

KHIRBAT ZA'KUKA: AN IRON AGE I SITE BETWEEN JERUSALEM AND BETHLEHEM

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Salvage excavations were conducted in 2006 at Khirbat Za'kuka, located on a hilltop (map ref. NIG 22250/62655, OIG 17250/12655) about 5 km south of the Old City of Jerusalem and 4 km northeast of Bethlehem (Figs. 1, 2) in the southeastern portion of the neighborhood of Zur Bahir. Today, the site is partly covered by modern construction.

The excavated area was about 100 m south of the summit at the edge of a wide agricultural terrace facing the western slope of the hill (698 m asl; map ref. NIG 22249/62679, OIG 17249/12679). This elongated hill is flanked from the east and the west by two deep, wide wadis, Nahal Darga and Wadi el-Gharabi, whose valleys were farmed in ancient times because of their fertile alluvial soil. Indeed, to this day, orchards, mostly olive trees, are cultivated. The lack of a perennial water source close to the site dictated that water be

supplied either by means of cisterns or carried for a distance.

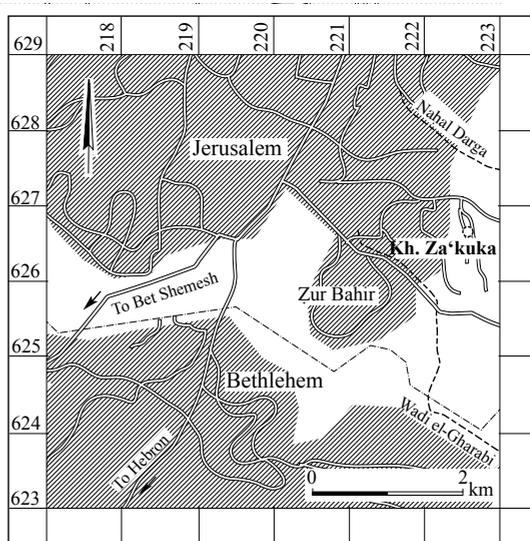


Fig. 1. Location map.



Fig. 2. Khirbat Za'kuka, looking south, with Bethlehem in the background.

THE EXCAVATION (Plan 1)

An area of 4×7 m was first opened along the slope. After evaluating the finds, the excavation resumed about one month later and the excavation area was enlarged to 9.5×10.0 m.¹ Architectural remains, which included part of a building (L102) and installations, were uncovered in the eastern, upper part of the excavated area (Figs. 3, 4). The exposed bedrock around the excavation area revealed that the settlement had been severely damaged by erosion prior to the construction of the agricultural terraces with building stones in secondary use. The poor state of preservation, and restrictions that impeded the widening of the excavation to the neighboring plot, precluded a determination of the size and plan of Building 102. While the lower western portion of Building 102 had been completely eroded, the eastern part had been preserved by a blanket of stone debris. Wall 4 (0.95 m wide), built

with two rows of stones on bedrock, enclosed the building from the north. Only two stones remained from W3 in the south; however, a deeply quarried line of bedrock assisted us in establishing that the width or length of this building was 8.6 m.

The floor (L102, L105; Fig. 5), made of packed chalk, possibly quarry waste, was uncovered about 1 m below the surface. A small area in the east of Floor 102 was paved with flat stones. Chisel marks showed that this floor had been laid over leveled bedrock and the natural hollows and depressions filled with soil and stones. Three square monolithic pillars, cut from local *nari*, which had supported the roof, were discovered in the building. Two of these pillars (each 1.55 m long) were complete and rested on the floor. A square, flat stone embedded in the floor may have served as a base for one of these pillars. The third monolithic pillar, its upper part missing, was found *in situ*; its preserved height was 0.8 m (Fig. 5).

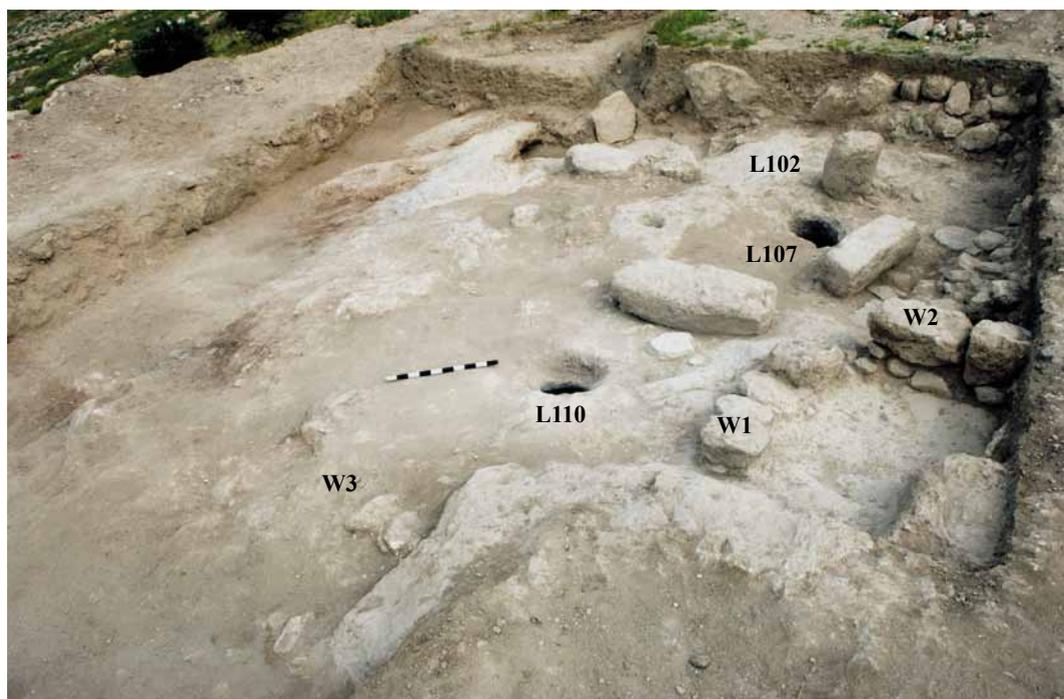
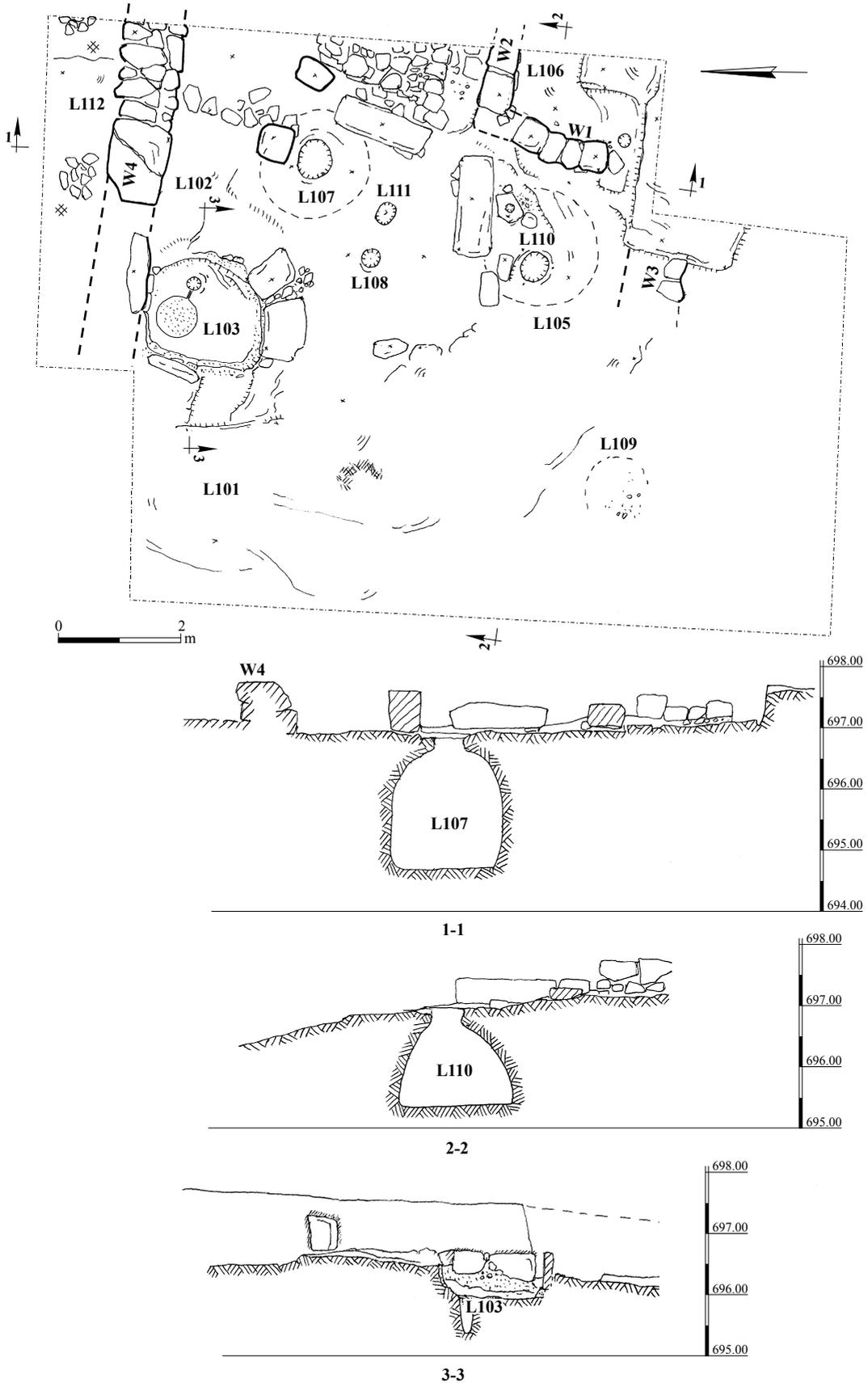


