAL FINDS

Elisabeth Yehuda

AN EGYPTIAN-ARABIC INSCRIBED BOWL

In Square B14, west of building Complex B14–B17 fragments of a bowl (Fig. 3.3.1: 1–2) were found. The exact location of the fragments was west of the enclosing W9230 of the early Umayyad Complex A–B 15–17 (see Chapter 2). The bowl was found in a soil fill (Locus 9256) at an elevation of 80.93 m asl, 0.50 m below the surface. The bowl could not be related to any architectural structure; instead, it seems to have been buried in an open area.

The bowl is made of finely levigated pinkish clay with very few small black inclusions. The interior of the bowl is covered with an orange-red slip while the exterior walls are covered with a slightly darker, reddish-brown slip. The walls of the bowl taper slightly toward the rim, which is pointed, and the base is slightly concave. Petrographic analysis of the bowl's clay revealed that it was produced in Egypt.

Bowls similar in form and clay are reported from Caesarea (Arnon 2008: Fig. 125 and especially 125a, 125e, 125f and 125g), where they were dated to the late 8th and early 9th centuries CE. Although these bowls are described as Islamic Red Slipped Bowls (Arnon 2008: 34), they belong to the group of Egyptian Red Slipped Ware since petrographic analyses of their clay revealed that they are of Egyptian origin (Arnon 2008: 54). Egyptian Red Slipped bowls were also reported from Caesarea from the earlier Stratum VIIIa, dating from the late 7th to the first half of the 8th centuries CE, but the forms of these early bowls differ markedly from those of the above-mentioned later bowls of Caesarea.

A bowl similar in form and clay to the one from our excavation in Ramla was discovered in the excavation north of the White Mosque in Ramla and described as Egyptian Fine Ware (Cytryn-Silverman 2010: 109, Pl. 9.13: 4). Cytryn-Silverman

dated the group of Egyptian Fine Ware to the Early Islamic period and more specifically to the 8th–9th centuries CE (Cytryn-Silverman 2010: 109).

Three sherds of Egyptian Red Slipped bowls were reported from the excavation at Marcus Street in Ramla, but the forms of the illustrated bowls do not correspond to that of our bowl (Arnon 2007: 39, Type 1.1d, Fig. 1: 6).

During the excavations at Ashkelon a large number of Egyptian Red Slipped bowls was found belonging to the Egyptian Red Slipped 'A', 'B' and 'C' Ware (Johnson 2008: 75–94). Despite the large variety of bowl types, only two bowls belonging to Egyptian Red Slipped 'A' Ware show a certain similarity to the one found during our excavation (Johnson 2008: nos. 248, 249). The Egyptian Red Slipped 'A' Ware at Ashkelon was dated from the 4th to the 7th centuries CE (Johnson 2008: 75).

At Tiberias, sherds of a bowl assigned to Egyptian Red Slipped 'C' Ware were reported (Stacey 2004: 89, Fig. 5.1) as well as Egyptian Red Slipped 'A' Ware from an Umayyad fill in Area D of Foerster's excavation in 1973–1974 (Stacey 1988–1989: 21–29). The sherds from Area D were dated to the end of the 8th century CE.

According to Hayes, Egyptian Red Slipped 'A' Ware first appeared from the late 4th to the 7th centuries CE (Hayes 1972: 387) and the center of its production was identified as the Aswan area in Egypt (Hayes 1972: 397; 1980: 531–532). Excavations at Alexandria (Rodziewicz 1983: 74) and Fustat (Kubiak and Scanlon 1986: 37) revealed that the production of Egyptian Red Slipped Ware extended into the 9th and even the 10th centuries CE.

It seems that bowls with a concave base and walls tapering toward the rim represent a later form of the Egyptian Red Slipped 'A' bowls. Such bowls are absent in earlier Egyptian Red Slipped 'A' Ware assemblages of 7th–8th centuries CE (Watson

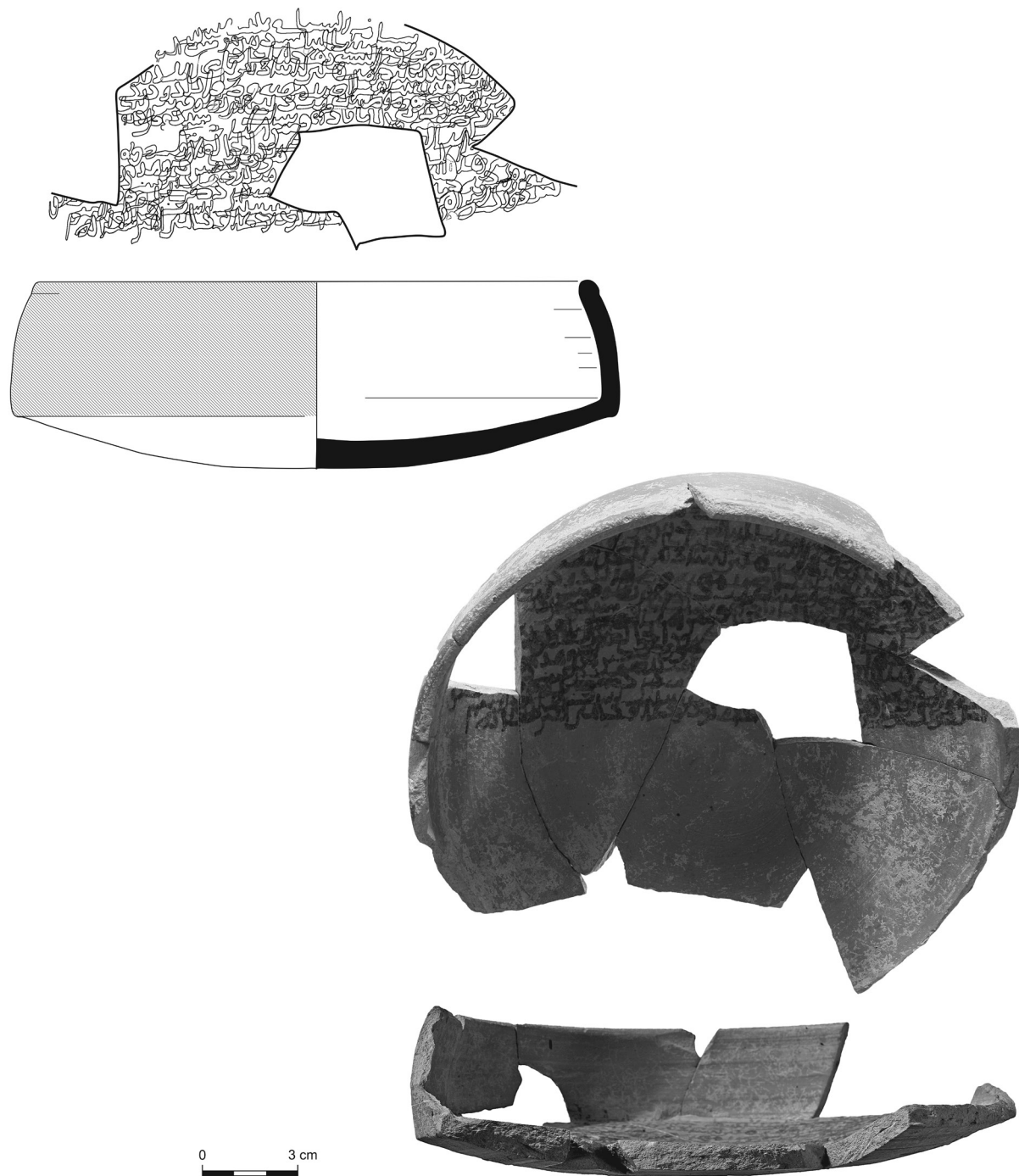


Figure 3.3.1: An Egyptian Arabic inscribed bowl (Locus 9256, Basket 90993).

1995: 304–305; Arnon: 2008: 29, 59; Hayes 1972: 387–394). Therefore the bowl from Ramla should be dated not earlier than the late 8th century CE.

The inside of the bowl found during our excavation is decorated with an ink inscription in Arabic. Only the upper half of the bowl is covered by the lines of writing, which are horizontal and roughly parallel. The lowest line ends approximately 1 cm above the center of the bowl. These horizontal lines of writing are overwritten by vertical lines of additional writing, starting at the upper rim of the bowl and ending on the lowest horizontal line.

A first attempt at reading the writing on the bowl, made by Prof. M. Sharon (Hebrew University Jerusalem), was unsuccessful. He could only state that the writing is reminiscent of 11th-century CE Arabic-Egyptian papyri writing.⁷ The bowl was shown to J.N. Ford who stated that the writing was unknown to him and that he could not decipher it.⁸

The tradition of inscribing clay bowls with ink, so-called incantation bowls, can be assigned to the Sasanian period (3rd–7th centuries CE) in the central and southern regions of modern Iraq/Mesopotamia (McCullough 1967: V; Montgomery 1913: 13–15, 21). This tradition reached its peak during the 4th–7th centuries, gradually fading during the early 8th century CE (Montgomery 1913: 102–105). The most common languages in which these bowls were inscribed are Aramaic dialects: Aramaic square script (approximately 60%), Mandaic (approximately 25%) and Syriac (approximately 15%) (Levene 2002: 6–7; Montgomery 1913: 26). Clay bowls inscribed with pseudoscript⁹ have also been found in significant numbers (Bohak 2008: 185).

The first ink-inscribed clay bowls were excavated and appeared on the antiquities market during the second half of the 19th century. Today some of the largest collections of clay incantation bowls are the Schøyen Collection, Oslo and London, the Hilprecht Collection, Jena, the collection at the University

of Pennsylvania Museum of Archaeology and Anthropology Philadelphia (Montgomery 1913), the collection of the British Museum, London, the collection at the Istanbul Museum and the Baghdad Museum. It is believed that these private collections and museums include more than 2,000 bowls of which less than 25% have been published (Levene 2002: 6).

While clay incantation bowls of Mesopotamian origin are numerous and well known, ink-inscribed Arabic clay bowls are far less common (Bohak 2008: 185, Harari 2005: 68). Although researchers refer to Arabic magical formulae written on all kinds of materials such as bone, egg shell, porcelain, metal and clay, these formulae are most commonly found on vessels made of metal¹⁰(Canaan 1936: 80; Harari 2005: 38). Such magical metal vessels, called “fear cups,” “poison cups” and “magical plates,”¹¹ are inscribed on the interior with Qur’an verses and invocations related to purification, healing (Spoer 1935: 237) and protection, which are widespread in Arabic culture (Canaan 1936: 79–89). The text was commonly engraved in lines, spirals or circles (Canaan 1936: 83, Spoer 1935: 237). Such spirals and circles closely resemble the form of writing on Mesopotamian clay incantation bowls (Levene 2003: 2–3). Despite the similarity between Mesopotamian clay incantation bowls and Arabic inscribed metal bowls, their functions were drastically different: Mesopotamian incantation bowls were buried in the ground beneath the thresholds or foundations of a house to ward off evil spirits (Peters 1897: 182; McCullough 1967: XII). In contrast, Arabic magical bowls were used in daily life to heal, strengthen and protect their users (Canaan 1936: 117) by imparting

7 Personal communication.

8 Personal communication.

9 Pseudoscript was a script devised by the scribe to make illiterate clients believe that they were in possession of a bowl with a valid incantation. Such pseudoscripts sometimes bore a close resemblance to identifiable forms of writing.

10 The most common metal was copper but vessels could also be made from iron or silver (Canaan 1936: 80; Harari 2005: 72).

11 “Fear cups” were used to neutralize the evil affects of fright (Canaan 1936: 118). A “poison cup” was, as the name alludes, used to neutralize all kinds of poisoning but also to cure a variety of illnesses such as migraine or colic and to ease difficult labor (Canaan 1936: 104–118). Many of the magical vessels bear inscriptions invoking God as protector, helper and healing power (Canaan 1936: 120; Harari 2005: 78–81).

magical power to the liquids poured into them. Thus, it seems safe to conclude that Arabic magic bowls were not a direct line from Mesopotamian incantation bowls (Harari 2005: 68).

Although the oldest Arabic metal bowls examined by Spoer and Canaan (Spoer 1935: 255–256; Canaan 1936: 117) date only to the 16th century, it can be assumed that the tradition of magical vessels is much older. The custom of imbuing a substance with magical powers through texts dates as far back as the 10th century CE (Harari 2005: 71), while the earliest known exemplar of an Arabic inscribed magical bowl made of copper dates to the end of the 8th or beginning of the 9th century CE (Harari 2005: 71).

Turning our attention to Arabic inscriptions on clay bowls, it becomes clear that such bowls were far rarer than clay bowls inscribed in Aramaic, Mandaic or Syriac or Arabic-inscribed vessels made of metal. The numbers of clay bowls inscribed in Arabic amounts to a handful (Bohak 2008: 185), none of which have been published. Two exemplars of Arabic-inscribed clay bowls are in the collection of the British Museum, London (Bowl no. AN743158001 http://www.britishmuseum.org/research/search_the_collection_database/search_object_details.aspx?objectId=367370&partId=1).

Arabic incantation bowls were cited along with bowls inscribed in “Jewish script” and Syriac (Peters 1897: 184) in the excavation report from Nippur in Mesopotamia. Hilprecht (1904: 337) also wrote of bowls inscribed in Arabic but Mueller-Kessler stated that the bowls of the Hilprecht collection in Jena were written in Aramaic, Manichaean, Mandaic and pseudoscript; Arabic is not mentioned among the inscription types (Mueller-Kessler 2005: 3–4).

It is not only the language of the inscription on the bowl from Ramla South that sets it apart from Mesopotamian clay incantation bowls; it is also the layout of the writing. The most popular layout of writing on Mesopotamian incantation bowls is in the form of a spiral, starting at the inner center of the bowl and proceeding clockwise, ending near the rim. Less popular forms show lines of writing starting at the rim of the bowl and running toward the center. In contrast to these layouts, our bowl

features linear writing forming dense, partially overlapping lines that start on the right and continue to the left, covering only the upper half of the bowl’s interior. A layout of writing similar to our bowl can be found on a bowl inscribed with pseudoscript in the collection of the British Museum/London (http://www.britishmuseum.org/research/search_the_collection_database/search_object_details.aspx?objectId=1403227&partId=1). In that exemplar, lines of writing from right to left covered the whole interior of the bowl.

The density of writing on the upper half of the bowl from Ramla South and the overlapping of lines makes it somewhat difficult to distinguish individual words, letters or even parts of lines. In this regard as well, the bowl differs from Mesopotamian incantation bowls. On the latter, words and lines were carefully written and set apart in order to ensure the power and validity of the inscribed formula.

Last but not least, in keeping with the rarity of Arabic-inscribed clay bowls in general, the inscribed bowl found at Ramla South is the only exemplar of an Arabic ink-inscribed clay bowl found in modern Israel.

CLAY WEIGHT

A weight (Fig. 3.3.2.) made of red-brown, coarse clay was found in Square A–B16 in Locus 9202 which was located at the corner of W9163 and W9162. The weight is conical and measures 8 × 7 × 6 cm. A small hole with a diameter of 2 mm was drilled through the upper part of the weight. According to its context it should be assigned to the late Byzantine–early Umayyad periods.

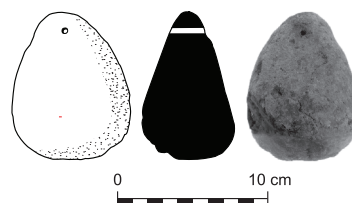


Figure 3.3.2: A clay weight (Locus 9202, Basket 90735).

CHAPTER 4

THE GLASS FINDS

Ruth E. Jackson-Tal

Several hundred fragments of glass objects were found at the excavations of Ramla South; 23 of the best-preserved diagnostic fragments were chosen for publication. More than half of the glass vessels presented here were found in abandonment or fill layers above late Umayyad–Abbasid pools (Pools 10234, 10130, 9399, 9242), in soil layers adjoining late Umayyad–Abbasid walls (W10104, W10174, W9383), in the fill above the late Umayyad–Abbasid Floor 9276 and in the fill below the late Umayyad–Abbasid stone Foundation 10039. Only a small number of these vessels was found in earlier layers, such as the fill below Umayyad Floor 9069 and in the fill covering Complex A–B 15–17.

Most of the vessels were made of colorless, greenish or bluish glass (or combinations thereof), with a few exceptions in yellowish and yellowish-green glass. The fragments were covered with black, white or silver weathering, with an iridescent film, and were sometimes pitted.

The vessels are presented in typological order, and comprise bowls, bottles and vials, a jug, jars, cosmetic tubes and bracelets. This assemblage features common types of glass vessels from the Early Islamic period (i.e., the Umayyad and mostly the Abbasid–Fatimid periods). Parallels are presented from Early Islamic sites throughout the country, especially those in close proximity to the excavation at Ramla South (Jackson-Tal 2008), and in other excavations at Ramla (Gorin-Rosen 1999; 2008; 2010; Gorin-Rosen and Katsnelson 2005; Pollak 2007), Caesarea (Pollak 2003), Tiberias (Lester 2004; Hadad 2008) and at Beth-Shean (Hadad 2005), from which well-dated Umayyad and Abbasid–Fatimid assemblages have been published extensively.

TYOLOGY

BOWLS

Shallow bowl with cylindrical walls (Fig. 4.1: 1)

Such bowls are very common during the Abbasid–Fatimid periods and are known both in shallow

and deep versions. Bowl No. 1 is smaller with a straight rim and No. 2 has an in-curving thickened rim. Similar shallow, cylindrical bowls were found in Abbasid–Fatimid contexts at Ramla South (Jackson-Tal 2008: 167, Fig. 6.111: 1) and in additional Abbasid–Fatimid contexts at Ramla (Gorin-Rosen 1999: 12, Fig. 2: 2, 3, 5); Caesarea (Pollak 2003: 167, Fig. 3: 40); Tiberias (Lester 2004: 168, Fig. 7.1: 1); and Beth-Shean (Hadad 2005: 35, Pl. 25: 491–495).

Shallow bowl with in-curving rim (Fig. 4.1: 2)

This bowl type is similar to the shallow bowl with cylindrical walls (above Fig. 4: 1) but wider with a different rim design. Similar bowls were found in Abbasid–Fatimid contexts at Ramla (Pollak 2007: 104–105, Fig. 3: 13), and at Beth-Shean (Hadad 2005: 35, Pl. 27: 534, 535).

Bowls with flaring rims (Fig. 4.1: 3, 4)

These bowls are well known during the Abbasid–Fatimid periods. Similar bowls were found in Abbasid–Fatimid contexts at Ramla South (Jackson-Tal 2008: 166, Fig. 6.109: 5–8) and in additional Abbasid–Fatimid contexts in several excavation at Ramla (Gorin-Rosen 1999: 12, Fig. 2: 4; Gorin-Rosen and Katsnelson 2005: 104–105, Fig. 2: 14; Pollak 2007: 107, Fig. 4: 20); Tiberias (Lester 2004: 168, Fig. 7.1: 7–10, 12); Yoqne‘am (Lester 1996: 203, Fig. XVII: 1–6), and Beth-Shean (Hadad 2005: 35–36, Pl. 27: 538–540).

Bowl with out-folded-out rim (Fig. 4.1: 5)

Bowls with out-folded rims are very common in the region during the Roman, Byzantine and the Early Islamic period, and their dating is usually based on their archaeological context, when possible, or their shape and fabric. The bowl from Ramla South is wide with a flaring rim and straight wall. Similar bowls were found in Abbasid–Fatimid contexts in another

excavation at Ramla (Pollak 2007: 101, Fig. 1: 1); at Tiberias (Lester 2004: 168, 173, Fig. 7.1: 23, 25, 26); and Beth-Shean (Hadad 2005: 36, Pl. 28: 559, 560).

Deep bowl/cup with out-folded rim (Fig. 4.1: 6)

This vessel could be defined as a deep bowl or cup and is decorated with a horizontal blue trail applied to the tip of the out-folded rim. Similar shaped vessels with straight or in-folded rims, plain or trail-decorated are well known during the Abbasid–Fatimid periods. Similar vessels were found in such contexts at Ramla (straight and plain, Gorin-Rosen 1999: 12, Fig. 2: 6, 7; Gorin-Rosen and Katsnelson 2005: 101, Fig. 1: 1; in-folded and trailed, Pollak 2007: 110, Fig. 6: 29); Caesarea (in-folded and plain, Pollak 2003: 167, Fig. 2: 21, 22) Beth-Shean (Hadad 2005: 35, Pl. 26: 521–526) and in the Serce Limani shipwreck (Lledó 2009: 115–116, 118, Fig. 10–2: CB7, CB16).

Bowl with mold-blown ribs (Fig. 4.1: 7)

Vessels, mainly bowls, with mold-blown decoration, have a long tradition in the Roman and Byzantine periods. However, they were also very common during the Early Islamic period, with specific stylistic characteristics. The fragment from Ramla South is adorned with thick, spaced rib decoration. This decorative style can be attributed to the Umayyad or Abbasid–Fatimid periods, according to the fabric and shape. Similarly decorated vessels were found in Umayyad contexts at Ramla (Gorin-Rosen 2010: 246–247, Pl. 10.9: 1) and Beth-Shean (Hadad 2005: 21–22, Pl. 4: 82), and others were found in Abbasid–Fatimid contexts at Ramla South (Jackson-Tal 2008: 167, Fig. 6.112: 1, 2) and Beth-Shean (Hadad 2005: 36–37, Pl. 31: 604–606).

Fig. 4.1: 1 Area N, Locus 10107, Basket 100565

Rim, wall and beginning of base fragment. Colorless. Thick black and silver weathering and iridescent film. Straight, thickened rim; straight, shallow wall and beginning of flat thickened base. Rim diam.: 6.8 cm.

Fig. 4.1: 2 Area M, Locus 9308, Basket 91131

Rim and wall fragment. Colorless. Thick black and silver weathering and iridescent film. In-curving, rounded rim with a horizontal thickened rib. In-curving shallow wall. Rim diam.: 18.2 cm.

Fig. 4.1: 3 Area M, Locus 9249, Basket 91034

Rim and wall fragment. Colorless. Thick black and silver weathering and iridescent film. Flaring, rounded rim. In-curving wall. Rim diam.: 10.4 cm.

Fig. 4.1: 4 Area N, Locus 10140, Basket 100806

Rim and wall fragment. Colorless. Thick black and silver weathering and iridescent film. Flaring, rounded rim and rounded wall. Rim diam.: 14 cm.

Fig. 4.1: 5 Area M, Locus 9215, Basket 90801

Rim and wall fragment. Colorless. Silver weathering and iridescent film. Out-folded rim and straight wall. Rim diam.: 23.4 cm.

Fig. 4.1: 6 Area M, Locus 9206, Basket 90901

Rim and wall fragment. Colorless with black weathering and iridescent film. Straight, out-folded rim and straight wall. Light blue trail applied to tip of rim. Rim diam.: 11.4 cm.

Fig. 4.1: 7 Area M, Locus 9326, Basket 91312

Base and wall fragment. Light blue with yellow streaks. Silver weathering and iridescent film. Flat base with large pontil scar with glass remains (1 cm). Up-curving wall with mold-blown vertical ribs extending from base. Base diam.: ~ 4 cm.

