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An Agricultural Settlement and Cemetery from the Roman, Byzantine and Mamluk Periods at Gane Ṭal

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Introduction

During 2010, two salvage excavations were conducted at Gane Ṭal (map ref. 180305–750/632113–500) within the limits of the site of al-Burj prior to the construction of greenhouses. The site is in the southeastern part of the Israeli coastal plain (see Ackermann, this volume), approximately 2 km west of Naḥal Timna, a tributary of Naḥal Soreq, 15 km east of Ashdod and about 25 km northeast of Ashqelon. It is located on a low hill (76.30 m asl), approximately 1 km southwest of Kibbutz Ḥafez Ḥayyim, and until recently, it was part of the kibbutz's agricultural fields (Fig. 1). This report presents the first excavations conducted at this site.

Dozens of trial trenches were mechanically dug prior to the excavations, covering approximately 18 dunams. While the area designated for housing was virtually devoid of ancient remains, several concentrations of potential archaeological locales, measuring approximately 5 dunams, were found in the fields immediately to the south, where greenhouses had been planned. Most of the archaeological remains were found just beneath the cultivated topsoil. As the developers of the site had planned to considerably lower the entire southern part of the site, a full exposure and excavation of all the identified archaeological locales was mandatory. The northern part, however, was to be raised by the addition of a large quantity of soil, and therefore, the archaeological remains were reserved for future research. Archaeological efforts in the northern part focused on selected segments where trial trenches identified the densest potential of archaeological concentrations, with the intention to acquire a sample. It should be stressed that despite the relatively wide exposure of the southern part, a full reconstruction of the site's plan, type and functional distribution could not be determined as parts of the site remain unexcavated, and due to extensive modern damage caused by mechanically-based agriculture.

The excavations were carried out by the authors in two phases. In January 2010, Uzi 'Ad directed the excavations in Area A at the northern end of the site, and in August-November of the same year, Yoav Arbel excavated Areas B1, B2, C1, C2, D1, D2 and E1–E4 (Fig. 2;

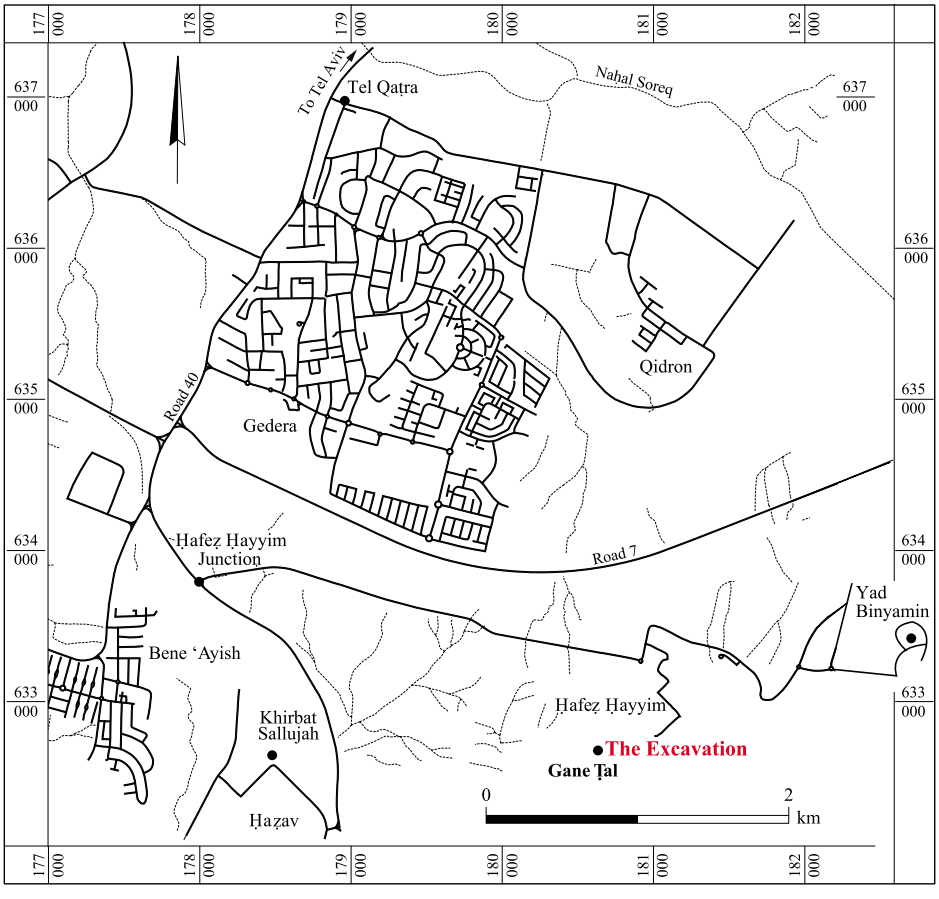


Fig. 1. Location map of the site and adjacent sites.

Plan 1).[1] Finds included plastered installations and tombs from the Roman period; dwellings, workshops, stores, winepresses and tombs from two subphases of the Byzantine period; graves from the Early Islamic period; and a structure from the Mamluk period. Isolated

[1] The excavations (Permit Nos. A-5810, A-5979), underwritten by the Naḥal Soreq Regional council, were conducted under the direction of the authors on behalf of the Israel Antiquities Authority, with the assistance of Mohammed Hater, Reneé Forestani and Tania de Vries (area supervisors) and Oksana Ashkenazi (field recording). Thanks are due to Shlomo Yaʻaqov-Jam, Yoni Amrani, Ra'ed Abu-Halef and Eli Bachar (administration), Avraham Hajian, Mark Kunin, Boris Antin and Elizabeta Belashov (surveying and drafting), Tania Kornfeld (surveying, drafting and isometric drawing), Chen Ben-Ari and Angelina Dagot (GPS), Yosef Bukengoltz (pottery restoration), Lena Kupershmidt (metal laboratory), Marina Shuiskaya (pottery drawing), Assaf Peretz (field photography), Clara Amit and Amir Gorzalczany (finds photography), Skyview Photography Ltd (aerial photography), Oded Raviv (stone restoration), Felix Volynsky (IAA inspector), Anna de Vincenz (pottery), Brigitte Ouahnouna (glass), Donald T. Ariel (numismatics), Kate Raphael (metal finds), Nitzan Amitai-Preiss (bronze rings), Naomi Sidi (stone implements), Inbar Ktalav (mollusks), Moshe Sade (archaeozoology) and Oren Ackermann (geomorphology).

Plan 1. Layout of the excavation areas at Gane Ṭal.

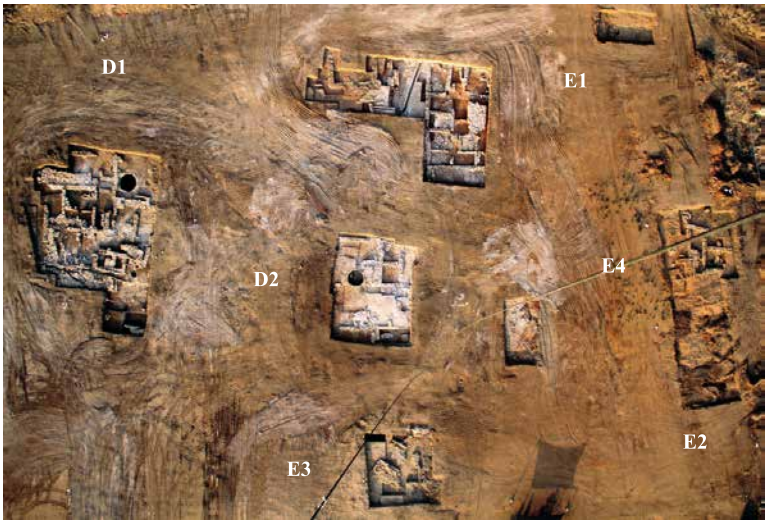


Fig. 2. Aerial view of Areas D and E.

artifacts from the Neolithic, Iron Age/Persian and Ottoman periods were found on topsoil (Table 1).

Remains from the periods represented in Gane Ṭal are only known from four other sites in the region (Fig. 1): Tell Qaṭra, Yad Binyamin, Khirbat Sallujah and Ḥafeẓ Ḥayyim. Tell Qaṭra is approximately 4.5 km northwest of Gane Ṭal, in the northern part of Gedera. This was probably the chief settlement in the area, at least until the Byzantine period (Gutfeld 1999; Fischer and Taxel 2008:27–28; Barda and Zbenovich 2012: Site 34). Yad Binyamin included occupations from the Hellenistic to the Early Islamic period, as well as meager architectural remains and pit graves from the Mamluk period (Weksler-Bdolah 2000:100*). Khirbat Sallujah had a loculi tomb from the Early Roman period, as well as an industrial winepress, installations and water cisterns.[2] A small site near the Ḥafeẓ Ḥayyim Junction showed two walls from the second century CE (Golan 2011).

[2] The Israel Antiquities Authority archives have a report dated June 14, 1957, by Baruch Sapir, where credit is given to then Israeli Chief of Staff, Moshe Dayan, for the original identification of the archaeological remains and the notification to the Antiquities Department about Khirbat Sallujah being severely compromised by quarrying activities. Sapir visited the site a few days after the discovery and described the burial cave in detail, along with a professionally drawn plan and section. The finds he described include two rosette-adorned ossuaries, and several complete oil lamps dating from the second to the sixth century CE. It should be noted that at a distance of 50 m to the south of the cave, Sapir noted, "the bottom of a circular winepress 1.10 m diam…paved with large mosaic stones…with a sump in its center." The installation is probably the distributing or the collecting vat of a Byzantine industrial winepress of the same family of presses as the one found at Gane Ṭal at about the same distance to the northwest of the cave. The only publication of the cave appeared in a brief anonymous article in the Hebrew newspaper HaBoker on June 14, 1957—the same date as that of Sapir's report. We thank Dor Golan for the initial information and access to the archived documents.

Table 1. Division of Strata according to Periods

Period	Stratum	Area	Remains
Ottoman (18th–19th c. CE)	I	Topsoil	Musket balls, pipe
Mamluk (14th–15th c. CE)	II	E3	Building, occupation floors
Early Islamic (8th–10th c. CE)	III	E2, E4	Graveyard
Byzantine (6th–7th c. CE)	IVa	D1, E2	Domestic and storage buildings, tombs
Byzantine (4th–5th c. CE)	IVb	All areas	Domestic buildings, courtyards
Early Roman (1st c. BCE–1st c. CE)	V	D1, D2, C1	Two circular installations
Iron III/Persian (8th–7th c. BCE)		Topsoil	Few sherds
Pottery Neolithic–Early Chalcolithic (5500–4800 BCE)		Topsoil	Two sickle blades

The importance of this article stems from the fact that there is no comprehensive publication of the finds retrieved from any of these sites, including those that have been systematically excavated. The information disclosed in this report is thus the first to be made available to researchers, shedding light on this area.

The report presents the strata from earliest to latest. The two industrial winepresses are presented as subchapters within their respective strata. The various burial contexts could not be excavated due to disturbance from ultra-orthodox protestors, and therefore, their precise dating remains uncertain; the tombs are presented separately in the closing part of the report. The discoveries in each stratum are described from north to south. Separate reports are dedicated to ceramics (see Vincenz, this volume), glass (see Ouahnouna, this volume), numismatics (see Ariel, this volume), metal finds (see Raphael, this volume), grinding stones (see Sidi, this volume), mollusks (see Ktalav, this volume) and geomorphology (see Ackermann, this volume). It should be noted that there are dating discrepancies between the reports on the ceramics and the glass. An analysis of these finds along with architectural characteristics and the numismatic finds allows a partial explanation based on occupation phases in different areas of the site, but the problem remains. Further research may help resolve this issue in the future.

The Excavation

The Early Roman Period (Stratum V)

The Early Roman period is represented at Gane Ṭal by two subterranean plastered installations, probably cisterns, and a loculi (*kokhim*) tomb (see below, *The Early Cemetery*). The dating is not definite, as it was based on finds from the soil above the floor of the installations and on typological and comparative data for the tomb. These considerations, and the fact that these features are detached from the Byzantine structures, provide only circumstantial evidence.

Circular Installations (Areas D1, D2; Plans 2, 5)

Two circular installations were found at the site, one in each subpart of Area D. The upper parts of both installations were missing, as reflected in the severed, rounded sections of the top edges. The installations were dug into the natural clay; their walls were built of stones and mortar (40–60 cm thick) and coated with a layer of plaster (3–5 cm thick). There was no architectural connection between the installations and the buildings in their immediate vicinity, nor were feeding channels discovered. While the installations are similar in most aspects, the installation in Area D1 (L1067; diam. 2.8 m; Plan 2) was slightly wider than the installation in Area D2 (L1083; diam. 2.6 m; Fig. 3, see Plan 5). Assuming that the field's surface level did not change significantly since the Byzantine period, the installation in Area D1 would have also been deeper than the installation in Area D2 (surviving depths 3.1 m and 1.4 m, respectively).

While the pottery related to the structures in their immediate vicinity is mostly dated to the Byzantine period, the finds within the installations included a concentration of sherds from the first and second centuries CE; finds from the earlier phase dominated the lowest levels above the floors (0.6–1.0 m deep; see Vincenz, this volume: Figs. 1–3). The Early Roman period is otherwise almost non-existent in the pottery assemblages of the site. Other than ceramics, the Early Roman date is confirmed by glass vessels (see Ouahnouna, this volume: Fig. 1:1–5), fragments of soft limestone mugs (Fig. 4) and two coins (see Ariel, this volume: Cat. Nos 1, 2).

The fill inside the installations contained mixed layers of soil, clay, sand and ash in slightly tilted horizons, apparently introduced as horizontal deposits that probably accumulated during the installations' use or shortly after their abandonment. Among the

Fig. 3. Installation 1083 in Area D2, looking west.

finds within Installation 1067 were two parts of a pillar made of *nari* limestone. On the floor of Installation 1083 was a large perforated square stone (60 × 60 cm), which originally may have been set over the top of the installation (Fig. 5). Several building stones were haphazardly piled over it, probably to facilitate climbing in and out of the installation (Fig. 6).

An intentional, roughly circular disturbance (diam. 0.6 m) that had cut into the plaster was detected slightly over the floor of Installation 1067. A probe into the disturbance yielded

Figs. 4. Chalkstone vessel fragments from the installations.

No.	Area[i]	Basket	Description and Measurements (cm)
1	D2	10608	Fragment of bottom of chalkstone mug; max. diam. 5.3, height 2.8, thickness 1.6
2	D1	10425	Handle of chalkstone mug; length 3.7, height 4.7, thickness 1.5
3	D2	10696	Handle of chalkstone mug; length 3.3, height 4.2, thickness 1.7

[i] Another fragment of a chalkstone mug fron Area D1 (B10469) was not illustrated (length 2.5 cm, height 3.2 cm, thickness 1.4 cm).

Fig. 5. Perforated stone from the bottom of Installation 1083, looking south.

Fig. 6. Stone pile by the edge of Installation 1083, looking south.

a small amount of first-century CE pottery over sterile clay. The function of the disturbance remains unexplained, but it seems to have been caused shortly after the installation was no longer active.

THE BYZANTINE PERIOD (Stratum IV)

The main phase of occupation at the site (Stratum IV) dates to the Byzantine period. Construction and activities relate to two subphases: the earlier dates from the fourth and fifth centuries CE (Stratum IVb; Areas D1 and E2), and the later, from the sixth to the early seventh century CE (Stratum IVa; Areas E1 and D2). Despite the structures from both subphases being located in close proximity, the numismatic, and to a lesser extent the ceramic finds, indicate that the earlier structures were only partially utilized during the later phase. Further discussion of this anomaly appears in the conclusions of this report.