Fig. 3. General view of the excavation, looking north.



Plan 1. Plan and sections of the excavated area.

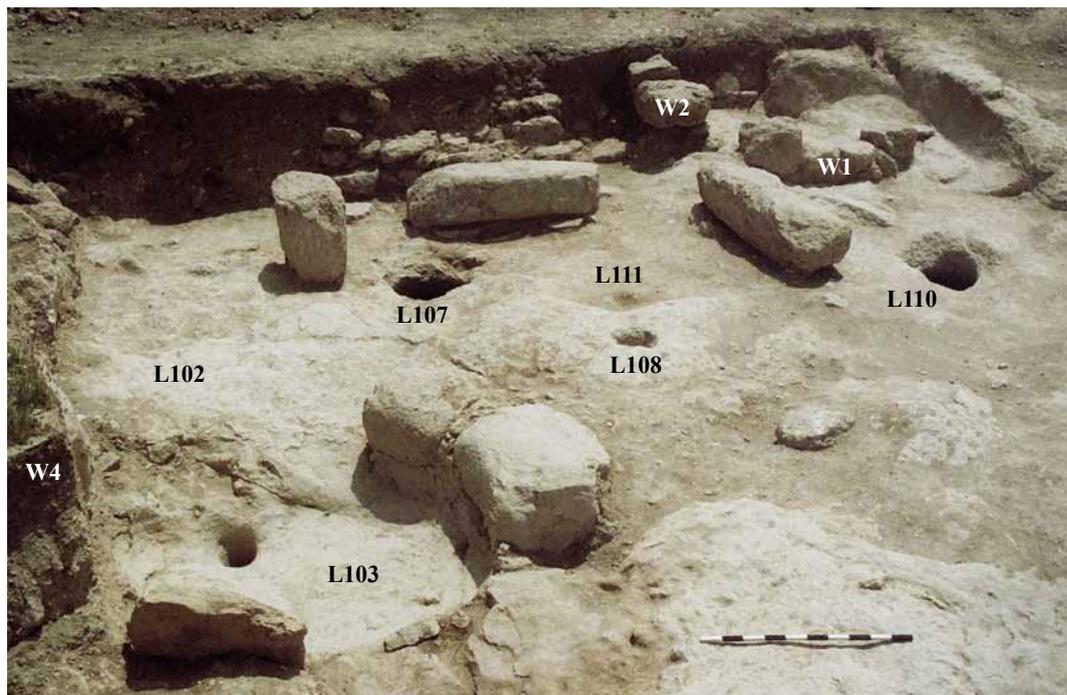


Fig. 4. General view of the excavation, looking east.



Fig. 5. An *in situ* monolith and a second monolith resting on the stone pavement in Room 102, looking east; bell-shaped Installation 107 is between the monoliths.

A small chamber or installation (L106) was uncovered in the southeastern portion of the building. The walls of this chamber (W1 and W2) were built of one row of roughly squared

blocks laid directly over a quarry. The chamber was entered from L105 through a narrow opening in W1. As in L102 and L105, the floor was composed of chalky soil laid over



Fig. 6. The hewn floor, fallen monolithic pillars and bell-shaped Installation 110 in L105, looking west.



Fig. 7. Olive Press 103, looking north; detail of the flat, round pressing area and the deep, conical vat.



Fig. 8. Olive Press 103, with stone weights *in situ*, looking southwest.

the uneven hewn bedrock. The bedrock was removed in this locus to level the floor for the building, and at the same time served as a source for the quarrying of the monolithic pillars, as attested by the negatives in the bedrock (Fig. 6).

A well-preserved olive press (L103) was uncovered in the western part of the structure, abutting W4. It consisted of a round basin (c. 1.7 m wide), constructed 0.6 m below Floor 102 and built of large stones and slabs that inclined slightly inward against a bedrock step.

The stones lining the olive press were sealed with small stones coated with a hard, yellowish plaster of very high quality. The bedrock floor of the press inclined northward toward a flat, circular pressing area (diam. 0.6 m), from which the liquid drained via a short, shallow groove into a rock-hewn conical container (0.55 m deep; Fig. 7). Two stone blocks found resting on the floor (Fig. 8) were identified as weights.