BOTTLES AND VIALS

Bottles with in-folded rims (Fig. 4.2: 1, 2)

Such bottles with in-folded flattened rims and rounded walls were very common during the Umayyad period, although they are also known in later periods (Hadad 2005: 23). Bottle No. 8 has a flattened rim and bottle No. 9 has an uneven down-curving rim, but they belong to the same vessel type. Similar bottles were found in Umayyad contexts at Ramla (Gorin-Rosen 1999: 11, Fig. 1: 5–8, 10; 2010: 223, Pl. 10.1: 13), Ḥorvat Ḥermeshit (Winter 1998: 176, Fig. 2: 14, 15), Caesarea (Pollak 2003: 165, Fig. 1: 4–6). Hammat Gader (Cohen 1997: 427–428, Pl. IX: 1–8) and Tel ʿIra (Lehrer-Jacobson 1999: 442–444, Fig. 13.1: 1, 2). Others were found in Umayyad-Abbasid context at Ramla (Pollak 2007: 121, Fig. 10: 61, 62), Tiberias (Lester 2004: 182, 185, Fig. 7.7: 73–85), and Beth-Shean (Hadad 2005: 23,

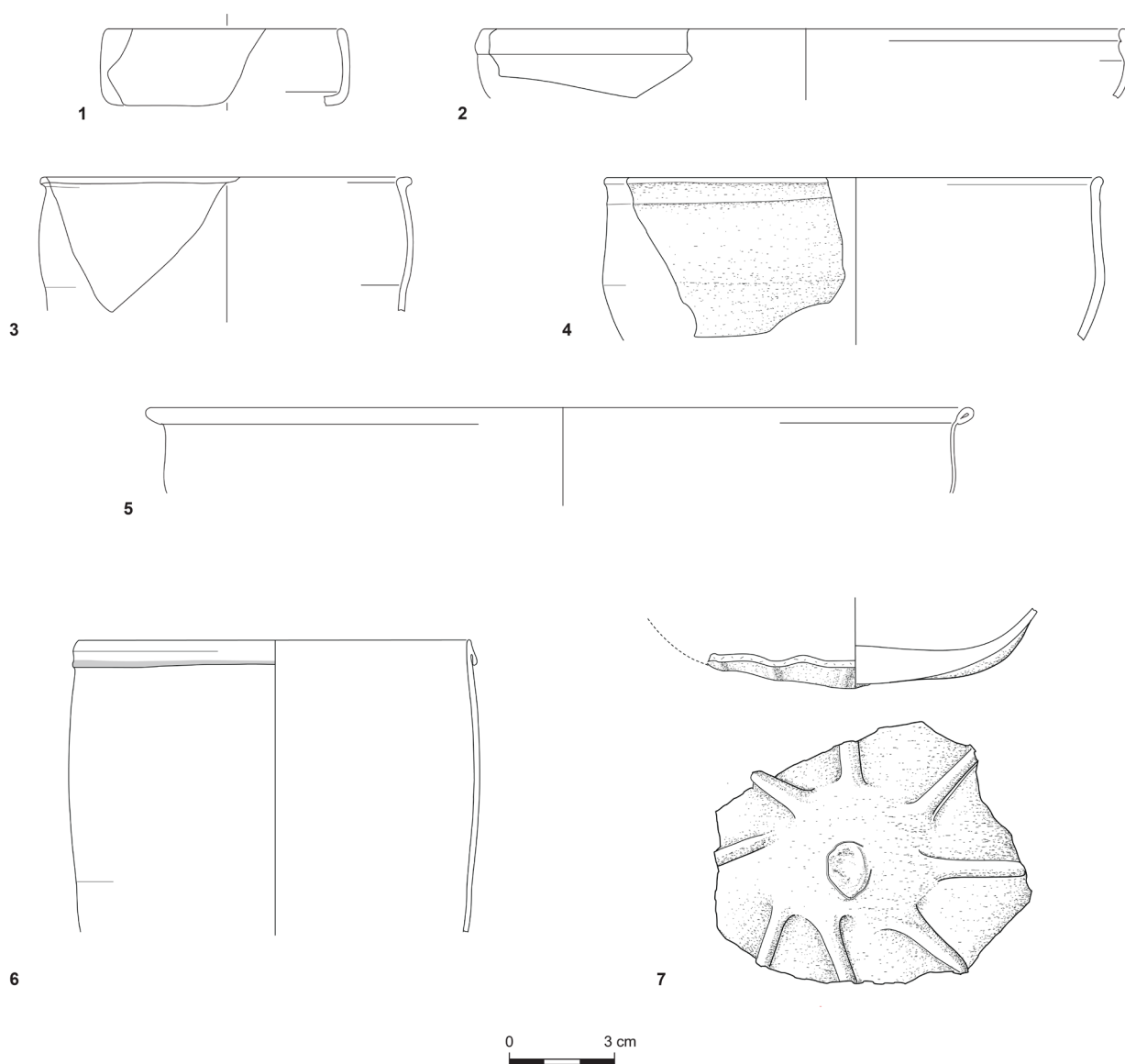


Figure 4.1: Bowls.

No	Locus	Description	Material
1	10107	bowl	glass
2	9308	bowl	glass
3	9249	bowl	glass
4	10140	bowl	glass
5	9215	bowl	glass
6	9206	bowl	glass
7	9326	bowl	glass

40, Pls. 9: 182–184; 10: 185–190; 11: 194, 195, 37: 750–755). Others were found in Abbasid-Fatimid contexts at Ramla South (Jackson-Tal 2008: 175, Fig. 6.117: 6, 7).

Mold-blown bottle (Fig. 4.2: 3)

Mold-blowing was employed for glass production since the early Roman period. During the Abbasid–Fatimid periods this technique became very common (Hadad 2005: 36). The bottle found at the site is adorned with dense, elaborate geometric designs typical of the Early Islamic period. Vessels with similar mold-blown designs, especially concentric dotted circles, were found in an Abbasid context at Caesarea (Pollak 2003: 167, Fig. 2: 24) and in an Abbasid–Fatimid context at Beth-Shean (Hadad 2005: 41–42, Pl. 40: 830, 832).

Wheel-cut bottles (Fig. 4.2: 4, 5)

Wheel-cutting was used during the Abbasid–Fatimid periods to decorate various vessel types with deep or shallow geometric designs (Hadad 2005: 38). The bottles are very large types, decorated with geometric and floral designs in low relief on the walls and horizontal grooves and vertical rectangle facets on the neck and above the base. Bottle No. 12 has a preserved, splayed shelf-like rim, typical of bottles of the Abbasid–Fatimid periods (Pollak 2007: 123, Fig. 10: 65; Gorin-Rosen 2010: 238, Pl. 10.6: 17, 18). A bottle with a similar rim and wheel-cut, horizontal groove was found unstratified at Ramla (Gorin-Rosen and Katsnelson 2008: 113, Fig. 4: 42).

A similar bottle with similar wheel-cut designs on the neck and missing rim was found at Tiberias (Hadad 2008: 172, Pl. 5.6: 97). Two bottles with the exact same rim and wheel-cut upper design were found in a Fatimid context in excavations at al-Fustat, Egypt (Shindo 2000: 234, Figs. 4, 5) and in Sabra, Tunisia (Marcais and Poinssot 1952: Nos. 1–7, Pl. LVIII). Others are known from the Serce Limani shipwreck (Cullen and Lledó 2009: 191–192, 194–195, 201, Figs. 16–2: DR35-DR38, 16–3: DR56-DR57, 16–4: DR145-DR147, DR154). A bottle with a similar rim and dense, vertical rectangle design was found in China, dated prior to 1018 CE (Kröger 1999: 224, Fig. 9).

Wheel-cut bottles were found in an Abbasid–Fatimid context at Ramla South (Jackson-Tal 2008: 175, Fig. 6.116: 1), Ramla (Gorin-Rosen 2010: 251, Pl. 10.10: 12); Caesarea (Pollak 2003: 167, Fig. 3: 47–51); Yoqne'am (Lester 1996: 210–211, Fig. 17.10: 1, 4) and Beth-Shean (Hadad 2005: 44–45, Pl. 42: 863–865).

Cylindrical base (Fig. 4.2: 6)

Cylindrical bases could belong to either beakers or bottles. Vessels with cylindrical base and walls are well known in the Abbasid–Fatimid periods. They were often decorated with mold-blown or wheel-cut decorations. Similar plain bases were found in Abbasid–Fatimid contexts at Ramla South (Jackson-Tal 2008: 180, Fig. 6.119: 7); Tiberias (Lester 2004a: 174–175, Fig. 7.3: 41); and Beth-Shean (Hadad 2005: 40, Pl. 38: 792). Mold-blown and wheel-cut vessels with similar bases were found in an additional excavation at Ramla (Gorin-Rosen and Katsnelson 2005: 111, 113, Figs. 3: 36, 4: 43).

Figure 4.2: Bottles and vials

No	Locus	Description	Material
1	10234	bottle	glass
2		bottle	glass
3	9078	bottle	glass
4	10060	bottle	glass
5	10203	bottle	glass
6	9308	beaker or bottle	glass
7	10173	bottle	glass
8	9343	vial	glass
9	10203	vial	glass

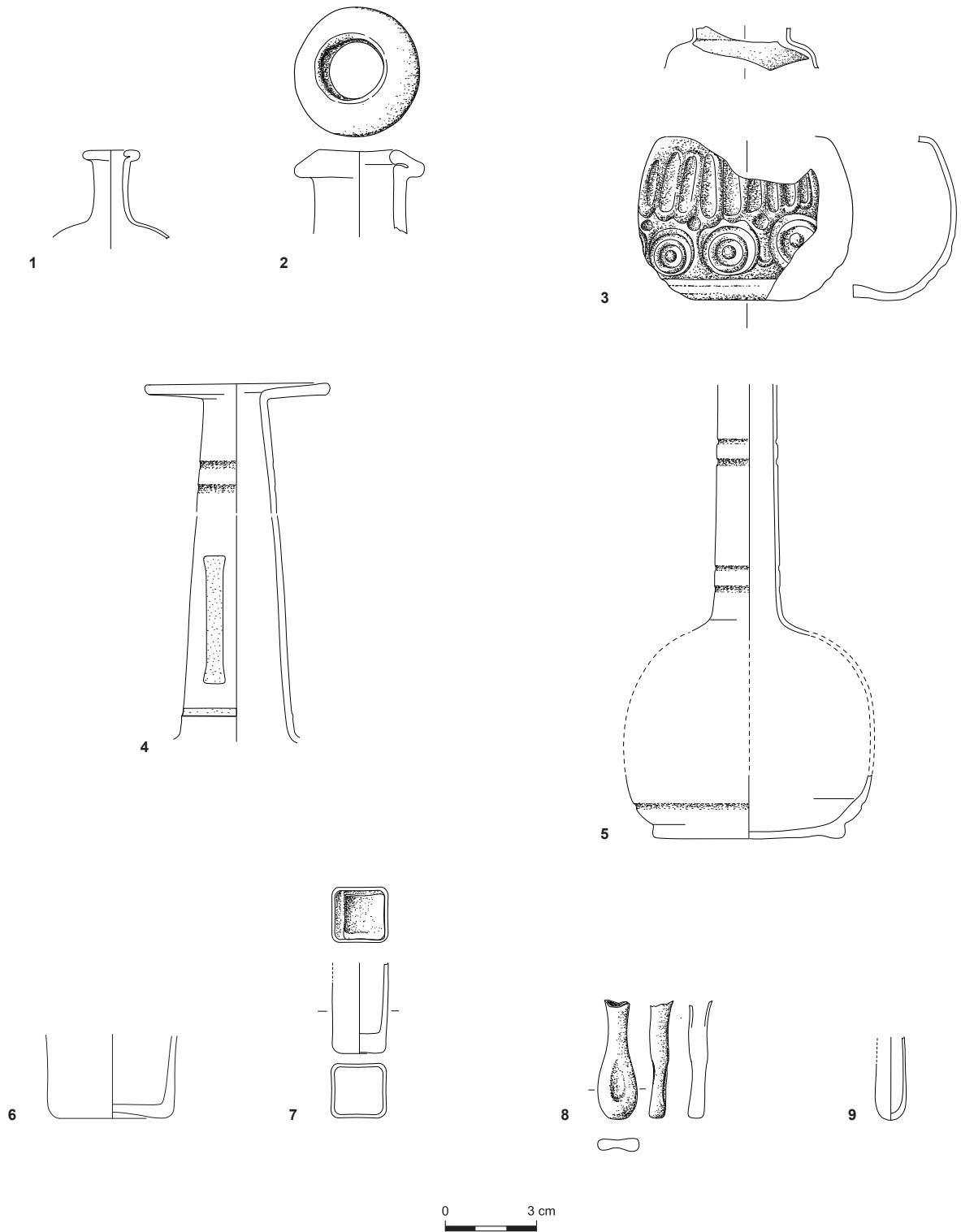


Figure 4.2: Bottles and vials.

Square bottle (Fig. 4.2: 7)

Square small bottles are well known in the Early Islamic period, especially during the Abbasid–Fatimid periods. They were used to store liquids, cosmetic or medicines. Similar bottles were found in Abbasid–Fatimid contexts at Ramla South (Jackson-Tal 2008: 176, Fig. 6.118: 1–3, 6.119: 8), and in several other excavations at Ramla (Gorin-Rosen and Katsnelson 2005: 112–113, Fig. 4: 41; Pollak 2007: 126–127, Fig. 11: 71). Others were found in Abbasid–Fatimid contexts at Kh. ‘Adasa (Gorin-Rosen 2008: 128, Fig. 3: 1), Yoqne‘am (Lester 1996: 206–207, Fig. XVII.6: 1–8; Gorin-Rosen 2005b: 106, Fig. 7.2: 8); Tiberias (Lester 2004a: 188, 191, Fig. 7.9: 100–106) and Beth-Shean (Hadad 2005: 39–40, Pls. 35: 695–697, 36: 698–704 with additional references).

Lentil-shaped vial (Fig. 4.2: 8)

This type of tiny bottle is known during the Abbasid–Fatimid periods. Such bottles were also used to contain small quantities of liquids for cosmetic or medicinal purposes, like the square bottle described above. Similar vessels were found in Abbasid–Fatimid contexts at Ramla (Pollak 2007: Fig. 11: 73), Yoqne‘am (Lester 1996: 207, Fig. XVII.6: 9) and Tiberias (Lester 2004: 191–192, Fig. 7.9: 107–115, with further discussion).

Tube-shaped vial (Fig. 4.2: 9)

This is another type of tiny bottle known from the Abbasid–Fatimid periods. Like the abovementioned square and lentil-shaped bottles they were also used to contain small quantities of liquids. Similar vessels were found in Abbasid–Fatimid contexts at Ramla (Gorin-Rosen and Katsnelson 2005: Fig. 1: 3). Others were found in similar contexts at Yoqne‘am (Lester 1996: 207, Fig. XVII.6: 10) and Beth-Shean (Hadad 2005: 39, Pl. 35: 689–690).

Fig. 4.2: 1 Area N, Locus 10234, Basket 100881

Complete rim and neck and shoulder fragment. Colorless with bluish tinge. Slight silver weathering. In-folded, flattened rim. Short cylindrical neck and beginning of rounded shoulder. Rim diam.: 1.8 cm.

Fig. 4.2: 2 Area M, Locus 106919, Basket 34

Complete rim and neck fragment. Bluish-green. White and silver weathering and iridescent film. Folded out and back in uneven thickened rim. Cylindrical neck with thickened wall. Rim diam.: 4 cm.

Fig. 4.2: 3 Area M, Locus 9078, Basket 90700

Two separate parts of the same vessel, base and wall fragment, and neck and shoulder fragment. Light yellow. Remains of thick black and silver weathering and iridescent film. Flat base with pontil scar (1 cm). Rounded wall with mold-blown geometric designs; vertical, shallow indentations above concentric dotted circles, with upper dots above a horizontal groove. Small cylindrical rim and sloping shoulder fragment. Base diam.: 2.5 cm.

Fig. 4.2: 4 Area N, Locus 10060, Basket 100176

Two separate parts of the same vessel, complete rim and neck fragment and another neck fragment. Colorless with yellowish tinge. Thick black and silver weathering and iridescent film. Splaying-out rounded rim and cylindrical neck. Wheel-cut, engraved horizontal grooves on the upper and lower part of the neck. Vertical, engraved rectangle facet on the neck. Rim diam.: 6 cm.

Fig. 4.2: 5 Area N, Locus 10203, Basket 100687

Two separate parts of the same vessel, neck and base fragments. Colorless with thick black and white weathering and severe pitting. Shallow, wheel-cut engraved horizontal grooves on the upper and lower part of the neck and above the base. Base diam.: 6.2 cm.

Fig. 4.2: 6 Area M, Locus 9308, Basket 91131

Complete base and wall fragment. Colorless. Thick black and silver weathering and iridescent film. Flat, square base with pontil scar (0.5 cm). Cylindrical walls. Base diam.: ~ 4 cm.

Fig. 4.2: 7 Area N, Locus 10173, Basket 100657

Complete base and wall fragment. Colorless. Thick black and silver weathering and iridescent film. Flat base with pontil scar (0.7 cm), square walls. Base diam.: 1.6 cm.

Fig. 4.2: 8 Area M, Locus 9343, Basket 91205

Complete base and body, neck fragment. Colorless. Silver weathering and iridescent film. Flat base, flattened, pear-shaped body and cylindrical neck. Base diam.: 0.5 cm.

Fig. 4.2: 9 Area N, Locus 10203, Basket 100687

Complete base and wall fragment. Colorless with thick white and black weathering. Flat base, small elongated rounded body. Base diam.: 0.5 cm.

JUGS, JARS, TUBES AND BRACELETS

TREFOIL-RIM JUG (FIG. 4.3: 1)

Jugs with trefoil rims are known from the Roman through the Islamic periods and are difficult to date specifically. The size of this fragment precludes certain dating; however, according to its context it can be assigned to the Abbasid–Fatimid periods.

JARS (FIG. 4.3: 2, 3)

Jars with wide necks were used during the Early Islamic period, for storage of goods, perhaps sugar products as suggested by Gorin-Rosen (2010: 242). Jar No. 18 has a flaring rim and wide neck. This type of vessel is sometimes referred to as a large bottle (Hadad 2005: 45), although the width of the rim probably indicates its function as jar. Similar vessels were found in an Abbasid–Fatimid context at Ramla (Pollak 2007: 116, Fig. 8: 45; Gorin-Rosen 2010: 242, Pl. 10.7: 5); Tiberias (Lester 2004: 180, Fig. 7.5: 63–66); Caesarea (smaller dimensions, Pollak 2000: 239–240, Fig. 6: 3, 4); Beth-Shean (Hadad 2005: 45, Pl. 42: 871–876); and the Serce Limani shipwreck (Ebel 2009: 330, Fig. 28–5: JR245). Jar No. 19 has a straight rim and tapering wide neck. A similar jar was found at Ramla South (Jackson-Tal 2008: 172, Fig. 6.114: 2), and in another excavation at Ramla in a context dated to the Abbasid–Fatimid periods (Pollak 2007: 116–117, Fig. 8: 46).

DOUBLE COSMETIC TUBES (FIG. 4.3: 4, 5)

These vessels were probably used to store kohl, as similar vessels containing kohl remains were discovered with metal or bone kohl sticks. Cosmetic tubes are known to have been used in the region from

the Late Roman to the Byzantine periods. A large quantity of these vessels was found at Kh. el-Ni‘ana (Gorin-Rosen and Katsnelson 2007: 108–114, Figs. 16–21, with further parallels). They are usually rare in Early Islamic contexts and may perhaps be dated to a late Byzantine–Umayyad stage at Ramla South.

RIBBED BRACELET (FIG. 4.3: 6)

This type of bracelet with vertical ribs has usually been assigned a pre-Islamic dating, in the Late Roman–Byzantine periods (Spaer 1988: 55–56, Type B2; 2001: 199, Nos. 443–446). However, it can be found in an Early Islamic context; for example, two similar bracelets were found in an Umayyad context at Beth-Shean (Hadad 2005: 29–30, Pls. 23: 460, 24: 461).

TRAILED BRACELET (FIG. 4.3: 7)

This type of bracelet with a multicolored meander trail pattern was usually dated to the Ottoman period (Spaer 1992: 54, Fig. 17, Type D1eb; 2001: 203, No. 473). However, a similar bracelet was found at Kh. el-Minyeh in an Umayyad context (Spaer 1992: 61, Fig. 25: 19).

Fig. 4.3: 1 Area M, Locus 9384, Basket 91312

Rim and neck fragment. Yellow-green. White and silver weathering and iridescent film. Pinched, trefoil mouth and cylindrical neck. Rim diam.: ~ 5.2 cm.

Fig. 4.3: 2 Area M, Locus 9125, Basket 90467

Rim and neck fragment. Light yellow-green. Iridescent film. Flaring thickened rim, straight, thickened wide neck. Rim diam.: 10 cm.

Fig. 4.3: 3 Area M, Locus 9094, Basket 90706

Rim, neck and shoulder fragment. Colorless with bluish tinge. Thick black and silver weathering and iridescent film. Straight, rounded rim. Wide, tapering short neck. Beginning of sloping shoulder. Rim diam.: 10.2 cm.

Fig. 4.3: 4 Area M, Locus 9013, Basket 90391

Wall fragment. Colorless. Thick, black and silver weathering and iridescent film. Remains of cylindrical double tubes with applied thick horizontal trail.

Fig. 4.3: 5 Area N, Locus 10052, Basket 100388
 Complete base and wall fragment. Light green. Silver weathering and iridescent film. Flat base with pontil scar (0.5 cm). Two cylindrical tubes, unevenly pinched in the center. Base diam.: 2 cm.

Fig. 4.3: 6 Area N, Locus 10011, Basket 100044
 Bracelet fragment. Unknown color due to thick yellow weathering. Rounded bracelet with pointed triangular section and even vertical ribs.

Fig. 4.3: 7 Area N, Locus 10054, Basket 100170
 Bracelet fragment. Light green with applied light blue, yellow, white and red trails. Rounded bracelet with square section. The bracelet is made of greenish glass covered by light blue glass and

features applied meander design made of a white trail bordered on both sides by a red trail and on one side by a yellow trail.

SUMMARY

The glass assemblage presented here is another contribution to the accumulating information on the glass finds from Ramla South. The glass vessels unearthed in this excavation represent well-known types of tableware, some plain and others decorated by trailing, mold-blowing and wheel-cutting. They are dated in accordance with the other archaeological finds to the Early Islamic, Umayyad and mainly to the Abbasid–Fatimid periods. They represent local, daily vessels, used as tableware, storage vessels, cosmetic or medicinal containers and as items of personal adornment.

Figure 4.3: Jugs, jars, tubes and bracelets

<i>No</i>	<i>Locus</i>	<i>Description</i>	<i>Material</i>
1	9384	jug	glass
2	9125	jar	glass
3	9094	jar	glass
4	9013	cosmetic tube	glass
5	10052	cosmetic tube	glass
6	10001	bracelet	glass
7	10054	bracelet	glass

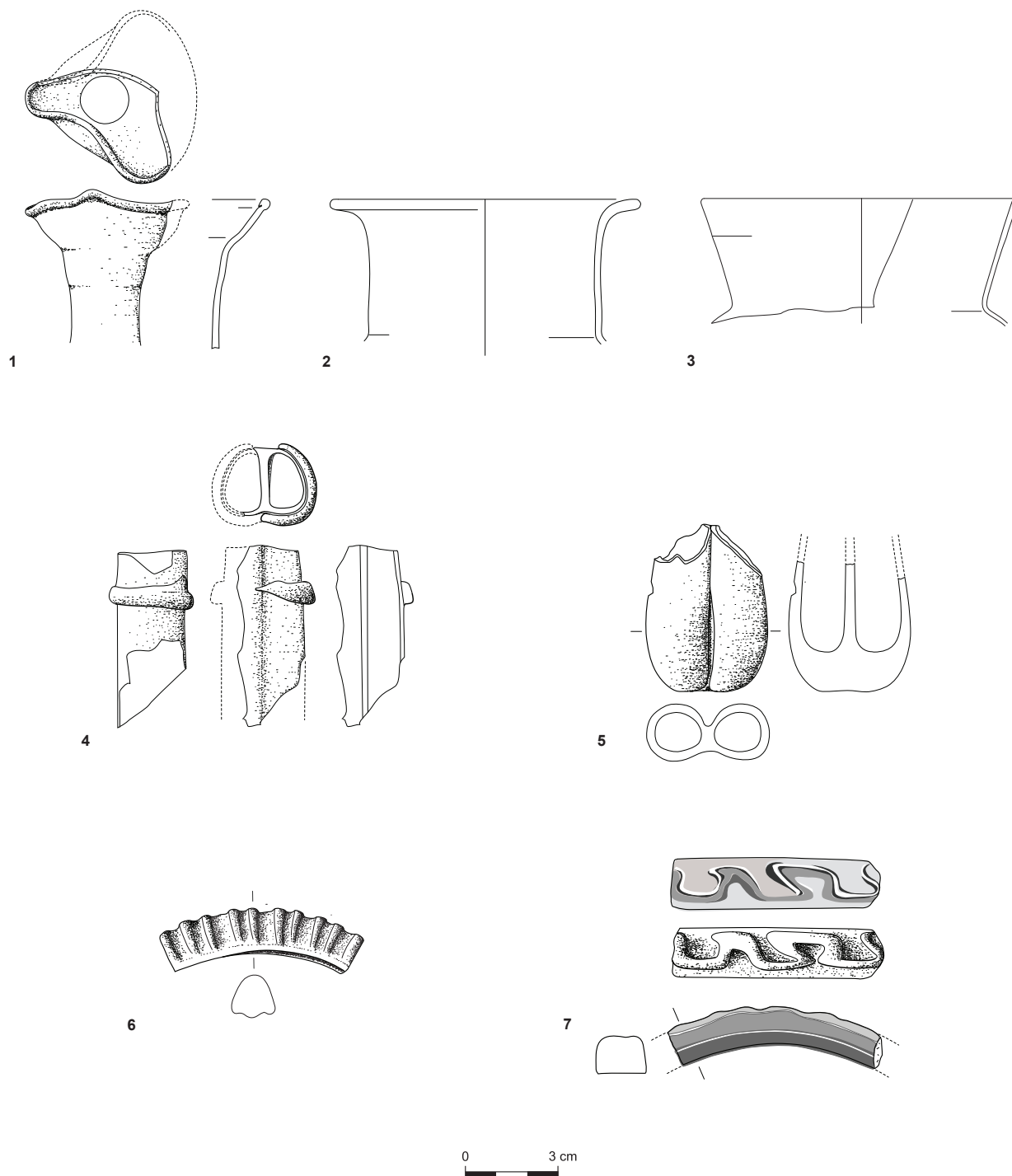


Figure 4.3: Jugs, jars, tubes and bracelets.