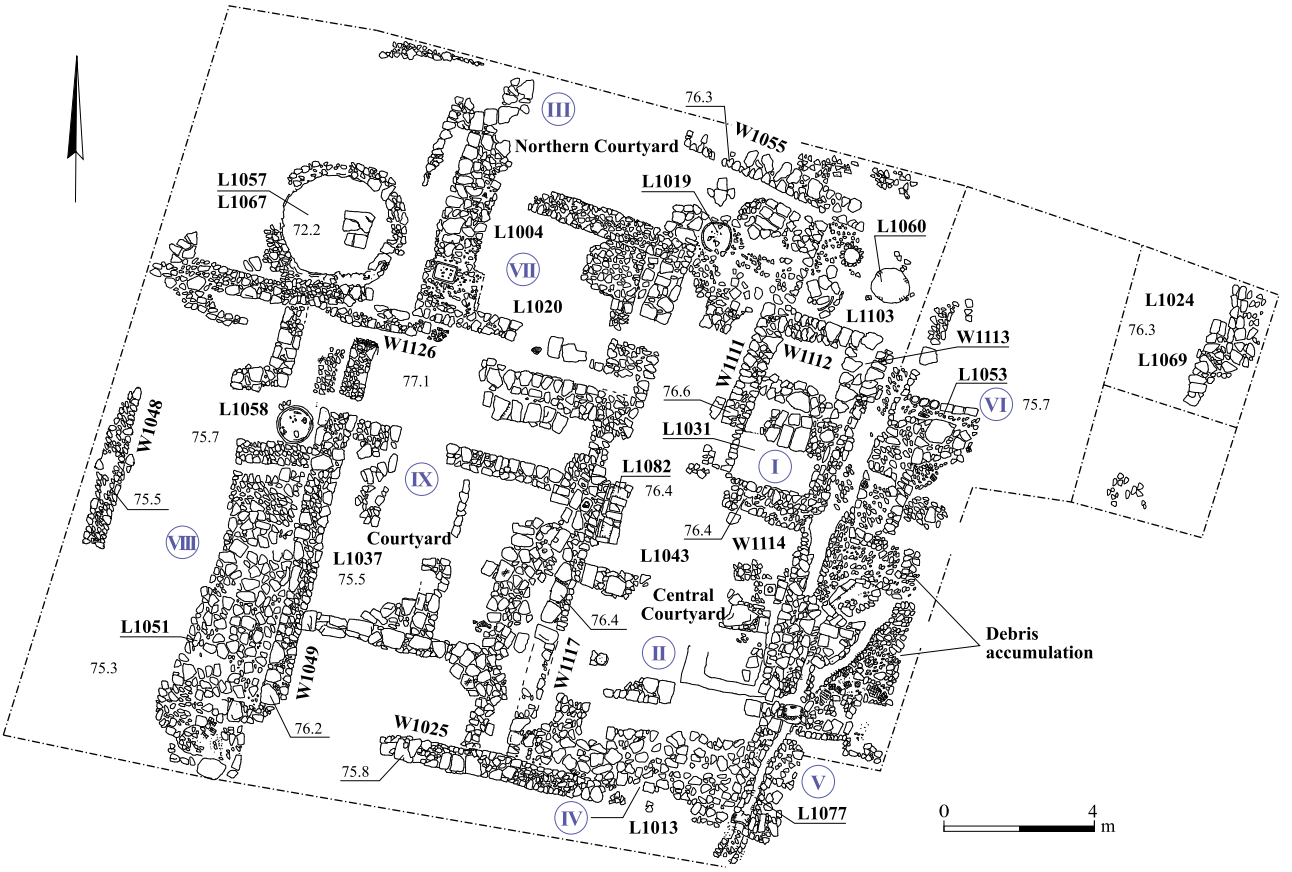
STRATUM IVB

This stratum probably represents a farm complex that was founded in the Late Roman period and lasted throughout the Byzantine period. The remains include rooms, courtyards and stone-paved floors in two concentrations totaling 1.5 dunams.

The Main Domestic/Industrial Complex (Area D1; Plan 2)

The delineation of complexes in this area is tentative due to the fragmentary architectural preservation, the haphazard original planning and the high likelihood of indiscernible subphases. There are marked similarities between Area D1 and Area E2 in the style, distribution, character and preservation of the architectural elements, in addition to both including circular installations.

Area D1 includes several main elements and may be roughly divided into eastern and western parts. Each part contains modest buildings arranged around small courtyards, as well as installations, drainage channels and stone-paved floors (Fig. 7); these are marked in Roman numerals. The planning is utilitarian with few straight walls and 90° angles. The walls were mostly built of fieldstones, and the small volume of nails found in the area (see Raphael, this volume: Nos. 8–13) suggests an infrequent use of wood. Several clay ovens, numerous grinding stones and several stone-paved floors suggest small-scale local production. The vast majority of sherds in the area belong to storage jars, with cooking pots in smaller quantities. Table wares, lamps and other more prestigious vessels were rare. Although most of the sherds dated to the late Byzantine period, coins from the fourth and sixth centuries CE appeared in similar numbers. The five sixth-century CE coins came from the layer nearest to topsoil, representing accumulations over the buildings (see Ariel, this volume: Nos. 26, 28, 32, 37, 38). All six earlier Byzantine coins (see Ariel,



Plan 2. Area D1.

Fig. 7. Area D1, aerial view to the north.

this volume: Nos. 9, 12, 14, 15, 22, 23) originated from contexts better affiliated with the architecture.

The Eastern Part

Straight-Angled Building (I).— The remains of a straight-angled rectangular structure were discovered slightly northeast of the central part of the area. It was the only structure of its kind at the site. Two phases of construction were noticed. The original phase (W1112, W1113) shows more investment in the construction style and materials than all other structures in Area D1. Relatively large, partially cut stones were used in this early phase, with small fieldstones used for consolidation. Construction of the later phase (W1111, W1114) was less precise, with smaller fieldstones used, partly overlying earlier remains. As no entrances were discerned, the walls probably represent only the lowest course. A few stone slabs were all that was left of the floor. The function of the structure remains unclear. The rim of a marble bowl (length 10.9 cm, height 7.7 cm, thickness 0.7 cm) was discovered in the southern part of this building (L1031, B10229).

Central Courtyard (II).— An irregularly shaped open space (L1043) may have contained work areas or installations as indicated by fragmentary remains scattered in several spots, including several grinding stones from debris and the topsoil (see Sidi, this volume: Nos. 3, 11, 31). The best-preserved installation (L1082) consisted of cut, soft limestone slabs, most of which were in a headers formation. Its purpose remains unclear. Despite the similarity to burials, it is unlikely to have been one due to its location at the heart of the domestic area, and its apparent association with adjacent W1117. No human remains, or other finds commonly associated with graves, were found above or in the immediate vicinity of the installation. The fragments of a Byzantine glass lamp were found in the debris in this courtyard (L1035; see Ouahnouna, this volume: No. 27).

Northern Courtyard (III).— Two subphases were discerned in this courtyard, as indicated by two superimposed stone floors and three clay ovens in close proximity, one of which was intentionally blocked.[3] The westernmost oven of the three in this courtyard (L1019; diam. 0.7 cm) was exposed within a surface of pebbles and packed soil. A large amount of pottery was scattered over this floor, most of which was from storage jars and cooking pots. The oven was ovoid in shape and a ceramic bellows improvised from a Gaza jar was inserted into its southern part (Fig. 8), a common phenomenon in coastal sites during the Byzantine period (for examples, see Ganor et al. 2010:29). The other two ovens were found embedded in packed-earth floors that were north of straight-angled Building I. The easternmost oven (L1060; diam. 1 m), either disintegrated or completely dismantled, was

[3] For further information on the subject of ancient baking ovens and their typology, see Avitzur 1976:109; Frankel 2011; Mazar 2011.

Fig. 8. Area D1, clay oven (L1019) with a funnel, looking north.

detected solely by the ring of ash and organic matter that had padded its outer frame. Ashy soil in small quantities was also found within it, as well as fragments of the oven's clay lining. Affiliated pottery dated it to the Byzantine period. Approximately 1 m west of this disintegrated oven was the third oven, which was intentionally blocked and incorporated into a later floor (L1103). Another small circular installation of unclear function was found embedded between and slightly north of the second and third ovens. At least some of the smaller spaces around the courtyard may have served as storage or work areas. A relatively substantial wall demarcates the courtyard to the north (W1055); however, its chronological affiliation with the courtyard cannot be proven.

Eastern Stone-Paved Floor (IV).— This floor (L1013) comprised stone slabs—mostly *nari* but also some basalt—in a tightly packed arrangement. It was covered with a brown sediment rich with Byzantine pottery, and below it the floor was natural clay. The paving

may have been used to allow outdoor work during winter, when the ground would otherwise be muddy.

Channels (V, VI).— Two channels were discovered. Their rough construction, the random use of building materials and the absence of hydraulic plaster suggest that they were intended for waste disposal rather than water collection. This is also indicated by their position, between the built area and the open grounds.

The southern Channel V (L1077) was built of fieldstones strengthened with rough mortar, with an inner conduit (20 cm wide) coated with rough plaster. Its northern extension disappeared into an accumulation of debris. It was probably fed by drains from rooftops or upper floors. Two halves of the top part of a Pompeian mill (see Sidi, this volume: Nos. 27, 28; Avitsur 1976:77; Frankel 2003a:46–47) were incorporated along the channel (Fig. 9). Such grinding devices were used in ancient Israel from the Early Roman to the Byzantine

Fig. 9. Area D1, Channel V with fragments of a Pompeian mill, looking north.

period (Yavor 2010:96–97). The fragments were placed on their side, allowing water to flow through the perforated center. The reason for their use is unclear, as no device was found that could seal the channel when necessary, nor were there diversions into which the water could be veered. They may have been intended simply to facilitate a pedestrian crossing of the channel.

The northern Channel VI (L1053) was tentatively identified due to its poor preservation. The channel survived to a length of 2.2 m and its conduit was 15 cm wide. No traces of plaster remained. Its southern end consisted of fieldstones consolidated with soil. The northern end showed a similar method of construction, except that the northern end had incorporated the overturned upper halves of three Gaza vessels filled with earth and plaster (Fig. 10). The use of such vessels in construction is unusual, but theey are known at other contemporary sites. At Giv‘ot ‘Etun, for example, Byzantine Gaza jars were used in the foundations of brick walls, and as inner partitions of large rubbish dumps (Seriy 2017).

The Western Part

Northern Stone-Paved Floor (VII).— This floor (L1004) was paved with stones of various types and sizes, some of which were in secondary use, including half a basalt cylindrical rotary mill—the only one to be found at the site (Fig. 11). In Israel, the earliest examples of these basic grinding devices date to the Roman period; however, their distribution was more significant later, in Byzantine times (Frankel 2003a:46; 2003b:18), and they remained in use among rural and Bedouin populations into the twentieth century (Avitsur 1976:75–76). A plaster-lined oblong installation (60 × 40 cm) was embedded near the floor’s meeting point with W1126 (Fig. 12). A similar installation was found in Area E2 (see below, *Secondary Domestic/Industrial Complex*).

Fig. 10. Area D1, Gaza jars incorporated into Channel VI, looking south.

Fig. 11. Basalt hand-grinder incorporated in the northern floor.

Fig. 12. Installation at the edge of the northwestern floor, looking south.

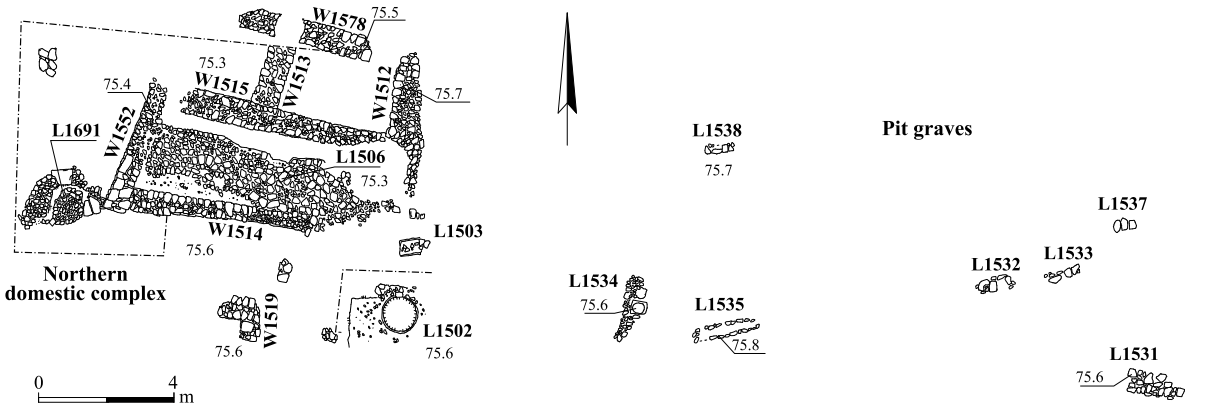
Southern Stone-Paved Floor (VIII).— This floor was the largest structural unit to be discovered in Area D1. It comprises fieldstones of various types and sizes in a tight arrangement, including several grinding stones in secondary use. There were also fragments of plaster and scattered white mosaic stones. Associated pottery was mostly Byzantine. Immediately to the north of the floor was a clay oven (L1058; diam. 0.9 cm), the only one found in the western part of Area D1.

Courtyard (IX).— The complete plan of this courtyard survived. It has an entrance located at the northern wall, but no doorjambs or threshold were found. The courtyard contained several fragmentary architectural remains, probably representing local installations whose functions cannot be determined. A narrow floor (4.0 × 1.2 m) made of stones in a haphazard arrangement was exposed at the eastern end of the courtyard. Pottery included mostly sherds of Byzantine-period storage jars; there was a denser concentration of sherds in the northwestern corner of the courtyard.

The Secondary Domestic/Industrial Complex (Area E2; Plan 3)

Area E2 comprises a small concentration of architectural remains (Fig. 13), and is reminiscent of Area D1 in its layout and installations. Dismantling in antiquity and the mechanized agricultural cultivation during modern times resulted in substantial disturbances to this complex. The later cemetery (see below, *The Late Burial Ground*) precluded further expansion as it was immediately east and south of these architectural remains, while no remains were found to the west and north.

The main structural remains in Area E2 include six connecting walls (W1512–1515, 1552, 1578), which formed a complex of at least three enclosed spaces. The two spaces to



Plan 3. Area E2.

Fig. 13. Area E2, aerial view to the north.

the north were of roughly similar dimensions, and the southern space was approximately twice as large as each of the northern rooms. A dense layer of fieldstones (L1506) likely served as the complex's floor or its foundation bed. Similar elements were found in Area D1.

All three spaces may have belonged to a single structure or complex with possible subphases. The walls were built of small fieldstones or roughly cut stones of a slightly larger size; their flatter sides were arranged along the outer faces. Soil was the only consolidation material. As no passages, entrances or installations were found, the walls were probably the foundations or floor-related courses.

Two short walls created a corner 2.2 m south of the complex (W1519), which were all that remained of an additional building. To the southeast of the complex were one clay oven (L1502; diam. 1 m) and a small plaster-lined oblong installation of an unknown function (L1503; 60 × 40 cm). Both elements have equivalents in Area D1. A roughly circular, stone-paved floor (L1691) was attached to the southwestern part of the complex. The fragmentary preservation of the complex precludes determining its exact function, although a domestic setting is the most likely option.

Most of the sherds found in Area E2 belonged to storage jars of the late Byzantine period. On the other hand, four of the five coins dated to the fourth century CE (see Ariel, this volume: Nos. 10, 11, 17, 18, 20) and only one (see Ariel, this volume: No. 43), to the sixth century CE. Coins of the fourth and fifth centuries continued to circulate into the sixth century, yet the numismatic statistics are noticeably different from those of Area E1 (see below, *The Storage Facility*). The combined ceramic and numismatic evidence suggests that the building was constructed during the earlier phase and was covered with soil and pottery sherds from the later phase after its dereliction.