Next to the press and above it, two bell-shaped subterranean installations (L107, L110;

Plan 1: Sections 1–1, 2–2) were uncovered, both with round, narrow entrances. Marks on the unplastered walls indicate that chisels or adzes with blades 3 cm wide were used to hew the installations. The northern installation (L107; diam. at bottom 1.85 m, depth 2.2 m) was filled with soft soil containing a homogeneous assemblage of potsherds similar to those collected on the floor. The southern installation (L110; diam. of entrance 0.42 m, depth 1.55 m, diam. at bottom 1.9 m) was intentionally filled to the top with stones, apparently during a later period when agricultural terraces were constructed at the site. Inside the building, near the entrance to Installation 110, was a shallow mortar made of dolomite (see Fig. 14:5), and west of Installation 107 were two cupmarks, L108 and L111. Cupmark 111 was covered by the chalk fill of Floor 102; thus, it was not in use during the last stage of the building's existence.

Building 102 extended beyond Olive Press 103, but the side descending to the west was eroded, and bedrock was exposed 0.4–1.2 m below the terrace surface. It seems that the area to the south and west of the building, where two piles of ash and soot were exposed, served as a rear courtyard. One pile, in L109, was c. 1.3 m in diameter and 0.3 m above the bedrock; it contained a small number of potsherds. The other pile, c. 2 m in diameter, was uncovered in L101; it served as a hearth, and contained mostly soot and small, burnt stones.

The small finds in Building 102 included non-restorable pottery dated to Iron I and stone objects. It is noteworthy that no animal bones were recovered from the excavation area, a fact that should be considered when reconstructing the activities that took place there.

THE FINDS

Pottery

Most of the pottery from Kh. Za'kuka was manufactured from clay of Moza Formation, and featured many white inclusions added as temper in the form of dolomite sand of

'Aminadav Formation.² The clay was usually well fired, giving the ware a bright brown to buff appearance. The only exceptions in the assemblage were the cooking vessels, which were brown to dark brown in color. These vessels were made of *terra rosa* clays mixed with a high quantity of crushed calcite, which was used to sustain high firing temperatures.

The excavation yielded no complete ceramic vessels. The assemblage consisted of 811 potsherds, almost all undecorated; among them, only 55 items were rims and bases. The number of diagnostic pieces was too scarce to conduct a quantitative analysis, but it was clear that the majority belonged to large vessel types, such as storage jars or pithoi, as well as jugs and cooking pots—a standard assemblage among sedentary settlements.

The pottery in Fig. 13:1–5 is from Site 120 (2-6/1), Map 106 of the Jerusalem Survey (Kloner 2000:97*),³ which is the site of our excavation, and includes potsherds collected during that survey. Although dated by the Jerusalem Survey surveyors to Iron II, we have re-dated them to Iron I, as they are similar to the Iron I pottery we unearthed during our excavation. They thus provide a more complete picture of the site. The Kh. Za'kuka assemblage represents the horizon of late Iron I (Iron IB), as known from several sites in the Central Hill Country.

Bowls (Figs. 9:1; 12:1, 2; 13:1).—The bowl in Fig. 9:1 with a simple rim is red slipped and hand burnished. The small size of the potsherd precludes defining the thickening under the rim as a ledge or part of a bar handle as on a bowl from Kh. ed-Dawwara (Finkelstein 1990: Fig. 13:3). Finkelstein dated this type to the end of the eleventh century BCE (Finkelstein 1990:180) based on the occurrence of bowls with bar handles at other Iron I sites. This was one of two burnished sherds found in the excavation; it parallels the red-slipped hand-burnished bowl shown in Fig. 13:1. The two bases in Fig. 12:1, 2 seem to belong to bowls.

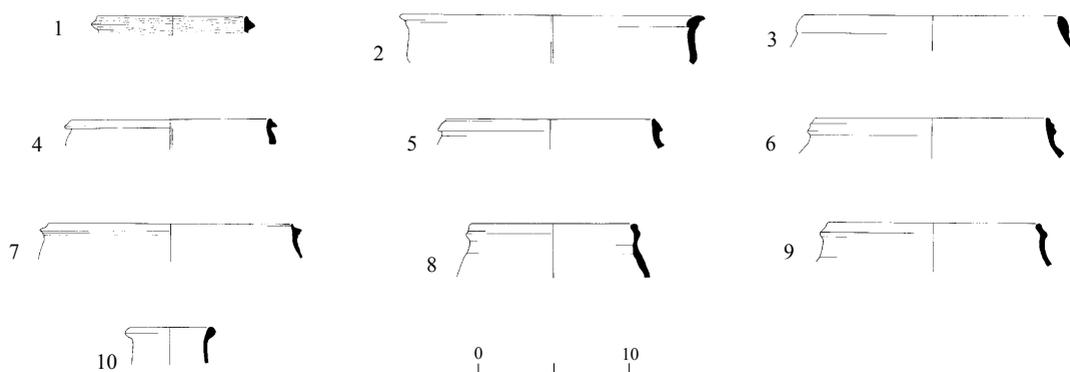


Fig. 9. Pottery: bowl, krater and cooking pots.

No.	Type	Reg. No.	Locus	Description	Parallels
1	Bowl	1027/4	110	Reddish brown, white and gray grits, red slip, burnish	Tell el-Ful: Albright 1924: Pl. XXX:15 Ta'anakh: Rast 1978: Figs. 23:11; 73:6
2	Krater	1015/1	102	Brown and gray core, white and gray grits	Giv'on: Pritchard 1964: Fig. 36:14 Bet El: Kelso 1968: Pl. 60:11 Kh. Raddana: Lederman 1999: Fig. 1:23 Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.59:2 City of David (Str. 15): De Groot and Ariel 2000: Figs. 11:11; 13:18
3	Cooking pot	1001/3	101	Brown and gray core, white and gray grits	'Ai: Marquet-Krause 1949: Pl. LXXXI:419 Tell el-Ful: Sinclair 1960: Pl. 21:15
4	Cooking pot	1014/2	104	Grayish brown and gray core, white and gray grits	Tell el-Ful: Sinclair 1960: Pl. 21:10
5	Cooking pot	1006/3	103	Brown and gray core, white grits	Kh. Raddana: Lederman 1999: Fig. 7:4 Bet El: Kelso 1968: Pl. 58:4 Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.47:3 'Ai: Marquet-Krause 1949: Pl. LXXXI:457
6	Cooking pot	1019/5	105	Brown, white and gray grits	Kh. ed-Dawwara: Finkelstein 1990: Fig. 17:7 Giv'on: Pritchard 1964: Fig. 36:18 Ta'anakh: Rast 1978: Fig. 17:13
7	Cooking pot	1015/2	102	Dark brown and gray core, calcite grits	Kh. Raddana: Lederman 1999: Fig. 4:9 Kh. ed-Dawwara: Finkelstein 1990: Fig. 17:6 Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.53:9
8	Cooking pot	1006/11	103	Reddish brown and white grits	Bet El: Kelso 1968: Pl. 61:9 Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.57:12
9	Cooking pot	1001/2	101	Brown and gray core, white grits	Kh. ed-Dawwara: Finkelstein 1990: Figs. 13:13; 16:4 Tell en-Nasbeh: Wampler 1947: Pl. 46:984 City of David (Str. 15): De Groot and Ariel 2000: Fig. 11:15
10	Cooking jug	1015/8	102	Brown and white grits	Kh. Raddana: Lederman 1999: Figs. 7:18; 8:4 Ta'anakh: Rast 1978: Fig. 11:3

Kraters (Figs. 9:2; 13:2).— The carinated krater with the folded rim in Fig. 9:2 is a common form; it usually appears with two handles. Such kraters have parallels in Iron I sites in the Central Hill Country, such as Kh. Raddana (Lederman 1999:72) and Kh. ed-Dawwara (Finkelstein 1990:182).