CHAPTER 5.1

THE METAL FINDS

Elisabeth Yehuda

Relatively few metal finds were discovered in the Ramla South excavation. Most of these objects were made of iron, a few were made of bronze and a lead sheet was found next to Pool 9051 (Fig. 5.1.1). The finds can roughly be divided into two groups: bronze objects and iron-working equipment; the latter is the larger of the two groups. No pieces of precious metal were found.

BRONZE OBJECTS

No fragments of bronze objects were found that could be clearly identified as personal possessions; rather, all the items unearthed could have been used in the industrial processes at the site. A small bronze spoon was found in the layer covering Floor 9299 (Fig. 5.1.2: 1). The spoon's bowl is circular and slightly concave, approximately 2 cm in diameter; the handle is 5 cm long.

A bronze bracket was found in the layer adjoining Floor 9297 (Fig. 5.1.2: 2). It is slightly bent on its vertical as well as its horizontal axis, which means that it could have bracketed a hemispherical vessel made of wood, such as a barrel. It measured 17.0 cm in length, 2.0 cm in width and was 0.1 cm thick.

A bronze element, possibly a chain link, measuring 3.0 cm in length and 0.5 cm in width was found northeast of Pool 9051 (Fig. 5.1.2: 3). It is slightly bent and shows the beginning of two bails on both narrow sides.

A bronze nail with a flat head 1 cm in diameter (Fig. 5.1.2: 4) was also retrieved; it may have been used as stud for wooden objects.

Fragments of two similar, small, bowl-shaped objects measuring approximately 6 cm in diameter were found in Squares B14 and A15. Both were made of thin copper sheeting; the sheeting of the object from Square A15 was slightly thinner (Fig. 5.1.2: 5) than the one from Square B14 (Fig. 5.1.2: 6). Both objects could have been scale-pans since some of their fragments feature small holes near

the rim where the strings might have attached from which the purported scale-pan could have been suspended. The two largest fragments from Square B14 have one hole each and the largest fragment from Square A15 also has one hole. The holes are very small—only 1 mm in diameter. The fragility of the presumed scale-pans as well of the holes for the attachment of the strings indicates that they were used to weigh objects of low volume such as precious metals, pigments or valuable spices.

IRON-WORKING EQUIPMENT

The most exciting metal object to emerge from the excavation site was an iron hammer-adze, 21 cm long, unearthed in the fill of Pool 10177 in Square B34 (Fig. 5.1.3: 1). One side is slightly broadened, flattened and blade-like, parallel to the shaft, while the other is block-shaped like a hammer. The thickened middle part features a shaft-hole with an upper diameter of 1.8 cm that tapers to a diameter of 1.2 cm.

An axe similar to the one excavated at Ramla South was retrieved from the Byzantine smithy of Ḥorvat 'Ovesh (Aviam and Getzov 1998: Fig. 16: 3[19]). Axes of this type were assigned by Aviam and Getzov to agricultural activities; however, it seems more likely that the one found at Ramla South was used in construction—for driving in and pulling out nails, working wood and smoothing surfaces. A pick with its blade parallel to the shaft was reported by Clermont-Ganneau (1896: 100). It was found in one of the sarcophagi—most likely Roman or Byzantine—discovered west of the church at Lydda where Clermont-Ganneau stopped over for four days. As Clermont-Ganneau described: "...the owner [of the area west of the church] has had a new handle put to this latter [the pick], and uses it, though it is terribly rusty" (Clermont-Ganneau 1896: 100). Another example of an adze was found at the excavation at Nevé Ur where it was dated to the 8th century CE (Shalem 2002: 173–174).

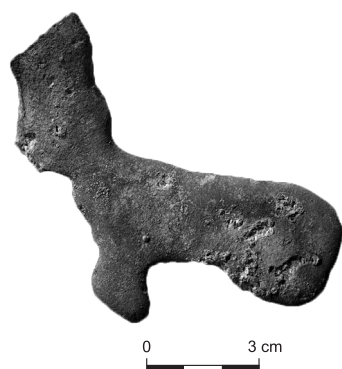


Fig. 5.1.1: Lead sheet (Locus 9268).

IRON FITTINGS

Iron fittings attest to the existence of wooden elements at the site, which may have been used as cladding and timbering for various installations. Most of the objects in this group consisted of nails, which may be roughly divided into two groups.

The first group includes nails with a massive convex head (Figs. 5.1.4: 1, 2). The nail shaft was irregularly forged into a rounded, flattened section. The nail head measures 2.5 cm in diameter and the shaft is at least 8 cm long. Four such nails were found during the excavations and may be assigned to the installations belonging to the Abbasid period, since they were found in the layers above and adjoining the installations in Squares B18, B34, A35 and B35. Such nails were used to hold thick wooden boards in place.

One nail from the second group was found in the layer below Floor 9234 (Fig. 5.1.4: 3). Its head is convex and hollow and the edge was bent, creating a mushroom-like appearance.

A considerable number of nails of the types described above were found during the 2005–2006 seasons at Ramla South (Tal and Taxel 2008: 199–200), where they were identified as coming from wooden roof fittings. Parts of the industrial area may very well have been roofed over to ensure that work could proceed uninterrupted even in bad weather. Nails similar to the second type were found at the Opher Park excavation at Ramla (Kletter 2005: 93, Fig. 27: 9, 10).

An iron hinge was found in the layer covering Channel 9391 (Fig. 5.1.4: 4). Its outer diameter

measures 2.5 cm and the inner diameter measures 0.7 cm. The hinge is 2 cm wide and its preserved length is 4 cm; it can be assumed to have been at least as twice as long.

Another hinge was found in Fill 9189 in Square A12 (Fig. 5.1.4: 5). Its preserved length is 8.0 cm; the widest part measures 3.2 cm. The flat part of the hinge is perforated by a hole through which a nail would have been driven through to a wooden surface. The small size of the hinge indicates that it was probably not a door hinge but rather a shutter or closet-door fitting. In contrast to usual hinges, which have tube-shaped pivots, the pivot on this hinge is ring-shaped, indicating that it had been hoisted onto a shaft, most likely made of stone or metal.

An iron clamp consisting of two outer fasteners and one inner one was found in Roman Pit 10134, discovered in the easternmost part of the excavation area (Fig. 5.1.4: 6). It was 7.8 cm long; the fasteners were 0.7 cm wide. The find-spot in the Roman pit indicates that it dates from that period.

A few pieces of iron slag (Fig. 5.1.4: 7) were found, all of them concentrated in the eastern part of the excavation area, especially in Squares A33–34 and B34. None of these was found farther west than Square B31. Most were found in the fills above installations, walls and floors and could not be assigned to a specific installation or floor. Their diameter varied from 5 cm to 12 cm.

Notably, the bronze objects and coins (treated in the following sub-chapter) were found exclusively in the western part of the excavation area while iron objects were found in both parts. The concentration of bronze objects in the western part might argue, as does the archaeological evidence, that this area served a more domestic purpose than the eastern area. Since most installations and spaces unearthed in the western excavation area date to the early Umayyad period (see Chapter 2), while the industrial complexes excavated in the eastern part date exclusively to the late Umayyad–Abbasid periods, it may be concluded that any intermingling of the industrial area with traces of domestic activities vanished completely during the Abbasid period.

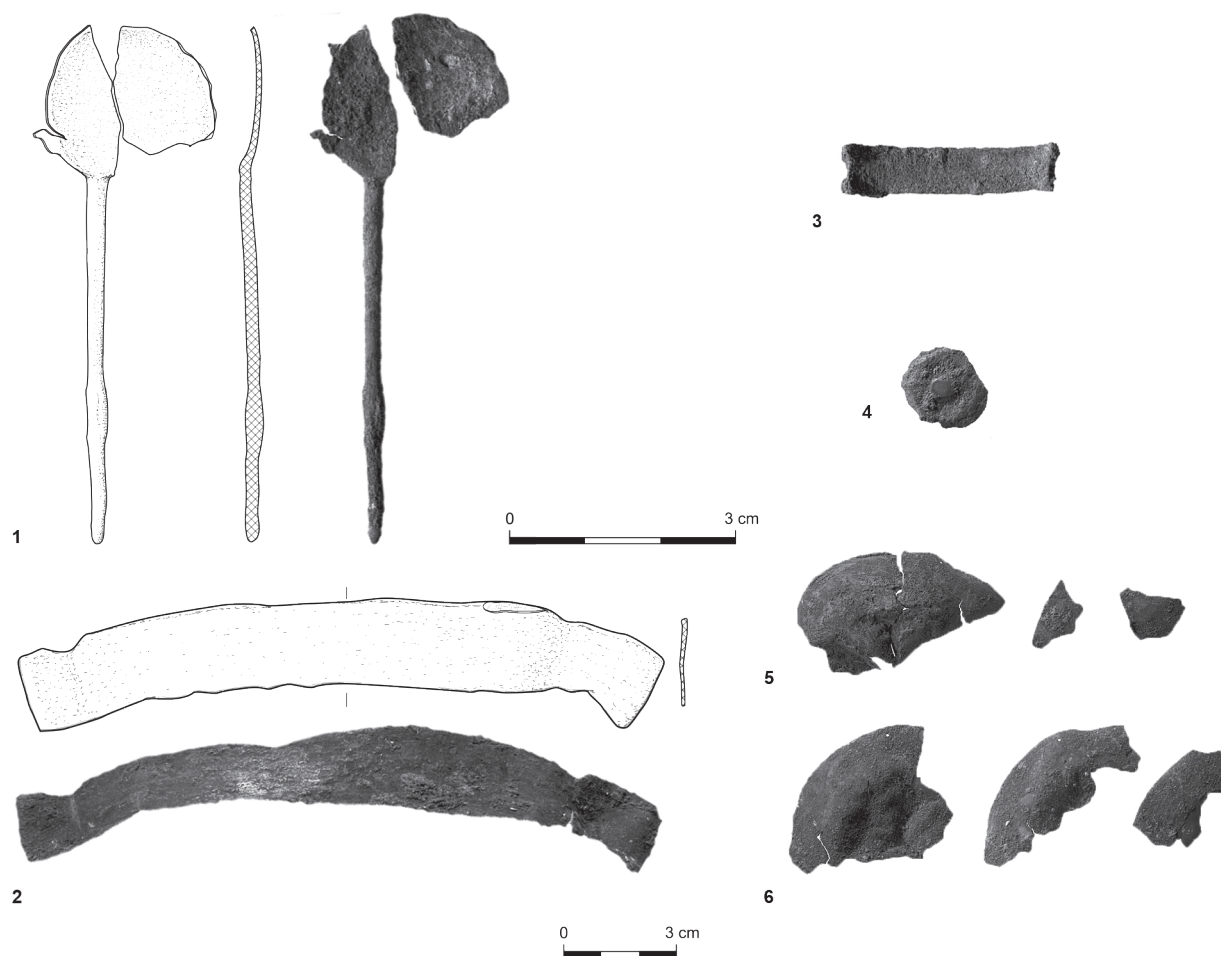


Fig. 5.1.2: Bronze objects.

No.	Locus	Description	Material
1	9287	spoon	bronze
2	9292	bracket	bronze
3	9268	?chain link	bronze
4	9202	nail	bronze
5	9099	scale pan	bronze
6	9256	scale pan	bronze

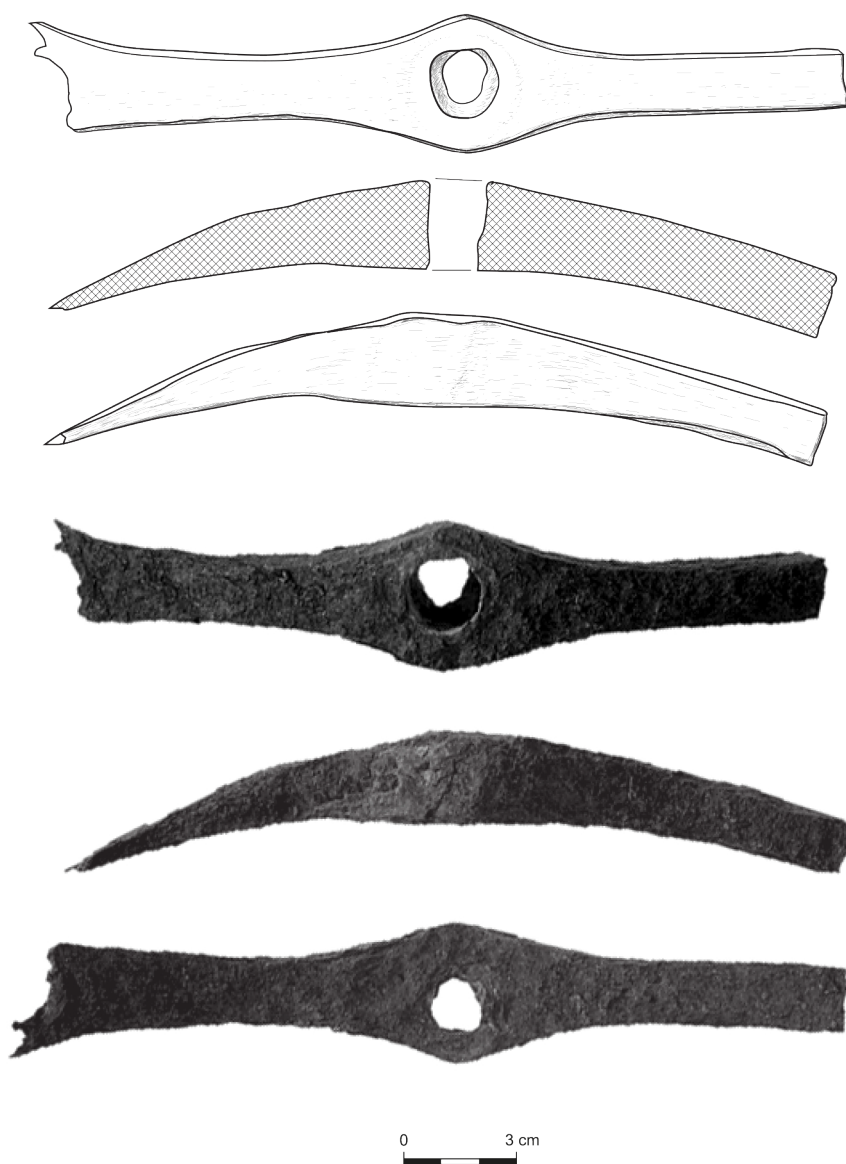


Fig. 5.1.3: Iron working equipment (Locus 10191).

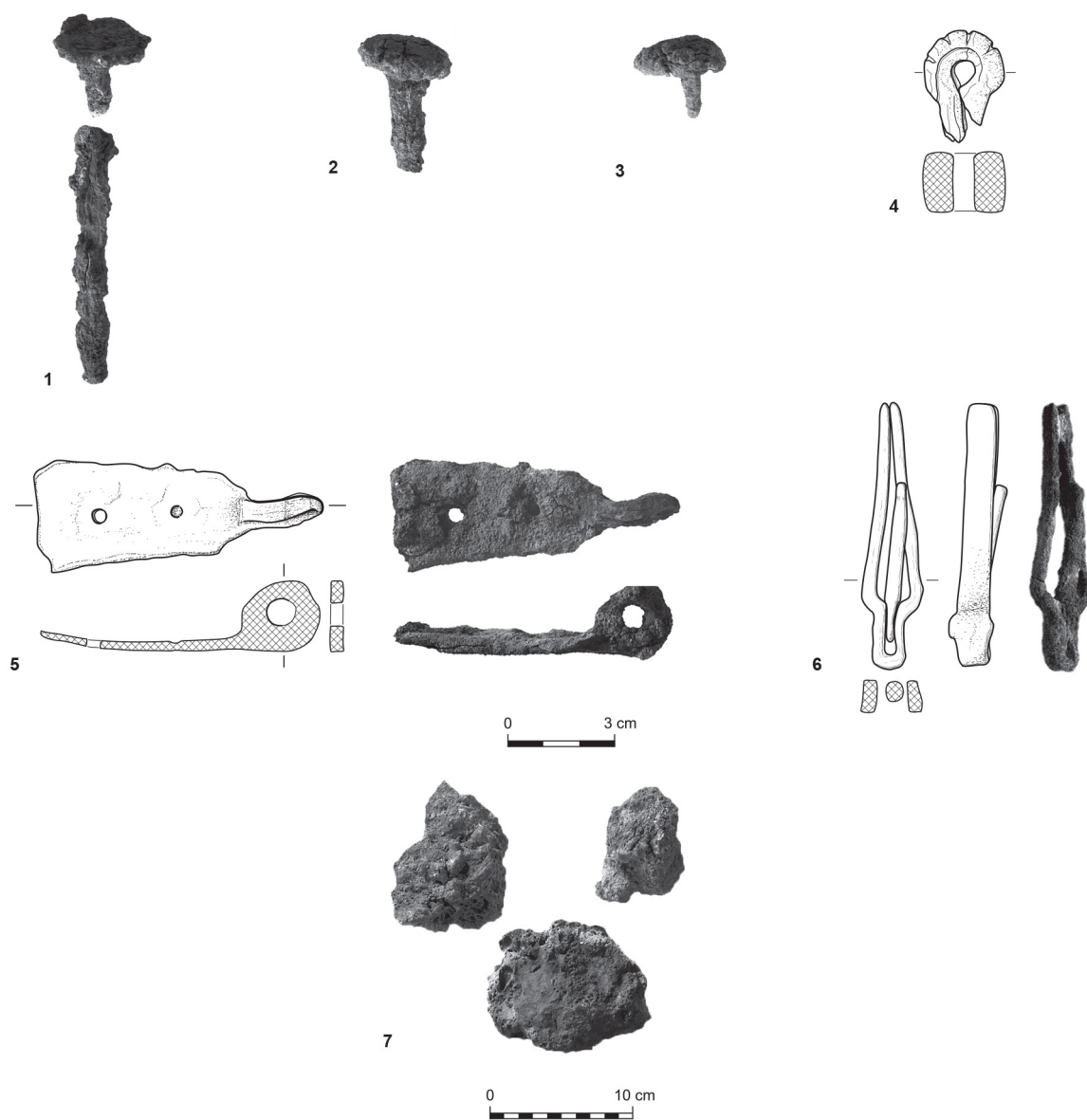


Fig. 5.1.4: Iron fittings.

No.	Locus	Description	Material
1	10030	nail	iron
2	10052	nail	iron
3	9304	nail	iron
4	9286	hinge	iron
5	9189	hinge	iron
6	10134	cramp	iron
7		slag pieces	iron

CHAPTER 5.2

WEIGHTS

Nitzan Amitai-Preiss

Despite the large site of the excavation area of Ramla South only three coins and one bronze weight were found.

THE COINS

The first two coins described below can be identified as Umayyad; the third could not be identified. The Umayyad coins were minted at Dimashq, the capital of the Umayyad caliphate. Coins of Dimashq reached numerous places, including Ramla, the capital of Jund Filastin, where they were found at the excavation north of the White Mosque (Amitai-Preiss 2010: 270, Nos. 12–14).

Coins No. 1 and No. 2 can probably both be dated to ca. 708–718 CE.¹

1. Coin (Fig. 5.2.1: 1) was found in Square A18 in the fill above Cesspit 9204. Dimashq (L9082, Basket 90234, Area M).

Obv.: In center: الله

Marginal inscription: محمد رسول الله

Rev.: ضرب - هذا الفلوس - بدمشق

Walker 1956: 251–252, a crude variation of Nos. 829–834.

AE, 19 mm, 5.35 gr, 5.

2. Coin (Fig. 5.2.1: 2) was found in Square A/B 22 north of double Pool I9051/I9052 in Fill 9268. The latter layer can be assumed to pre-date the pools since it lay below them. Dimashq (L9268, Basket 326, Area M).

Obv.: Within three circles: لا اله الا الله / وحده

Rev.: In the field: بدمشق / هذا الفلوس / ضرب

Outside, two circles broken at top by a six-pointed star and a crescent; between circles marginal legend beginning top 1:

الله [ربي] بسم الله

محمد رسول الله

Walker 1956: 251, a combination of Nos. P. 129 and 832.

AE, 24 mm, 4.4 gr, 7.

3. This coin, (Fig. 5.2.1: 3), was also found in Square A-B 22 in Layer 9306, which lay below Layer 9268. It could not be identified.

AE, 9 mm, 0.86 g.

BRONZE WEIGHT

The bronze weight (Fig. 5.2.1: 4) was found in Square A15 in a modern disturbance cutting through earlier layers. Such small weights were used not only for precious metals but for spices and pigments as well.

The weight (found in L9133, Basket 90400), is round, with a diameter of 8 mm. It weighs 0.69 g. On one of its sides, عمران (*Imrān* or *Umrān*) is written.² It is not clear whether this is a name or a title.

The word *Imrān* also appears on other kinds of bronze weights found in other surveys or excavations. Brick-shaped weights from an excavation at Ramla (Kav Hasnika) were found that carry this word (Amitai-Preiss forthcoming) (these are *dirham*-weights based on the silver coin's weight). At Caesarea a series of *dinār* weights were found; these are based on the weight of gold coins of the same shape as our small round weight. The series included 1 *dinār* (4.0 g)—1/2 *dinār* (2.04 g); 1/3 *dinār* (1.43 g); 1/6 *dinār* (0.62 g); 1/12 *dinār* (0.35 g) and 1/24 *dinār* (0.16 g). All of these weights except for the 1 *dinār* and the 1/6 *dinār* carry the word *Imrān*. (Holland 2009: 48, Nos. 154–159 respectively). It seems that the weight from Ramla South is 1/6 of a *dinār*, albeit a bit heavier than the above-mentioned weight from Caesarea, which lost weight in cleaning.

¹ Dating according to Bone 2000 for these coins is ca. 90. A.H. / ca. 708–718 CE (Bone 2000: 375, No. 7 1a.

² The first, letter, `Ain, does not appear on this weight; due to its small size, that letter is off the flan.



Figure 5.2.1: Coins and a weight.