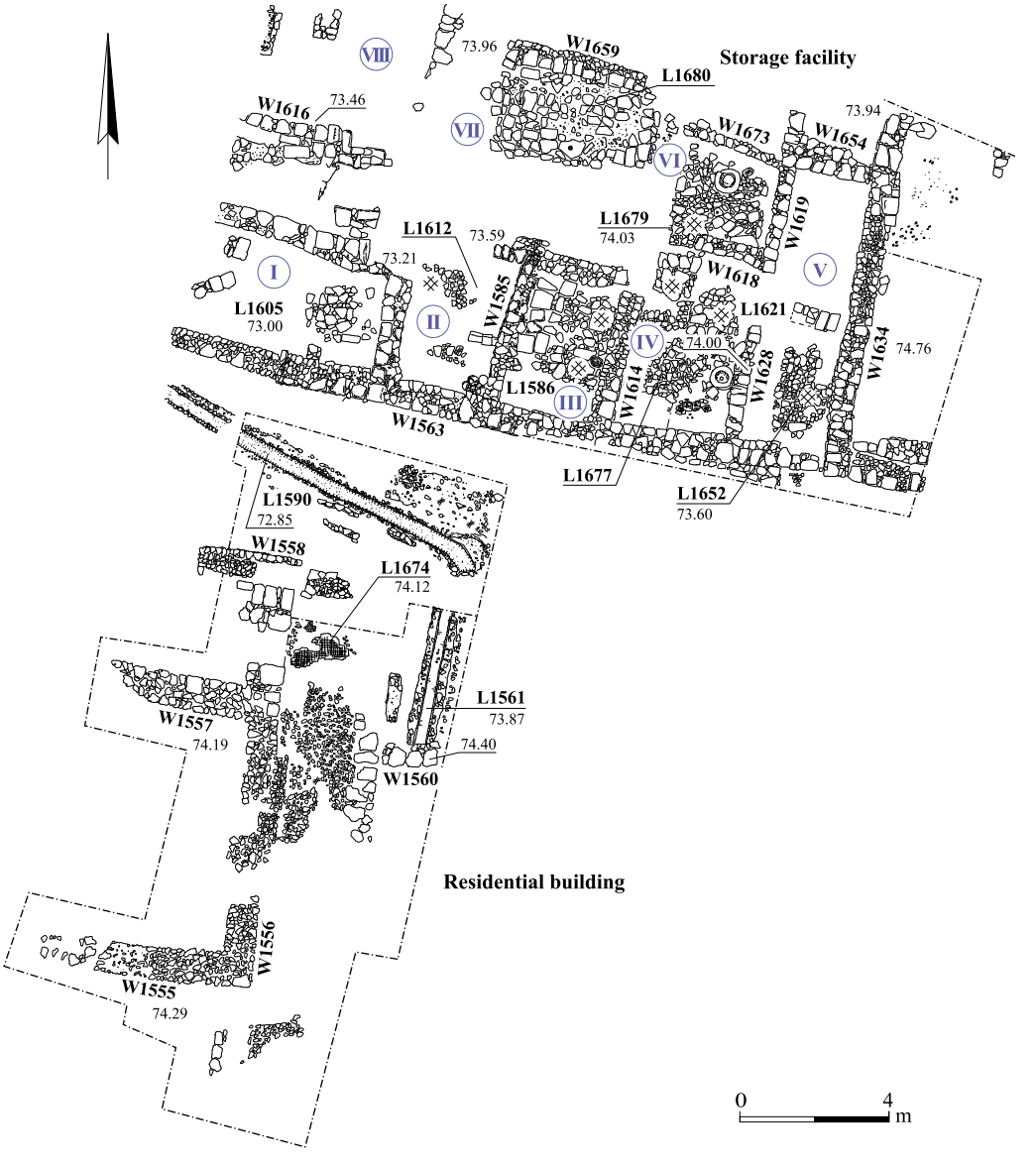
STRATUM IVA

The remains from the later phase in the Byzantine period include what was probably a residential building, a large storage facility and two industrial winepresses, all of which belonged to a single farmstead. The residential building and storage facilities, comprising a total of two dunams, were discovered at the center of the site, while the presses were discovered at its extremities.

The Residential Building (Area E1; Plan 4)

The partial foundations of a large residential building were found in poor preservation due to its dismantling for other construction projects in antiquity, and due to its proximity to an intensely cultivated modern area. The remains include three orthogonal walls delineating a large space (W1555–1557) with an additional affiliated structure, a plastered channel and a fragmentary patch of a mosaic floor (Fig. 14).

The straight-angled architectural remains are possibly the inner core of walls that lost their facades to stone-robbing once the building became derelict. What is left comprises small fieldstones consolidated with soil preserved to a single course except at the corners, where up to three courses survived. All three walls were of the same width (c. 80 cm). The eastern wall (W1556) was exposed to its full length (8.6 m). The northern and southern walls (W1557 and W1555, respectively) lost their western extensions, and each have a preserved length of 5.7 m.



Plan 4. Area E1.

Fig. 14. Area E1, the residential building, looking west.

The inner courtyard delineated by W1555–1557 was surrounded by rooms from at least three sides. Remains of a mosaic floor (L1674; 1.5 × 0.7 m) with red-and-black geometric motifs against a white background abutted the eastern face of W1556 (Fig. 15). The foundation bed of the mosaic was made of tightly arranged pebbles; it was exposed south of the floor patch, where the mosaics were not preserved. Mosaic Floor 1674 was the only decorated one at the site that was not associated with the two winepresses.

The remains of an an east–west wall (W1558), and several large slabs made of soft limestone south of W1558 were found up to 3 m north of the main structure; these were placed in parallel lines. They may have been the remains of a northern room of the same complex as the courtyard. Despite the fragmentary preservation, the layout, building materials and decorative mosaic floor indicate that the investment noticeably exceeded other domestic settings at Gane Ṭal.

Two plastered channels to the east (L1561) and north (L1590) of the building were similar in dimensions and style. The southern part of the eastern channel (L1561) ended with a perpendicular wall (W1560) that may have originally had a vertical conduit that drained from a roof. The channel runs 3.9 m northward, at which point it was cut. A one-meter gap separated this channel from the eastern end of the northern channel (L1590). Despite this gap and the northern channel being one meter lower (Fig. 16), the two may have been part of the same system. The northern channel resembles the eastern channel in its construction style, albeit it was slightly wider. It declined westward and channeled water to an area where no building remains were noted. The quality of construction and the

Fig. 15. Area E1, the fragmentary mosaic floor from the residential building.

Fig. 16. Area E1, northern Channel 1590, looking east.

hydraulic plaster suggest that this was part of a drainage system that led into a cistern or irrigation network.

The dating of this complex to the later phase of the Byzantine period rests on two arguments: (1) The majority of the sherds from this complex belong to late Byzantine-period storage and cooking vessels, including vessels from fairly secure floor contexts (see Vincenz, this volume: Figs. 5:7; 6:7, 9, 21); (2) The adjacent storage facility, securely dated to the sixth century CE (see below, *The Storage Facility*), was found next to the residential building, and at no point encroached upon it, indicating that the residential building was still in use when the storage facility was constructed. Additionally, the clean lines of the plan of the building were undisturbed by later construction phases and the mosaic floor, which suggests that it was part of a private residence built during the Byzantine period. While it may have been originally constructed during the early phase, it probably remained active throughout the sixth century.

The Storage Facility (Area E1; Plan 4)

This structure, located immediately to the north of the residential building, was the largest coherent architectural unit discovered at the site (Fig. 17). The remains are represented by long segments of the southern and eastern perimeter walls (W1563, W1634; 18.4 m and 8 m, respectively) and a series of rooms. The depth of the remains and the sturdy construction of two lines of roughly worked large stones (0.6–0.9 m wide) spared the remains from some of the damage that would normally have been inflicted by modern agriculture. Therefore, its preservation is better than most other complexes at the site.

Fig. 17. Area E1, the storage facility, looking south.

Most of the inner rooms were well-defined, although the inner walls perpendicular to the perimeter walls of the building were sometimes missing or fragmentary. It is possible that some of the rooms opened to an inner east–west corridor without a partition wall between them. This would not have been a problem for a large storage facility, and would have facilitated access and the mobilization of vessels. The dominant ceramic assemblage of the rooms included Byzantine Gaza storage jars and bag-shaped vessels.

Room I.— This is the only room of the complex built on an east–west trajectory. It was covered by a massive layer of debris. A roughly circular floor made of irregular slabs of *nari* stones was at the eastern side. The soil that had accumulated over the floor contained small quantities of ash (L1605).

Room II.— This room was covered with debris. The fragmentary remains of a pavement made of small irregular slabs were found in the northern part of the room. Three upside-down Gaza jars were set against the southeastern corner of the room (L1612; Fig. 18). A similar appearance of upside-down Gaza jars was recorded at Yad Binyamin (Weksler-Bdolah 2000:99*).

Room III.— This room contained a well-preserved stone pavement made of tightly arranged irregularly shaped slabs of various sizes in a random arrangement. The pavement was missing, probably intentionally, in an approximately one-meter-wide strip along the southern perimeter wall. A Gaza jar was embedded in the eastern part of the floor, probably as a fixed container for liquids (Fig. 19).

Room IV.— Of this well-preserved room, both the western and eastern walls were clearly discernable. There were no traces of a northern wall, and there may not have been one. The

Fig. 18. Area E1, upside-down Gaza jars in corner of Room 1612, looking southeast.

room’s floor (L1677) was paved with irregular stone slabs, appearing mostly in the central and northern parts. The upside-down rims of three Gaza jars were found in an unpaved part at the southern part of the room (Fig. 20). These may have been used as permanent stands for other storage jars.

Fig. 19. Area E1, room III with embedded Gaza jar, looking east.

Fig. 20. Area E1, basin and remains of upside-down Gaza jars in Room IV, looking north.

While it is possible that the perimeter paving stones were robbed, or that they demarcate the location of dismantled benches, the orderly placement of the ceramic vessels implies that some parts of the room were originally left unpaved. A large limestone basin (c. 80 cm high, diam. 0.5 m) was found standing *in situ* near the eastern wall (Fig. 20). Among the finds from this room was a well-preserved handle of a bronze pot, possibly of a valuable vessel (see Raphael, this volume: Fig. 4).

A unique basalt bowl with the sculpted image of a head of a female or a youth (Fig. 21) was found in this room, c. 50 cm above the floor. The fragment (8 cm high, diam. 0.2 cm) represents approximately a third of the vessel. The bowl apparently stood on a set of four legs, two of which remain. Each stand was subdivided into three cushion-like feet in linear formation, with two larger feet at each end and a smaller foot in the middle. The vessel's exact function remains obscure.[4] No comparisons have been found for the bowl, although the image is similar to examples in stone capitals (Schlumberger 1933: Pl. XXXVII:2; Fischer 1981: Figs. 9, 14) and ceramic vessels (Taxel 2007: Fig. 1:3, 5) from the Roman and Byzantine periods.[5]

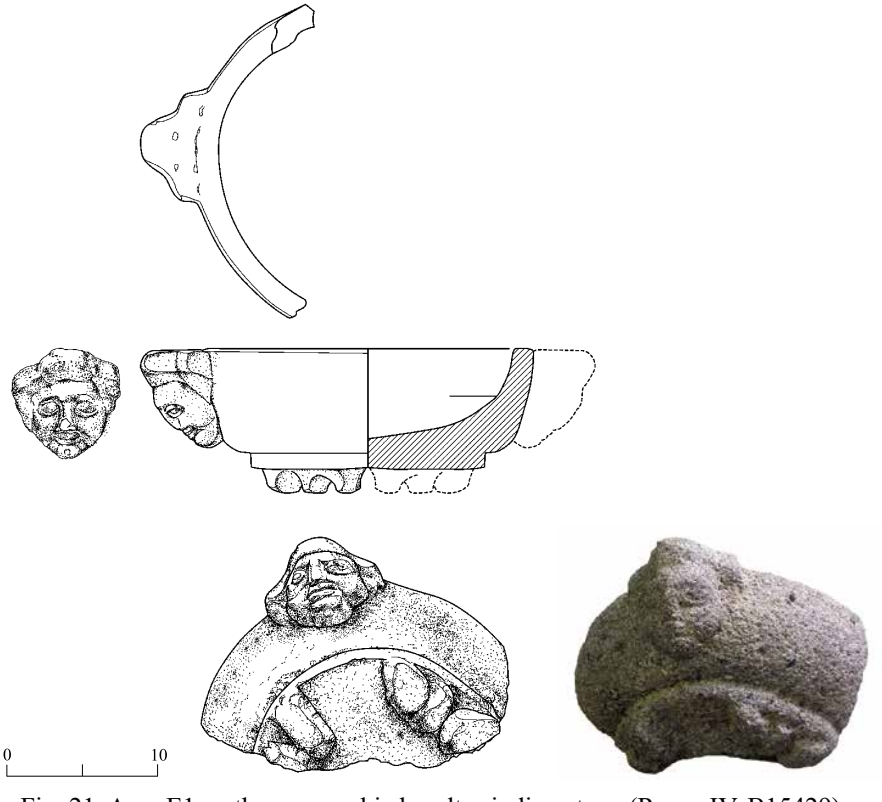


Fig. 21. Area E1, anthropomorphic basalt grinding stone (Room IV, B15429).

[4] An option that cannot be proven, but should not be ruled out, is that the vessel may have been of older, possibly Roman origin, and was collected and kept as a curio by the Byzantine settlers.

[5] We would like to thank Prof. Moshe Fischer for referring us to these sources.

Room V.— This is the largest room in the complex. Its western side opens to a corridor that extends the full breadth of the structure. The room was found unpaved except for tightly-arranged irregular stones exposed in its south (L1652). Room V contained storage jars at about the same quantity as in other rooms of this complex, as well as a smaller quantity of sherds of cooking vessels, a type far less frequent than the storage jars found in other parts of the complex.

Room VI.— This well-preserved room (W1673, W1619, W1618) had an almost intact stone pavement (L1679); most of its western wall was missing. Pavement 1679 consisted of densely-laid irregular slabs. The strip by the northern wall was apparently intentionally unpaved. At the northern part of the room was the bottom part of a large stone basin (Fig. 22). It resembles the vessel found in Room IV (Fig. 20), however, the basin in Room IV survived intact and was not plastered, while the basin in Room VI was plastered on the inside and its upper part was missing.

Room VII.— The stone-slab pavement (L1680) in this room survived in a fairly intact condition, while only the northern wall remained of the superstructure. Robber trenches were tentatively identified along the western and southern boundaries of the room. A perforated stone, possibly a worn-out grinder, was embedded in the floor.

Fig. 22. Area E1, basin in Room VI, looking north.

Room VIII.— These walls were poorly preserved, precluding their identification as a room. The walls may have belonged to different subphases. An accumulation of debris reached virgin soil, over which no floor was detected. Part of a large stone threshold (2.0 × 0.6 m) was incorporated in W1616, presumably the northern wall of the room.

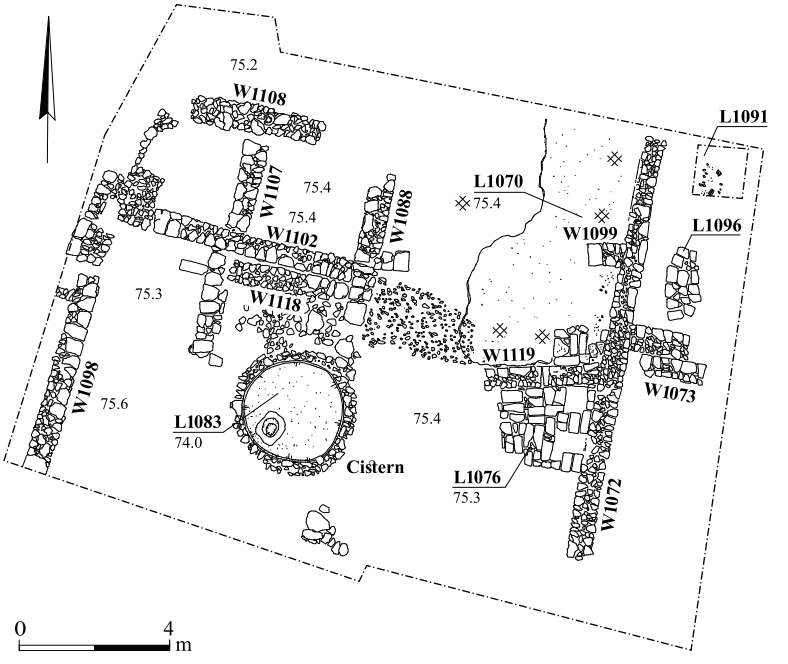
The size of this structure, the symmetry of the rooms and the lack of installations, finds and ash concentrations indicate that it served as a large storage facility. Only two possible work tools were found within its premises (see Raphael, this volume: Figs. 1, 2), and only 13 ground stones, which are few in comparison to the 41 found in Area D1 (for the better preserved ground stones, see Sidi, this volume). This indicates that some, but not extensive, work activity took place in this structure, unlike the Area D1 complex which shows intense work activity.

Very few pieces of raw glass were found in Area E1 despite a large quantity being found in Area D2 of the same phase (see below). No cooking ovens were discovered in Area E1, although the presence of 13 ground stones and two large stone basins in that area indicates that some food processing and storing took place within the structure. Additionally, this complex yielded the densest concentrations of sherds of Byzantine storage vessels found at the site. Of the ten coins discovered in soil accumulations covering the building, seven date to the sixth century CE (see Ariel, this volume: Cat. Nos. 31, 34–36, 40–42). The three remaining coins, both found during the removal of top soil, date between the second and fourth centuries CE (see Ariel, this volume: Cat. Nos. 4, 13, 16).

Adjacent Courtyards and Structures (Area D2; Plan 5)
The remains in Area D2 are characterized by long walls with large open spaces between them, unlike the coherent but denser plan of Area E1 and the cluttered architectural distribution seen in Areas D1 and E2 (Fig. 23).

The Eastern Part.— A long and well-built wall (W1072; exposed length 11 m) crossed nearly the entire length of Area D2. Its facades consisted of medium-sized and large stones in a random distribution, with small stones and pebbles as the core. Between two and four courses remained, with no doorways. Most other architectural features in this part of Area D2 were attached to either side of this wall. These included three walls—two west of W1072 (W1099, W1119) and one to the east (W1073)—that had been placed at imperfect angles to W1072. These walls belong to a similar phase and context, although they likely underwent alterations. The limited dimensions of the excavation and the extensive stone removal that took place during antiquity prevented a clear indication of the function of this complex and courtyard.

There were three types of associated floors: soil with small stones and plaster, paved floors, and soil without stones or plaster. Locus 1070 represents an extensive floor segment (7.0 × 3.8 m) of compressed soil, small stones and some plaster. This floor reached both W1072 and W1119, and gradually disappeared in the west. Concentrations of raw glass



Plan 5. Area D2.