The bowl/krater in Fig. 13:2 has three deep horizontal grooves below the plain rim. Similar grooves can be observed on a bowl and kraters from Shillo (Bunimovitz and Finkelstein 1993: Fig. 6.46:2–5, 7).

Cooking Pots (Figs. 9:3–9).— Figure 9:3 is an upright rilled-rim cooking pot. No parallels were found for this unusual type. The cooking pots in Fig. 9:4–7 are closed-form variants of the traditional triangular-rim type that developed from the open forms dated at Gillo to the twelfth century BCE (Mazar 1981:21–23). Such upright and inverted triangular-rimmed cooking pots appear at Shillo Stratum V and are dated to the first half of the eleventh century BCE (Bunimovitz and Finkelstein 1993:162).

The cooking pots illustrated in Fig. 9:8, 9 represent a further development of the above

type and are more typical of the latest phase of Iron I. This type, with the inner gutter rim, is more common at sites dated to the second half of the eleventh century BCE, such as Kh. ed-Dawwara (Finkelstein 1990:186).

Cooking Jug (Fig. 9:10).— This cooking jug is characterized by a thickened, everted rim, and is made of *terra rosa* clay, as are all the other cooking pots. This vessel type appears at the end of Iron I and has a wide range of distribution (Finkelstein 1990:187).

Pithoi (Figs. 10:1–11; 12:3; 13:3–5).— These large storage vessels predominate in the assemblage. The rims are plain (Fig. 10:3, 4), thickened (Fig. 10:1) or folded out and profiled (Fig. 10:2, 5–7). All the pithoi are variants of the short-necked (Figs. 10:1–7; 13:3) or the neck-less (Fig. 10:8–10; 13:4) types. This change from the ‘classic’ high-necked collar-rim form was observed at Bet El, in the second Iron I phase, built over the earlier phase that had been destroyed by conflagration (Kelso 1968:33–34, 63). As short-necked and neck-less types are absent from twelfth-century BCE sites, such as

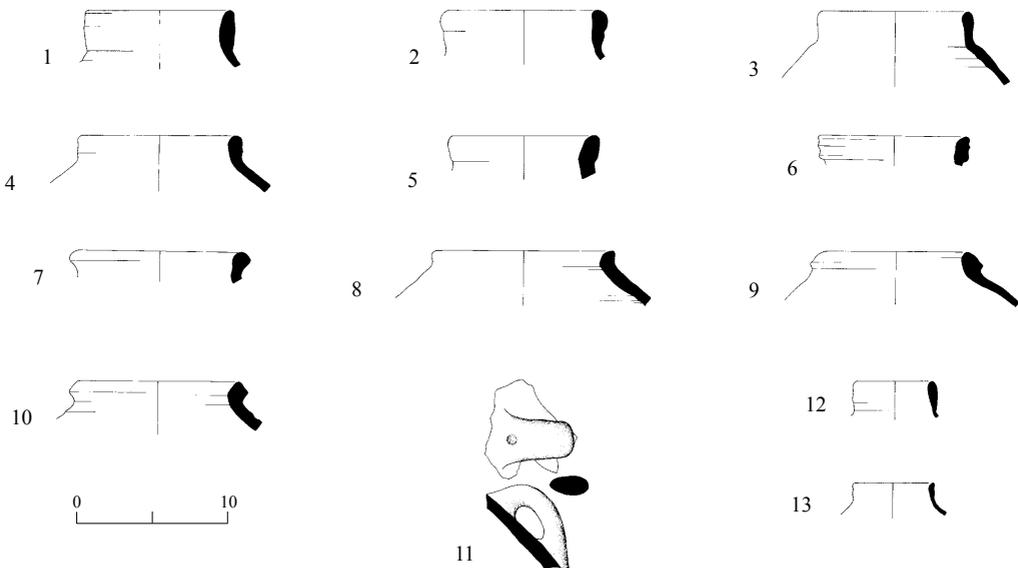


Fig. 10. Pottery: pithoi and storage jars.

◄ Fig. 10

No.	Type	Reg. No.	Locus	Description	Parallels
1	Pithos	1001/1	101	Light brown and gray core, white and gray grits	Tell el-Ful: Sinclair 1960: Pl. 20:4
2	Pithos	1002/3	102	Light brown and gray core, white and gray grits	Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.58:11 Bet Zur: Sellers et al. 1968: Fig. 7:9
3	Pithos	1033/4	112	Brown and gray core, white and gray grits	Tell el-Ful: Albright 1924: Pl. XXVII:17 'Ai: Marquet-Krause 1949: Pl. LXXX: 511 City of David (Str. 15): De Groot and Ariel 2000: Fig. 12:5
4	Pithos	1019/1	105	Buff and gray core, white and gray grits	Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.53:8 'Ai: Marquet-Krause 1949: Pl. LXXX:331
5	Pithos	1002/4	102	Buff and gray core, white and gray grits	Kh. Raddana: Lederman 1999: Figs. 1:10; 6:5, 16
6	Pithos	1019/10	105	Brown and gray core, white and gray grits	Tell en-Nasbeh: Wampler 1947: Pl. 1:5 Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.58:10
7	Pithos	1027/3	110	Buff and gray core, white and gray grits	Kh. Raddana: Lederman 1999: Fig. 6:6 'Ai: Marquet-Krause 1949: Pls. LXXXIV:1228; LXXX:5
8	Pithos	1025/3	107	Light brown and gray core, white and gray grits	
9	Pithos	1002/1	102	Buff and gray core, white and gray grits	Kh. Raddana: Lederman 1999: Fig. 4:1 Tell en-Nasbeh: Wampler 1947: Pl. 5:69 Bet El: Kelso 1968: Pl. 61:7 Giv'on: Pritchard 1964: Fig. 32:7
10	Pithos	1025/9	107	Brown and gray core, white and gray grits	Kh. ed-Dawwara: Finkelstein 1990: Fig. 16:9 Bet El: Kelso 1968: Pl. 57:2 Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.53:9 'Ai: Marquet-Krause 1949: Pl. LXXX:281
11	Pithos handle	1003/16	102	Reddish brown and gray core, white and gray grits	Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.47:10–12 Mt. Ebal: Zertal 1986–1987: Fig. 15:7 Ta'anakh: Rast 1978: Fig. 10:13
12	Storage jar	1001/6	101	Brown and gray core, white and brown grits	Bet Zur: Sellers et al. 1968: Fig. 8:29
13	Storage jar	1025/2	107	Buff and gray core, white and gray grits	

Gillo and Mt. Ebal, Finkelstein perceives them as the descendants of and successors to the collar-rim jar (Finkelstein 1990:190).

Some pithoi handles have finger or reed imprints on their upper sides (Figs. 10:11; 13:5). This is a frequent occurrence in Iron I. It appears on a variety of vessel types, particularly on pithoi found at most of the Central Hill Country sites. The base of a pithos is illustrated in Fig. 12:3.