<i>No.</i>	<i>Locus</i>	<i>Description</i>	<i>Material</i>
1	9082	coin	Bronze
2	9268	coin	Bronze
3	9306	coin	Bronze
4	9133	weight	Bronze

CHAPTER 6

STONE ARTIFACTS

Elisabeth Yehuda

The stone artifacts discovered during this excavation at Ramla South can roughly be divided into three groups: stone vessels, stone tools and architectural elements. Most of the stone objects are made of basalt, marble, tuff or limestone. Pieces of greenish-black porphyry and red granite from Egypt are examples of imported stones.

Only two items could be identified as jewelry.

JEWELRY

The first item is a fragment of a small stone medallion made of black basalt (Fig. 6.1: 1). The medallion was circular, with both flat sides polished and the edges carefully rounded. Its diameter can be reconstructed at approximately 2.5 cm. It may be assumed that the upper part of the medallion, which is missing, had a hole through which it could be threaded.

The second piece is a small, egg-shaped bead made of amethyst (Fig. 6.1: 2), with short grooves running diagonal to the central axis.

STONE VESSELS

Four stone vessels were discovered. The first (Fig. 6.2: 1) is a basalt mortarium, or metate, whose interior shows signs of grinding. It originally possessed three knob-shaped legs, arranged triangularly close to the simple, pointed rim.

The second vessel (Fig. 6.2: 2) is a small crater made of white, coarse-grained marble. The walls of this 12-cm-high vessel are straight, with a maximum thickness of 3 cm, while the base is slightly thinner, measuring 2 cm. The rim is straight in section, with a tendril or calyx pattern flanking a nozzle-shaped protrusion. It can be assumed that two such nozzle-shaped protrusions, facing each other, would be found on an intact vessel. The outside of the vessel is decorated with a tripartite rope interwoven in repeating patterns imitating wickerwork.

Interlacing decoration appears in simple geometric forms as early as the Late Roman period, as can be seen on the decoration of the synagogues of Capernaum, Eshtamoa and Kfar Kanaf (Avi-Yonah 1981: 7111–7112, Figs. 31, 32). Byzantine churches, such as the one at Baikat Abu Hadbe, feature the same motif in the decoration of their lintels (Avi-Yonah 1981: 101, Fig. 15). More elaborate forms of interlacing decoration are known from Early and Late Islamic architectural contexts, where the decorations are complex, recurrent patterns. A contemporary Early Islamic example is the window tracery found at the palace at Kh. al-Mafjar, bearing the same tripartite interlaced design as our vessel (Grabar 1967: 196; Sourdel 1968: 339, Fig. 123). A similar decorative style can be found on stone carvings from excavations next to the Temple Mount, which show the same interlacing carved with a moil chisel (Rosen-Ayalon 1996: 402). A limestone fragment from the chancel screen of the church on Mount Berenice bears a similar design (Hirschfeld 2004: 224, Fig. App. 1.1: 2). Although the piece in question was retrieved from the debris dating to the last stage of the church during the Crusader period, stylistic considerations reasonably date it to the Early Islamic period.

The third vessel (Fig. 6.2: 3) is a conical mortarium made of basalt with steep, thick walls measuring between 3.5 and 4 cm high. The rim is simple and slightly flattened. A groove 0.5 cm wide appears on the outside of the vessel 2 cm below the rim.

The fourth vessel is a cup with slanting walls and simple rim 12.0 cm high, 8.0 cm in diameter at the bottom with a rim diameter of 13.5 cm (Fig. 6.2: 4). The vessel is made of whitish limestone. The outer surface is decorated with vertical, grooves approximately 1 cm wide with a slight diagonal twist. These grooves are also decorated with small, horizontal chisel cuts. A number of similar vessels was found at Ramat Rahel and dated to the Roman period (R. Reich in *Ramat Rahel III*, forthcoming).

STONE TOOLS

GRINDING TOOLS

A number of grinding tools were found at the excavation site. The majority are fragments of metates—flat or slightly concave stone slabs used in conjunction with *manos* (hand stones) for grinding grains, nuts or pigments into powder or paste.

None of the metates found is more than a raw basalt stone roughly worked to serve its purpose. The metate found in Square B11 (Fig. 6.3: 1) is a slightly concave stone plate both of whose surfaces show traces of smoothing. The fragment measures 4.5 cm at its thickest part and 2.7 cm at its thinnest.

The *manos* unearthed in the excavation have a rough appearance, irregular and mostly oval or



Figure 6.1: Jewelry.

No.	Locus	Description	Material
1	9270	stone medaillon	basalt
2	10219	bead	amethyst

rectangular in shape. Most are fist-sized or slightly larger and are made of basalt. One exemplar was made of limestone.

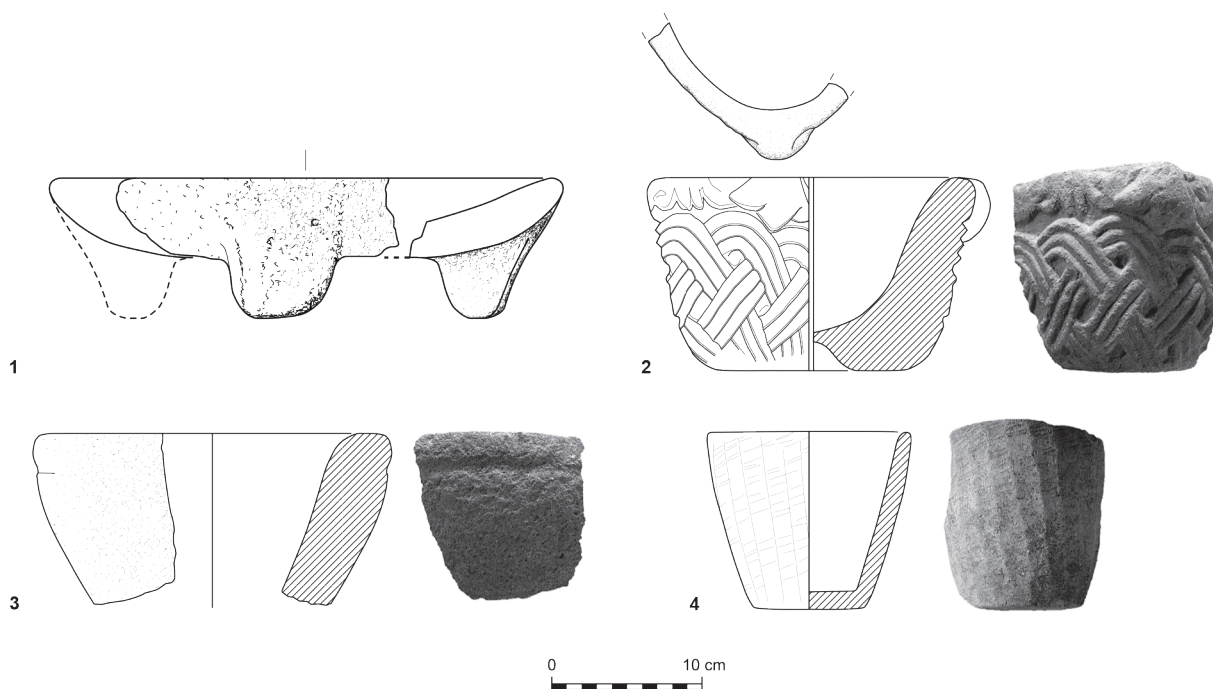


Figure 6.2: Stone vessels.

No.	Locus	Description	Material
1	10127	mortarium	basalt
2	10116	crater	marble
3	9270	mortarium	basalt
4	9222	cup	limestone

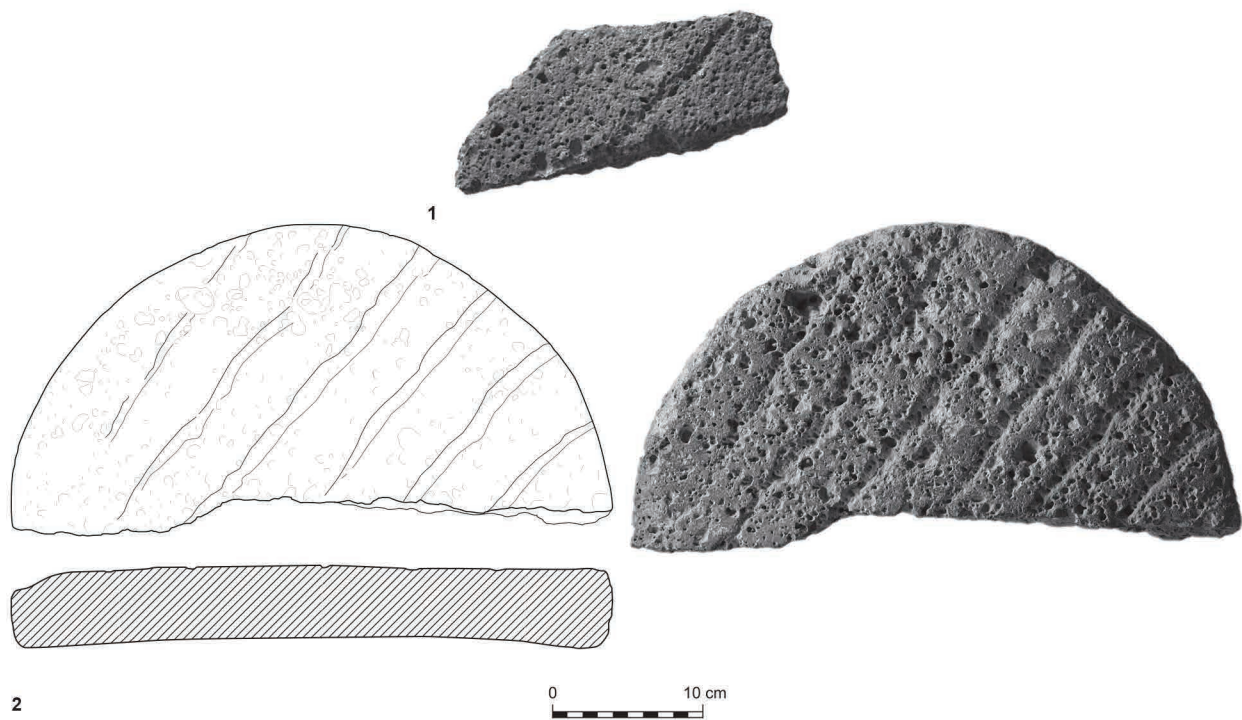


Figure 6.3: Grinding tools.

No.	Locus	Description	Material
1	9220	metate	basalt
2	9276	grindstone	basalt

The fragment of a circular grinding stone or small millstone made of basalt was found on Floor 9276 in Square A25 (Fig. 6.3: 2). It is 5 cm high and 42 cm in diameter. One side of this tool is flat and shows traces of wear. Diagonal rills were grooved into the other side at a regular distance of ca. 4.5 cm. Striations similar in style carved into stone grinding surfaces can also be observed on upper and lower stones of Olynthus mills (see below).

Most of the grinding tools were found in the fills above installations and floors in the western area of the excavation site. Only two grinding stones were found on the surface—on Floor 9069. Other grinding tools were found below the earliest floor levels, assigning those tools to the formation and development of the site rather than to its decay.

Taking into account the identification of the site as industrial area it seems logical to assume that the

grinding tools were not used in a domestic context for grinding grain or nuts, but rather that they ground substances used in industrial processes such as dyeing.

SCRAPING STONES

Two scraping stones made of scoria were found, both with a flat-to-oval shape. One is 1.5 cm high and 6.0 cm in diameter (Fig. 6.4: 1) and the other is 4.0 cm high, 10.5 cm long and 7.0 cm wide (Fig. 6.4: 2).

Stone tools made of scoria were used for smoothing and manipulating the surfaces of soft materials such as leather, wood or fabrics.

UPPER STONES OF OLYNTHUS MILLS

Fragments of upper stones of two lever-operated Olynthus mills were found built into W9162 in the western part of the excavation area. Both

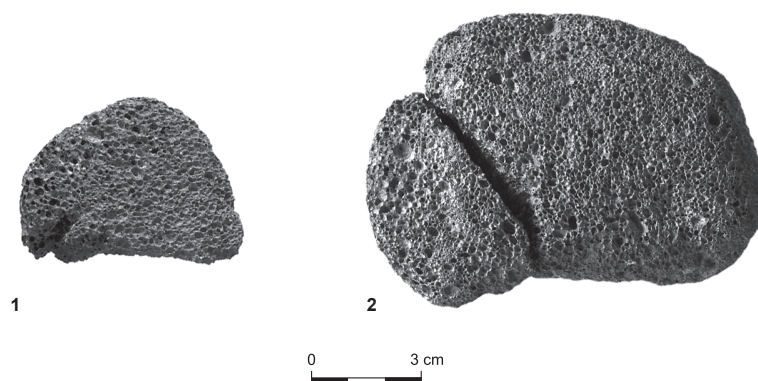


Figure 6.4: Scraping stones.

No.	Locus	Description	Material
1	10052	scraping stone	scoria
2	9016	scraping stone	scoria

fragments are made of basalt and are rectangular. They belong to Type I (after Frankel 2003: 8–9). The lower side of the larger fragment, which measures $46.0 \times 19.5 \times 13.0$ cm (Fig. 6.5), was engraved with a pattern of parallel but slightly irregular striations measuring 0.5 cm. The smaller fragment measured $34 \times 14 \times 10$ cm (Fig. 6.6). Its lower side features a pattern similar to that of the larger fragment, but the striation is finer and the single grooves are thinner and more irregular. The striation pattern on both stones has no direct parallels but can be compared to millstones found at Delos, Masada, Ramat Hanadiv and Kh. es-Suyyagh (Frankel 2003: 10, Fig. 8a, b; Taxel 2009: 152, 153, Fig. 5.1: 8, 9). The pattern on our stones is not typical of local patterns, which have fan-like, concentric, semicircular striations together with parallel striations.

The Olynthus mill reached Israel during the first century BCE and was replaced by the rotary hand mill in the Byzantine period (Frankel 2003: 18). Thus, it can be assumed that the fragments of Olynthus mills found at the excavation site belonged to the Roman or Byzantine period. The archaeological context of our two fragments—in secondary use in a wall dating to the Umayyad period—points to the Byzantine period as the *terminus ante quem*.

MILLSTONES

A millstone made of limestone was found in the Roman Pit 10134/10135 in the easternmost area of the excavation (see Fig. 2.1, Chapter 2). The pottery unearthed in this pit dates without exception to the Roman period and thus marks the *terminus ante quem* for the manufacturing of the millstone. The millstone measures 62 cm in diameter and 24 cm thick. The central hole tapers from a width of 5.5 cm on both ends to a width of 3.0 cm in the middle.

UNIDENTIFIED STONE TOOL

An ellipsoid tool was found in Square A32 (Fig. 6.7). Made of red Egyptian granite, the tool has a diameter of 11.5 cm, a maximum thickness of 4.5 cm and tapers slightly toward the edge. The middle is perforated by a hole measuring 1.5 cm in diameter. A protrusion with a diameter of 2.5 cm had been cut down around the hole to match the general height of the stone. While its surface was carefully polished, the edges show signs of abrasion attesting to the repeated rolling of the stone around its axis. From the location of the abrasion it can be assumed that this tool was set onto a shaft and held in place by two smaller weights or stones.



Figure 6.5: Upper stone of Olynthus mill (Locus 9162).

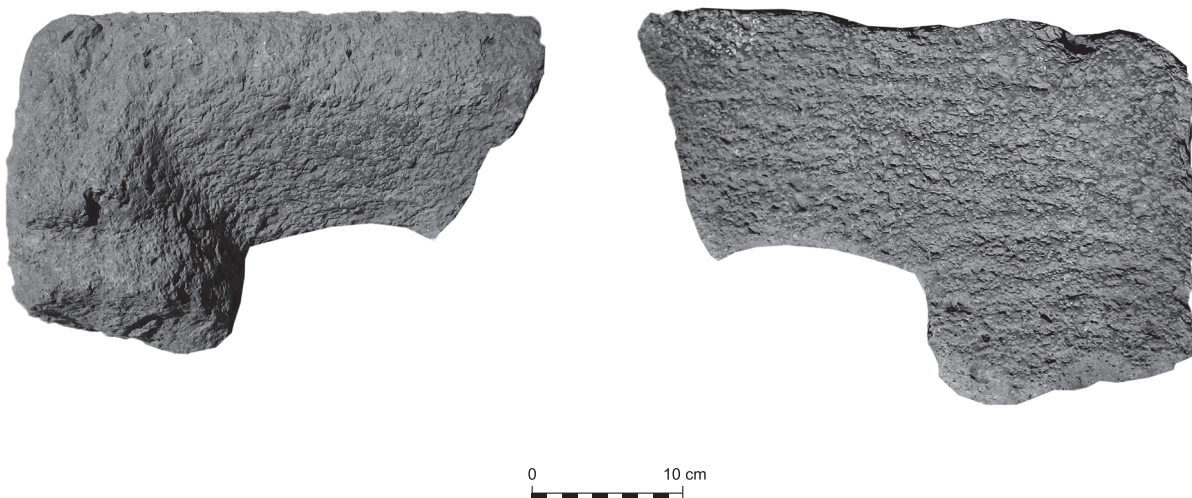


Figure 6.6: Upper stone Olynthus ill (Locus 9162).

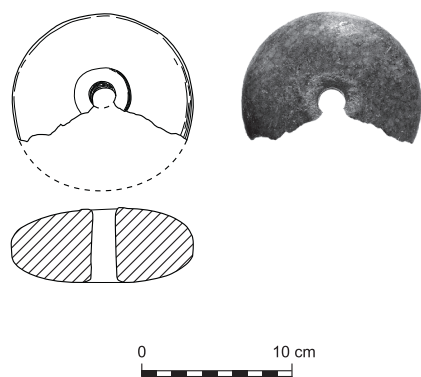


Figure 6.7: Unidentified stone tool (surface find).

ARCHITECTURAL FINDS

The group of architectural elements found during this excavation consists mainly of slabs of marble, dressed marble fragments, pillars—regular pillars as well as a window or balustrade pillar—and a column base or capital.

MARBLE AND LIMESTONE SLABS

Most of these slabs, which were all fragmentary, were found concentrated in the eastern part of the excavation in Squares A–B 34–37 and no further west at the site than Squares A–B15. With the exception of the fragments in secondary use as paving stones in Floor 10122 all the other fragments in Square B35 were found deposited in fills above and adjoining the Abbasid-period industrial installations. A single fragment was found below the late Byzantine–early Umayyad Floor 9069.

Two types of marble slabs were found, one thicker than the other. The first type consists of fragments of rectangular slabs 1.5–2.0 thick. The upper half of the narrow edge was carefully smoothed and tapered while the lower part tapered slightly and was only coarsely worked. Eight fragments found in Locus 10040 are made of whitish marble with blue-grayish veins (Fig. 6.8: 1). The distinctive pattern of this type of marble reveals it as an import from Turkey or Italy. The fragments can be pieced together to form a rectangular slab whose edge was at least 42 cm long. These slabs, which were not thick and consequently relatively lightweight, may be assumed

to have been used as panels for walls and podiums.¹ Fragments of similar thickness with tapering sides have been found at the excavation at Opher Park, Ramla (Kletter 2005: 91, Fig. 26: 8). Marble wall panels still *in situ*, with the same thickness as our panels, can be found at the Byzantine bathhouse in Caesarea east of the Hippodrome.

The second type of marble slab is between 3 and 5 cm thick. Floor 10122 (see Fig. 2.45, Chapter 2) was paved with fragments of floor slabs of this type. All of the fragments unearthed in which the original profile-cutting was preserved show tapering. Tapering allowed the stones to be more easily set into mortar bedding, ensuring a smooth joining of all edges. The surface was carefully smoothed while the underside remained rough. It may be assumed that because of their considerable thickness, slabs of the second type were used as floor slabs.

Most of the pieces unearthed were made of whitish marble without grain (Fig. 6.8: 2); two fragments were whitish marble with blue-grayish veins. The two fragments could be pieced together into a rectangular slab 21 cm long (Fig. 6.8: 3). Another fragment (Fig. 6.8: 4) was also reconstructed as rectangular.

While the rectangular shape was the most common, other shapes were also found. One fragment, found in Locus 10030, was triangular, measuring 28 × 22 × 20 cm (Fig. 6.8: 5). The base of the triangle and one of its profiles show the original cutting; the other side was damaged. Two more fragments originating from a large circular stone were made of red limestone (Fig. 6.8: 6). Here again, the surface was carefully smoothed while the underside shows only coarse cutting. The thickness of the fragments measures 4 cm; they can be pieced together into a larger fragment 31 cm long.

Rectangular as well as triangular and round slabs may have been part of a floor composed of stone slabs of different types and shapes similar to an *opus sectile* design. A tangible example of the type of floor to which our stones could have belonged was found in Room E of the House of Cupid and

¹ Marble paneling of the walls of important buildings was common during the Roman and Byzantine periods and was also adopted during the Umayyad period (Rosen-Ayalon 1996: 399–400).

Psyche in Ostia (Packer 1967). Another example of such a floor was unearthed at the northern end of Area C (Hall of Piers) at the Roman baths of Hammat Gader (Solar 1997: 28).

DRESSED STONE FRAGMENTS

Some pieces of dressed stone, of various types including marble, could not be assigned a specific

architectural function. One piece is a small, amorphous marble block. Such fragments may have been cut off of larger stones, such as ashlar or other architectural elements, and reworked for a new purpose.

A large fragment of a discoid stone (Fig. 6.9) was found embedded in secondary use in Floor 9276 (see Figs. 2.14, 2.15, Chapter 2) where it formed part

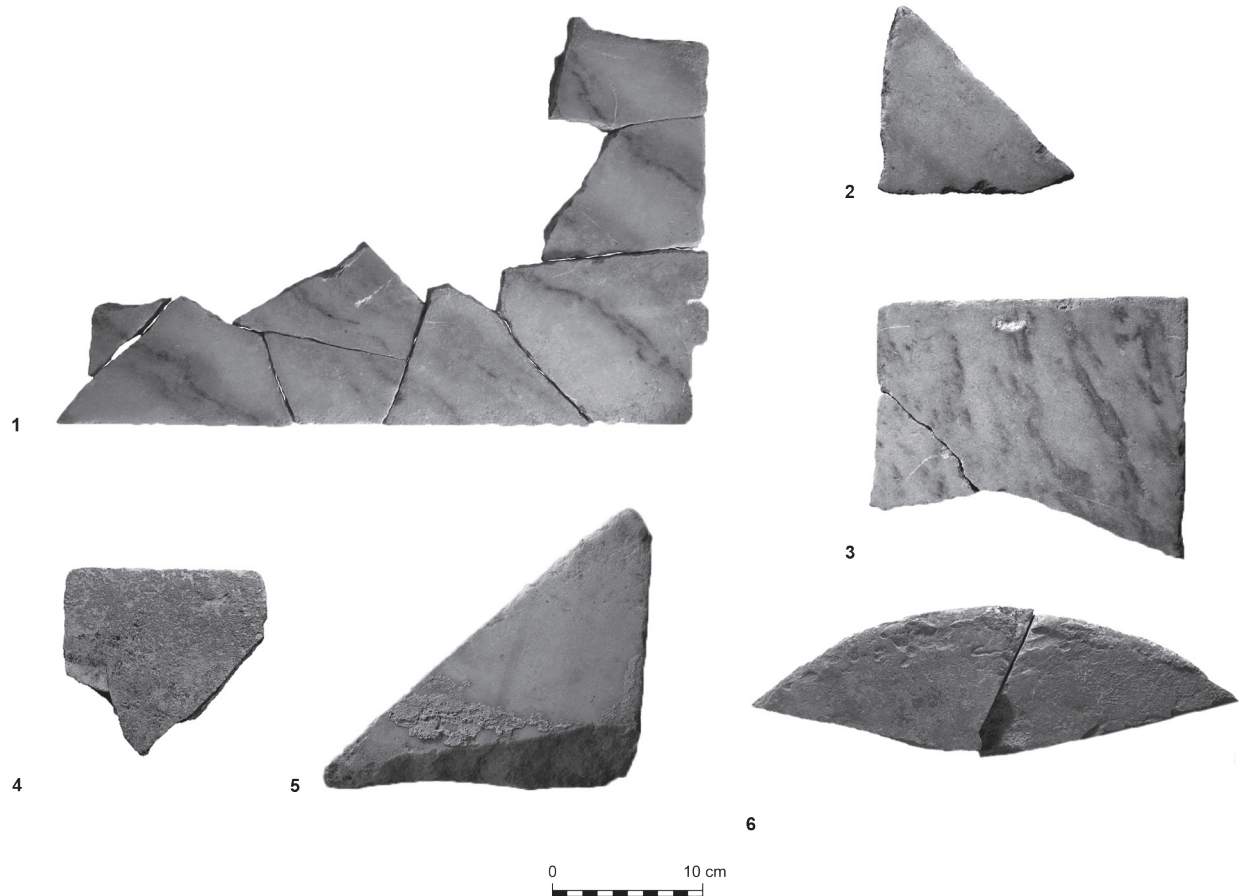


Figure 6.8: Marble and limestone slabs.