Fig. 23. Elongated walls enclosing courtyards in Area D2, looking north.

were found in the sediment covering the floor and embedded in it; however, no industrial installations relating to glass production were discovered.

Two segments of a paved floor (L1076) of irregularly-arranged rectangular chalkstone slabs were discovered on both sides of W1119 (Fig. 24). In light of the soft paving material, which would crack under prolonged stress, the floors may have been used for storage rather than as part of an exposed courtyard used for industrial activity. The easternmost part of Area D2 was otherwise unpaved; this was possibly a courtyard with virgin soil as its floor. At the northeastern corner of this area were a well-defined feature of flat stones in a tight arrangement (L1096) and numerous mosaic floor fragments in the adjoining accumulated soil (L1091; c. 0.9 × 0.6 m); their function remains unknown.

The Western Part.— Remains comprise several perpendicular walls from at least two late Byzantine phases with 25–40 cm of soil between them. No chronological distinctions were noted in the ceramic and glass finds. The walls do not form a coherent plan—no floors or installations were found, and their architectural affiliation with the walls at the eastern part were vague. As no entrances or thresholds were discovered, the walls probably represent foundations.

Two fragmentary, parallel walls belonged to the earlier phase: W1108 and W1118. Both have an east–west orientation and are 3.9 m apart. They were built of uncut, tightly arranged *nari* fieldstones, with no consolidating materials. It could not be determined if they had belonged to a single room, although it is probable that they were part of the same complex.

Fig. 24. Area D2, chalkstone slab Floor 1076, looking east.

The other walls in this complex were associated with the later phase based on their construction style and general plan. The later complex includes two long, perpendicular walls (W1098, W1102) and two additional walls on a north–south axis (W1088, W1107). Preservation allows for a tentative reconstruction of four rooms, with W1102 dividing the northern and southern rooms and W1098 as the western limit of the complex. Larger stones were used for one face of each wall, and a compact formation of smaller stones lined the other. There are notable similarities to the storage complex in Area E1 in construction style and general size of the spaces.

No entrances, floors or installations were associated with the walls of the later phase, which may therefore represent foundations. The volume of industrial glass from the western part was considerably smaller than the eastern part. The function of the buildings in this area remains unknown. The concentration of raw glass and the wide spaces, some of which were plastered or paved but all too broad to be roofed over, suggests that industrial activities took place there or nearby.

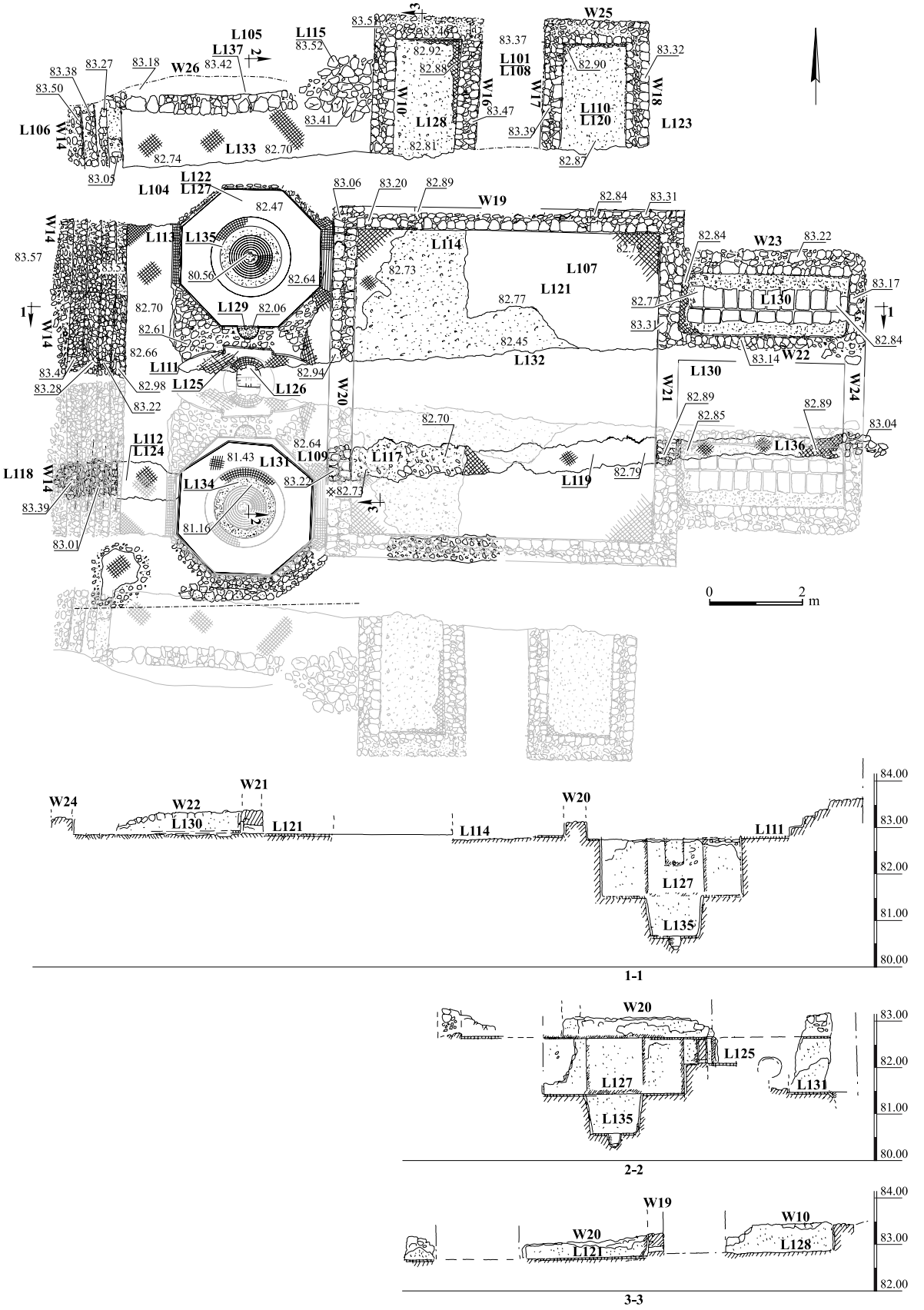
Of the six coins found in Area D2, five dated to the sixth century CE (see Ariel, this volume: Cat. Nos. 24, 25, 30, 33, 39).

The Winepresses (Areas A, B2; Plans 6, 7)

Two complex winepresses were exposed at the northern and southern parts of the site: the northern winepress was excavated in Area A (Plan 6); the southern winepress was unearthed in Area B2 (Plan 7). The northern winepress was damaged during mechanical development work, but was well-preserved and allowed a viable restoration. The southern winepress was found in a significantly poorer state of preservation, although most of its main parts survived to an extent that permitted reconstruction. Both winepresses were typologically assigned to the sixth century CE.

The Northern Winepress (Plan 6).— The winepress was damaged prior to the excavation when three trenches were mechanically dug. Despite the damage to the treading floor, intermediate vat, two collecting vats and three auxiliary floors, all survived to an extent that allowed restoration (Figs. 25–27). The walls surrounding the winepress and surrounding the auxiliary floors and vats were built of fieldstones and a crushed beige lime. A reddish pink plaster was applied to a layer of gray mortar that was consolidated with stones and/or pottery sherds.

The treading floor was roughly square (L119, L121; 6.5 × 6.8 m, approximately 44 sq m) and surrounded by three low walls (W19–W21; max. preservation height 0.52 m). The floor was covered with a diagonally arranged white mosaic (7–9 tesserae per sq dm) paved on a bed of stones and pebbles that had been set into a light gray lime (L114; 5–7 cm thick). Below was a natural clay. The floor sloped slightly westward toward the intermediate vat (L126). In the center of the floor was a pit that had housed the screw-press base. Neither the shape of the base stone, nor whether it had a perforated hole—allowing liquids to pass



Plan 6. Area A, the northern winepress, plan and sections.

Fig. 25. Area A, the northern winepress at the end of the excavation, aerial view to the south.

Fig. 26. Area A, the northern winepress after restoration, aerial view to the south.

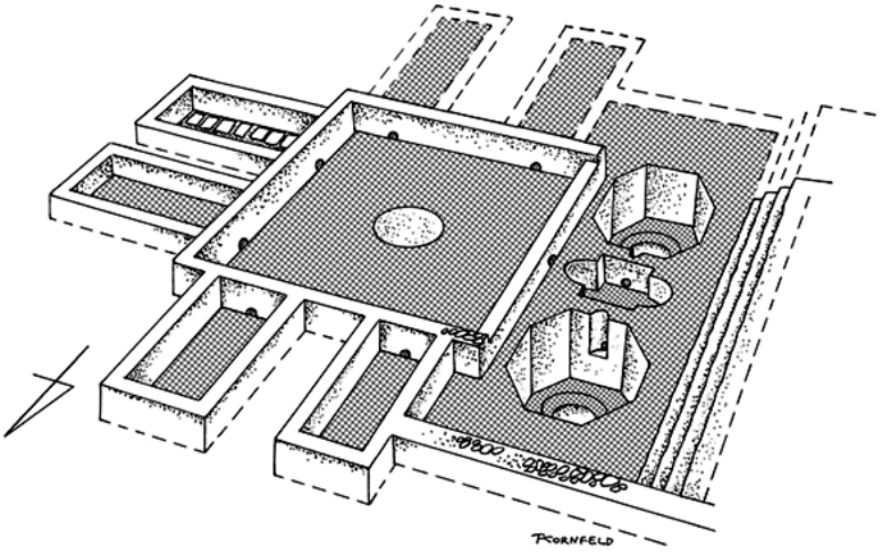


Fig. 27. Isometric restoration of the northern winepress.

westward to the intermediate vat—could be determined from the remains. In fact, nothing remained of the passage between the intermediate vat and the treading floor.

Only the northern part of the intermediate vat survived (L126). It had a fairly elliptical shape, apparently with straight northern and southern edges. Its walls were coated with hydraulic plaster and its floor was paved with a white mosaic (9–10 tesserae per sq dm). The tesserae were diagonally arranged, with a few rows circling the center of the vat. Built-in holes at the center of the northern and southern walls (length 0.2 m) allowed the must to flow to the collecting vats.

Two symmetrical collecting vats, whose construction was heavily invested, were installed beside the western wall of the treading floor (W20), and to either side of the intermediate vat. The collecting vats were octagonally shaped (approximately 1.3 m length each side, depth 1.2 m, capacity 12 cu m; Figs. 28, 29), with hemispherical niches in the sides closest to the intermediate vat, i.e., on the southern side of the northern vat and on the northern side of the southern vat. The liquid flowed from the intermediate vat into the collecting vats through holes drilled into the niches. The floors of the vats were made of diagonally arranged white mosaics (7–9 tesserae per sq dm). At the center of each collecting vat was a circular sump (L134, L135; diam. 1.3 m; depth 0.9 m; Plan 6: Sections 1–1, 2–2). The walls of the sumps were coated with hydraulic plaster and paved with mosaics. The base of a Byzantine Gaza jar was at the center of each sump, which served for draining the must remains and the collection of waste.

A floor paved with diagonally arranged mosaics (L111, L133; 7–9 tesserae per sq dm) surrounded the intermediate vat and collecting vats. The edges of the vats were emphasized by a 0.25 m mosaic band. Wall 26 (0.8 m wide) delineated this floor to the north. To the

Fig. 28. Northern collecting vat of the northern winepress, aerial view to the east.

Fig. 29. Northern collecting vat of the northern winepress, looking north.

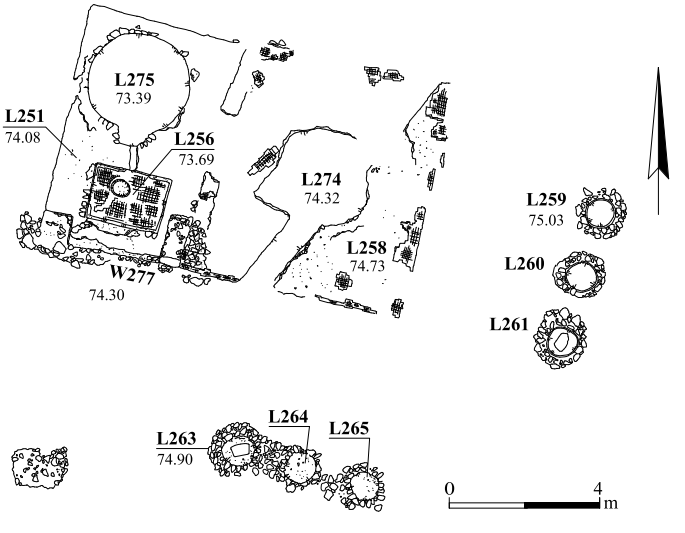
west, a broad stepped wall ran along the entire length of the floor (W14; 1.8 m wide); it consisted of five steps. The architectural remains exposed to the west of W14 indicate that during the Byzantine period, the surface was level with the tread of the uppermost step. The width of W14 also helped stabilize the structure against natural soil movement, a known phenomenon of heavy soil.

To the north and east of the treading floor were four preserved auxiliary floors (L120, L128, L130, L136; 3.6 × 1.3 m, c. 4.7 sq m each; Fig. 30). The auxiliary floors were circumscribed by walls built of small and medium-sized fieldstones. Between them were raised platforms (L108 at the northern part). The auxiliary floors were paved with mosaics (10–12 tesserae per sq dm) laid over square ceramic tiles (0.40 × 0.25 m, width: 4.0 × 4.5 cm); there was a lower foundation bed of small stones and pebbles inserted into the gray mortar-plaster (5–10 cm thick). The square tiles, laid over the pebbles-and-mortar foundation layer, were an additional precaution against soil movement. The auxiliary floors were higher than the treading floor and sloped toward it, connected to it via perforated holes (0.45 m length). The holes were found in the partition wall, in the center of each auxiliary floor and the treading floor. This seems to suggest that there were at least six auxiliary floors in the winepress, two on each side of the treading floor.

The Southern Winepress (Plan 7).— The southern winepress was located in close proximity to the intensively cultivated modern surface, resulting in substantial damage to the winepress (Fig. 31). Nonetheless, its treading floor, intermediate vat, collecting vat and six subsidiary collecting vats were preserved enough to be clearly delineated.

The treading floor was square (L258; 6.3 × 6.0 m, c. 38 sq m); only the foundations of the southern wall remained (W277). This wall was built of soft limestone and light-colored mortar. The contour of the other walls could be determined from the treading floor's edges.

Fig. 30. Auxiliary floor L130, looking west.



Plan 7. Area B2, the southern winepress.

Fig. 31. Area B2, the southern winepress at the end of the excavation, aerial view to the south; a pre-excavation trial trench cuts the treading floor.

The treading floor was paved with a diagonally arranged mosaic (10–11 tesserae per sq dm) laid over a 2 cm thick layer of mortar, with a foundation bed (3–5 cm thick) composed of pebbles and small stones (3.0 × 3.5 × 7.0 cm) inserted into crushed lime. Mending with pottery sherds was noticed at the southwestern end of the floor (Fig. 32). At the center of the floor was a pit where the base of the screw mechanism would have been (L274; see above, *The Northern Winepress*).

The intermediate vat (Fig. 33) was rectangular (L256; 2.0 × 1.5 m; depth 0.3 m; capacity 0.9 cu m). Its sides were coated with a layer of reddish pink plaster, which had incorporated stones or potsherds (3–5 cm thick). Its floor was paved with a mosaic, and it had a sump at the northwestern part (diam. 0.5 m, 0.2 m deep). The damaged remains of a channel or perforated hole that linked the treading floor to the intermediate vat were exposed at the top of the vat's eastern side. Another perforated hole that connected the intermediate vat to the collecting vat (L275) was found at the center of the northern side.

The collecting vat was located to the north of the intermediate vat (Fig. 34). This vat was circular (L275; diam. 2.8 m, depth 1.3 m, capacity 13.5 cu m) and its sides were made of fieldstones and white mortar, coated with hydraulic plaster, as was its floor (Fig. 35).

Fig. 32. Patch of sherds that mended the missing part of the treading floor's mosaic.

Fig. 33. The intermediate vat, looking west.

At the southern end of the vat was a hemispherical niche (diam. 0.85 m) with a perforated hole through which the must flowed from the adjacent intermediate vat. At the center of the floor was a circular sump (diam. 0.45 m, depth 0.28 m) for draining the waste. The sump's sloping sides were coated with hydraulic plaster. A large stone was found on the floor of the collecting vat, near the hemispherical niche. It had two purposes: (1) preventing damage to the plastered floor from the must flowing from the intermediate vat; and (2) providing access into the vat and the hemispherical niche.

Fig. 34. Area B2, Collecting Vat 275 and Intermediate Vat 265, looking west.