Storage Jars (Fig. 10:12, 13).— The rims of these jars resemble those of the pithoi, but as they are thinner and have a smaller diameter, it is likely that these were storage jars similar to those found at Shillo (Bunimovitz and Finkelstein 1993: Fig. 6.51:5, 7).

Jugs (Figs. 11:1–4; 12:4).— The jugs in Fig. 11:1–4 are variants of the ridged-neck type, which are usually characterized by a trefoil



Fig. 11. Pottery: jugs, juglet and flask.

No.	Type	Reg. No.	Locus	Description	Parallels
1	Jug	1033/6	112	Buff and gray core, white and brown grits	Kh. ed-Dawwara: Finkelstein 1990: Fig. 18:8 Bet Zur: Sellers et al. 1968: Fig. 8:26 Ta'anakh: Rast 1978: Fig. 6:8
2	Jug	1015/4	102	Buff and gray core, white and brown grits	Kh. Raddana: Lederman 1999: Fig. 4:10 Tell el-Ful: Albright 1924: Pl. XXVIII:8 Bet Zur: Sellers et al. 1968: Fig. 9:14 Mt. Ebal: Zertal 1986–1987: Fig. 12:15
3	Jug	1006/2	103	Brownish white and brown grits	Kh. ed-Dawwara: Finkelstein 1990: Fig. 17:8 Tell el-Ful: Albright 1924: Pl. XXVIII:2 Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.53:10
4	Jug	1033/5	112	Brown and gray core, white and brown grits	Shillo: Bunimovitz and Finkelstein 1993: Fig. 6.51:2 'Ai: Marquet-Krause 1949: Pl. LXXX:539
5	Juglet	1025/1	107	Brown, white and gray grits; red stripes	Ta'anakh: Rast 1978: Fig. 40:1
6	Flask	1006/9	103	Buff, white and brown grits	

mouth and a handle drawn from rim to shoulder (Finkelstein 1990: Fig. 18:5, 6, 8). The ridged-neck jar is one of the most common vessels in the twelfth and eleventh centuries BCE. The base in Fig. 12:4 seems to belong to a jug.

Juglets (Figs. 11:5; 12:5, 6).— Juglet 11:5 has a wide mouth decorated with two horizontal red stripes. Such ornamentation appears on juglets of an earlier date from Strata VII–VI at Megiddo (Loud 1948: Pl. 71:6, 7), but has no parallels from nearby contemporary sites.

Two juglet bases were found (Fig. 12:5, 6), one (6), with burnish.

Flask (Fig. 11:6).— This traditional Late Bronze Age vessel continued to appear in Iron I, but was rare in the Central Hill Country. The small flask here has a funnel-shaped rim and a very narrow neck (diam. 0.6 cm), which differs from the few known examples, for

example, from Bet El (Kelso 1968: Pl. 61:19) and Shillo (Bunimovitz and Finkelstein 1993: Fig. 6.53:1).

Fenestrated Chalice (Fig. 12:7).— The upper part of this vessel is broken at the attachment line to another, missing part. The diagonal section on one side indicates a triangular fenestration, as can be seen on complete examples from Megiddo (Loud 1948: Pl. 87:10, 11).

Stand (Fig. 12:8).— This fragment seems to be the base of a stand.

Oil Lamp (Fig. 12:9).— This oil-lamp fragment, with an everted rim, is a common type. It is similar in shape to the earlier Canaanean lamp, which continued to appear in Iron II.

Stoppers (Fig. 12:10, 11).— Two examples, apparently of jar stoppers, were retrieved.

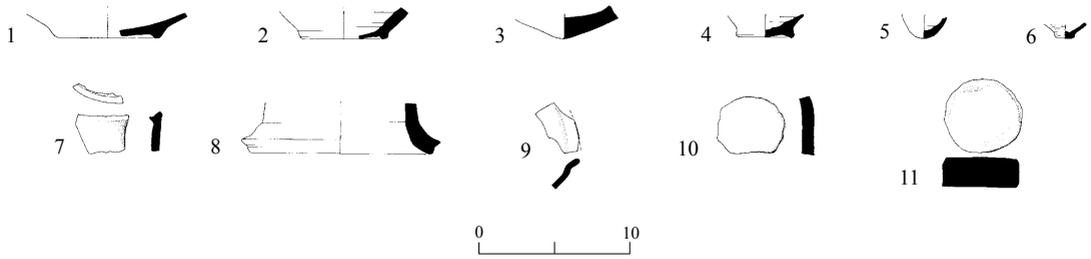


Fig. 12. Pottery: varia.

No.	Type	Reg. No.	Locus	Description	Parallels
1	Bowl base?	1003/7	102	Gray-brown and gray core, white and gray grits	
2	Bowl base?	1003/6	102	Light brown and gray core, white and gray grits	
3	Pithos base	1033/2	112	Brown and gray core, white and gray grits	
4	Jug base?	1006/5	103	Brown and gray core, white and brown grits	
5	Juglet base	1019/4	105	Reddish brown and gray core, white and gray grits	
6	Juglet base	1015/9	102	Reddish brown and gray core, white and gray grits, burnish	
7	Chalice	1015/3	102	Light brown and gray core, white grits	
8	Stand base?	1019/2	105	Buff and gray core, white and gray grits	
9	Oil lamp	1006/6	103	Light brown, white and gray grits	Bet El: Kelso 1968: Pl. 61:11
10	Stopper	1003/2	102	Brown and gray core, white and gray grits	
11	Stopper	1018	102	Buff, white and gray grits	

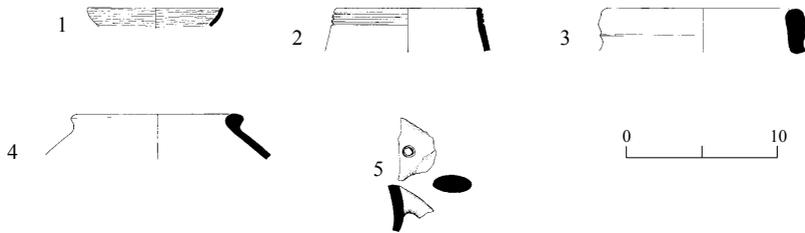


Fig. 13. Potsherds from the Jerusalem Survey.