No.	Locus	Description	Material
1	10040	eight slabs	marble
2	10040	floor veener	marble
3	10040	floor veener	marble
4	10102	floor veener	marble
5	10030	floor veener	marble
6	9220	floor veener	red limestone

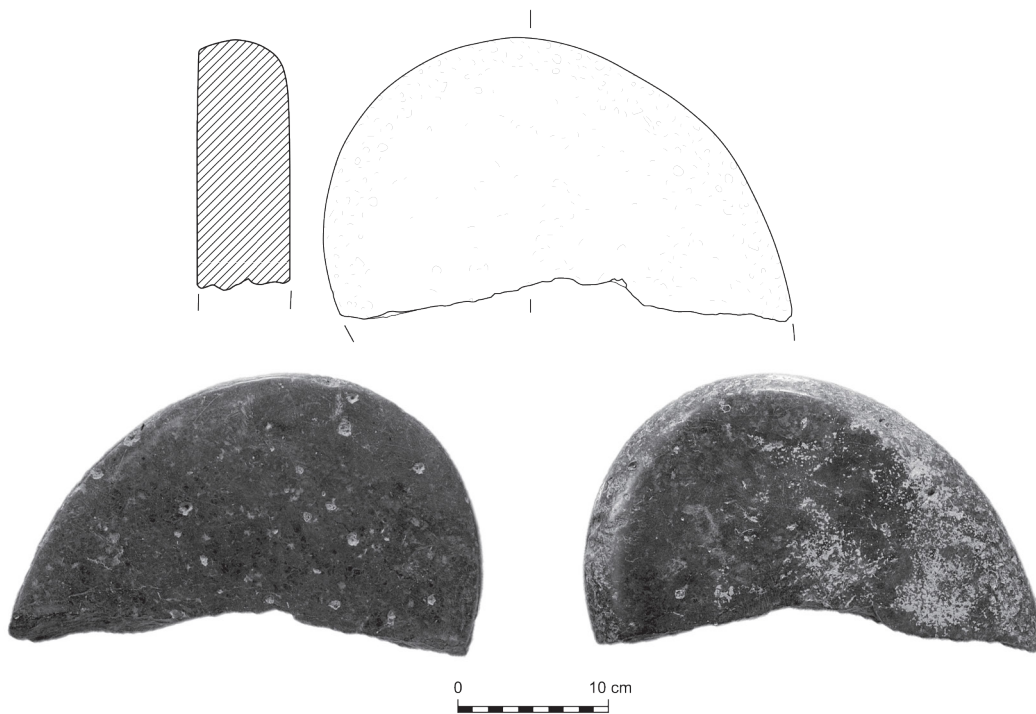


Figure 6.9: Dressed stone fragment (Locus 9276).

of the paving. The material is Egyptian greenish-black porphyry. The stone fragment measures $31.3 \times 17.0 \times 4.0$ cm. Both sides are carefully finished and polished. One side is flat while the other one is slightly rounded at the edges. Since both sides of this stone were finely worked, it can be ruled out that this piece was originally intended to serve as pavement and its function remains uncertain for now.

PILLARS

One pillar was discovered in secondary use integrated into the eastern wall bordering the space between Pools 10061 and 10151 (see Fig. 2.40, Chapter 2). The pillar is made of plain white marble and measures 0.25 m in diameter and 1.02 m long. The *torus* of the base is 0.28 m in diameter.

A Tuscan limestone capital was found in Square A8 in Fill 9169 above Floor 9288 (Fig. 6.10). The diameter of the *abacus* measures 0.42 m, the *collarino* measures 0.29 m and the height is 0.41 m. The column head shows traces of reworking with coarse chiseling.



Figure 6.10: Tuscan capital (Locus 9169).

A window or balustrade pillar made of marble was unearthed in the fill above Pool 10177 and *Tabuns* 10208 and 10207 (Fig. 6.11). It measured 0.27 m long and 7.00 cm in diameter. The section of the shaft shows that it is basically circular; however, one side is oblate, perhaps because the pillar was once set against a wall. The column head is rectangular with a slightly trapezoid section. The four sides are decorated with two convergent lines engraved with a moil chisel. A similarly decorated element, albeit of limestone, was found during the excavation at Opher Park in Ramla (Kletter 2005: Fig. 25: 3). The excavator reconstructed this element as carrying a cross and believed it had originated in nearby Lod. Fragments of similarly small pillar shafts were discovered during the excavation at Opher Park and the near the trace of Highway 431 and identified as originating from an altar canopy (Tal and Taxel 2008: 185) or a window (Kletter 2005: 91, Fig. 25: 4).

DISCUSSION

The large quantity of architectural elements unearthed in the excavation, as well as the marble of most of them were made, are incompatible with the nature of an industrial area. Additionally, many

elements were found in secondary use—built into pool complexes and cisterns—while others even show traces of reprocessing. Generally, it can be stated that during the first centuries of Muslim rule it was common to incorporate architectural elements deriving from earlier buildings (Rosen-Ayalon 1996: 397–398).

The excavators of the 2005–2006 Seasons at Ramla South ascribed the extensive presence of such architectural elements to the late Byzantine–early Umayyad period from which many remains were unearthed during those seasons (Tal and Taxel 2008: 47–80). The excavators proposed two explanations: Either the marble fragments were brought from nearby Lod (Kletter 2005: 91; Tal and Taxel 2008: 196) or they may have originated from a church from the late Byzantine–early Umayyad settlement that was dismantled in to make way for the industrial complex (Tal and Taxel 2008: 193).²

A closer look at the architectural finds reveals that many of them are of fine workmanship and thus suitable for an important building such as a church. The excavation of the church at Shavei Zion, a rural area during the Byzantine period revealed late 5th-century walls decorated with marble tiles as well as cut and polished colored stones such as green granite, red porphyry and white marble. Fine glass mosaics were also used as wall decoration (Prausnitz 1967: 18).

Concerning the distribution of building materials in secondary use it may be concluded that the most decorative elements, highly ornate and undamaged stones were reserved for important public buildings (Harrell, Lazzarini and Bruno 2002), while broken and more simply decorated stones were also reused in domestic buildings (Palmyra <http://www.pcma.uw.edu.pl/index.php?id=83&L=0>). In spatial terms, find-spots indicate that the site closest to the place of origin of reusable architectural elements was most likely to enjoy most of the available building material. The report of Kaplan's excavation at the White Mosque in Ramla reveals that numerous marble fragments

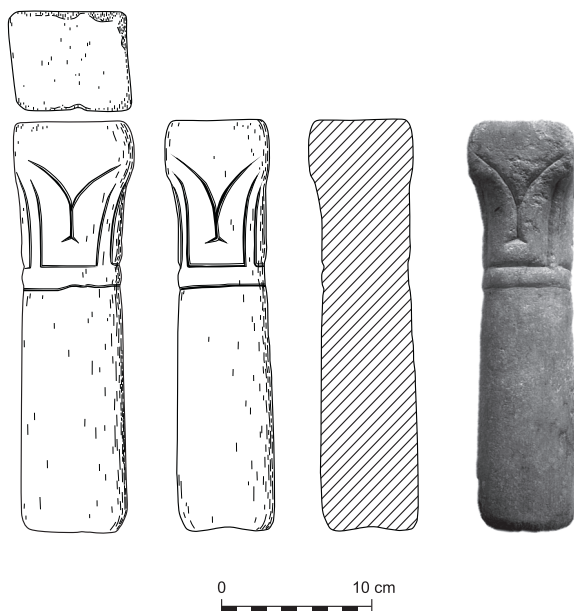


Figure 6.11: Window or balustrade pillar (Locus 10052).

² The baptismal basin found upside down in a pool used as refuse pit (Gorzalczany and 'Ad 2010) would support such an assumption.

were used in the rubble filling of walls, piers and vaults (Kaplan 1959: 107). Although it must be stated that those marble fragments should be considered demolition waste rather than valuable construction elements, their abundance still attests to the existence of ruins of earlier periods in close proximity to the mosque. The description of Nâsir-i-Khusrau, who visited Ramla in 1047, can be interpreted as more evidence for their distribution: “In the city of Ramla there is marble in plenty, and most of the buildings and private houses are of this material; and, further, the surface thereof they do most beautifully sculpture and ornament.... The marbles that I saw here were of all colours, some variegated, some green, red, black, and white” (N.Kh., 21, in Le Strange 1890: 307).

However if the social importance of a nearby site was very low (e.g., an industrial area or a farm) it would most likely have been skipped in the distribution of valuable architectural elements, since none would have been needed in an area where people exclusively worked.

A discovery made during the 2006 season of excavations at Ramla South might shed light at the origin of the reused architectural elements found at the industrial area of Ramla. During excavations conducted in 2006 alongside the future Highway 431 (Gorzalczany and Spivak 2008) a bell-shaped pit (Locus 303) was discovered filled entirely with discarded high-quality mosaic stones. Many of them were white but some were also retrieved made of black, blue, red and yellow stone as well as green and yellow glass. The material and colors of these mosaic stones suggests that the floor they once formed was originally installed in an important building.

Since our floor was completely removed it may be assumed that either it was in the way of the Early Islamic building activities or was it was removed due to a depiction offensive to Muslims.

In the first case, since the mosaic stones were discarded in an Early Islamic pit after it went out of its original use, it can be speculated that the dismantled building to which the mosaic floor belonged might have been contemporaneous with the early stages of the Early Islamic industrial area.

As for the idea that the floor was removed due to an offending depiction, examples of iconoclasm

from the period reveal that in some cases, like the churches of Ayn al-Kanisa or Ma'in, the floor was left intact and only the stones forming the eyes or heads of animals were removed (Schick 1998: 87). However, such delicate manipulations were only carried out on floors of buildings intended for continued use. The discarding of the mosaic stones in a pit indicates either temporary storage of the tesserae with the intent to reuse them (for example for paving the surface of a working floor) or intentional disposal to ensure that stones were not reused.

If the floor was not removed on purpose, the function of the building to which it belonged can only be vaguely said to have been an important one, either public or private, and as far as dating is concerned, that the Early Islamic period is its *terminus ante quem*.

If we assume that the floor was intentionally destroyed, we must also assume that it must have been of such an offensive nature that the builders of the Early Islamic industrial complex literally buried it in a waste pit. Such an offensive floor could not have been part of either an Early Islamic building or a Byzantine church. Rather, such a floor could only have been part of a secular building dating to the Roman or Early Byzantine period, such as a *villa rustica*.

Equipped with such considerations based on archaeological evidence, we may now turn to the textual evidence dealing with the foundation of Ramla and of the area prior to its foundation.

Prior to the founding of Ramla, no city is mentioned in early texts as being situated close to Lod (Luz 1997: 28–29). Concerning smaller settlements, research on the hinterland of Lod has shown that archaeological remains of Christian settlements dating to the Byzantine period have been found mainly north of Lod where they were concentrated in the vicinity of Christian pilgrimage roads leading to holy sites in Palestine such as Jaffa, Shechem and Jerusalem (Schwartz 1991: 129; Gophna and Beit-Arieh 1997).

Furthermore, Arabic sources dating from the 9th to the 16th centuries state explicitly that Ramla was founded on sand (Yâk, ii. 817, in Le Strange 1890: 307–308; Bil 143, in Le Strange 1890: 304). There is no mention of a settlement or ruins thereof

that needed to give way to the construction of the new Umayyad capital during Caliph Sulaymān's reign. On the contrary, the impression emerges that the land on which future construction was to take place was empty.

Thus, it seems that the building material for the newly founded Ramla was not obtained from the ruins of Byzantine Christian settlements on its future site. Here the Arab sources again reveal valuable information. Balādhurī, writing in Ramla in the 9th century, says that the inhabitants of Lydda "...were removed hither and Lydda fell into ruins."

(Yb, 116, in Le Strange 1890: 303), making it an ideal place to obtain building materials. Yâkût also states that the erection of Ramla "...was the cause of the ruin of the city of Ludd (and of the church there)." (Yâk, ii. 817, in Le Strange 1890: 307–308).

It seems thus reasonable to assume that the building materials were brought to Ramla from nearby Lod, i.e., from the north. As the materials were transported southward through the city, they were put into use on the way. Thus, what reached the industrial area were only the broken and simpler pieces.

CHAPTER 7

FUNCTIONAL ANALYSIS

Elisabeth Yehuda

The Early Islamic industrial area at Ramla South is definitely not the most suitable subject for household studies. We need not and cannot define the function of the rooms within its various complexes by examining the distribution of vessel types, since it is clear that most of the excavated area was used for industrial processes. Nevertheless, there is a distinction between the western excavation area (Squares A–B 5–17) and the eastern excavation area (Squares A–B 18–38). Industrial features such as pools and drainage channels were found exclusively in the eastern area while the western area was devoid of such industrial installations and featured instead variously oriented walls (see Chapter 2 pp. 2, 4–8). A preliminary conclusion that can be drawn is that during the Umayyad period the western excavation area constituted the fringe of a dwelling quarter of the city and the undeveloped area east of it was gradually transformed into the southern industrial area. Such a growth process could have resulted in earlier, Umayyad industrial complexes, such as the one south of the White Mosque (Luz 1997: 34–35) becoming part of the expanding Abbasid city while a new industrial center, the one excavated at Ramla South, was established in the undeveloped area south of medieval Ramla.

In order to reveal the nature of the production process in the eastern area and distribution of functions in the western area it is important to examine the pottery assemblages preserved on the floors excavated in the western part and compare them to those excavated in the eastern part.

Before doing so it must be stressed that different vessel types attest to different activities within spatially defined contexts. Some vessel types can be assigned a variety of functions according to the context in which they were found. In fact, a multitude of functions may be assigned to vessels depending on their form, material and find-spot. For example, coarse bowls, basins and jugs can attest to a variety

of functions and thus we expect to find them in a broad variety of spatial contexts. A specific function of such coarse vessel types can only be determined when the find context is identified.

Some vessel types evince mono-functionality. For example, decorated and glazed bowls and decorated table jugs are highly likely to have been used exclusively for food serving or consumption; thus they would be expected to be found exclusively in a domestic context. In terms of the vessel identifying the context—decorated vessels would also indicate personal or household belongings and thus a domestic nature of the context in which they were found. In a domestic context, four basic groups of activities represented by different vessel types can be established.¹

- Food processing, indicated by frying pans and cooking-pots.
- Food serving/food consumption, indicated by bowls, dishes and plates.
- Beverage consumption or temporary storage, indicated by table jugs, jugs or jars.
- Long-term storage, indicated by storage jars.

Plain vessels were once believed to be significant indicators of food consumption and serving. However, in an industrial context, they could indicate other uses, for example, the preparation and mixing of solid and liquid ingredients used in chemical processes. Consequentially, in an industrial context, the following vessel types could represent the following activities:

- Preparation of mixtures and solutions indicated by coarse, plain bowls, basins and craters.
- Boiling of mixtures indicated by cooking-pots and casseroles.

¹ A slightly different version of the functional definition of pottery types is presented by Putzey *et al.* (2004: 42). Nevet presents another pottery classification based on material, shape and decoration (Nevett 1999: 51).

- Long-term storage indicated by jars and storage jars.
- Food serving/food consumption indicated by decorated vessels (bowls, jugs and jars).

Accordingly it is not the presence or absence of vessels considered domestic, such as casseroles or cooking-pots, that would indicate whether an area was domestic or industrial, but rather the presence or absence of decorated vessels.

Since the eastern area was identified by means of its installations as industrial, a comparison of the pottery from the eastern and the western area should reveal similarities between them—which would indicate that the western area was also industrial—or differences—which would indicate that the western area was used domestically.

The first comparison between the two areas was made for the purpose of revealing the composition of the general assemblages from the western and the eastern areas; i.e., all basic vessel types were compared without dividing them in sub-groups (such as decorated and undecorated vessels or imported and locally produced vessels). Table 1 reveals that the pottery assemblages from both areas show only somewhat of a similarity. Vessel types such as lids/stoppers, cups and jugs are represented in similar proportions differing by not more than 5%. Greater differences in other vessel types such as storage jars, bowls and basins, cooking-pots, jars and frying pans appeared in each assemblage. The percentage of storage jars

and frying pans is higher in the eastern area while the number of bowls/basins and cooking-pots is higher in the western area.

Next, several vessel types were divided into sub-groups. Bowls were divided into sub-groups of decorated and plain unglazed bowls and the same was done with jugs. These sub-groups were then compared to each other (Table 2). The graph shows similar proportion of decorated bowls and plain unglazed bowls in both areas. However, differences between the proportions of decorated bowls and plain unglazed bowls are more distinctive in the western area than in the eastern area. Table jugs and decorated jugs were present in clearly higher percentages in the western area than in the eastern area, while plain jugs appeared only in the eastern area.

Comparing coarse wares against table wares in both areas—including not only decorated bowls and decorated jugs but also small vessels such as flasks, juglets and cups (Table 3)—the difference between the eastern and the western areas becomes more pronounced. In the western area the proportion of table wares within the overall assemblage is higher than in the eastern area.

Focusing on the restorable vessels only, the following can be observed. The proportion of restorable vessels in the general assemblage is considerably higher in the western area than in the eastern area (Table 4). Looking at the composition of the restorable vessels in both areas (Table 5)

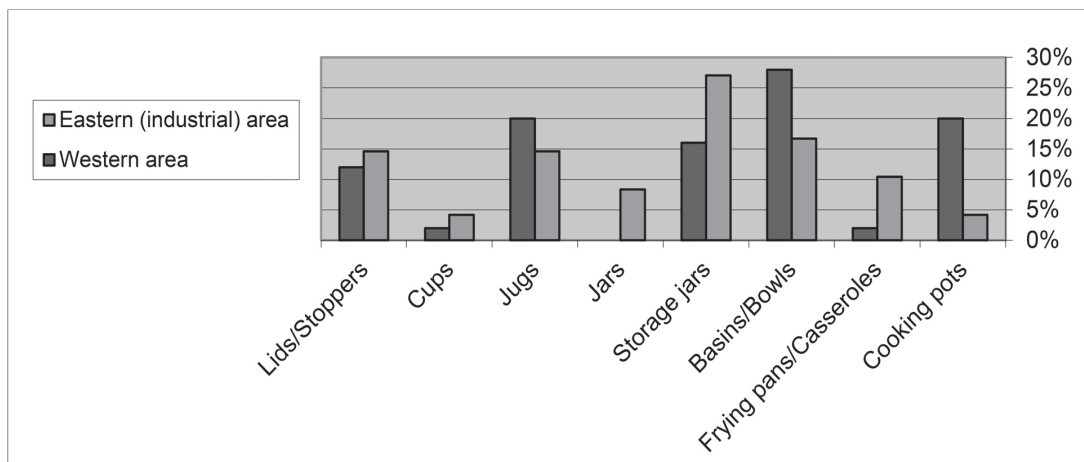


Table 1: Composition of general assemblages in the Eastern and Western areas.

in the western area the three dominant vessel types are table jugs followed by cooking-pots and storage jars, while in the eastern industrial area, only two vessel types are dominant: storage jars and stoppers for storage jars. Table 5 shows a sharp distinction between the two large groups and all other—remarkably smaller—groups in the eastern industrial area. In contrast, in the western area a gradual differentiation between the largest, medium-size and smallest groups may be observed. The differences in the composition of the restorable vessels in both areas points to an intensive use of certain vessel types in the eastern area and suggests use of a greater variety of vessels in the western area.

Narrowing the focus to single assemblages found on diverse surfaces, only a limited number of find-spots come into consideration. The largest assemblage excavated on a floor was found in the complex located between Squares A–B 15–17, where the largest number of restorable and semi-restorable vessels was found on Floor 9069. The assemblage contained five cooking-pots, two casseroles, two storage jars, one jug and one lid. Interestingly, no fine ware or decorated pottery was retrieved from the assemblage; furthermore, most vessels were made of coarse cooking-pot material and were produced in the kilns nearby (see Chapter 2, Stratigraphy and Chapter 3, Pottery). Although this relatively large quantity of restorable vessels was found alongside

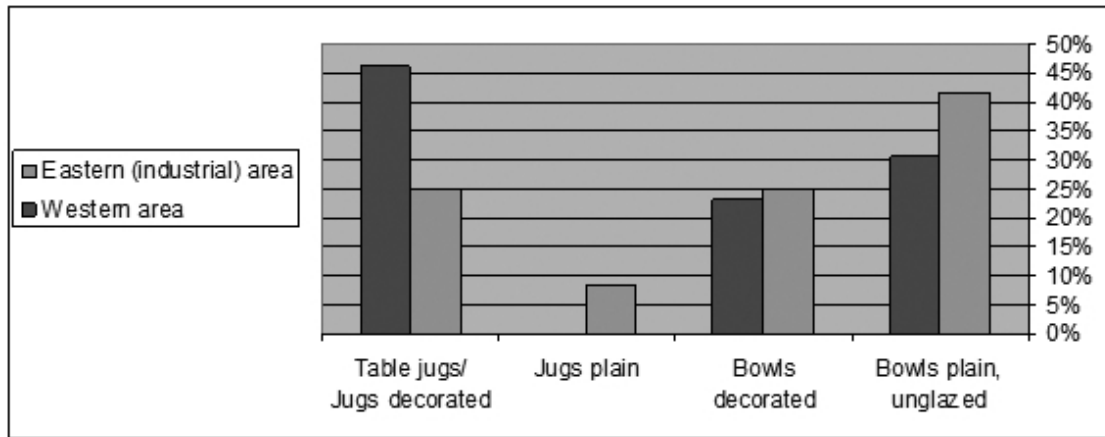


Table 2: Comparison of selected vessel types from the Eastern and Western area.

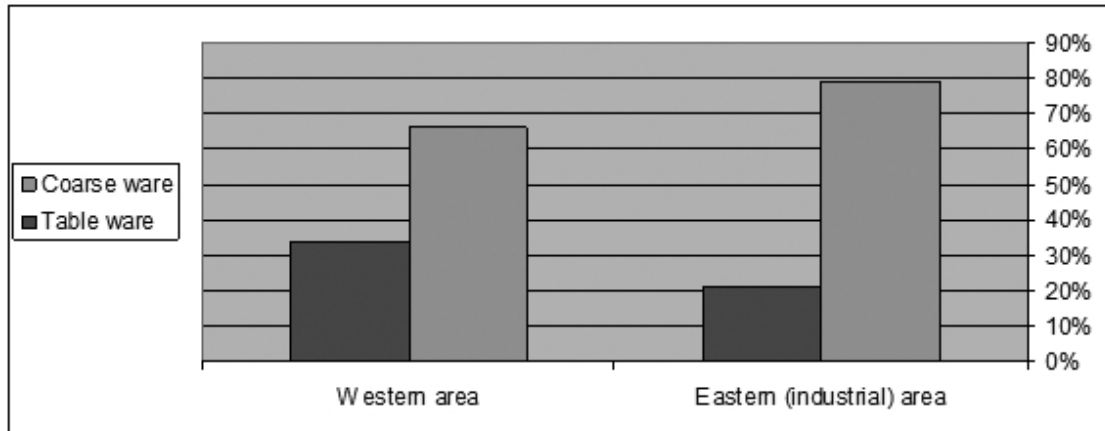


Table 3: Proportions of coarse and table wares in the Eastern and Western areas.