Fig. 35. Area B2, Collecting Vat 275, looking south.

A mosaic floor (L251; 9–11 tesserae per sq dm) surrounded the collecting and intermediate vats. Wall 277, surviving at foundation level, separated L251 from the treading floor to the east. The remains of the foundation walls to the south and west of the working area were fragmentary, while the northern wall could only be delineated by its robbers' trench. At the southwestern corner of the working surface was a step (0.8 × 0.8 m, 0.2 m high) that facilitated the descent to the working surface.

The Minor Collecting Vats.— Six small collecting vats (Fig. 36) were discovered 3.6–3.9 m east and south of the treading floor; they were arranged in two rows (L259–L261, L263–L265; diam. 0.7–0.9 m; depth 0.6–0.8 m), their sides coated with plaster. Only the foundation bed remained of their floors, which may have originally been paved with a mosaic. Such

Fig. 36. Area B2, the eastern row of minor collecting vats, looking north.

vats were usually associated with auxiliary floors—one per floor—and were either placed in the outer walls between the auxiliary floors and the main treading floor or further away and surrounding the floors, as they are at Gane Ṭal (Avshalom-Gorni, Frankel and Getzov 2008:62–63; Frankel 2009). The westernmost vat in the southern row and the southernmost vat in the eastern row were intentionally blocked with a large stone in each. The reason remains unknown, and it is also not clear whether the use of the affiliated working areas simultaneously stopped.

The auxiliary floors were not preserved, probably because of their proximity to the top soil. A suggested restoration based on the location of the minor collecting vats places six auxiliary floors next to the treading floor, three to the south, three to the east and possibly, three more to the north. These vats were destroyed due to their proximity to the topsoil, which is comparable to the northern winepress (Plan 6), where the auxiliary floors were preserved. The dimensions of each of these floors can be estimated as 3.6–3.9 m in length and 2 m in width (7–8 sq m).

The two winepresses excavated at Gane Ṭal are complex winepresses. Both are very large, with treading floors measuring 36 and 44 sq m. The overall capacity of the northern winepress reached 24 cu m and that of the southern winepress reached 13.5 cu m.[6] They are comparable with the complex winepresses discovered in the southern coastal plain and the Negev. Concerning the better-preserved northern winepress, two points should be stressed: (1) It is remarkably similar to the winepresses excavated at Gan Darom (Dayan et al. 2020) and in the 'Third Mile Estate', north of Ashqelon (Israel and Erickson-Gini 2013), the only exceptions being the use of stone floors at Ashqelon and the larger size of the Gane Ṭal winepress; (2) The quality and meticulous investment are clear from the details of the winepress, e.g., the multi-angled octagonal collecting vats, which were harder to form and maintain in comparison to circular or rectangular ones, and were more impressive visually, such emphasis on aesthetics and detail is characteristic of winepresses in the south of the country.

The two winepresses at Gane Ṭal differ in the number of collecting vats, as well as their construction and the relative locations of their auxiliary floors. The northern winepress has two collecting vats, while the southern winepress has a single one. Regarding the auxiliary floors, those of the northern winepress were bordered by fieldstones and were not associated with any collecting vats, whereas each auxiliary floor in the southern winepress had a small collecting vat placed on the side further away from the main treading floor.

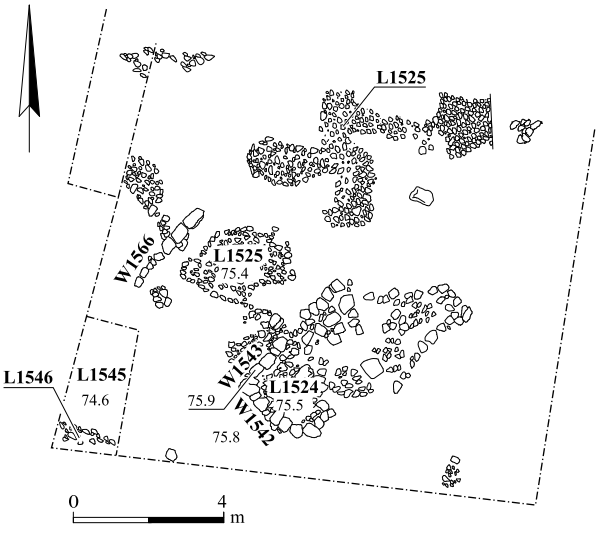
[6] See Avshalom-Gorni, Getzov and Frankel 2008: Table 1. It should be noted that there was a mistake in the size of the treading floors and the vats of the Mishmar Ha-ʻEmeq winepress: 49 sq m instead of 31.5 sq m and 35 cu m instead of 25 cu m. In addition, it has not yet been proven that the installation at Ḥorbat Sumaq (No. 3) is a winepress.

The Mamluk Period (Stratum II)

An isolated occupation layer from the Mamluk period appeared at the eastern part of the site (Area E3; Plan 8). The remains include a poorly preserved corner of a stone structure, a related but detached wall and several segments of floor foundation beds (Fig. 37).

The stone structure consists of two walls (W1542, W1543) meeting at a 90° angle (Fig. 38). The walls were built of uncut limestones and comprised the southwestern and northwestern part of the structure. As no inner facades were discerned, the surviving course may have served as foundation walls, which is also suggested by the mass of stones exposed between the walls (L1524), the lack of associated floors and the scarcity of finds. As the stone mass is limited to the space between the walls, the option of scattered debris should be ruled out. Based on the distribution and limits of the stone mass, the dimensions of the structure can be roughly estimated to have been 2.8 × 6.0 m. A similar stone mass or structure from the same period was recorded at Khirbat el-Ni‘ana (Sion 2007:46*).

Several parts of what seem to be foundation beds of earth floors were exposed northwest and north of the building (L1525). A lack of affiliated walls, with one exception (W1566), suggests that these were courtyards. The single wall from the same context as the floors (W1566) was discovered c. 3.8 m northwest of the walled structure and parallel to its northwestern wall (W1543). Stones of various sizes were used haphazardly in W1566, comprising both cut and uncut stones. The vast majority of the pottery from the foundation beds and the sediment surrounding them dated to the Mamluk period (see Vincenz, this volume: Figs. 10–12). Eight of the nine coins found in this area were minted by Ayubbid or Mamluk rulers (see Ariel, this volume: Cat. Nos. 44–49, 51, 52). Three bronze rings dated by style to the fourteenth–fifteenth centuries CE were also found in this area (see Amitai-Preiss, this volume: Nos. 1–3). Other metal finds were found, including pins and an iron



Plan 8. Area E3, Mamluk-period remains.

Fig. 37. Area E3, the Mamluk-period architectural remains, looking north.

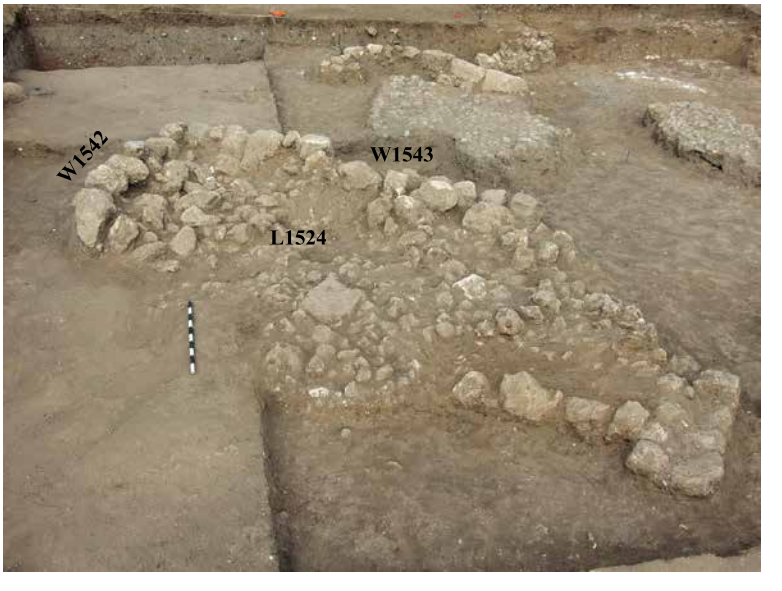


Fig. 38. Area E3, Mamluk-period walls and stone mass, looking south.

dagger that was similar to an artifact found in the twelfth-century CE Crusader fortress at Vaduum Jacob (see Raphael, this volume: Fig. 3).

A probe dug at the southwestern corner of the excavation (L1545) showed that the Mamluk-period buildings were constructed over a thick layer of light gray sediment that had blown in from the Negev, a geomorphic phenomenon familiar from other sites in the region and beyond (see Ackermann, this volume). The soil below the blown-in sediment contained Byzantine architectural remains. The remains were founded over the natural soil, similar to most of the Byzantine structures in other parts of the site. The state of the remains precludes a clear determination of its function. A small farm or a road station would be the most viable options.

Ottoman Period (Stratum I)

Four musket balls from the Ottoman period were found, all of them on or near topsoil layers (Table 2). All balls were cast of lead. They were similar although not identical in size. Some of the balls show rough flattened surfaces, possibly from damage caused upon impact. It should be noted that numerous travelers in the Holy Land attest to the use of muskets well into the nineteenth century. Musket balls are commonly found in open fields. As in most such cases, the Gane Ṭal balls were found in small numbers over a large area, and thus should be attributed to hunting or other non-military activities.

The Burial Grounds

Two burial fields and three sepulchral burial structures were discovered at Gane Ṭal. The graves were exposed, but the excavation of the structures was stopped before the burial layer was reached. Dating the burial grounds rests mostly on typological and comparative considerations; however, sherds found in the soil accumulations sealing the burial structures indicate their *terminus ante quem*. While a link between the tombs and the settlement remains is logical, lack of sufficient data precludes specific strata associations.

The burials at Gane Ṭal may be subdivided into two general phases. The earlier phase includes a loculi tomb, two vaulted tombs and cist graves. All of those were found at the southern part of the site, approximately 90 m south of the nearest settlement remains. The later phase consists of what is probably a single burial field of pit graves, located in the heart of the settlement area, between Areas E1–E3 and D2.

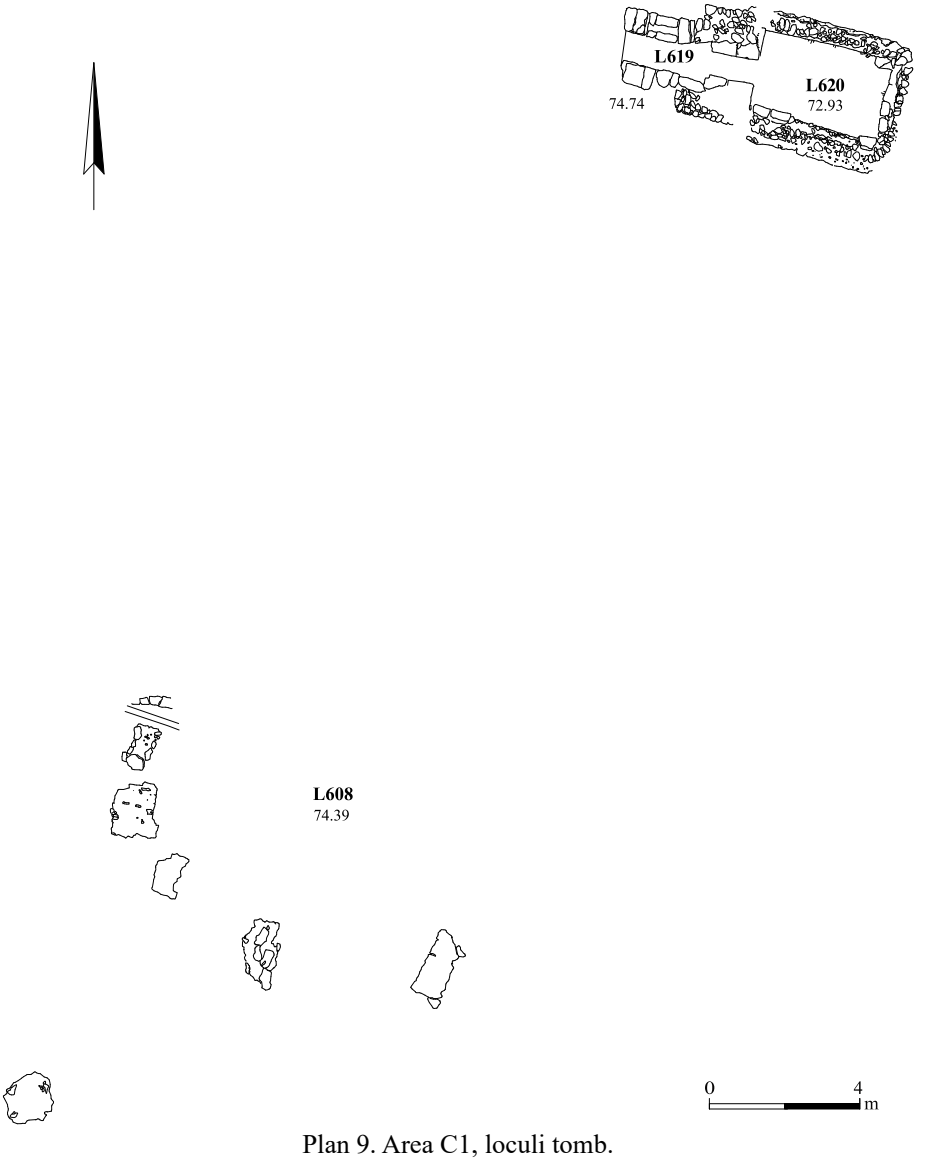
Table 2. Ottoman-Period Musket Balls

No.	Area	Locus	Basket	Diam. (mm)	Weight
1	D1	1000	10097	13.89	10.94
2	B2	255	2576	12.70	10.29
3	B2	250	2580	13.15	10.66
4	E1	1544	15525	13.93	12.60

THE EARLY CEMETERY

The Loculi Tomb (Area C1; Plan 9)

This burial structure (Fig. 39) emulates the more common rock-hewn equivalents. While widespread in Roman and Byzantine times, this architectural form is first attested in Hellenistic times (Kloner 2003:21–30; Kloner and Zissu 2007:75–79; Avni, Dahari and Kloner 2008:115). The construction of the tomb from Gane Ṭal—in soil rather than hewn—was dictated by the geomorphology of the site, where the bedrock was inaccessibly deep. Builders dug a large rectangular pit, and lined it from the inside with dressed stones, supporting the soil from all sides and imitating rock-hewn tombs. The tomb was roofed



Plan 9. Area C1, loculi tomb.

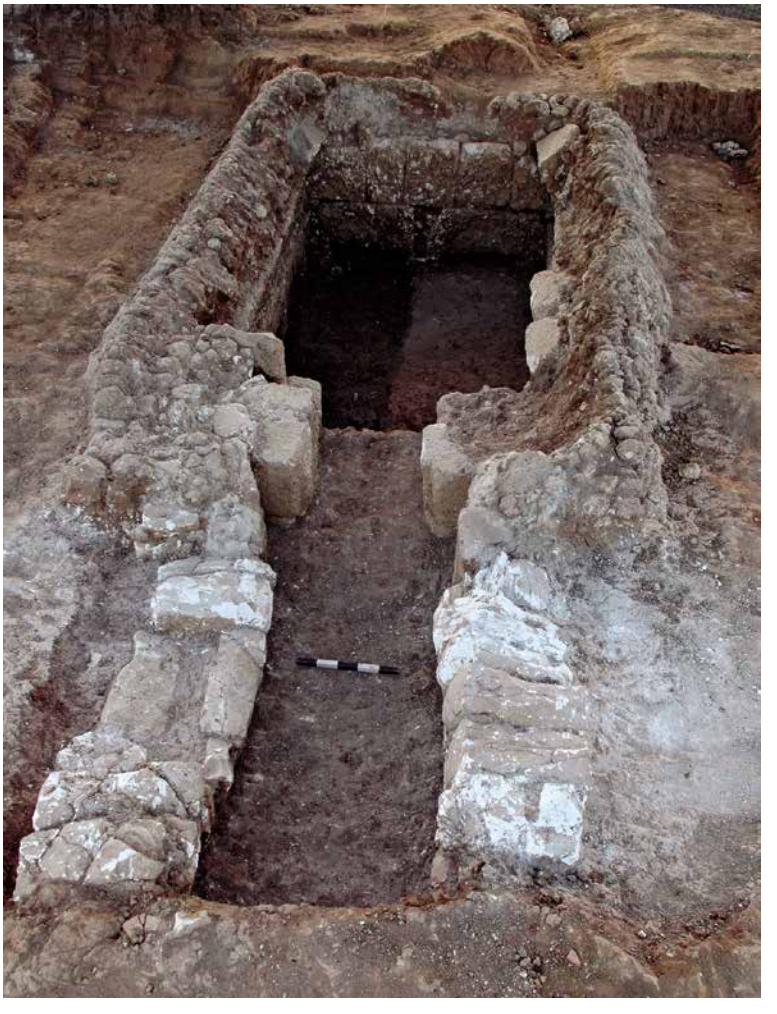


Fig. 39. Area C1, the loculi tomb, looking east.

with a stone vault, which was probably raised to the surface to some extent. Three stones in their original position confirmed the existence of a vaulted roof.