No.	Type	Site No.	Locus	Description	Parallels
1	Bowl	106/26/1		Brown and gray core, red slip, hand burnish	Kh. ed-Dawwara: Finkelstein 1990: Fig. 2:2
2	Bowl/krater	106/26/2		Brown and gray core, white and gray grits	Tell el-Ful: Albright 1924: Pl. XXV:26 City of David (Str. 15): De Groot and Ariel 2000: Figs. 11:7
3	Pithos	106/26/4		Reddish brown and gray core, white and gray grits	Tell en-Nasbeh: Wampler 1947: Pl. 2:22 ‘Ai: Marquet-Krause 1949: Pl. LXXX:343
4	Pithos	106/26/5		Light brown and gray core, white and gray grits	Kh. Raddana: Lederman 1999: Fig. 6:9 Tell en-Nasbeh: Wampler 1947: Pl. 3:44
5	Pithos handle	106/26/6		Light brown and gray core, white and gray grits	‘Ai: Marquet-Krause 1949: Pl. LXXX:69 Mt. Ebal: Zertal 1986–1987: Fig. 15:1, 6

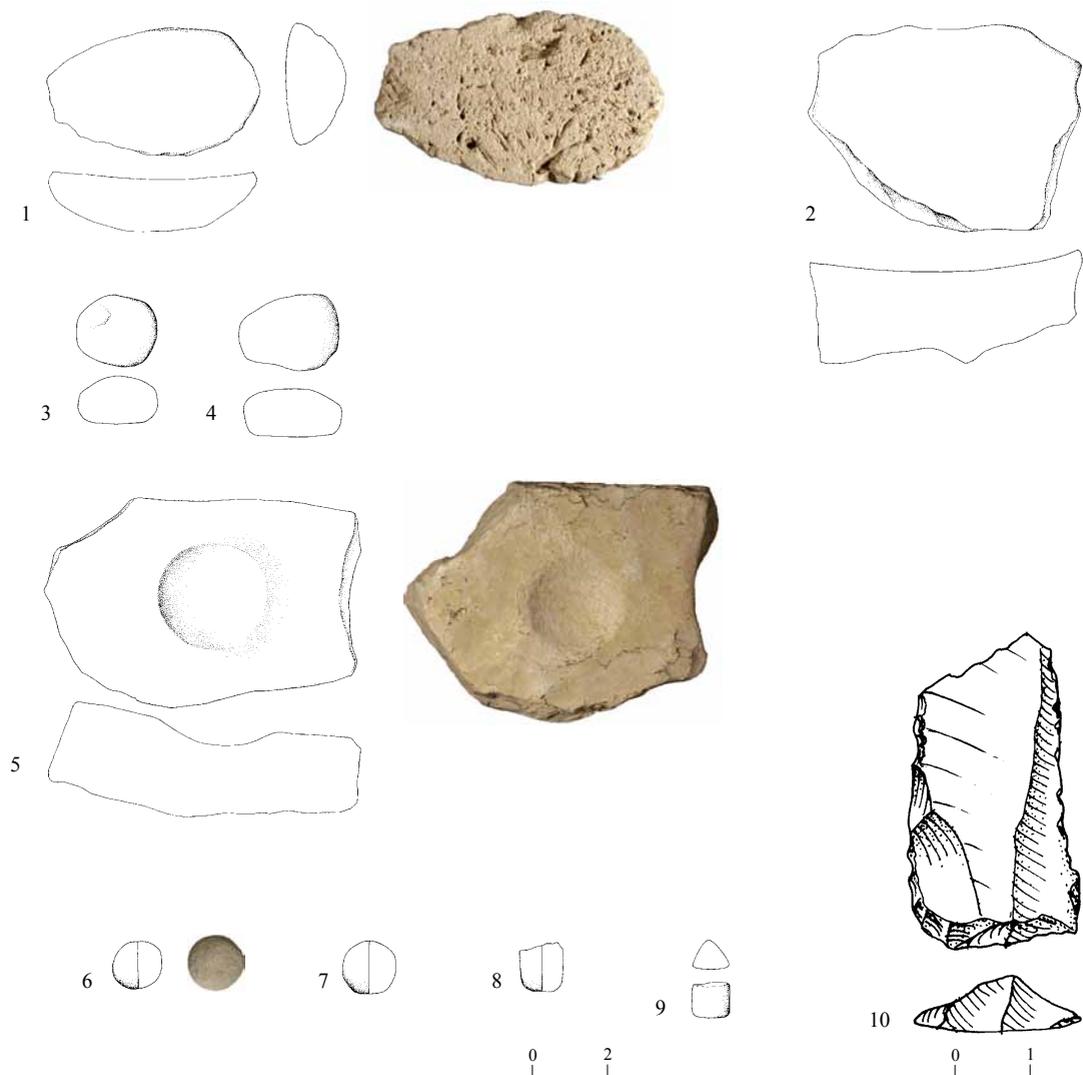


Fig. 14. Stone vessels.

No.	Type	Reg. No.	Locus	Description
1	Grinding stone	1022	102	Quartzolite
2	Saddle-shaped quern	1024	102	Quartzolite
3	Grinding stone	1012	103	Flint
4	Grinding stone	1013	103	Quartzolite
5	Mortar	1029	104	Dolomite
6	Hammer	1009	103	Flint
7	Hammer	1016	102	Quartzolite
8	Pestle	1017	102	Basalt, upper part missing, rounded section
9	Pestle	1002/2	102	Basalt, upper part missing
10	Sickle blade	1021	105	Flint

Stone Objects

Grinding Stones (Fig. 14:1–4).— These tools were fashioned for the most part from local quartzolite, which generates high friction due to the rich component of sand and shells, and thus serves as a suitable substitute for basalt. Additional grinding stones were made from local Meshash flint of 'Aminadav Formation. However, those grinding stones were less efficient than the quartzolite stones. One set includes an oval upper stone, plano-convex in section (Fig. 14:1), that was worked with two hands over a larger quern (Fig. 14:2) fixed to the ground. The smaller grinding stones (Fig. 14:3, 4) with a smooth active side could only be used with one hand.

Mortar (Fig. 14:5).— This mortar of dolomite has a hemispherical hollow in its center.

Hammers (Fig. 14:6, 7).— These fist-sized ball-like pebbles were collected from riverbeds. Of the twelve stone artifacts of this type found in the excavations, eleven are of flint and merely one is of quartzolite. The worn faces of these tools indicate that they were struck against a hard surface, which often caused them to break into two halves. It seems that these hand grinders were multipurpose crushing tools that could be used for activities such as crushing olives in oil production or crushing acorns, as suggested by Lederman (1999:95–96).⁴ Stone hammers have a very long history in the Jerusalem area. The fact that these hammers continued to be used in Iron I indicates that production of certain basic tools did not change over the centuries.

Pestles (Fig. 14:8, 9).— Two fragmentary examples of pestles were retrieved, both of basalt.

Sickle Blade (Fig. 14:10).— The only sickle blade unearthed during the excavations belongs to the rectangular type (Friedman 1993:201–202; Lederman 1999:96–98). It measures

20 × 39 mm and has retouch on three sides and sickle sheen on the active edge, revealing its use for reaping cereals.

RESULTS OF THE 2006 SURVEY

The area of Kh. Za'kuka appears in the Survey of Jerusalem within Map 106 (Kloner 2000:96*–97*: Sites 119–121). Site 119 is a small settlement on a hilltop occupied from the Roman period onward. Kloner and his team observed foundations of ancient buildings, caves and a winepress. In the nineteenth century, the *Survey of Western Palestine* (Conder and Kitchener 1881–1883, 3) observed a few houses there. Accelerated construction in this area after 1967 covered the summit with houses, causing irreversible damage to the site. Site 120, where the present excavation was conducted, was more-or-less left undisturbed by modern construction. Within this site, five cisterns and a small pool were documented. At Site 121, south of Site 120, a winepress, probably from the Roman or Byzantine period, was recorded. Diagnostic pottery collected from Site 120 (see Fig. 13) included five potsherds that were dated by Kloner and his team to Iron II. Our reexamination of this pottery revealed characteristics similar to the pottery retrieved from the present excavation, which led us to re-date these potsherds to Iron I and to add them to this report.