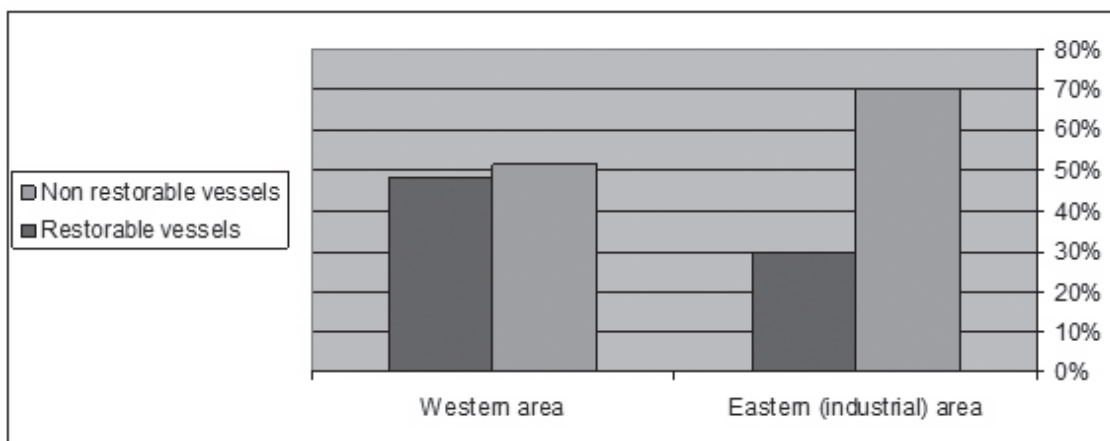


Table 4: Relations of restorable and non-restorable vessels in the eastern and western areas.

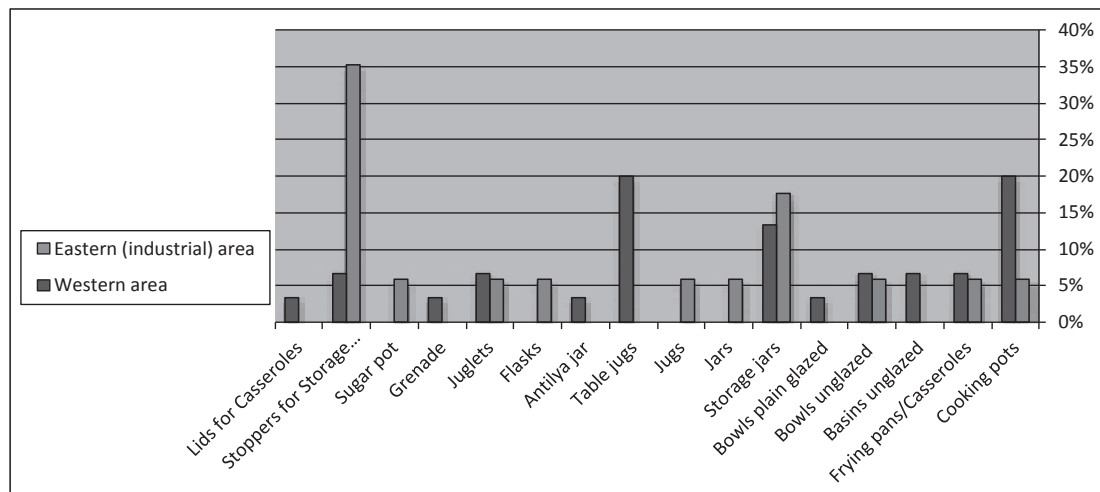


Table 5: Composition of restorable vessels in the Eastern and the Western areas.

several grinding stones on top of and below Floor 9069, no personal objects were detected there. The absence of decorated vessels, small finds and personal objects could indicate a provisional or brief habitation of the building. Use for a longer period would have been reflected in a greater variety of vessel types and more discarded or lost small finds.

An assemblage different in composition from the previous one was also excavated in the western area in Square B8. Here, a smaller quantity of restorable vessels was found in the northeastern corner of the square in the fill above a pebble floor (Floor 9156). The restorable vessels are four table jugs (Fig. 3.12: 8–9, 11, 14), two small bowls (Fig. 3.12: 2, 3) and a

larger, green glazed bowl (Fig. 3.12: 5). All of these vessels were identified as late Umayyad–Abbasid buff ware. Rim fragments of additional vessels (bowls and jugs) show the same uniformity of vessel type—they also belong to the group of buff ware; two of the bowls are polychrome glazed.

The limited variety of vessel types reflected in this assemblage indicates a very short period of use and the limited number of vessel forms (bowls and table jars) indicates that the functions performed on this floor were not of great variety. Since most vessels can be assigned to the group of table wares it seems logical to assume that food serving and consumption was the main activity here.

Although fragments of other floors were excavated in Squares A8 (Floor 9288), B11 (Floor 9299), and A14 (Floor 9131), the quantity of pottery found on those floors was not large enough to perform household studies.

The eastern part of the excavation area revealed a similar picture. Floor fragments unearthed in Square B22 (Floor 9047), B23 (Floors 9253 and 9334), A25 (Floors 9276, 9282 and 9295) and A–B38 (Floors 10222, 10138 and 10153) did not yield satisfying amounts of pottery let alone restorable vessels.

In conclusion, it may be said that the western part of the excavation area shows significant differences in function not only in its architectural remains but also in the composition of its pottery assemblage—including restorable and non-restorable vessels. In contrast to the eastern, industrial area, findings show at least temporary domestic use of the western area.

Lamps have been excluded from the examination of the general pottery assemblage since their functional significance depends on architectural context more than does the functional significance of other vessels. Moreover, it is only in combination with other vessel types that lamps can be used to identify functions performed within a spatially defined area because lamps illuminate activities but do not represent the activities themselves.

Two interesting details were detected in examining the lamps. The number of lamps dating to the Umayyad and Abbasid periods found at the site was relatively high² and all the lamps showed signs of use. This means that their large quantity is not due to the existence of a production center for oil lamps.

Most lamps were found concentrated in the eastern, industrial, part of the excavation area—71% of the lamps were detected in Squares A–B 22–38 and 29% were found in the complexes excavated in the western part of the excavation area in Squares A–B 11–18.

Because most of the lamps were found in the industrial complexes of the excavation area, they

should be identified as being closely related to industrial processes.

Since lamps were needed as sources of artificial light at night, the conclusion can be drawn that the industrial activities of this area were also performed at night. Such a ‘night shift’ may have been needed due to the importance or value of the product being manufactured. The next question to ask would be what that product was.

The installations in the eastern excavation area give several hints as to the nature of their use. As suggested by Tal and Taxel (2008: 123) there is strong evidence that the various pools, channels and cisterns excavated during the 2005–2006 seasons were related to the processing of flax into fibers. Textual evidence refers to the clothes of Ramla (Muk., 181 in *Le Strange 1890*: 16) and explicitly mentions muslin or linen veils (Muk., 183 in *Le Strange 1890*: 22). Five hundred years later Mujīr al-Din lists cotton merchants, flax weavers and leather workers as selling their products in the markets of Ramla (Luz 1997: 37).

Despite the likelihood that flax fibers were processed into linen in the industrial area of Ramla South, this task seems to have been only one part of a more complex production process executed in the installations there.

Plaster samples taken from the pools of the eastern excavation area of Ramla South show that Pool 9051 in Square B22, Pool 10177 in Square B34 and Pool 10061 in Square B38 had at least one layer of pigment attached directly to the original plaster coating. The color is the same in all pools, a deep red, closer to the yellow part of the color spectrum (vermillion) than to the violet or bluish part (such as purple or crimson). This first pigment layer is covered by what seem to be thin layers of oxidation in various shades of brown and ochre.

Obviously, at least the three abovementioned pools served as dyeing pools and the question then becomes what kind of dyeing was done there. The first type that comes to mind is the famous purple dye; however, two facts speak against that idea. The first one is the historical evidence. The tradition of purple dyeing had gradually declined in the southern Levant toward the end of the Byzantine period (7th century CE). When the southern Levant fell under Muslim rule, production in the large dyeing centers

² For additional excavations in the southern industrial area see Kletter 2005, Gorzalczany and Spivak 2008; Tal and Taxel 2008; Gorzalczany, Yehuda and Torge 2010.

along the Mediterranean coast ceased, persisting only in the areas remaining under Byzantine control (Bridgeman 1987; Karmon 1993: 80–82).

The second fact is the archaeological evidence. The installations in the industrial area of Ramla seem too big for purple dyeing, although they have all the necessary conditions for this type of dyeing. Cisterns found in Squares A—B 26, A31, B34 and B35 provided the necessary amount of water while channels such as the ones found in Square B22–23 and B26–27 were used for its distribution. Furthermore, purple dyeing required constant heating of the dye during dye fermentation (thermophilic fermentation) as well as during the dyeing itself (Koren 2005: 140–141, Forbes 1964: 127–137). All three pools in which residues of red dye were found had tabuns nearby. Although the tabuns were not found in the same stratigraphical context as the pools, they could have been used to heat the dye in a vat while the soaking of the cloth with the dyestuff was done elsewhere. An additional tabun (10113) relatively close to Pool 10061 was found in Square A38 west of W10184.

However, the plaster examples collected from the three pools show no shades of red tending to the violet/blue spectrum, as might be expected for purple dyeing. The use of cochineal, which produced crimson (bluish-red) and kermes, which produced a vivid scarlet (orange-red) (Koren 2006: 178–182) can also be excluded. Instead, the conditions at the industrial area of Ramla South imply that the manufacturers used dyestuff whose results did not depend on precise temperatures, for example, madder root (Koren 1993: 26*–27*; 2006: 172; Forbes 1964: 109–110) or hematite.³ Plaster samples were given to Dr. David Iluz (Bar-Ilan University), who concluded that the color residues do not derive from an organic source but seem to be of mineral origin (personal communication). Other samples of the same plaster were given to Prof. Zvi Koren (Shenkar Institute, Tel Aviv), who also excluded the possibility of organic dyes (personal communication Amir Gorzalczany).

³ During an excavation conducted by the IAA in 1991 southwest of the White Mosque, pools were unearthed that yielded a red deposit identified as hematite (Rosen-Ayalon 1996: 253–254; Porath and Ilani 1993: 11*).

Excluding very expensive colors, sacral and royal colors (Koren 2006: 174, 184) and introducing the possibility of dyeing with less exclusive dyestuff, it seems that the industrial dyeing installations at Ramla South were used to dye skeins from which ordinary, everyday clothing was made.

Another interesting aspect of the dyestuff residue on the plaster coating of the pools is its uniformity. Except for red, no other shades of that color, let alone other colors, could be detected. It could thus be concluded that large amounts of red-dyed thread were produced at the industrial area of Ramla South, which served as a main provider of red thread to weavers and garment manufacturers in and around the city of Ramla.

Turning to the textual evidence for support, we find that Sulaymān built the “house of the dyers” at the same time that he built his palace and that these two buildings were completed before he started to build the mosque (Yb., 116, in Le Strange 1890: 303). This suggests that this Umayyad ruler was heavily involved in the region’s dyeing industry.

As early as the Byzantine period, dye from the area around Lod was considered of particularly high quality and had gained an international reputation (Schwartz 1991: 173). Linen and cotton fabrics and clothes muslin or linen veils (Muk., 181 in Le Strange 1890: 16) were sold in the markets of Ramla.

Still, the possibility must be considered that rather than fabric, leather was the material dyed in the industrial area of Ramla South. Several facts speak for this assumption: Firstly, the industrial area was isolated from the Umayyad–Abbasid city. Secondly, as stated above, several features, such as cisterns and water channels, attest to major water use in the industrial area. The location and character of the industrial area thus hint at highly polluting industrial activities, like tanning, which had to be excluded from dwelling quarters. The large amount of water suits the amount that would be required for tanning.

Regardless of which material was dyed, the dyeing industry was probably a lucrative one. It could have provided an additional source of income for the Umayyad and Abbasid rulers and work could therefore have been done in shifts to increase productivity.

CHAPTER 8

DISCUSSION

Elisabeth Yehuda

The Umayyad city of Ramla and the industrial area in its southern vicinity are the subject of ongoing discussions about formation and development of the site as well as settlement continuity or discontinuity.

Soundings with mechanical equipment conducted during the excavations on behalf of the Israel Antiquities Authority revealed that the industrial complex did not extend as far as the southern boundaries of Umayyad Ramla. An area that was not built-up lay between the northern side of the industrial area and the southern part of the Umayyad city. Two conclusions based on this observation may be drawn, which may be used to support the two theories elaborated below.

1. The distance between the two areas supports the assumption that at least the earlier remains found at Ramla South were not related to the Umayyad city.
2. This distance can be explained as an attempt to clearly separate dwelling areas from working areas.

Two contrary opinions concerning the subject of Umayyad continuity or late Byzantine–early Umayyad discontinuity have been formed:

- The first opinion is that Ramla and its industrial area, Ramla South, were constructed on virgin soil. Thus, all archaeological finds unearthed at the industrial area of Ramla South should be related to the foundation of the Umayyad capital and should be dated not earlier than the first quarter of the 8th century CE.
- The second opinion is that at least the industrial area of Ramla South was built above an earlier settlement of an agricultural nature such as a large farmstead or village, which existed independently of the founding of Ramla and its later industrial area.

The following evidence supports the first opinion:

- Textual evidence: According to the Arabic sources written by Balādhurī and Yākūtm

Ramla was founded on virgin soil (Bil 143, in Le Strange 1890: 304; Yāk, ii. 817, in: Le Strange 1890: 307–308; Rosen-Ayalon 1996: 250)

- Archaeological evidence: None of the pottery unearthed at the industrial area of Ramla South ceased to be produced at the end of the Byzantine period (end of the first half of the 7th century CE). Among the remains dating to the earlier period were numerous large pottery kilns¹—too many to have been associated with a small rural settlement such as a village or farmstead.
- Historical evidence: An earthquake destroyed the region in 749 CE.²
- Extent of earlier remains: The remains of the earlier period of Ramla South, but also of the Abbasid period, were found at a reasonable distance from the Umayyad city. This might attest to an attempt to isolate the industrial area from the rest of the city, because of pollution or noxious odors (see Chapter 7).

The following evidence supports the second opinion:

- Archaeological evidence: Numerous architectural elements such as marble slabs and columns in secondary use were found, which had clearly originated from buildings or a settlement not related to the industrial area. These earlier (late Byzantine–early Umayyad) architectural features consist partially of agricultural

¹ Remains of kilns dating to the earlier phase were first found at Ramla South in Area C of Gorzalczy's excavation in 2004 (Gorzalczy 2006). Two additional kilns were found during the 2005–2006 season of excavation at Ramla South in Area A (Tal and Taxel 2008: 63). Numerous kilns were also discovered from May to August, 2007 (Gorzalczy 2009a; Gorzalczy, Yehuda and Torge 2010).

² This is in accordance with Gorzalczy's assumption that the earthquake in question was the one that occurred in 749 CE (Gorzalczy 2009b). The absence of signs from the earlier earthquake, in 715 CE, would suggest that the site was founded after 715 and before 749.

installations typical of the Byzantine period, such as winepresses and oil presses. Most of the earliest pottery found in Ramla South was produced from the 7th century or even the 6th century CE onward and shows clear continuity of a late Byzantine pottery tradition and clear discontinuity with the later (late Umayyad–Abbasid) pottery assemblage.

- Historical evidence: An earthquake destroyed the region in 715 CE.
- Spatial evidence: The remains dating to the earlier period were found quite some distance from the Umayyad city—much farther from the city’s initial core than the Umayyad city would have logically spread.

The 2008 season at Ramla South revealed the following:

- Numerous architectural elements such as marble slabs and columns as well as wall and floor panels made of imported stone in secondary use.
- A late Byzantine lamp with a Christian inscription.
- Two clearly distinguishable groups of pottery (late Byzantine–early Umayyad and late Umayyad–Abbasid) with a gap between them occurring around the end of the first half of the 8th century CE.
- Two clearly distinguishable areas: a western, more domestic area that dates mainly to the late Byzantine–early Umayyad periods and an eastern, clearly industrial area that dates to the late Umayyad–Abbasid periods.
- In the western area few but clear traces of late Umayyad–early Abbasid activities were found. In Square B8 a late Umayyad pottery assemblage was unearthed, and in Squares A11 and B11 Abbasid additions to walls erected during the Umayyad period were detected. Despite the presence of pottery from both periods in both areas, no extensive overlapping of architectural remains from both periods was observed.
- A pottery assemblage unearthed in Square B16 should be dated according to stratigraphical considerations to around the mid-8th century CE.

The dating and the discontinuity of the pottery, the existence of architectural elements in secondary use in the earlier stratum of Ramla and emphasis

on either the earlier or later earthquake are the key factors in answering the question about continuous or discontinuous settlement at Ramla South.

Concerning the pottery it may be stated that a changeover of political power did not lead to a simultaneous change in the material culture. Although the influence of a new reign was easily distinguishable in important buildings, ordinary objects were beyond such immediate changes. This may be seen in a developmental delay in simple goods—potters continued to produce traditional pottery for much longer than architects continued to design palaces or mosque in the style of the previous regime.

The different combination of the above mentioned key factors allows the development of different scenarios concerning the foundation and gradual development of Ramla South.

First and foremost it can be assumed that dramatic events such as the earthquakes of 715 and 749 had a fatal impact on the material culture such as the interruption of the pottery production. This interruption is visible in the archaeological record.

Two conclusions can now be drawn.

1. Assuming that the 715 earthquake was the reason for the dramatic change, the earlier phase of the settlement (the western area) discovered during the excavation and the later phase (the eastern area) are not a continuous sequence but the result of two independent settlement processes. In other words, a late Byzantine settlement existed before the foundation of the Umayyad city. This late Byzantine settlement ceased to exist shortly before or at the time of the founding of the Umayyad city, and the Early Islamic industrial area developed slowly on its eastern and southern fringes. This, at least partially, contradicts the historical sources, which state that Ramla was founded on sand. On the one hand, such a large, late Byzantine settlement independent from Umayyad Ramla (remains of it were found during all excavations conducted from 2005 to 2008) in close proximity to Ramla would most likely have been mentioned in the sources. On the other hand, the authors of the early Arabic sources probably did not have the industrial area of

Ramla South at the southern fringes of the city in mind when they spoke of the founding of Ramla on sand. Furthermore, Ramla was founded in a densely built region—the city of Lod was approximately 3 km away and various finds from the Roman and Byzantine period unearthed near Ramla testify to the existence of independent, small rural settlements.

If the 715 earthquake was indeed a reason for the two clearly distinguishable areas, the builders of Umayyad Ramla would not have had enough time to erect a semi-industrial area south of the city, since according to that scenario, it would have been founded only around 714 or 715. The remains in the western excavation area should therefore be dated to the late Byzantine or pre-Islamic period and should be considered independent from any construction process in this area related to Umayyad Ramla.

Turning to the archaeological evidence, the latter conclusion would mean that the remains of a pre-Islamic settlement (such as a winepress and oil presses (Tal and Taxel 2008: 53–62) were found all over the industrial area of the late Umayyad–Abbasid periods. It would also mean that the architectural elements unearthed mainly in the western excavation area had originated from this earlier settlement. But arguing against such a conclusion, some of the architectural elements in secondary use were found in the layers dated to the first stage of building activities i.e., the late Byzantine–early Umayyad periods.

2. Assuming that the 749 earthquake was the reason for the change, the conclusion would be that shortly after the foundation of Umayyad Ramla a semi-industrial area (the western area) was built outside the city walls. The earthquake destroyed this area and, as the results of the 2008 season suggest, partially forced the later inhabitants of Ramla to erect the late Umayyad–Abbasid industrial area farther to the east. This contradicts some of the above-mentioned architectural finds—the winepresses and the oil presses—but gains support in the numerous early pottery kilns, which could testify to a more industrial than agrarian nature of the earlier settlement.

In order to explain the phenomenon of architectural elements in secondary use, which definitely does not fit an industrial area, it can be argued that these elements did not originate in the immediate surroundings of the industrial area but were brought there from a site farther away such as Lod or another destroyed late Byzantine settlement at a reasonable distance from Ramla.

Other architectural evidence, showing the differentiation of a western and an eastern area, can be observed in this case as follows:

The later eastern industrial area was bordered on its western and northern sides immediately by the earlier western area as previous IAA excavations in 2006 and 2007 revealed (Gorzalczany and Spivak 2008; Gorzalczany, Yehuda and Torge 2010). Thus, it may be concluded that the immediate proximity of the two areas was due to a sudden change rather than to gradual architectural development. This argues that the ruins or squatters of the earlier area were still visible and forced the builders of the later industrial area to take them into account.

The lack of a spatial gap between the eastern and the western excavation areas also suggests that there was no chronological gap between them. Assuming that both areas existed contemporaneously for a certain period of time, three stages of development could be assumed.

1. During the first stage the western area was founded, possibly a semi-industrial area of the Umayyad city outside its city walls but in reasonable proximity to them.
2. This semi-industrial area was devastated by an earthquake around 749 CE and was abandoned.
3. During a second stage the industrial area was founded adjacent to the earlier (western and northern) area. The destroyed western area was—in the case of the area of the 2006, 2007 and 2008 excavation—only selectively used by the Abbasid people, perhaps as squatters, and its existence hindered an expansion of the eastern industrial area to the west and the north by forcing the builders of the later industrial area to build around it.

If the second opinion holds water, the difference between the earlier and the later area is not defined by people from different cultural backgrounds having built them but by different purposes they served. As we have shown, the earlier area was mainly oriented to the processing of agricultural products but also produced glass and pottery on a large scale. During the second period the industrial area produced thread and fabrics and perhaps garments, although evidence for the production of mother-of-pearl and lead inlays, glass, soap and perfume were also found during earlier excavations (Gorzalczany and Spivak 2008; Gorzalczany, Yehuda and Torge 2010).

As the above discussion makes clear, both arguments have their pros and cons and as in so many cases, the facts, as well as the dating of archaeological evidence can be used to reconstruct more than one settlement process.

In summary, the strongest points that argue for the first conclusion are the presence of unrelated architectural elements in secondary use, the presence of installations considered typically Byzantine and the anchoring of most of the earlier pottery in the Byzantine pottery tradition.

The strongest points that argue for the second conclusion are historiographic evidence, the relation between the eastern and the western areas and the continuation of the production of the early pottery well into the Umayyad period.