The burial chamber (3.2 × 2.0 m) was orientated an east–west, and was accessed through a narrow stone-lined corridor (L619; 3.2 × 0.8 m) with an entrance in the western wall. Excavation was stopped before the corridor's floor was reached, but it can be assumed to have been stepped. Two grooved limestone jambs flanked the doorway (Fig. 40). The inner walls were built of limestone (*nari*) ashlars (average size 45 × 40 × 55 cm). Each of the long walls included three loculi (Fig. 41), and two additional loculi were set in the narrower eastern wall. Each loculus was approximately 70 cm wide. Their height could not be determined as excavation had been halted before their floors were reached. No skeletal remains or grave artifacts were retrieved. The soil that sealed the tomb accumulated as disposed waste after the roof caved in or was intentionally dismantled. The rich volume of

Fig. 40. Area C1, the tomb's entrance, looking west.

Fig. 41. Area C1, the three loculi at the northern side, looking north.

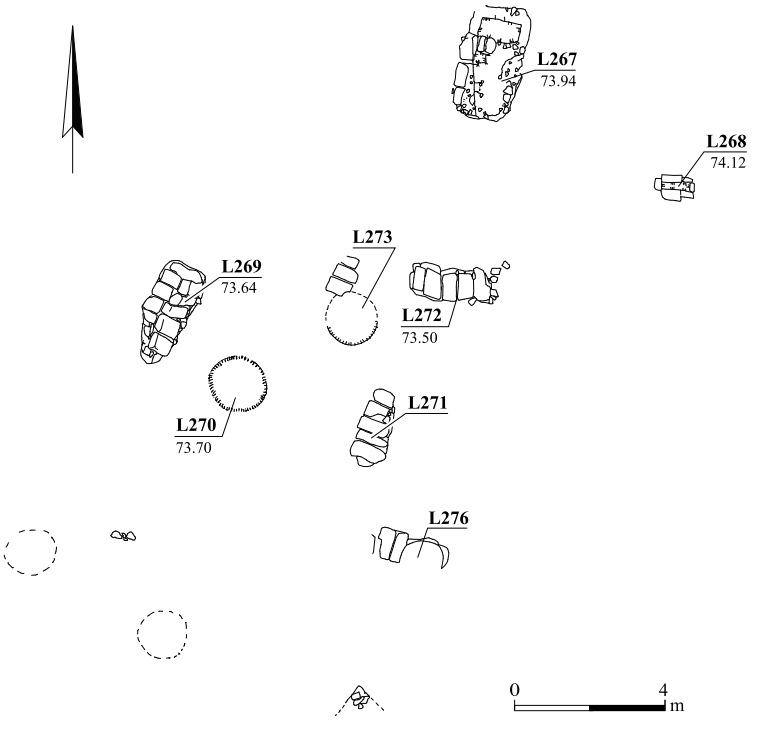
late Byzantine storage jars is thus unrelated to the underground structure and irrelevant to its dating. Its latest use is indicated by the fragment of a double-tube glass vessel, found near the presumed floor of the chamber (see Ouahnouna, this volume: Fig. 4:23). Its similarity to an item from the Khirbat el-Niʻana tombs indicates a fourth- or fifth-century CE date.

Tombs resembling the Gane Ṭal structure are found at various sites in the southern coastal plain (Huster and Sion 2006:51–52, Type IV) and are usually dated to the Late Roman and Byzantine periods. Clermont-Ganneau (1896:341–349) reports a stone-lined tomb in Lod that shows notable similarities to the Gane Ṭal structure. The tomb from Lod, whose precise location is now lost, comprised a vaulted central room and nine loculi equally divided between three of the walls. Unlike the tomb at Gane Ṭal, the Lod structure was accessed by a vaulted vestibule. Finds from the Lod structure included adorned and inscribed first-century CE ossuaries. Another example was found at Ḥorbat Midras (Kloner 1976), although there the cave was cut into the soft local chalk, which was then lined with harder dressed blocks; however, the side walls contained three loculi each. A vaulted tomb built into a large pit that cut into the *kurkar* sandstone was excavated by Jacob Ory in 1941 near Kibbutz Or Ha-Ner (Tsafrir 1969). Instead of loculi, the tomb contained four vaulted burial chambers, two on each side of a central room. This tomb was adorned with wall paintings including inscriptions, and was dated to the fourth century CE. Several stone-lined tombs dug into sandy soil were also found at Ashqelon. One example was excavated at Migdal Ashqelon (Kogan-Zehavi 1996; 1999), where its burial chamber was consolidated with mortar and accessed through a staircase that descended into a subterranean vestibule walled with ashlars in a headers-and-stretchers formation. Three loculi were built into each of the side walls; two more were fitted into the narrower wall opposite the entrance, similar to the tomb from Gane Ṭal. The Migdal Ashqelon tomb was used from the second to the fourth century CE, with lead coffins placed in it during its latest phase. As in the case of the Gane Ṭal structure, the tomb was then used as a dump during the late Byzantine period. A stone-lined tomb with six loculi and of a similar date was exposed at Tel Ashdod (Varga 2005), and other stone-lined tombs with a vault built in similar style and of similar materials as the Gane Ṭal tomb were discovered at Ashqelon, in the Afridar and Barneʿa sites (Varga 2002:87*), although these lacked loculi.

Several features south of the tomb were indiscernible structures or installations. The excavation yielded a few sherds, most of which were from late Byzantine jars, whose juxtaposition to the features may be accidental. The possibility of additional heavily disturbed graves was initially considered, but no human remains were discovered in or around the features.

The Cist Graves (Area B1; Plan 10)

Seven cist graves were exposed in the early cemetery (Table 3). These were dug into virgin soil and lined with soft limestone slabs. Their orientation varied: three of the graves were aligned in a general east–west direction and the other four, from north to south. They were roofed with similar-sized, horizontally laid, soft limestone slabs (Fig. 42), with the exception of a single gabled grave (L269; Fig. 43). A coin struck by a Roman governor of Judea during the rule of Tiberius was found in the soil covering this grave (see Ariel, this volume: Cat. No. 1), yet cannot be used as reliable dating evidence. The only grave that was excavated (L268) was probably intended for a child, based on its size (Fig. 44), but was possibly never used as there was no sign of roofing and no human remains or artifacts were found within.



Plan 10. Area B1, cist graves.

Table 3. Cist Graves from the Early Cemetery

Locus	Measurements (m)	Average Stone Size (cm)	Orientation	Comments
267	3.0 × 1.8	55 × 15	North–south	Roof slabs found in fragmentary state
268	1.1 × 0.6	50 × 20 (frame stones)	East–west	Thoroughly excavated; smallest grave in the complex, child's dimensions; roofing completely missing, no human material remains, possibly never used (Fig. 44)
269	2.6 × 1.2	70 × 40	North–south	Single gabled grave; fully preserved (Fig. 43)
271	2.1 × 0.5–0.9	70 × 30	North–south	Single line of roofing slabs; fully preserved; gradually narrowing northward
272	2.0 × 0.9	70 × 30	East–west	Fully preserved (Fig. 42)
273	1.05 × 0.70	70 × 30	North–south	Circular pit; disturbed southeastern corner (Fig. 45)
276	1.8 × 0.7	70 × 30	East–west	Circular pit; disturbed eastern half

Five circular pits that had been dug into the soil (average diam. 1.5 m) were unevenly distributed between the graves. A single pit (L270) was excavated but only a few sherds were found, all of which were not datable. Neither the depth of these pits nor their function

Fig. 42. Area B1, Cist Grave 272, looking north.

Fig. 44. Area B1, unused child-sized Grave 268, looking west.

Fig. 43. Area B1, Cist Grave 269, looking south.

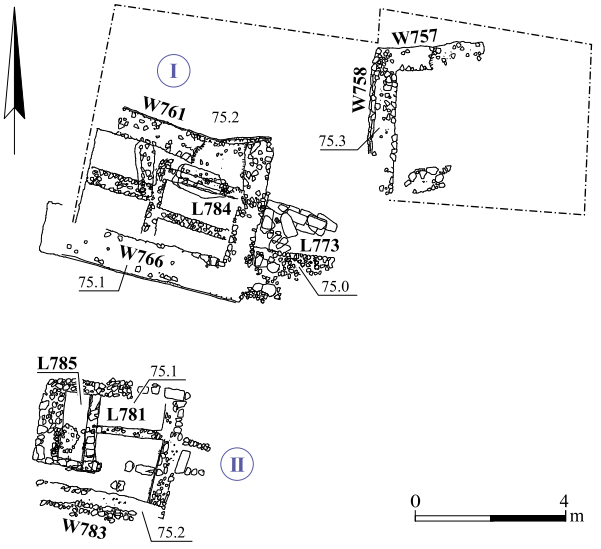
Fig. 45. Area B1, circular pit partially disturbing Cist Grave 273, looking north.

or date could be clearly defined. They definitely post-date the graves, as the pits disturbed the covering slabs of adjacent burials (Fig. 45). The disturbance also precludes a functional relation to the cemetery. As the sealed graves could not be opened, and since stone-lined graves were common in various periods, the date of this cemetery cannot be determined.

The Vaulted Tombs (Area C2; Plan 11)

Two large tombs with several inner partitions were discovered at the southeastern part of the site in Area C2. The northern tomb consisted of a vaulted subterranean chamber split into rectangular compartments by thin stone-and-plaster walls. The other tomb has a similar inner plan but was discovered at a higher level near the modern surface, and is significantly less preserved. Tombs with similar dimensions and plans were found at various sites in the southern coastal plain (Huster and Sion 2006:50–52, Type I). The remains of a large structure that may have been a third tomb (W757, W758) were discovered to the east of the northern tomb, but its poor preservation did not allow for a certain identification. As the tombs could not be excavated, their dating is based on typological considerations and comparative analyses.

Vaulted Tomb I.— The tomb is a broad rectangle on an east–west axis (4.8 × 4.0 m). It was dug into virgin soil, and its solid outer walls were built of tightly laid stones consolidated with mortar. The two longer walls (W761, W766) were very thick (0.7–0.9 m) and plastered both inside and out (Fig. 46). The width of the walls and the use of plaster on the outer face, which would not have been visible from the surface, possibly served to protect the chamber from humidity. The burial chamber (4.0 × 2.5 m) was accessed from the east through a 0.9 m wide passageway (L773) built of large, roughly hewn blocks. A perfectly preserved 0.8 m tall, arched doorway in the eastern wall linked the passageway to the burial chamber (Fig. 47). The full length of the burial chamber could not be determined. Both the burial chamber and the passageway were vaulted. Large portions of the collapsed vault were found in upper accumulations of both areas, indicating a gradual disintegration over a protracted period.



Plan 11. Area C2, vaulted tombs.

Fig. 46. Area C2, plastered outer face of Vaulted Tomb I W761, looking south.

Fig. 47. Area C2, Vaulted Tomb I inner partitions, looking east.

The burial chamber (L784) was subdivided into five rectangular troughs, all of which were orientated east–west (Fig. 47): three, roughly similar-sized troughs were located in the eastern part of the chamber, and two, wider ones, in the western half. The excavation was stopped before the troughs could be thoroughly excavated, and therefore potential information for dating the structure remained inaccessible. The central eastern trough that

connected to the passageway was probably used as a standing pit for access to the burial troughs lining the walls. Assuming the tomb was used over several generations, the standing pit would have also allowed the rearrangement of skeletal remains in the sides of each trough to make room for the new deceased.

A group of tombs with a very similar structural plan and inner division was excavated at Khirbat el-Niʻana, which was dated by its finds to between the third and fourth centuries CE (Sion 2007). The inner layouts vary but the resemblance to the Gane Ṭal example in the use of short and thin partitions made of stone and plaster indicate that these were from a single typological class, and probably from the same period. Other examples were discovered in the Ashqelon area: Ory (1939) describes a subterranean tomb reminiscent of the Gane Ṭal example at a site near Ashqelon, which was dated to the third and fourth centuries CE; and Varga (2003) excavated a similar tomb with four troughs at the Medorage Yam site in Ashqelon. The arrangement of troughs around a standing pit can also be found in rock-hewn graves in other parts of the country, such as Tomb 8 at a site near Shiqmona, in modern-day Haifa (Kletter 2010:169–170).

Finds from this tomb consisted mostly of large quantities of late Byzantine ceramics—mostly Gaza-jar sherds—related to a post-abandonment use of the structure as rubbish dump. The only two finds possibly related to the main utilization phase were an oil lamp of a fourth or fifth century CE date (see Vincenz, this volume: Fig. 8:1) and a bronze bracelet (see Raphael, this volume: No. 1). Both were found in the lower levels of the accumulation. Similar bronze objects were among the finds at the burial levels at Khirbat el-Niʻana (Sion 2007: Figs. 5, 9, 13).

Vaulted Tomb II.— A smaller tomb was discovered 3 m south of larger Vaulted Tomb I and was significantly less preserved (Fig. 48). The surviving structure measures 3.6 × 3.4 m, with an inner space of 2.5 × 1.8 m. The southern wall (W783) was almost completely destroyed. Similar to the northern tomb, the outer faces of the southern tomb's walls were coated with plaster, and the access corridor was in the eastern side. Three troughs were built in the central and northern parts of the tomb. The western trough was perpendicular to the eastern ones, resembling the layout of Tomb II at Khirbat el-Niʻana (Sion 2007: Plan 1). The burial level was very close to the surface, indicating that the tomb had likely undergone substantial modern destruction. Other than a limited excavation in the northeastern and northwestern troughs (L781, L785 respectively), no work was conducted at the burial level. The layer covering the tomb structure contained post-abandonment Byzantine-period sherds, mostly of Gaza-type storage vessels.

THE LATE CEMETERY

Pit Graves (Areas E2, E4; Plans 3, 12)

Two segments of a pit-grave cemetery were exposed in the northern part of the site (Plan 1), approximately 0.6 m under the present surface. Seven graves were detected in the eastern

Fig. 48. Area C2, Vaulted Tomb II, looking east.

part of Area E2 (Plan 3), by the site's northern limits, and eight additional graves were discovered approximately 25 m to the south (Area E4; Plan 12). There is little doubt that the two groups are part of the same grave complex, and that there are additional graves in the unexcavated area between them. As the graves could not be excavated, information on the burial ground derives from finds in the adjacent contexts and on typological comparisons.

All of the burials were oval pit graves dug into virgin soil and marked with simple lines of stones or architectural elements up to 2 m in length and 65 cm in width (L1531; Fig. 49). Most graves were considerably shorter (Table 4). The stones were up to 40 × 30 cm in size. It is likely that some graves were totally destroyed, as suggested by a thin scatter of disarticulated human bones found outside delineated burials. These bones had to be immediately reburied on site and therefore no physical anthropological data was collected.

The following points should be considered regarding the date of the graves and the ethno-religious background of the interred individuals:

1) Fourteen of the fifteen graves were orientated east–west, which is in accordance with Islamic tradition;

2) Grave architecture, even in the better-preserved units, was distinctly modest;

3) Despite extensive excavation of the immediate surroundings and the damaged condition of most of the graves, no gifts or jewelry of any kind were discovered;

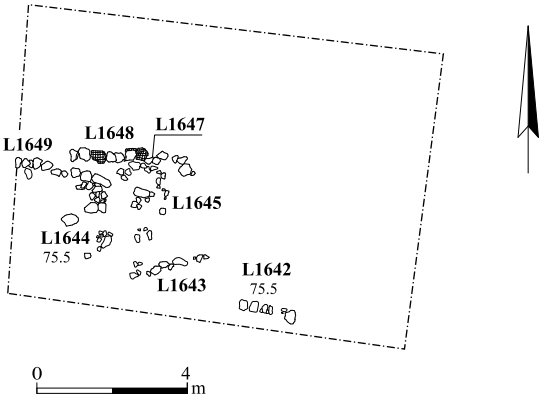
4) The graves were dug into the soil and covered by the loess—this morphological stratigraphy is congruent with the late Byzantine layer and diverges from the Mamluk occupation (see below), which was built over the loess.[7]

[7] It should be noted that a similar cemetery at Yad Binyamin was dated to the Mamluk period based on a single Mamluk glazed sherd found next to one of the skeletons (Weksler-Bdolah 2000:100*).