The results of the excavation clearly showed that Kh. Za'kuka was a single-period site, leading us to conduct a thorough survey using GPS technology to document all visible ancient remains. Table 1 presents 35 sites (Plan 2) recorded in the 2006 survey, which also includes the sites from Kloner's survey. All the surveyed remains were rock-hewn, with the exception of one built element (No. 12), and were concentrated in a relatively small area of about 6000 sq m (6 dunams). The sites include 12 cupmarks, 5 caves (Fig. 15), 5 cylindrical installations (silos; Plan 3; Fig. 16), 7 cisterns (Fig. 17) and 6 other elements (Fig. 18).

Table 1. Survey Data

No.	Type	NIG Map Ref.	Description
1	Cupmark	222464/626327	Diam. 0.16 m, depth 0.12 m
2	Cupmark	222479/626307	Diam. 0.32 m, depth 0.28 m
3	Cave	222477/626306	Circular, diam. c. 3 m; outline unclear due to expansion; fronted by shaft: 1.4 × 1.4 m
4	Silo	222481/626299	Cylindrical, diam. 1.15 m
5	Silo	222479/626293	Cylindrical, diam. 1.64 m
6	Silo	222478/626282	Cylindrical, diam. 1.98–2.20 m; excavated by robbers to depth of 1.35 m; Iron I pottery in fill; excavated as L104
7	Square-cut installation	222457/626299	Cave entrance? outline unclear because of fill and a newly planted olive tree
8	Cupmark	222456/626290	Diam. 0.14 m, depth 0.08 m
9	Olive press	222449/626279	Round installation built on bedrock; excavated as L103
10	Cistern	222462/626256	Active cistern filled with water, constructed concrete opening covered with a metal lid
11	Cistern	222451/626245	Circular opening, diam. 0.65 m; 0.4 m to east: cupmark, diam. 0.31 m
12	Installation	222448/626241	One course of stones arranged in a semicircle, diam. 1.85 m
13	Cupmark	222449/626235	Diam. 0.18, depth 0.14 m
14	Cupmark	222447/626235	Diam. 0.19, depth 0.12 m
15	Cupmark	222451/626231	Diam. 0.15 m
16	Cupmark	222453/626233	Diam. 0.21 m, depth 0.08 m
17	Cave?	222457/626232	Entrance from south, blocked
18	Cistern	222446/626231	Circular opening, diam. 0.7 m; blocked by a stone
19	Cupmark	222447/626227	Diam. 0.13, depth 0.12 m
20	Cupmark	222450/626224	Diam. 0.12, depth 0.12 m
21	Cupmark	222450/626217	Diam. 0.14, depth 0.1 m
22	Winepress vat?	222472/626231	Rectangular installation, 1.38 × 1.90 m; covered with fill
23	Cistern	222481/626227	Diam. c. 3.5 m; circular opening, diam. 0.63 m
24	Cistern	222479/626239	Nearly square shaft, 0.65 × 0.70 m
25	Cave	222476/626241	Entrance blocked
26	Cistern	222491/626251	Fill up to 3.2 m from top; circular entrance, diam. 0.75 m; circular shaft
27	Cave	222504/626256	Entrance from east, blocked
28	Cave	222506/626276	c. 8 × 10 m, supported by a square pillar; entrance from east, blocked; dwelling?
29	Cupmark	222505/626280	Diam. 0.16, depth 0.15m
30	Basin	222501/626282	Rectangular, 1.05 × 1.10 m
31	Silo	222488/626265	Cylindrical, diam. 1.87 m; remains of plaster mixed with pebbles on southeastern side
32	Installation	222504/626289	Square, 0.65 × 0.65 m; shallow with central cupmark, diam. 0.17 m, depth 0.12 m; connected to a shallow channel 0.95 m long
33	Cistern	222513/626290	Circular opening, diam. 0.72
34	Winepress	222529/626223	On a terrace east of the ridge; treading floor, width 3.3 m; adjacent vat to its north, 0.5 × 0.9 m
35	Silo	222469/626265	Cylindrical, diam. 1.42 m; filled with stones

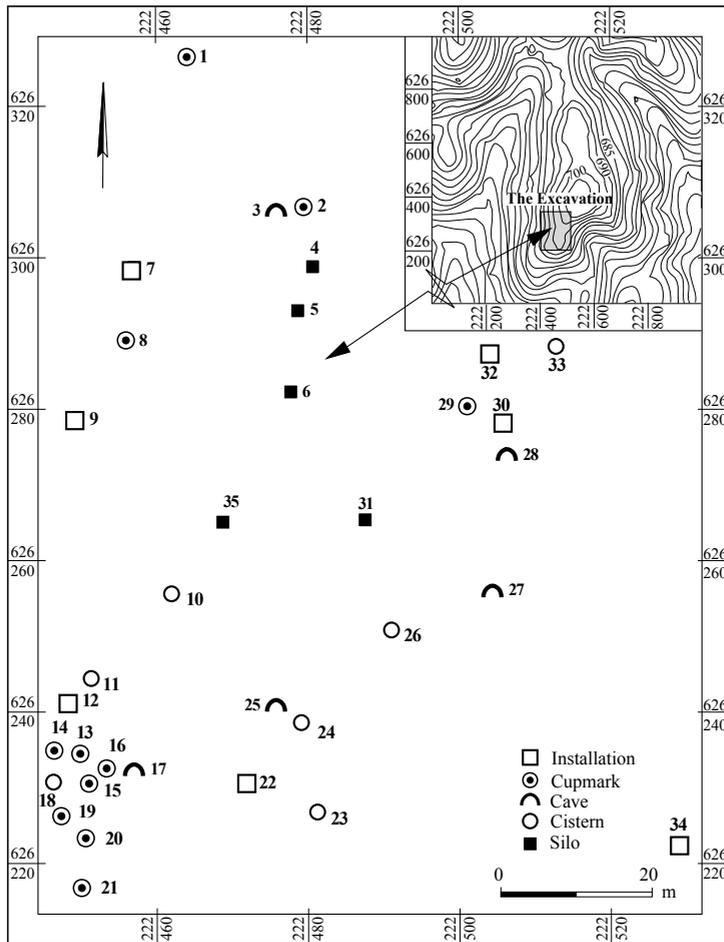
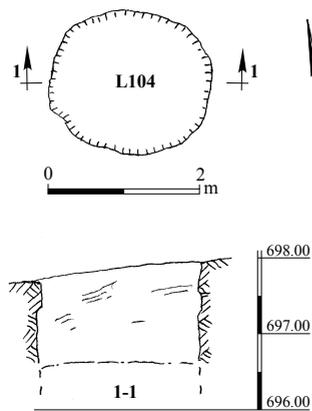


Fig. 15. The 2006 survey, entrance to cave (Site No. 3), looking northeast.



Fig. 16. The 2006 survey, Silo 104 (Site No. 6), looking north.



Plan 3. Plan and section of Silo No. 104
(Site No. 6).