LIST OF POTTERY, GLASS, METAL AND STONE FINDS

No	Locus	Basket	Elevation	Description	Material	Context
3.1.1	10025	100428	81.33-81.77			
3.1.2:1	9069	90670	81.11			
3.1.2:2	9069	90670	81.11			
3.1.2:3	9138	90686	81.01-81.04			
3.1.2:4	9198	90746	80.90-81.04			
3.1.2:5	9198	90746	80.90-81.04			
3.1.2:6	9115	90401	80.45-81.10			
3.1.2:7	9115	90401	80.45-81.10			
3.1.2:8	9069	90670	81.11			
3.1.2:9	9069	90670	81.11			
3.1.2:10	9069	90639	81.05			
3.1.2:11	9198	90686	81.01-81.04			
3.1.2:12	9115	90401	80.45-81.10			
3.1.2:13	9069	90664	81.11			
3.1.2:14	9069	90638	80.95			
3.1.2:15	9069	90670	81.11			
3.1.2:16	9069	90639	81.05			
3.1.2:17	9115	90401	80.45-81.10			
3.1.2:18	9198	90746	80.90-81.04			
3.1.2:19	9198	90746	80.90-81.04			
3.1.2:20	9115	90401	80.45-81.10			
3.1.2:21	9173	90729	79.35			
3.1.3:1	9069	90639	81.05			
3.1.3:2	9069	90665	81.11			
3.1.3:3	9069	90670	81.11			
3.1.3:4	9069	90660	81.11			
3.1.3:5	9069	90661	80.55			
3.1.3:6	9069	90662	81.12			
3.1.3:7	9069	90665	81.11			
3.1.3:8	9069	90662	81.12			
3.1.3:9	9069	90638	80.95			
3.1.3:10	9198	90687	81.01-81.04			
3.1.3:11	9069	90662	81.12			
3.1.5.	9220	91045	79.35-79.51			
3.1.6.	9379	91281	78.97-79.13			
3.1.7.	9288	91198	77.74			
3.1.8.	9353	91260	80.61			
3.1.10:1	9190	90655	80.07-80.47			
3.1.10:2	9003	90564	81.04-81.06			
3.1.10:3	9276	91153	78.57-78.94			

List of Pottery, Glass, Metal and Stone Finds

No	Locus	Basket	Elevation	Description	Material	Context
3.1.10:4	9103	90414	81.02			
3.1.11.	9066	90220	77.45-77.65			
3.1.12:1	9091	90426	78.24-78.58			
3.1.12:2	9056	90189	78.95-79.00			
3.1.12:3	9091	90426	78.24-78.58			
3.1.12:4	9091	90426	78.24-78.58			
3.1.12:5	9091	90426	78.24-78.58			
3.1.12:6	9091	90426	78.24-78.58			
3.1.12:7	9091	90426	78.24-78.58			
3.1.12:8	9091	90426	78.24-78.58			
3.1.12:9	9091	90426	78.24-78.58			
3.1.12:10	9091	90426	78.24-78.58			
3.1.12:11	9091	90426	78.24-78.58			
3.1.12:12	9091	90426	78.24-78.58			
3.1.12:13	9091	90426	78.24-78.58			
3.1.12:14	9091	90426	78.24-78.58			
3.1.12:15	9091	90426	78.24-78.58			
3.1.14:1	9190	90655	80.07-80.47			
3.1.14:2	10259	100809	80.02-80.82			
3.1.14:3	9082	90544	80.37-80.47			
3.1.14:4	10107	100504	80.00-80.18			
3.1.14:5	9198	90732	80.90-81.04			
3.1.14:6	9150	90556	80.60-80.79			
3.1.14:7	9198	90732	80.90-81.04			
3.1.15:1	9140	90424	80.72-80.73			
3.1.15:2	10094	100462	80.69-81.05			
3.1.16:1	9082	90544	80.37-80.47			
3.1.16:2	9186	90663	80.55			
3.1.16:3	9201	90789	80.96			
3.1.16:4	9140	90513	80.61			
3.1.16:5	9268	91025	79.27			
3.1.16:6	9294	91088	79.57-80.06			
3.1.16:7	10223	100732	80.85-81.00			
3.1.16:8	9082	90544	80.37-80.47			
3.1.16:9	9209	90781	78.96-79.39			
3.1.17:1	9342	91215	80.02			
3.1.17:2	9256	91006	80.91			
3.1.18	10039	100387	81.36-81.83			
3.1.19	9021	90026	81.27			
3.1.20:1	10082	100581	80.32-80.81			
3.1.20:2	10223	100732	80.85-81.00			
3.1.20:3	10223	100732	80.85-81.00			
3.1.20:4	10234	100872	80.42			
3.1.20:5	9209	90781	78.96-79.39			
3.1.20:6	10117	100393	81.09-81.64			

No	Locus	Basket	Elevation	Description	Material	Context
3.1.21:1		90108		surface find		
3.1.21:2	9228	90840	79.24			
3.1.21:3	9292	91190	79.79			
3.1.21:4	9249	90988	79.36			
3.1.21:5	9256	90991	80.07-80.96			
3.1.21:6	9008	90143		surface find		
3.1.21:7	9184	90708	81.15			
3.1.21:8	9170	90833	79.37			
3.1.21:9	9041	90145	78.17			
3.1.22:1	9044	90115	77.51			
3.1.22:2	9044	90094	76.68			
3.1.23:1	9190	90655	80.07-80.47			
3.1.23:2	9262	91007	78.72-78.84			
3.1.24	9190	90655	80.07-80.47			
3.1.25:1	9044	90115	77.51			
3.1.25:2	9198	90732	80.90-81.04			
3.1.25:3	9003	90490	81.06-81.22			
3.1.26	10230	100809	80.02-80.82			
3.1.27	10075	100253	80.73-80.99			
3.2.1:1	9198	90891	80.9			
3.2.1:2	9215	90881	80.35			
3.2.1:3	9205	91309	80.65			
3.2.1:4	9038	90124	78.07			
3.2.2:1	10256	100898	79.86 - 79.98			
3.2.2:2	9293	91244	79.52			
3.2.2:3	10199	100918				
3.2.2:4	10224	100813	80.36 - 81.00			
3.2.2:5	9226	90880	79.8			
3.2.2:6	10203	100917				
3.2.2:7	10123	100920				
3.2.2:8	10269	100913	81.33 - 81.56			
3.2.2:9	9207	91304	78.55			
3.2.3:1	10004	100031	81.34 - 81.40			
3.2.3:2	10199	100900	79.32 - 79.35			
3.2.4:1	10220	100859	79.77 - 79.78			
3.2.4:2	9023	90106	80.71			
3.2.4:3	9008	90122	80.14			
3.2.4:4	10060	100177	80.65 - 80.88			
3.2.4:5	9133	90432	80.87			
3.2.4:6	10030	100359	81.35 - 81.42			
3.2.4:7	9077	90226	81.09 - 81.39			
3.2.4:8	9006	90040	80.34			
3.2.5:1	9220	90854	80.07			
3.2.5:2	10071	100916				

List of Pottery, Glass, Metal and Stone Finds

No	Locus	Basket	Elevation	Description	Material	Context
3.2.6:1	10044	100162	81.33			
3.2.6:2	10003	100009	81.28 - 81.59			
3.3.1: 1	9256	90993	80.93			
3.3.1: 2	9256	90993	80.93			
3.3.2	9202	90735	80.45			
4.1: 1	10107			Bowl		Fill adjoins W10104 and W10174
4.1: 2	9308			Bowl		Fill above F9276
4.1: 3	9249			Bowl		Fill above I9399
4.1: 4	10140			Bowl		Fill
4.1: 5	9215			Bowl		Fill below 9198
4.1: 6	9206			Bowl		Fill above I9242
4.1: 7	9326			Bowl		Fill northeast of 9193
4.2: 1	10234			Bottle		Plastered pool
4.2: 2				Bottle		
4.2: 3	9078			Bottle		Fill
4.2: 4	10060			Bottle		Fill
4.2: 5	10203			Bottle		Fill
4.2: 6	9308			Beaker or bottle		Fill above F9276
4.2: 7	10173			Bottle		Fill of installation 10130
4.2: 8	9343			Vial		Fill
4.2: 9	10203			Vial		Fill
4.3: 1	9384			Jug		Fill north of W9383
4.3: 2	9125			Jar		Fill
4.3: 3	9094			Jar		Fill above 9169
4.3: 4	9013			Cosmetic tube		Fill
4.3: 5	10052			Cosmetic tube		Fill below stone foundation 10039
4.3: 6	10001			Bracelet		Modern surface
4.3: 7	10054			Bracelet		Fill
5.1.1	9268			Sheed	Lead	
5.1.2:1	9287			Spoon	Bronze	
5.1.2:2	9292			Bracket	Bronze	
5.1.2:3	9268			Chain link?	Bronze	
5.1.2:4	9202			Nail	Bronze	
5.1.2:5	9099			Scale pan	Bronze	
5.1.2:6	9256			Scale pan	Bronze	
5.1.3	10191			Axe	Iron	
5.1.4:1	10030			Nail	Iron	
5.1.4:2	10052			Nail	Iron	
5.1.4:3	9304			Nail	Iron	
5.1.4:4	9286			Hinge	Iron	
5.1.4:5	9189			Hinge	Iron	

List of Pottery, Glass, Metal and Stone Finds

No	Locus	Basket	Elevation	Description	Material	Context
5.1.4:6	10134			Cramp	Iron	
5.1.4:7				Slag pieces	Iron	
5.2.1:1	9082			Coin	Bronze	
5.2.1:2	9268			Coin	Bronze	
5.2.1:3	9306			Coin	Bronze	
5.2.1:4	9133			Weight	Bronze	
6.1: 1	9270			Stone medaillon	Basalt	
6.1: 2	10219			Bead	Amethyst	
6.2: 1	10127			Mortarium	Basalt	
6.2: 2	10116			Crater	Marble	
6.2: 3	9270			Mortarium	Basalt	
6.2: 4	9222			Cup	Limestone	
6.3: 1	9220			Metate	Basalt	
6.3: 2	9276			Grindstone	Basalt	
6.4: 1	10052			Scraping stone	Scoria	
6.4: 2	9016			Scraping stone	Scoria	
6.5	9162			Upper stone Olynthus mill	Basalt	
6.6	9162			Upper stone Olynthus mill	Basalt	
6.7				Ellipsoidal tool	Red granite	
6.8: 1	10040			Eight slabs	Marble	
6.8: 2	10040			Floor veener	Marble	
6.8: 3	10040			Floor veener	Marble	
6.8: 4	10102			Floor veener	Marble	
6.8: 5	10030			Floor veener	Marble	
6.8: 6	9220			Floor veener	Red limestone	
6.9	9276			Discoid stone	Greenish black Porphyry	
6.10	9169			Column head	Limestone	
6.11	10052			Ballustrade pillar	Marble	

LIST OF LOCI

Area M

<i>Locus</i>	<i>Square</i>	<i>Opening Height</i>	<i>Closing Height</i>	<i>Associated Loci</i>	<i>Description and Stratigraphical Relation</i>
9010	B17	81.71	81.2		Fill
9013	A16	81.13	80.83		Fill
9016	B13	81.3	81.09		Installation
9017	A23	80.23	80.15		Stone layer
9018	A23	80.23	80.02		Fill adjoins 9017
9021	B13	81.3	81.16		Fill
9024	B15	81.72	81.19		Fill
9029	B22	80.47	80.29		Plaster floor
9030	B22	80.47	80.29	Adjoins F9029	Fill above F9047
9031	B27	80.79	80.58		Pit
9035	B27	80.79	80.58		Fill adjoins pit 9032
9043	B27	80.25	79.95		Fill
9044	B27	81.1	79.23		Fill above F9397
9045	B22	80.56	80.25		Fill northeast corner of square
9046	B22	80.56	79.76	Equals I9051 and I9052, F9047, 9061, F9280, W9085	Plastered pool
9047	B22	80.17	80.12	I9046, W9085	Remains of mosaic floor
9049	B22	80.56	80.17		Fill southeast corner of square
9050	B22	80.29			Fill between 9043 and 9049
9051	B22	80.17	79.76	I9046, I9061, I9290	Eastern part of double pool I9046
9052	B22	80.3	79.97	I9046, I9061, I9290	Western part of double pool I9046
9053	B22	80.16	79.79		Fill between F9029 and I9046
9057	B16	81.2	81.16		Fill
9058	A5	77.95	77.36		Fill above 9130
9059	A7	78.42	77.84		Hamra soil above 9155 and 9125
9060	B22	80.16			North of I9046
9061	B22	80.31	79.95	I9046	Channel built of stones
9062	A8	78.94	78.47		Hamra soil above 9094
9063	B8	79	78.29 - 78.09		Cess pit above F9144
9064	B6	78.45	78.26		Fill east of W9063
9065	B6	78.45	78.26		Fill west of W9063
9066	A5	78.25	77.97		Fill above F9120
9067	B5	78.07	77.96		Fill above 9093
9068	A13	80.5	79.89		Trench or pit
9069	B16	81.16	80.95 - 81.04	W9161, W9264, W9158	Floor

<i>Locus</i>	<i>Square</i>	<i>Opening Height</i>	<i>Closing Height</i>	<i>Associated Loci</i>	<i>Description and Stratigraphical Relation</i>
9070	B16	81.16	81.04	Equals F9069	Fill
9071	B16	81.16	81.04	Equals F9069	Fill
9072	B16	81.16	81.04	Equals F9069	Fill
9074	A23	80.15	80.02		Fill east of wall W9073
9075	A23	80.15	80.13		Fill west of wall W9073
9081	A18	80.76	80.47		Stone layer
9082	A18	80.72	80.47		Fill between stones of 9081
9083	A8	78.78	78.47		Stone layer above 9094
9086	A18	80.72	80.58		Plaster floor above I9204
9087	B8	79	78.84		Hamra soil
9088	B28	80.36	80.33		Plaster floor above I9273
9089	A29	80.82	80.07		Fill
9090	A29	80.82	80.07		Hamra soil
9091	B8	78.84	78.15		Fill northeast of cess pit above F9156
9092	B8	78.84	78.29		Fill southwest of cess pit
9093	B5	77.96	77.81		Fill above 9117
9094	A8	78.47	77.85		Fill above 9169
9099	A15	81.14	80.68		Kiln material
9100	B15	81.16	80.96		Kiln material
9101	A14	80.98	80.82		Kiln material adjoins 9104
9102	A15	81.14	80.87		Fill adjoining W9073
9103	B15	81.17	80.76		Fill adjoins 9100
9104	A14	80.98	80.82		Fill adjoins 9101
9105	A17	80.84	80.73	W9109	Plaster floor east and below W9109
9106	A17	80.83	80.54		Fill
9107	A17	80.83	80.54		Fill
9108	A17	80.83	80.46		Fill
9113	B13	81.16	80.9		Fill east of W9112
9114	B13	81.16	80.78		Fill west of W9112
9115	A14	80.82	80.22		Kiln material
9116	B6	78.26	77.18		Fill below W9063
9117	B5	77.81 - 77.96	77.7		Fill above 9182 and W9386
9118	A6	78.05	77.98		Fill above 9123
9119	A5	77.97	77.58		Adjoining F9120
9120	A5	77.97	77.74		Plaster floor
9121	B25	80.59	80.41		Fill
9122	B5	78.31 - 78.08	78.14 - 77.87		Installation?
9123	A6	77.98	77.89		Fill above 9175
9125	A7	77.84	76.42		Fill
9127	B28	80.36	80.02		Fill adjoins F9088
9128	B27				
9130	A5	77.74	77.58		Below F9120

List of Loci

<i>Locus</i>	<i>Square</i>	<i>Opening Height</i>	<i>Closing Height</i>	<i>Associated Loci</i>	<i>Description and Stratigraphical Relation</i>
9131	A14	80.66	80.62	9146	Floor below W9230
9132	B15	81.1	80.76		Sand
9134	B17	81.18	81.01		Kiln material
9135	B17	81.18	81.02		Fill adjoins 9134
9136	B15	80.99	80.79		Circular stone layer below 9103
9137	B15	80.86	80.79		Adjoins I9136
9138	B16	81.04	80.88		Fill
9139	B12	80.72	80.61		Circular stone installation
9140	B12	80.73	80.61		Fill adjoins I9139
9141	B8	78.15	78.09		Fill adjoins F9156
9143	B13	80.78	80.6		Fill west of W9142
9144	B8	78.29	78.2	Equals F9156	Pebbles floor below I9063
9145	B8	78.29	78.2		Fill adjoins F9144
9146	A14	80.7	80.57	F9131	Stone layer or floor of installation Below 9115
9147	B16	81.13	81		Fill below 9170 and above 9198 inside W9158 and W9164
9148	A16	80.83	80.59		Kiln material
9149	A16	80.83	80.71		Fill adjoins 9148, above I9160
9150	B13	80.9	80.6		Fill east of W9142 and below W9112
9151	A14	80.57	80.1		Kiln material
9152	B13	80.79	80.6		Fill east and below W9112
9153	B12	80.61	80.55		Below I9139
9154	A15	80.96	80.79		Kiln material
9155	A7	78.13	77.47		Fill above F9289
9156	B8	78.15	78.09	Equals F9144	Pebbles floor below I9063
9159	B16	81.04	80.59		Stone layer
9160	A16	80.9	80.59 - 80.69		Rectangular installation with trances of burning
9166	A18	80.47	80.31		Fill adjoins F9086
9167	A16	80.97	80.79		Hamra soil below W9163 and W9165 above 9192
9168	B13	80.6	80.54		West of W9142
9169	A8	77.85	77.78 - 77.67		Fill above F9288
9170	A18	80.13	78.9		Digging in depth
9171	B17	81.12	80.6		Digging in depth
9172	A17	81.1	79.31		Digging in depth
9173	A14	79.99	79.72		Fill
9174	B12	80.53	78.71		Fill western part of square
9175	A6	77.89	76.9		Digging in depth
9176	A5	77.58	76.72		Digging in depth
9182	B5	77.72	77.03		Digging in depth

<i>Locus</i>	<i>Square</i>	<i>Opening Height</i>	<i>Closing Height</i>	<i>Associated Loci</i>	<i>Description and Stratigraphical Relation</i>
9185	B17	80.74	80.08		Digging in depth
9186	A15	80.79	80.08		Digging depth
9187	B15	80.79	80.55		Digging depth southeastern corner of square
9188	A13	79.89	78.95		Fill western part of square
9189	A12	80.62	79.74		Kiln material
9190	B11	80.47	80.34		Fill in northeast corner of square
9191	A11	80.45	79.39		Fill above F9229
9192	A16	80.83	80.36		Fill between W9165 and W9163
9193	B13	80.3	79.38		Fill northeastern corner of square
9194	B13	80.54	78.89		Fill northwestern corner of square
9195	B12	80.3	79.91		Fill
9196	B12	79.91	79.76		Hamra soil
9197	A14	79.72	79.65		Hamra soil
9198	B16	81.04	80.67		Fill below F9069, W9158 and W9164
9199	A16	80.83	80.59		Fill north of W9165
9200	A17	80.6	80.51		Sand
9201	B14	81.17	80.9		Hamra soil
9202	A16/B16	81.5	80.43		Fill in corner between W9163 and W9162
9204	A18	80.31	78.9		Cess pit
9205	B15	80.9	80.65		Hamra soil below 9100
9206	B18	81.05	80.7		Fill above I9242, 9269
9207	A12	79.74	78.55		Fill
9208	B11	80.33	80.28		Fill
9209	A11	79.39	78.96		Fill
9211	A23	80.02	79.09		Fill below W9073
9213	A24	80.11	79.63		Fill
9214	B24	80.48	79.71		Fill above 9249, 9250
9215	B16	80.67	80.31		Fill below 9198
9216	B14	80.85	80.44		Kiln material
9217	A18	80.31	79.45		Fill inside I9204
9218	A18	79.6	79.37		Fill north of cess pit
9220	B11	80.28	79.51		Fill north of W9019
9221	B11	80.28	79.88		Fill south of W9019
9222	B15	80.81	80.06		Fill
9223	B14	80.85	80.4		Hamra soil
9225	B12	80.72	80.27		Hamra soil
9226	A23	80.02	79.77		Fill west of W9073
9227	A24	79.63	79.2		Fill
9228	B25	80.41	78.98		Fill above 9348 and I9347
9231	A23	79.09			Fill below W9073

List of Loci

<i>Locus</i>	<i>Square</i>	<i>Opening Height</i>	<i>Closing Height</i>	<i>Associated Loci</i>	<i>Description and Stratigraphical Relation</i>
9232	B12	80.27	79.91		Fill
9235	B26	79.25	79.17		Fill above F9239 and I9236
9234	A26	80	79.07		Fill above 9400
9235	B26	79.25	79.17		Fill above I9236 and F9239
9236	B26	79.17	78.47	F9239, I9391, 9400, I9394	Cistern
9237	A22	80.11	79.9		Fill above 9252
9238	B11	79.9	79.44		Fill below south of W9219
9239	B26	79.26	78.97	I9236	Plaster floor
9240	A23	79.77	79.11		Fill west and below W9073
9241	A25	79.56	79.45		Fill cuts F9276
9242	B18	80.95	79.91		Plastered pool
9243	B25	79.24	79.04		Upper part of W9264
9244	B25	79.24	79.04		Fill adjoins F9243/W9264
9246	A25	79.45	79.04		Fill south of W9245
9247	A25	79.45	79.28		Fill northwest of W9245
9248	A25	79.45	79.28		Fill northeast of W9245
9249	B24	79.91	79.07		Stone debris above 9399, cut by 9250
9250	B24	79.91	79.77		Fill above I9399
9251	B18	80.7	80.46		Fill outside of I9242
9252	A22/B22	79.86	79.53		Fill of bulk
9253	B23	80.14	79.94	Tabun 9254	Plaster floor above I9290
9254	B23	80.14	79.71	F9253	Tabun cuts into F9253
9255	B23	80.14	79.71		Fill adjoins 9254
9256	B14	81.25	80.7		Fill in western half of square
9257	A12	79.92	78.55		Kiln material
9258	B23	79.94	78.32		Fill below F9253
9260	A25	79.28	78.14	W9245	Beaten earth floor above 9276
9262	B27	78.84	78.02		East of W9261
9265	B25	79.04	78.49		Fill adjoins W9264 and I9247
9266	B23	79.94	79.61		Fill outside of I9046
9268	A22	79.53	79.04		Fill east of W9361
9269	B18	80.46	80.4		Fill below 9206, adjoins I9242
9270	B18	80.46	79.73		Fill below 9251, adjoins I9242
9271	A25	79.03	78.91		Fill above F9276 and below F9260
9273	B28	79.85	79.13		Plastered pool
9274	B28	80.02	79.82		Fill south of I9273
9275	B28	80.02	79.77		Fill north of I9273
9276	A25	78.91	78.77	W9245	Plaster floor below F9260
9277	B29	80.36	80.28		Plaster floor
9278	B29	80.36	79.37		Fill adjoining F9277
9280	B23	79.71	79.68	I9046, W9366, W9368	Plaster floor below F9253

<i>Locus</i>	<i>Square</i>	<i>Opening Height</i>	<i>Closing Height</i>	<i>Associated Loci</i>	<i>Description and Stratigraphical Relation</i>
9281	B14	80.7	79.93		Hamra soil
9282	A25	78.91	78.35		Fill above F9276 and north of W9245
9283	B27	79.13	78.56		Fill south of I9394
9285	B23	79.71	79.7		Fill adjoining F9280
9286	B27				Fill
9287	B11	79.51	79.13		Fill below north of W9219
9288	A8	77.67 - 77.78	77.56 - 77.74	Equals F9289	Stone pavement
9289	A7	77.74	77.56	Equals F9288	Cobbles floor
9290	B23	79.71	78.88	I9051/I9052	Rectangular installation
9291	B23	79.71	79.6		East of I9290
9292	A29	80.07	79.93		Fill adjoins F9297
9293	B29	79.67	79.57		Small circular stone layer above I9314
9294	B29	79.67	79.57		Fill adjoins I9293
9296	B23	79.71	79.47		South of I9290
9297	A29	80.07	79.93		Plaster floor
9299	B11	79.13	78.94	W9312	Pebbles floor
9300	B11	79.13	78.84		Fill adjoins F9299
9302	A25	79.07	78.87		Fill east of W9301
9303	A25	79.07	78.89		Fill west of W9301
9304	B27	78.94	78.71		Fill south of I9193 and I9236
9306	A22	79.5	79.4		Fill west of W9361
9307	B23	79.71	78.88		Fill inside brick installation
9308	A25	79.14	78.91		Fill below F9260
9313	B11	79.56	79.3		Fill west of W9312
9314	B29	79.57			Trench
9315	B29	79.52	79.2		Fill north of 9314
9316	B29	79.57	78.89		Fill south of 9314
9318	B11	79.56	79		Fill east of W9312
9319	B17	80.91	80.7		Fill southeast of W9321
9320	B17	80.91	80.88		Fill northeast of W9321
9322	A25	79.67	78.69		Pit/fill in southwestern corner cuts 9323
9323	A25	78.77	78.69		Fill below F9276 and above F9330
9324	A28	80.15	79.13		Plastered pool
9325	A28	79.7	79.54		Fill adjoins I9324
9326	B27	78.78 - 78.88	78.43		Fill northeast of I9193
9327	B27	78.78 - 78.88	78.61		Fill southwest of I9193
9328	A29	79.55	79.14		Fill below 9292
9329	A18	80.45	79.45		Fill of I9204
9330	A25	78.69	78.59	W9245	Plaster floor below F9276
9331	B26/B27	78.97	78.28		Fill southwest of cistern I9236
9332	A25	78.35	76.95		Fill below F9295
9334	B23	79.66	79.55	W9366	Plaster floor