Table 4. Graves from the Late Cemetery

Area	Locus	Grave Measurements (m)	Average Stone Size (cm)	Orientation	Comments
E2	1531	2.00 × 0.65	15 × 10	East–west	Single layer of irregular fieldstones arranged in three lines; northeastern corner missing (Fig. 49)
E2	1532	1.10 × 0.30	20 × 30	East–west	Partially preserved; larger frame stones and pebbles for consolidation; mid-section missing
E2	1533	1.10 × 0.25	20 × 25	East–west	Partially preserved; single line of fieldstones or partially cut building stones; presumably the northern frame of an otherwise unpreserved unit
E2	1534	2.00 × 0.50	10 × 15	North–south	Partially preserved; single layer of mostly small fieldstones (possible rough plaster consolidation); incorporates a pillar base made of *nari* limestone, the only element of this kind to have been found at the site
E2	1535	2.00 × 0.40	10 × 15	East–west	Fragmentary preservation
E2	1537	0.60 × 0.25	12 × 20	East–west	Fragmentary preservation, small fieldstones and rough plaster
E2	1538	0.80 × 0.30	10 × 15	East–west	Fragmentary preservation, small fieldstones and rough plaster
E4	1642	1.60 × 0.25	30 × 25	East–west	Fragmentarily preserved; single incomplete line of fieldstones
E4	1643	2.05 × 0.25	15 × 20	East–west	Fragmentarily preserved; single partly dislocated line of fieldstones
E4	1644	55 (diam.)	20 × 15	Indeterminable	Fragmentary preservation; small concentration of stones and crushed plaster
E4	1645	60 (diam.)	10 × 15	Indeterminable	Fragmentary preservation; small concentration of stones and crushed plaster
E4	1646	0.60 × 0.80	30 × 25	East–west	Partially preserved; part of frame; edges of larger roughly cut stones and dense fill of smaller irregular fieldstones
E4	1647	1.40 × 0.25	20 × 15	East–west	Partially preserved; single line of stones; possible disturbance by grave L1548
E4	1648.	2.20 × 0.40	20 × 30	East–west	One of two best preserved graves of the late cemetery; single lines of stones of varying sizes arranged on an acclivity of approximately 40 degrees; two large fragments of white mosaic of the type used in winepresses placed among the stones
E4	1649	1.40 × 0.30	20 × 15	East–west	Partially preserved; single line of stones

5) The graves never superimpose the Byzantine architecture and were not found in the Byzantine rooms or between them;
6) Pottery dated to the sixth and possibly seventh century CE was found in both the soil covering the graves and the soil layer into which the pits were dug;
7) One of the graves was lined with fragments of a plain industrial mosaic floor (L1648; Fig. 50)—this type of mosaic was used in the treading floor and intermediate vats of the winepresses in Areas A and B and a pillar base was incorporated into another grave (L1534; Fig. 51)—it is likely to have belonged to the Byzantine phase.



Plan 12. Area E4, southern pit-grave field.

Fig. 49. Area E2, Pit Grave 1531, looking west.

Fig. 50. Area E4, parts of mosaic floor used as grave markers (L1648), looking east.

Fig. 51. Area E2, pillar base reused as a grave marker (L1534), looking south.

Taking these points into consideration, it could be suggested that the cemetery dates from either the latest phase of the Byzantine occupation, probably during the seventh century CE, or shortly after its abandonment. Pit graves of this type were common in the Negev during the Byzantine period (Tsafrir 1988:36–38), and are also characteristic of Muslim nomadic populations in the Early Islamic period (Avni 1996:30–40). Their presence in the southern lowlands (Shephelah) should come as no surprise. The orientation of the graves, their modest architectural investment and the apparent lack of grave goods suggests that these were Muslim individuals. They may have been settlers in a nearby site that used the abandoned site for burial, or nomads or semi-nomads that occupied the site or its vicinity when many of the derelict buildings were still standing. Another, less viable, alternative would be that the graves belong to the fourth–fifth centuries CE and are contemporaneous with the cist graves and vaulted tombs, but represent the less affluent residents of the settlement or estate.

CONCLUSIONS

Little is known about the area surrounding Gane Ṭal in the periods represented at the site. Very few other sites are known, none of which are on the same scale as Gane Ṭal, and fewer still have been systematically excavated. Gane Ṭal, in fact, is the first comprehensively investigated site in this region.

The pre-Roman finds are sporadic and rare, and do not indicate settlements. Additionally, little can be reconstructed from the large plastered pits of the Early Roman occupation, other than the certainty of activity at the site sometime between the first and early second centuries CE. Jewish ethnic affiliations can be assumed based on several types of artifacts from deeper levels in the installations, which were dominated by Early Roman-period finds. The best identifiers were the fragments of soft limestone vessels (Magen 2002; Gibson 2003:300) and two coins minted in Jerusalem, one of a prefect and the other of Agrippa I (see Ariel, this volume: Cat. Nos. 1, 2). More vague yet still noteworthy evidence comes from the glass vessel types known from Jerusalem's Jewish Quarter excavations (see Ouahnouna, this volume: Fig. 1:4) and many ceramic vessels with parallels in Jerusalem and Masada (see Vincenz, this volume: Figs. 1:1, 2, 4, 5; 2:5, 7, 8; 3:1–3, 5, 7, 9, 10). The regional context should also be taken into consideration, and the above-mentioned ossuaries in the burial cave in nearby Khirbat Sallujah (see n. 2) and a hiding complex at Yad Binyamin (Weksler-Bdolah 2000:99*; 2001) attest to Jewish communities living in this area during the Early Roman period.

Early Roman-period finds seem to stop accumulating during the early second century CE, hinting at an abandonment after 135 CE with the suppression of the Bar Kokhba Revolt—a common phenomenon in Jewish sites in the area between Jerusalem and Hebron to the east, and the Mediterranean coast to the west (Zelinger 2009:166–168).

Burial grounds that included both cist graves and vaulted tombs, cut into the rock or dug and built into the ground, are common in this region during the Late Roman and Byzantine periods (Huster and Sion 2006:61). As the tombs could not be thoroughly excavated, cultural affiliation cannot be narrowed to a single ethnos. Cist graves are known from numerous periods with little change in plan. Surviving decorations from various family tombs resembling the two Gane Ṭal examples include both pagan and Christian motifs, with Jewish and Samaritan associations also proposed (Huster and Sion 2006:60).

The Byzantine occupation at Gane Ṭal is congruous with other settlements that existed in the region throughout this period (Tsafrir, Di Segni and Green 1994: southern map). The settlement had a rural character and a peripheral location since no major roads are known in its vicinity (Roll 1994). Architectural characteristics and their associated finds reflect two Byzantine phases. The earlier occupation, identified in Areas D1 and E2, was probably a farmstead, as reflected by the modest structures surrounding courtyards and by the large assemblage of simple grinding stones (see Sidi, this volume), clay ovens and domestic ceramic assemblage. Among the grinding stones were also fragments of Pompeian mills (see Sidi, this volume), whose volume of production suggests a limited industrial activity. The architecture and technological evidence suggests a wealthy local population that enjoyed security and prosperity during much of the sixth century CE. The invested vaulted tombs may be explained by the same logic, but further excavation is needed before these conclusions can be verified.

Sometime during the sixth century CE, the site was significantly alterated. The remains include a manor house and an adjacent well-planned, multi-compartment storage facility. The

glass assemblage indicates a possible minor glass industry at the site. The source of wealth that allowed the development of the site was probably the production of wine in the two presses that were excavated, and possibly in others that remain outside the excavation area and have not been discovered. The disproportionate amount of storage jars in the ceramic assemblages, especially of the Gaza jars, which are known to have been used for wine trade throughout the Mediterranean basin (Mayerson 1994), reflects the importance of wine production in the economy of the site, at least in its later Byzantine phase. While no kiln was discovered, we can be certain that the jars were of local production. Production of vessels serving the local wine industry has been noted in other contemporaneous sites in the region, such as at the 'Third Mile Estate' (Israel 1995; Israel and Erickson-Gini 2013:196–201). The overall volume of pottery within the residence's remains, where a more varied assemblage could be expected, was remarkably small, probably owing to the proximity of the residence to the surface and subsequent erosion.

The difference in style, dimensions, complexity and planning between the residential buildings and the farmstead is striking, reflecting their different functions. The chronology is more complicated. In light of the proximity between these complexes, a secondary utilization of at least some of the earlier buildings during the later phase might be expected. And yet, coins of the sixth century CE, several of which were found in the later storage complexes, are almost absent from the structures of the original phase, wherein earlier Byzantine coins were found. Ceramic evidence is less conclusive. The vast majority of the vessels from all parts of the site are Gaza jars of the sixth and seventh centuries CE; however, most of the sherds originated in post-use accumulations, and far fewer from clean loci. It should be noted that large quantities of sherds of such jars also sealed the earlier burial structures. The distribution of the bag-shaped jars is inconclusive as different phases of this type are seen in all parts of the site.

Chronological subdivisions of the cooking vessels are also vague. Ceramic types which can be better chronologically defined, such as lamps and Fine Byzantine Ware bowls, were found in very small quantities and in parts of the site that dated to both phases. While the ceramic evidence suggests that the older buildings continued to be used during the later phase, the numismatic evidence cannot be ignored. Secondary utilization probably took place only on a limited scale, perhaps as dwellings for workers serving the later complexes, or as storage.

The Byzantine occupation at Gane Ṭal ended sometime in the eighth century CE, as it did in other sites in the region, some of which had industrial winepresses. The reasons have been subject to debate. It is well-attested that wine production continued well into the Umayyad period, and thus the Muslim religious ban on the consumption of alcohol cannot be the reason for the phenomenon. A more likely option is the economic pressure applied by the Muslim rulers against the non-Muslim population during the eighth century CE, which included heavy taxation and confiscations (Taxel 2013:190–191). An inability to sustain the economic pressure over a prolonged period of time may have forced non-Muslims to either convert to Islam (and in most cases, give up wine production) or emigrate, which, unless new inhabitants wandered in, left settlements abandoned. The movement of rural

populations into larger towns, either with government encouragement, such as the case in the new city of Ramla, or independently, has also been suggested (Taxel 2013:192).

Another influence may have been the effect of a plague reported during Justinian's reign (Ariel 2013:230; this volume). It should be noted, however, that the continuation of settlement at Gane Ṭal and at other sites into the later part of the sixth century and the seventh century CE attest to a significant recovery. Thus, the plague may have weakened regional settlement and wine production, yet its impact was one of many causes of the eventual decline (Taxel 2013:191).

A relationship between the graveyard in Areas E2 and E4 and the Byzantine occupation is unlikely, as the cemetery is located between the various Byzantine structures. In all likelihood, the cemetery housed a post-Byzantine population, possibly Muslim and nomadic, as indicated by the lack of associated structures or installations and by the orientation of the graves. The use of Byzantine architectural elements in secondary use amplifies this impression, as it is likely that the stones that mark the graves were removed from the derelict Byzantine structures.

The Mamluk architectural remains are too meager to clearly identify their function or to reconstruct their plan. A small farmstead is the most likely option. Further archaeological research in the region might provide additional information, possibly with discovering other contemporary farms in this part of the country, or through discerning a secondary road along which stations could be built. However, it should be noted that a major Mamluk road and an earlier road ran west of Gane Ṭal, and Qaṭra, an adjacent village, was one of its stations, which makes it less probable that an undiscovered road and station was at this site.

The excavations at Gane Ṭal are the largest to be conducted in its area and the first to cast light on settlement types and patterns in that region. Owing to its impressive appearance, complex plan and good preservation, the northern winepress is one of the finest examples of installations of its kind to be discovered in Israel. The winepress, along with its more modest southern counterpart, the substantial volume of storage jars, including Gaza jars, and the large and well-organized storage facility reflect the industrial wine production at the site. Gane Ṭal thus joins a growing number of wine-production sites from the Byzantine period, adding information concerning one of the leading industries in this land during that period. The earlier complex suggests that there was a development of Byzantine rural sites in this area, and despite being in an area where first- and second-century Jewish sites are relatively scarce, the Early Roman installations indicate that there was Jewish activity. Furthermore, nearby multi-ethnic towns such as Yavne, Ashdod and Ashqelon also included Jewish populations, and therefore some Jewish presence in the settlement at Gane Ṭal and others in the hinterland can be expected. The Mamluk remains, despite poor preservation and resulting ambiguity, marks an additional spot in the still-developing map of Mamluk sites not along the main routes of that time. It is regrettable that considerations unrelated to science prevented the investigation of the tombs, thus denying us important aspects on the history of the site during periods that are attested by no other element.

APPENDIX: LOCUS LIST

Locus	Description
Area A	
10	Wall
11	Wall
12	Wall
13	Wall
14	Stepped retaining wall
15	Wall
16	Wall
17	Wall
18	Wall
19	Northern wall of the treading floor
20	Western wall of the treading floor
21	Southern wall of the treading floor
22	Wall
23	Wall
24	Wall
25	Wall
26	Northern wall of the service area
100	Soil accumulation
101	Soil accumulation
102	Soil accumulation
103	Soil accumulation
104	Soil accumulation
105	Soil accumulation
106	Soil accumulation
107	Soil accumulation
108	Platforms in the northern part
109	Soil accumulation
110	Soil accumulation
111	Service area
112	Soil accumulation
113	Soil accumulation
114	Treading floor foundation
115	Soil accumulation
116	Soil accumulation
117	Soil accumulation
118	Soil accumulation
119	Treading floor
120	Auxiliary floor
121	Treading floor
122	Soil accumulation

Locus	Description
123	Soil accumulation
124	Soil accumulation
125	Soil accumulation
126	Intermediate vat
127	Soil accumulation
128	Auxiliary floor
129	Drilled installation in northern vat
130	Auxiliary floor
131	Soil accumulation in southern collecting vat
132	Soil accumulation in robbers' trench
133	Service area
134	Circular sump in the collecting vat
135	Circular sump in the collecting vat
136	Auxiliary floor
137	Fill in robbers' trench
Area B	
250	Topsoil
251	Floor
252	Floor
253	Soil accumulation
254	Soil accumulation
255	Soil accumulation
256	Intermediate vat
257	Soil accumulation over press treading floor
258	Treading floor
259	Minor collecting vat
260	Minor collecting vat
261	Minor collecting vat
262	Intermediate vat floor
263	Minor collecting vat
264	Minor collecting vat
265	Minor collecting vat
266	Treading floor
267	Grave
268	Grave
269	Grave
270	Pit
271	Grave
272	Grave

Appendix (cont.)

Locus	Description
273	Pit
274	Base of screw mechanism
275	Collecting vat
276	Grave
277	Wall
278	Sump between intermediate vat and collecting vat
279	Sump in intermediate vat
280	Sump in collecting vat
281	Wall
282	Wall
Area C1	
600	Topsoil
601	Soil accumulation near installation
602	Soil accumulation near installation
603	Soil accumulation near installation
604	Soil accumulation near installation
605	Soil accumulation
606	Installation dismantling
607	Installation dismantling
608	Topsoil
609	Topsoil
610	Soil accumulation over vaulted tomb
611	Soil accumulation over vaulted tomb
612	Installation
613	Soil accumulation next to vaulted tomb
614	Clearing of vaulted tomb's walls
615	Soil accumulation in vaulted tomb
616	Clearing of vaulted tomb's southern wall
617	Clearing of vaulted tomb's northern wall
618	Clearing of vaulted tomb's entrance stairwell
619	Vaulted tomb's entrance stairwell
620	Soil accumulation in vaulted tomb
621	Northern wall of tomb's stairwell
622	Southern wall of tomb's stairwell
623	Vaulted tomb
Area C2	
750	Topsoil
751	Soil accumulation
752	Soil accumulation

Locus	Description
753	Soil accumulation
754	Soil accumulation over vaulted tomb's walls
755	Soil accumulation over vaulted tomb's walls
756	Soil accumulation over vaulted tomb
757	Wall
758	Wall
759	Eastern wall of vaulted tomb
760	Vaulted tomb debris
761	Northern wall of vaulted tomb
762	Vaulted tomb debris
763	Soil accumulation in vaulted tomb
764	Soil accumulation near vaulted tomb
765	Soil accumulation in vaulted tomb
766	Southern wall of vaulted tomb
767	Soil accumulation near vaulted tomb
768	Soil accumulation over vaulted tomb
769	Debris
770	Soil accumulation near entrance of vaulted tomb
771	Soil accumulation
772	Soil accumulation
773	Passageway into vaulted tomb
774	Soil accumulation near entrance of vaulted tomb
775	Soil accumulation in vaulted tomb
776	Soil accumulation
777	Soil accumulation
778	Soil accumulation over southern tomb
779	Soil accumulation
780	Soil accumulation
781	Northeastern trough of southern tomb
782	Wall
783	Southern wall of southern tomb
784	Southern tomb
785	Northwestern trough of southern tomb
Area D1	
1000	Topsoil
1001	Soil accumulation
1002	Soil accumulation

APPENDIX (cont.)

Locus	Description
1003	Soil accumulation
1004	Floor
1005	Soil accumulation
1006	Floor
1007	Floor
1008	Installation
1009	Vessel accumulation
1010	Soil accumulation
1011	Soil accumulation
1012	Wall
1013	Floor
1014	Soil accumulation
1015	Floor
1016	Soil accumulation
1017	Soil accumulation
1018	Debris
1019	*Ṭabun*
1020	Installation
1021	Debris
1022	Soil accumulation
1023	Floor
1024	Soil accumulation
1025	Wall
1026	Wall
1027	Topsoil
1028	Debris
1029	Debris
1030	Debris
1031	Debris
1032	Soil accumulation
1033	Soil accumulation
1034	Floor
1035	Debris
1036	Pottery layer
1037	Soil accumulation
1038	Soil accumulation
1039	Soil accumulation
1040	Soil accumulation in cistern
1041	Soil accumulation
1042	Debris in cistern
1043	Soil accumulation

Locus	Description
1044	*Ḥamra* (clay) layer
1045	Wall
1046	Wall
1047	Soil accumulation
1048	Wall
1049	Wall
1050	Wall
1051	Debris
1052	Soil accumulation
1053	Installation
1054	Soil accumulation
1055	Wall
1056	Floor
1057	Fill in cistern
1058	*Ṭabun*
1059	Installation
1060	*Ṭabun*
1061	Soil accumulation
1062	Wall
1063	Installation
1064	Debris
1065	Floor
1066	Topsoil
1067	Fill in cistern
1069	Wall
1077	Channel
1078	Mosaic debris
1082	Installation
1084	Soil accumulation
1085	Niche in cistern
1086	Wall
1087	Installation
1089	Wall
1092	Wall
1100	Soil accumulation
1103	*Ṭabun*
1106	Wall
1111	Wall
1112	Wall
1113	Wall
1114	Wall

Appendix (cont.)

Locus	Description
1116	Wall
1117	Wall
1123	Wall
1125	Stone lining
1126	Wall
Area D2	
1068	Fill in cistern
1070	Floor
1071	Debris
1072	Wall
1073	Wall
1074	Soil accumulation
1075	Soil accumulation
1076	Floor
1079	Clay layer
1080	Wall
1081	Floor foundation bed
1083	Fill in cistern
1088	Wall
1090	Clay layer
1091	Soil accumulation
1093	Soil accumulation
1094	Debris
1095	Floor
1096	Floor
1097	Debris
1098	Wall
1099	Wall
1101	Debris
1102	Wall
1103	*Ṭabun*
1104	Clay layer
1105	Debris
1107	Wall
1108	Wall
1109	Installation
1110	Soil accumulation
1115	Wall
1118	Wall
1119	Wall
1120	Installation

Locus	Description
1121	Debris
1122	Wall
1124	Wall
Area E1	
1544	Topsoil
1549	Soil accumulation
1550	Soil accumulation
1554	Soil accumulation
1555	Wall
1556	Wall
1557	Wall
1558	Wall
1559	Wall
1560	Wall
1561	Channel
1562	Channel
1563	Wall
1564	Soil accumulation
1570	Topsoil
1571	Soil accumulation
1572	Soil accumulation
1573	Soil accumulation
1574	Soil accumulation
1576	Topsoil
1577	Topsoil
1579	Soil accumulation
1580	Soil accumulation
1581	Soil accumulation
1582	Soil accumulation
1583	Floor removal
1584	Soil accumulation
1585	Wall
1586	Soil accumulation
1587	Soil accumulation
1589	Soil accumulation
1590	Channel
1591	Channel
1592	Channel fill
1593	Soil accumulation
1594	Soil accumulation
1595	Soil accumulation

APPENDIX (cont.)

Locus	Description
1597	Soil accumulation
1599	Soil accumulation
1600	Soil accumulation
1601	Soil accumulation
1602	Installation
1603	Wall
1604	Wall
1605	Soil accumulation
1606	Soil accumulation
1607	Soil accumulation
1608	Soil accumulation
1610	Wall
1611	Soil accumulation
1612	Soil accumulation
1613	Soil accumulation
1614	Wall
1615	Wall
1616	Wall
1617	Wall
1618	Wall
1619	Wall
1620	Debris removal
1621	Debris removal
1622	Debris removal
1623	Soil accumulation
1624	Soil accumulation
1625	Soil accumulation
1626	Soil accumulation
1627	Soil accumulation
1628	Wall
1629	Soil accumulation
1630	Soil accumulation
1631	Soil accumulation
1632	Pottery concentration
1633	Soil accumulation
1634	Wall
1635	Soil accumulation
1636	Soil accumulation
1637	Soil accumulation
1639	Soil accumulation
1640	Soil accumulation

Locus	Description
1650	Soil accumulation
1651	Soil accumulation
1652	Soil accumulation
1653	Wall
1654	Wall
1655	Soil accumulation
1656	Soil accumulation
1657	Soil accumulation
1658	Soil accumulation
1659	Wall
1660	Soil accumulation
1661	Soil accumulation
1662	Soil accumulation
1663	Soil accumulation
1664	Stone lining
1665	Soil accumulation
1666	Soil accumulation
1667	Soil accumulation
1668	Soil accumulation
1669	Soil accumulation
1670	Soil accumulation
1671	Soil accumulation
1672	Stone lining
1673	Wall
1674	Mosaic floor
1675	Floor
1676	Floor
1677	Floor
1678	Floor
1679	Floor
1680	Floor
1681	Floor
1682	Floor
1683	Soil accumulation
1684	Floor
1685	Soil accumulation
1686	Soil accumulation
1687	Floor
1688	Installation
1689	Wall
1690	Floor

Appendix (cont.)

Locus	Description
1691	Floor
Area E2	
1500	Topsoil
1502	*Ṭabun*
1503	Installation
1504	Soil accumulation
1505	Soil accumulation
1506	Stone layer (floor?)
1507	Soil accumulation
1511	Soil in *ṭabun*
1512	Wall
1513	Wall
1514	Wall
1515	Wall
1516	Soil accumulation
1517	Soil accumulation
1518	Soil accumulation
1519	Corner of two walls
1520	Topsoil
1521	Soil accumulation
1522	Soil accumulation
1523	Soil accumulation
1528	Soil accumulation by pillar base grave
1529	Topsoil
1531	Grave
1532	Grave
1536	Grave
1537	Grave
1538	Grave
1540	Soil accumulation
1551	Soil accumulation
1552	Wall
1534	Grave
1567	Topsoil
1575	Soil accumulation
1578	Wall
1588	Floor dismantling

Locus	Description
1596	Topsoil
1598	Soil accumulation
1609	Soil accumulation
Area E3	
1501	Topsoil
1508	Soil accumulation
1509	Soil accumulation
1510	Soil accumulation
1524	Debris dismantling
1525	Foundation bed
1526	Soil accumulation
1527	Soil accumulation in probe
1530	Debris dismantling
1539	Soil accumulation
1541	Soil accumulation
1542	Wall
1543	Wall
1545	Soil accumulation
1546	Soil accumulation
1547	Soil accumulation
1548	Soil accumulation
1553	Soil accumulation
1565	Soil accumulation
1566	Wall
1568	Soil accumulation
1569	Soil accumulation
Area E4	
1638	Topsoil
1641	Soil accumulation around graves
1642	Grave
1643	Grave
1644	Grave
1645	Grave
1646	Grave
1647	Grave
1648	Grave
1649	Grave

References

Ackermann O. This volume. Geomorphology and Sedimentology of Gane Ṭal.

Amitai-Preiss N. This volume. Four Inscribed Bronze Rings from Gane Ṭal.

Ariel D.T. 2013. The Coins from the ʻThird Mile Estate', Ashqelon. *ʻAtiqot* 74:229–239.

Ariel D.T. This volume. The Coins from Gane Ṭal.

Avitsur S. 1976. *Man and His Work; Historical Atlas of Tools and Workshops in the Holy Land.* Jerusalem (Hebrew).

Avni G. 1996. *Nomads, Farmers and Town-Dwellers: Pastoralists-Sedentist Interaction in the Negev Highlands, Sixth–Eighth Centuries CE* (Suppl. to the Archaeological Survey of Israel). Jerusalem.

Avni G., Dahari U. and Kloner A. 2008. *The Necropolis of Bet Guvrin–Eleutheropolis* (IAA Reports 36). Jerusalem.

Avshalom-Gorni D., Frankel R. and Getzov N. 2008. A Complex Winepress from Mishmar Ha-ʻEmeq: Evidence for the Peak in the Development of the Wine Industry in Eretz Israel in Antiquity. *ʻAtiqot* 58:49–66 (Hebrew; English summary, pp. 65*–67*).

Barda L. and Zbenovich V. 2012. *Map of Gedera (85)* (Archaeological Survey of Israel). Jerusalem.

Clermont-Ganneau C. 1896. *Archaeological Researches in Palestine during the Years 1873–1874* II. London.

Dayan A., Barkan D., Nadav-Ziv L., Golan D., Mermelstein M. and Tamir A. 2020. Gan Ha-Darom. *HA–ESI* 132 (December 31). http://www.hadashot-esi.org.il/Report_Detail_Eng.aspx?id=25874 (accessed February 3, 2021).

Fischer M. 1981. Figured Capitals in Roman Palestine: Marble Imports and Local Stone: Some Aspects of ʻImperial' and ʻProvincial' Art. *PEQ* 121:112–132.

Fischer M. and Taxel I. 2008. Rural Settlement in the Vicinity of Yavneh in the Byzantine Period: A Religio-Archaeological Perspective. *BASOR* 350:7–35.

Frankel R. 2003a. Mills and Querns in Talmudic Literature—A Reappraisal in Light of the Archaeological Evidence. *Cathedra* 110:43–60 (Hebrew; English summary, p. 188).

Frankel R. 2003b. The Olynthus Mill, Its Origin, and Diffusion: Typology and Distribution. *AJA* 107:1–21.

Frankel R. 2009. Introduction. In E. Ayalon, R. Frankel and A. Kloner eds. 2009. *Oil and Wine Presses in Israel from the Hellenistic, Roman and Byzantine Periods* (BAR Int. S. 1972). Oxford. Pp. 1–18.

Frankel R. 2011. Devices for Baking Bread in Talmudic Literature. *Cathedra* 139:79–110 (Hebrew; English summary, p. 180).

Ganor A., Klein A., Ganor S. and Klein E. 2010. A Roman Villa at ʻUrkan el-Khala Northwest of Eleutheropolis. *Qadmoniot* 139:26–29 (Hebrew).

Gibson S. 2003. Stone Vessels from the Early Roman Period from Jerusalem and Palestine: A Reassessment. In G.C. Bottini, L. Di Segni and L.D. Chrupcala eds. *One Land—Many Cultures:*

Archaeological Studies in Honour of Stanislao Loffreda OFM (SBF Collectio Maior 41). Jerusalem. Pp. 287–308.

Golan D. 2011. Ḥafez Ḥayyim. *HA–ESI* 123 (April 17). http://www.hadashot-esi.org.il/report_detail_eng.aspx?id=1661&mag_id=118 (accessed August 15, 2011).

Gutfeld O. 1999. Tell Qaṭra (Southwest). *HA–ESI* 110:65*.

Huster Y. and Sion O. 2006. Late Roman and Byzantine Period Vaulted Tombs in the Southern Coastal Plain. *Jerusalem and Eretz-Israel* 3:49–67 (Hebrew; English summary, p. 7*).

Israel Y. 1995. The Economy of the Gaza–Ashkelon Region in the Byzantine Period in the Light of the Archaeological Survey and Excavations of the '3rd Mile Estate' near Ashkelon. *Michmanim* 8:119–132 (Hebrew; English summary, pp. 16*–17*).

Israel Y. and Erickson-Gini T. 2013. Remains from the Hellenistic through the Byzantine Periods at the 'Third Mile Estate', Ashqelon. *'Atiqot* 74:167–222.

Kletter R. 2010. Late Byzantine Remains near Shiqmona: A Monastery, a Cemetery and a Winepress. *'Atiqot* 63:147–182.

Kloner A. 1976. H. Midras. *HA* 59–60:38–40.

Kloner A. 2003. *Maresha Excavations Final Report* I: *Subterranean Complexes 21, 44, 70* (IAA Reports 17). Jerusalem.

Kloner A. and Zissu B. 2007. *The Necropolis of Jerusalem in the Second Temple Period* (Interdisciplinary Studies in Ancient Culture and Religion 8). Leuven–Dudley, Mass.

Kogan-Zehavi E. 1996. Migdal Ashqelon. *ESI* 15: 94–96.

Kogan-Zehavi E. 1999. A Painted Tomb of the Roman Period at Migdal Ashqelon. *'Atiqot* 37:181–209 (Hebrew; English summary, pp. 179*–181*).

Ktalav I. This volume. The Mollusks from Gane Ṭal.

Magen Y. 2002. *The Stone Vessel Industry in the Second Temple Period: Excavations at Ḥizma and the Jerusalem Temple Mount* (JSP 1). Jerusalem.

Mayerson P. 1994. The Gaza 'Wine' Jar (*Gazition*) and the 'Lost' Jar (*Askalônion*). In P. Mayerson. *Monks, Martyrs, Soldiers and Saracens: Papers on the Near East in Late Antiquity (1962–1993).* Jerusalem. Pp. 347–351.

Mazar A. 2011. Oven from Tel Reḥov Dated to the Tenth Century BCE. *Cathedra* 139:111–114 (Hebrew).

Ory J. 1939. A Painted Tomb near Ascalon. *QDAP* 8:38–44.

Ouahnouna B. This volume. The Glass Vessels from Gane Ṭal.

Raphael K. This volume. The Metal Finds from Gane Ṭal.

Roll I. 1994. Roman Roads. In Y. Tsafrir, L. Di Segni, and J. Green. *Tabula Imperii Romani; Iudaea-Palaestina: Eretz Israel in the Hellenistic, Roman and Byzantine Periods. Maps and Gazeteer.* Jerusalem. Pp. 21–22.

Schlumberger D. 1933. Les formes anciennes du chapiteau corinthien en Syrie, en Palestine et en Arabie. *Syria* 14:283–317.

Seriy G. 2017. Givʻot ʻEtun. *HA–ESI* 129 (March 9). http://www.hadashot-esi.org.il/report_detail_eng.aspx?id=25183&mag_id=125 (accessed August 15, 2019).

Sidi N. This volume. The Stone Implements from Gane Ṭal.

Sion O. 2007. The Excavations at Khirbat el-Niʻana. *ʻAtiqot* 57:29*–49* (Hebrew; English summary, pp. 166–167).

Taxel I. 2007. Application-Decorated Bowls: A Cultural Characterisation of the Pagan and Christian Population of Jerusalem in the Late Roman and Byzantine Periods. *IEJ* 57/2:170–186.

Taxel I. 2013. Rural Settlement Processes in Central Palestine, ca. 640–800 C.E.: The Ramla–Yavneh Region as a Case Study. *BASOR* 369:157–199.

Tsafrir Y. 1969. A Painted Tomb of the Fourth Century C.E. *Qadmoniot* 6:61–65 (Hebrew).

Tsafrir Y. 1988. *Excavations at Reḥovot-in-the-Negev* I: *The Northern Church* (Qedem 25). Jerusalem.

Tsafrir Y., Di Segni L. and Green J. 1994. *Tabula Imperii Romani; Iudaea-Palaestina: Eretz Israel in the Hellenistic, Roman and Byzantine Periods; Maps and Gazeteer.* Jerusalem.

Varga D. 2002. Ashqelon, Afridar and Barneaʻ (A). *HA–ESI* 114:87*–88*.

Varga D. 2003. Ashqelon (B). *HA–ESI* 115:60*.

Varga D. 2005. Tel Ashdod. *HA–ESI* 117 (June 19). http://www.hadashot-esi.org.il/report_detail_eng.aspx?id=200&mag_id=110 (accessed January 24, 2012).

Vincenz A. de. This volume. Pottery Assemblages from Gane Ṭal.

Weksler-Bdolah S. 2000. Yad Benyamin. *HA–ESI* 112:98*–100*.

Weksler-Bdolah S. 2001. ʻYad Benyaminʼ—A Hiding Complex Site in the Western Judaean Foothills. In H. Eshel and B. Zissu eds. *New Studies on the Bar Kokhba Revolt* (Proceedings of the 21st Annual Conference of the Martin (Szusz) Department of Land of Israel Studies, March 13th 2001). Ramat Gan. Pp. 41–51 (Hebrew).

Yavor Z. 2010. The Architecture and Stratigraphy of the Eastern and Western Quarters. In D. Syon and Z. Yavor. *Gamla* II: *The Architecture; The Shmarya Gutmann Excavations, 1976–1988* (IAA Reports 44). Jerusalem. Pp. 13–112.

Zelinger Y. 2009. *The Rural Settlement in the Shephela of Lod (Lydda) during the Second Temple Period.* Ph.D. diss. Bar Ilan University. Ramat Gan (Hebrew; English summary, pp. I–III).