List of Loci

<i>Locus</i>	<i>Square</i>	<i>Opening Height</i>	<i>Closing Height</i>	<i>Associated Loci</i>	<i>Description and Stratigraphical Relation</i>
9335	B23	79.55	79.37		Fill below F9334
9336	B14	80.01	79.93		Digging in depth
9337	B18	79.73	79.62		Fill below 9270
9338	A26	79.07	78.92	9400	Plaster floor
9339	A26	79.07	78.92		Fill adjoins F9338
9340	A27	80.57	80		Fill
9341	A28	79.54	78.84		Fill below I9324
9342	A11	80.24	78.86		Fill in area adjoining F9229
9343	B14	79.93	79.52		Fill
9344	A14	79.31	78.55		Kiln material
9346	A6	77.08	76.9		Dismantling of W9203
9347	B25	79.13	78.63		Plastered pool below F9398
9348	B25	79.13	78.24		Fill below 9228
9349	B29	79.25	78.51		Fill south and below trench
9350	B15	81.04	80.84		Pebbles floor (of installation?)
9351	B15	80.78	80.6		Pebbles floor north of F9352
9352	B15	80.6	80.52		Pebbles floor south of F9351
9353	B16	80.9	80.56		Fill south of W9165 and east of W9388
9354	B25	78.97	78.57		Fill of I9347
9355	B8	78.95	78.13		Dismantling of I9063
9356	B11	79.56 - 79.88	79.46		Fill south below W
9357	A27	80	79.42		Fill above F9377
9358	B27	79.2	78.32		Fill
9359	B16	80.56	80.36		Circular concentration of burnt material below 9353
9360	B5	77.21	76.7		Fill south of W9386
9371	B23	80.17	80.16		Small plastered pool below F9047
9373	A5	76.73	75.8		Digging in depth below 9358
9374	A8	77.74	77.3		Fill below F288
9375	B5	77.42	76.07		Fill north of W9386
9376	A27	80	78.07		Fill above F9377
9377	A27	78.17	78.11	I9378, W9401	Plaster floor
9378	A27	79.07	78.21	F9377	Circular installation
9379	B28	79.85	79.13		Fill of I9273
9380	A26	78.95	78.15	9400	Fill of cistern
9381	A24/B24	80.05	79.02		Cleaning of pit
9382	A26	78.15	77.96		Fill below F9338
9384	A25	77.45	76.82		Fill north of W9383
9385	A25	77.45	77.28		Dismantling of W9383
9389	B11	79.46	79.07	W9372	Pebbles floor
9391	B27	78.77 - 78.88	78.43	I9236, I9394, I9400	Water channel

<i>Locus</i>	<i>Square</i>	<i>Opening Height</i>	<i>Closing Height</i>	<i>Associated Loci</i>	<i>Description and Stratigraphical Relation</i>
9394	B27	78.9	78.73	I9391, I9236, I9400, W9261	Plastered pool
9396	B27	78.77 - 78.88	78.36		Pipe installation above W9261
9397	B27	79	78.97	W9363	Plaster floor above I9391
9398	B25	79.13	79.08		Plaster floor above I9347
9399	B24	79.51	79.02		Double pool
9400	A26	78.95	78.15?	F9338, 9380, I9236, I9391, I9394	Cistern opening

Area N

<i>Locus</i>	<i>Square</i>	<i>Opening Height</i>	<i>Closing Height</i>	<i>Associated Loci</i>	<i>Description and Stratigraphical Relation</i>
10008	B42	81.91	81.09		Fill
10009	B38	81.4	81.36		Fill
10012	A38	81.33			Plaster floor
10017	B34	81.82			Plaster floor
10019	A36	81.52	81.07		Brown soil
10020	A36	81.52	80.95		Fill
10021	B36	81.52	81.49		Fill above stone foundation 10048
10022	A37	81.37	80.95		Fill
10023	B38	81.36	80.88		Brown soil
10024	B38	81.36	81.17		Fill
10025	B40	81.89	81.13		Fill above F10026
10026	B40	81.87	81.83		Floor above 10134/10135
10028	B38	81.36	81.17		Fill of I10029
10029	B38	81.53	81.23		Circular stone installation
10030	A35	81.33	81.05		Fill above F10108
10031	B34	81.74	81.44		Fill
10035	B33	81.79	80.53 - 80.77		Brown soil
10038	B36	81.49	81.35		Brown soil
10039	B34	81.83	81.36		Stone layer
10040	A35	81.59	81.28		Stone layer adjoins F10108
10041	A36	81.46	81.33		Stone layer
10042	A38	81.21	81.05		Stone layer
10044	B31	81.54	80.88		Fill
10045	B36	81.35	80.6		Brown soil
10046	B38	81.17	80.89		Fill
10047	A39	81.4	81.13		Hamra
10048	B36	81.68 - 81.80	81.06		Stone layer
10049	A37	80.95	80.65	Equals 10070	Reddish soil
10050	B36	81.35	80.48		Grey soil below 10048
10051	B36	81.35	80.44		Brown soil above I10091

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10052	B34	81.52	80.28		Fill below stone foundation 10039
10053	A31	81.47	80.78		Fill
10054	B30	81.49	80.55		Fill
10055	B35	81.71	81.57		Fill
10056	A30	80.93	79.5		Fill
10057	B34	81.52	81.23		Fill
10058	B33	81.68	81.12		Stone layer adjoins F10147
10059	A32	81.19	80.78		Brown soil
10060	A37	80.95	80.65	Equals 10070	Fill
10061	B38	81.25	80.28	F10222, F10097	Plastered pool
10062	B36	81.45	81.08		Pit
10063	B35	81.83	81.57		Stone layer
10064	B31	80.88	79.44		Robber trench, fill above 10072
10065	B34	81.23	80.81		Robber trench above I10177 and W10221
10066	B34	81.23	80.14		sand above I10177 and W10221
10067	B35	81.57	81.16		Fill below stone foundation 10063
10068	B35	81.57	80.93		Fill adjoins F10092
10069	B35	81.57	80.82		Pit
10070	A37	80.67	80.61	Unification of 10060 and 10049	Living surface, adjoins Tabun 10200
10071	B38	81.1	80.09		Exposure of I10029
10072	B31	80.88	80.33	10089, 10161	robber trench
10073	A31	81.18	80.76		Stone layer
10075	B32	81.22	80.72		Brown soil
10076	A32	80.87	80.38		yellow soil above F10093
10077	B37	81	80.81	Equals 10168	Grey soil
10078	B30	80.55	79.52		Brown soil
10079	B31	80.7	80.03		Brown soil
10080	B37	81	80.81	Equals 10168	Brown soil
10081	A38	81.45	81.14		Stone layer
10082	B34	80.95	80.81		Fill below 10065
10083	B33	80.53	80.41		Fill below 10035
10084	A34	81.44	81.18		alluvium adjoins 10085
10085	A34	81.56	81.03		Plastered pool below 10033
10086	B31	79.06	78.9		Plaster floor
10087	A32	80.82	80.67	Cuts F10093	Robber trench
10088	B33	80.77	79.84		Fill
10089	B32	80.73	80.23	F10099, F10167, 10072 10161	Robber trench
10090	B36	80.44	80.44		Fill adjoining I10091
10091	B36	80.61	80.09		Remains of plastered pool below 10051
10092	B35	81.41		Equals F10108	Plaster floor adjoins 10068

10093	A32	80.67			Plaster floor cut by robber trench 10087
10094	A34	81.4	80.56		Brown soil
10095	A34	81.56	81.18		Stone layer adjoins I10085
10096	B38	80.89	80.45		Fill adjoins I10118
10097	B38	81.52		I10061	remains of plastered floor
10099	B32	80.83		equalls F10167	Plaster floor
10100	A37	81.09	80.67		Grey soil
10101	B35	81.16	80.8		Fill above F10122
10102	A36	81.33	80.88		Fill below 10041
10103	A36	80.95	80.88		Fill north of W10104
10105	A38	80.96	80.05		Fill adjoining W10184 and W10214
10106	B36	81.09	80.57		Stone debris
10107	B36	80.48	80.08		Fill adjoins W10104 and W10174
10108	A35	81.4			Floor above 10121
10109	B32	81.92	81.42		Stone layer
10110	B32	81.42	81.03	below 10109	Brown soil
10111	A38	81.03	80.46	F10222, W10227	Plastered pool
10112	B36	80.57		I10234	Floor of pool I10234
10113	A38	80.82	80.02		Tabun
10118	B38	81	80.45		Circular stone installation
10119	B31	80.5			Plaster floor cut by robber trench 10064
10120	B31	80.02	79.39		Brown soil
10121	A35	81.28	80.54		Fill below F10108
10122	B35	80.79		I10192	Floor made of marble pieces
10123	A31	80.78	80.04 - 80.76		Fill
10124	B32	81.03	80.84		Brown soil
10125	B35	81.57	81.35		Brown soil below 10063
10127	B34	80.14	79.28		Fill adjoining I10207
10128	B35	80.8	79.38 - 80.35		Fill adjoining and below F10122, above I10192
10130	A35	81.2	80.03		Plastered pool
10131	B35	81.35	80.8		Brown soil
10132	B34	81.44	81.26		Fill on height of F10133
10133	B34	81.52			Remains of floor above 10139
10134	B40	81.33	80.91		Pit
10135	B40	81.33	80.91		Pit
10136	A36	80.88	80.61		Fill of pool I10234
10137	B37	81.2	80.22		Fill
10138	A37	80.61		W10143, F10153	Plaster floor
10139	B34	81.26	80.22		Fill above I10207
10140	A35	81.04	79.94		Fill
10141	A31	80.76	80.04		Fill
10142	A37	80.53	80.37		Brown soil below F10038

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10144	A32	80.38	79.97		Brown soil below F10093
10147	B33	80.55			Floor adjoins 10058
10148	B38	79.84	79.71		Fill south of W10146
10151	A38	81.03	80.07		Fill of installation 10111
10152	B31	79.44	79.06		Fill
10153	A37	80.47		W10143, F10138	Plaster floor north of W10143
10156	A30	79.97	79.46		Brown soil
10157	B38	81.01	80.45		Dismantling of I10118
10158	B38	80.45	79.9		Fill south of W10154
10159	B38	80.45	80.4		Fill north of W10154
10160	A37	80.37	79.94		Fill
10161	B32	80.84	79.32	F10099, F10167, 10189, 10172	Robber trench
10162	B32	80.73	80.73		Fill
10163	A34	80.56	79.79		Brown soil
10164	A36	80.72	79.94		Fill below F10163
10165	B31	79.06	78.9		Fill
10166	B32	80.84	80.78		Fill on height of F10167
10167	B32	80.84		Equals F10099	Plaster floor
10168	B37	80.81	80.24	Equals 10077 and 10080	Fill between I10061 and I10129
10169	B37	80.89	80.13		Fill west of I10129 and north of W10145
10173	A35/A36	81.2	80.22		Fill of installation 10130
10175	A38	81.03	80.59	F10222	Plastered installation
10176	A34	81.56	80.85		Fill of I10085
10177	B34	80.7	79.72	W10221, 10208, I10207	Plastered pool
10179	B32	80.68 - 80.82	80.06		Plastered pool
10183	A36	80.62		I10234	Earth floor
10185	B35	80.35	79.1		Fill of vault I10192
10186	B32	80.78	79.58		Fill west of I10179
10187	B32	80.78	80.06		Fill east of I10179
10188	A34	79.9	79.52		Pit north of W10180
10189	A34	79.9	79.85	10161, 10072	Fill west of W10180
10190	A34	79.9	79.54		Fill east of W10180
10191	B34	80.29	79.36		Fill of installation I10177
10192	B35	80.35	79.38	F10122, I10234	Stone vault of cistern
10193	B34	80.37	80.06		Fill west of I10177
10195	B30	79.88	78.8		Fill south of W10194
10196	B30	79.88	79.39		Fill north of W10194
10197	B32	80.23	79.7		Fill below 10089
10198	B36	80.75	80.08		Dismantling of wall 10171 and 10172
10199	B36	80.08	79.32		Fill

10200	A37	80.65	80.57	F10070	Tabun
10201	A30	79.5	78.94		Fill north of W10178
10202	A30	79.5	78.94		Fill south of W10178
10203	A34	79.52	79.05		Fill
10204	B38	79.9	79.52		Fill
10205	B38	79.9	79.9		Fill west of W10206
10207	B34	80.13	79.3	I10177	Cistern
10208	B34	79.70 - 79.88	79.45	I10177	Tabun
10209	B32	79.82			Floor below I10179
10210	B32	79.58	79.32		Fill around F10209
10211	A33	81.42			Plaster floor
10212	A33	81.42	81.17		Fill around F10211
10213	B34	79.88	79.28		Fill of Tabun I10208
10215	A38/B38	80.52	80.47		Fill between I10061 and I10111 and Above F10222
10218	A33	81.17			Plaster floor
10219	A33	81.17	81		Fill adjoining and below F10218
10220	A37/B37	80.38	79.11		Fill
10222	A38/B38	80.47		I10061 and I10111, I10175	Floor between I10111 and I10061
10223	A33	81			Plaster floor
10224	A33	81	80.36		Fill on height of F10223
10225	A38/B38	80.27	79.61		Fill below F10222
10226	B32	80.06	79.92		Fill below I10179
10229	A38	80.1	79.73		Fill between W10184 and W10214
10230	A38	80.82	80.52		Fill of tabun I10113
10231	A31	79.96			Plaster floor
10232	A31	79.96	79.65		Fill on height of F10231
10233	B33	80.37	79.38		Fill north of wall W10146
10234	A36/B36	81.08 - 81.35	80.57	W10149, W10150, W10174, W10104, F10183, F10112, I10192/I10185	Plastered pool
10235	A31	79.65	79.26		Fill south of W10236
10239	B32	79.32	78.91		Hamra soil
10240	B32	79.32	78.91		sand below 10210
10241	A33	80.36	80.19		Fill
10242	A33	80.36	80.19		Fill
10244	B36	79.32	79.29		Fill on height of W10243
10245	B36	80.04	79.63	W10243	Cistern
10247	B36	79.43	79.06		Fill east and north of W10243
10248	A33	80.19	79.98		Fill on height of F10249
10249	A33	80.19			Plaster floor
10250	B33	79.83	79.38		Hamra soil

List of Loci

10253	A37/B37	79.53			Hamra soil
10254	A37/B37	79.77	78.66		Fill south of W10252
10255	A37/B37	79.77	79.45		Fill east of I10104
10256	A33	79.98	79.61		Fill between W10257, W10260 and W10264
10258	A32	80.67	79.60 - 80.23		Fill below floor F10093
10261	A31	80.02		W10266	Cistern
10262	A31	79.7	79.42		Fill south of I10261
10263	A31	79.7	79.6		Brown soil north of W10236
10265	A37/B37	79.77	79.64		Fill east of W10252
10267	A31		79.33		Fill of I10261
10268	B34/B35	81.9	81.52		Plaster floor
10269	B34/B35	81.52	81.49		Fill below F10268

LIST OF WALLS

Area M

<i>Wall</i>	<i>Square</i>	<i>Orientation</i>	<i>Upper Elevation</i>	<i>Lower Elevation</i>	<i>Feature above</i>	<i>Related to</i>	<i>Description</i>
9073	A23	N - S	80.06 - 80.15	79.55 - 80.06	9004	W9233	One course
9084	A6	N - S	78.4	78.05	9039		One course
9085	B22	N - S	80.48	79.76	9053	I9046, F9047	Two courses
9109	A17	NNW -SSE	81.09	80.88	9080	F9105	One course
9112	B13	N - S	81.16	80.9	9021, I9016		
9157	B16	NEE - SWW	81.12	80.97	W9161, F9069		One course
9158	B16	SWW -NEE	81.32	81.13	9057	F9069, abuts W9164,	One course
9161	B16	NEE - SWW	81.38	81.04	9057	F9069, cut by W9364	One course
9162	B15/B16	NEE - SWW	81.15	80.65	F9069, 9137	Bonds with W9163	One course
9163	A16/B16	NW - SE	81.08 - 81.18	80.65 - 80.80	F9069, 9148	Bonds with W9162	One course
9164	B16	N - S	81.42	81.24	9057	F9069, abuts W9158	One course
9165	A16	NW - SE	80.96 - 81.05	80.93	9149	Abutted by 9167	One course
9203 deleted	B6	N-S					Two courses
9219	B11	NEE - SWW	80.3	79.47 - 80.01	9190		Two courses
9229	A11	NNE - SSW	79.23	79.01	9191	W9312/W9372	
9230	B14	NE - SW			9078	W9321	
9233	A24/B24	E - W	80.06 - 80.15	79.55 - 80.06		W9245, W9073	
9245	A25	NEE - SWW	79.42	78.17	9241	F9260, F9276, F9330, W9301, W9233	Five courses
9261	B27	N - S	79.23	78.98	9044	I9394	One course
9264	B25	NE - SW	79.01 - 79.24	78.24	F9389	9243 (upper part of wall)	
9279	B6	NNW -SSE	78.73 - 78.91	78.30 - 78.45	9040		Two courses
9301	A25	N - S	79.07	78.93	9246	W9245	One course
9312	B11	NNW -SSE	79.35 - 79.62	78.99	9300	F9299, equals W9372, W9229	One course
9321	B17	NNE - SSW	80.86 - 80.96	80.65 - 80.72	9135	W9230	Two courses
9361	A22	N - S	79.5	79.32	9252		One course
9362	B25	N - S	78.99	78.57	9244, F9243		One course
9363	B27	NEE - SWW	78.97	78.23	9044, F9397	F9397	One course
9364	B27	SE - NW	79.47	79.02	9044	Cuts W9261	One course

List of Walls

<i>Wall</i>	<i>Square</i>	<i>Orientation</i>	<i>Upper Elevation</i>	<i>Lower Elevation</i>	<i>Feature above</i>	<i>Related to</i>	<i>Description</i>
9365	B22	N - S	79.76	79.54	W9085		One course
9366	B23	N - S	79.71	79.38	F9280	Abuts W9367, F9280, F9334	One course
9367	B23	E - W	79.7	79.48	9047, F9280	Abutted by W9368 and W9366, F9280	One course
9368	B23	N - S	79.61	79.25		Abuts W9367, F9280	One course
9369	A24	NEE - SWW	80.22	79	9345, 9095		Four courses
9370	B23	NNW -SSE	79.25	79	W9368		One course
9372	B11	NNW -SSE	79.59 - 79.91	79.47	9238	Equals W9357 and W9312, F9389, W9229	Two courses
9383	A25	NEE - SWW	77.38 - 77.45	76.82	9346		Five courses
9386	B5	E - W	77.01 - 77.41	76.4			Four courses
9387	B16	NEE - SWW	80.90 - 81.00	80.71 - 80.81	F9069		One course
9388	B16	NNW -SSE	80.87	80.61	9198		One course
9390	A25	E - W	79.67	78.62	9241	Equals W9245, abutted by W9282, F9260	Five courses
9393	B8	NEE - SWW	78.95	78.56	9056		Two courses
9395	B27	E - W	78.52	78.05	9262		Two courses
9401	A27	N - S	78.91	78.49	F9377	F9377	One course
9402	A27	N - S	78.47	78.24		W9481	Two courses

Area N

<i>Wall</i>	<i>Square</i>	<i>Orientation</i>	<i>Upper Elevation</i>	<i>Lower Elevation</i>	<i>Feature Above</i>	<i>Related to</i>	<i>Description</i>
10098	B38	NE - SW	81.17 - 81.19	80.88 - 80.92	110029, 10006	Equals W10145, abutted by F10097, bonds with I10061	One course
10104	A36	NW - SE	81.04 - 81.06	80.15 - 80.52	10136	I10234	Eastern wall of I10234
10143	A37	SW - NE	80.64 - 80.70	80.37 - 80.43		Abuts I10104, abutted by F10138, F10153	One course
10145	B37	SW - NE	81.11	80.75 - 80.93	10137	Abutted by W10129, equals 10098	Two courses
10146	B33	SW - NE	80.52 - 80.78	80.20 - 80.48	10088		One course
10149	B36	SW - NE	80.44 - 80.48	80.20 - 80.27	10050	F10112, bonds with W10150, equals W10171	Two courses
10150	B36	SE - NW	80.60 - 80.84	80	10051	F10112, bonds with W10149, equals W10174	Two courses

<i>Wall</i>	<i>Square</i>	<i>Orientation</i>	<i>Upper Elevation</i>	<i>Lower Elevation</i>	<i>Feature Above</i>	<i>Related to</i>	<i>Description</i>
10154	B38	SW - NE	80.62 - 80.75	80.14 - 80.16	10096	Bonds with W10184	One course
10171	B36	SW - NE	80.54 - 80.75	80.09	10051	Abutted by W10172, equals W10149	One course
10172	B36	SE - NW	80.75	80.48	10051	Abuts W10171	Two courses
10174	A36	NW - SE	81.35 - 81.08	80.22 - 80.65	10136	I10234, abuts W10181, equals W10150	Western wall of I10234
10178	A30	SW - NE	79.39 - 79.60	79.02 - 79.09	10018, 10056		Four courses
10180	A34	SE - NW	80.31 - 80.41	79.78 - 80.23	10163	10189	Three courses
10181	A36	SW - NE	80.93	80.37 - 80.41	10136	I10234 abuts W10174	Five courses
10182	A36	SE - NW	80.61	80.27	10136, I10234		One course
10184	A38	SE - NW	80.74	80.17 - 80.29	10105	W10214	Two courses
10194	B30	E - W	79.85 - 79.91	78.36 - 78.44	10078		
10129	B37	SE - NW	81.08 - 81.10	80.40 - 80.42	10004	Abuts 10145	Three courses
10206	B38	SE - NW	79.93 - 80.00	79.74 - 79.75	10158	Abutted by W10228	Two courses
10214	A38	SE - NW	80.50 - 80.60	80.30 - 80.31	10105	W10184, bonds with W10154	One course
10221	B34	SE - NW	80.46 - 80.58	79.95 - 80.18	10193	I10177	Two courses
10227	A38	SE - NW	81.09 - 81.11	80.58 - 80.63	10005, 10006	Abuts W10098, bonds with I10111	One course
10228	B38	SW - NE	79.91 - 79.98	79.76 - 79.85	10158	Abuts W10206	Two courses
10236	A31	SW - NE	79.85 - 79.98	79.62 - 79.67	10232	adjoins W10266, Equals W10264?	One course
10237	A37	SE - NW	80.28 - 80.79	80.07 - 80.57		Abuts W10143	Three courses
10238	B36	W - E	79.83	79.82 - 79.77	10199		One course
10243	B36	SW - NE	79.64	79.63	10199	Abuts I10245	
10246	B35	SW - NE	80.25 - 80.32	80.00 - 80.03	10128	Abuts I10192	One course
10251	A37/B37	SE - NW	79.72 - 79.79	78.8	10220	Abuts W10152	One course
10252	A37/B37	SW - NE	79.91 - 79.93	78.8	10220	Abutted by W10151, W10259	
10257	A33	SE - NW	80.15 - 80.24	79.95 - 79.99	10248	Abuts W10260 and bond with W10264	One course
10259	A37/B37	SE - NW	79.93 - 80.08	78.8	10220	Abuts W10152	
10260	A33	E - W	79.66 - 80.11	79.66 - 79.86	10248	W10257, W10264	Three courses
10264	A33	E - W	80.12 - 80.20	79.80 - 80.00	10248, 10249	W10260, equals W10236?	One course
10266	A31	SE - NW	79.8	79.60 - 79.65	10123	Equals W10236, I10261	Two courses

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