Fig. 17. The 2006 survey, cistern (Site No. 11),
looking south.



Fig. 18. The 2006 survey, installation
(Site No. 32; oil press?).

DISCUSSION

The excavation results and subsequent survey revealed a hitherto unknown eleventh-century BCE rural settlement, dated to Iron IB. The inhabitants subsisted on dry farming, as indicated by the oil press, the silos and the stone tools. Located at the edge of the Judean Desert, it can be assumed that the economy also included animal husbandry.

The estimated size of the settlement (c. 6 dunams) is similar to contemporaneous excavated settlements at Kh. ed-Dawwara (5 dunams; Finkelstein 1990:163), Kh. Raddana (c. 8 dunams; Callaway 1993b:1253) and 'Ai (c. 10 dunams; Callaway 1993a). The exposed bedrock reveals that the inhabited area had been almost completely eroded and presumably, only small portions of the site still survive underneath the agricultural terraces facing the western slope. The pottery reveals a one-period site and therefore, most of the installations recorded in the survey should be attributed to Iron I, and only a few, such as Winepress No. 34, to later periods. It is also probable that some of the exposed installations were reused, or, as in the case of Cistern No. 10, continue to be active today.

Building 102 is a pillared house characteristic of Iron I settlements in the Central Hill Country, such as those found at Bet El (Kelso 1968:320), 'Ai (Callaway 1970:12–15), Kh. ed-Dawwara (Finkelstein 1990:196) and Kh. Raddana (Lederman 1999:34–40). The locations of the fallen monolithic pillars and the single pillar found *in situ* suggest that the structure had two rows of pillars, and was a three- or four-room house (Shiloh 1970).

We assume that this structure had two stories based on the relatively large amount of debris that surrounded (and thereby preserved) the single upright *in situ* pillar. The remains exposed by the excavation probably belong to the ground floor. The finds indicate that the ground floor was used for storage, food processing and other daily activities and that the residential space was on the second floor.

The round oil press (L103) unearthed in the western part of Building 102 is a simple (domestic) installation (Frankel 1999:57). The olives were crushed nearby, probably in a stone basin, using either wooden or stone pestles, simple heavy stones or hammers. The shallow stone mortar (Fig. 14:5), found *in situ*, may have been used for this purpose. After crushing the olives, the pulp was collected in baskets and placed on the round pressing area. The extracted oil then drained into the conical container, which was apparently deep enough to accommodate water, which served as a filter for dirt and heavy substances. The small volume (12 liters) of the container shows that this procedure had to be repeated frequently to achieve the desired quantities. The clean floating oil was collected using a small vessel and stored in jars, perhaps in adjacent bell-shaped Installations 107 and 110. The pressing process remains unclear; we do not know whether pressure on the baskets was applied directly, using the stone weights, or by means of a wooden beam levered with these weights.

The earliest presses of this type appeared in the Shephelah during the Late Bronze Age.⁵ Albright, who first identified this installation type as an olive press, found a round basin (No. 49) with a stone base that inclined toward a small stone vat and another round installation (No. 43) with a pottery krater that served as a container (Albright 1938:65; 1943:20) in Stratum C at Tell Beit Mirsim. In addition, two installations from the Late Bronze Age were uncovered in Stratum V at Tel Ḥarasim, but were incorrectly interpreted by the excavator as silos (Givon 1992: Fig. 4; 1993:4). All the other oil presses known to scholars were dated to Iron I; some of these were used until the tenth century BCE (Beeri 2008). Several generations later, during Iron II, this simple press was replaced by the more advanced perforated stone-weights type.

At nearby Tell en-Nasbeh, a press was found that consisted of a round slab (as a base) and a stone container (McCown 1947: Pl. 99). Although the perimeters of this installation

were not preserved and its provenience was not recorded, it is a good parallel to the Kh. Za'kuka round press. The Shephelah region has yielded the largest number of similar Iron I round oil presses to date. The early excavations at Tel Bet Shemesh uncovered at least five presses of this type in Stratum II that were misinterpreted as winepresses (Grant and Wright 1938: Pls. XVIII:2–4; XIX:1, 2). The renewed excavations at Tel Bet Shemesh uncovered four additional round presses, all dating to Iron I (Strata 7–4).⁶ As at Kh. Za'kuka, the Tel Bet Shemesh basins are about 1.5 m in diameter and set about 0.6 m into the floors. Because they were not grounded on bedrock, their bases were made of one solid flat stone to withstand high pressure and inclined slightly toward a small collecting vat. The sides of the basins were made of stone slabs sealed with hard plaster. Three large imperforate rectangular stones arranged in a row were found in each basin; these stones served as weights. Round, hard-limestone basins that may have served as crushing mortars were uncovered next to two olive presses.

Additional examples of typical round olive presses are Bin 6011 from Stratum IX at Tel Miqne (Killebrew 1996:25, Pl. 18) and Vat 1016, Vat 18049 and Vat 17020 from Strata 3–5A at Tel Gezer, where these installations were likewise interpreted as winepresses (Dever, Lance and Wright 1970:25; Dever 1986:97–98, 124–125). These examples sufficiently indicate the importance of olive-oil production to the economy of the Shephelah region, and raise the question of whether these simple devices were intended only for domestic use or for commercial purposes.

Parallels from the northern part of the country are found at Tel Kinneret (Fritz 1990:27, Table 31A) near the Sea of Galilee, and from Megiddo (Schumacher 1908: Abb. 48b), Tel Qashish (Ben-Tor, Bonfil and Zuckerman 2003:345–348) and Tel Yoqne'am (Zarzecki-Peleg 2005:22–30) in the Jezreel Valley. It should be noted that the first confirmation for the use of these round installations as oil presses came from the Oil-

maker's House at Tel Yoqne'am, where a large number of carbonized olive pits were found.

The two bell-shaped pits (L107, L110) hollowed in the bedrock were apparently used to store agricultural products, serving as natural coolers that provided a relatively constant temperature for preserving food, especially during the hot summers. These unplastered bell-shaped pits may have been for the storage of foodstuffs in small pottery jars that could fit through the pits' narrow entrances (Lapp 1981:61–62). The invention of this installation should be attributed to the Iron I Central Hill Country people who built their settlements over chalk formations. At Tell en-Nasbeh, these installations were found inside and outside pillared structures. They were regarded by the excavators as cisterns and dated to Iron II. It seems, however, that at least some of the bell-shaped pits that had been sealed by a wall from a later phase, such as Cistern 160, should be attributed to Stratum II—the earlier Iron I settlement (McCown 1947:180–183, Fig. 54). Other, smaller, installations (c. 2 m deep) at Tell en-Nasbeh, such as Cistern 156, should be regarded as food-storage units. The 63 bell-shaped installations unearthed at Giv'on were identified as wine cellars (Pritchard 1964:1–8). Their openings, size and average depth (2.2 m) are very similar to those of Kh. Za'kuka. Indeed, some of the plastered installations at Giv'on could have also served as cisterns.

Lacking a nearby perennial water source, the survival of the sedentary population at Kh.

Za'kuka depended on a constant supply of water, in this case, rainfall that was apparently collected in cisterns. Therefore, we assume that the majority of the seven cisterns recorded at the site (among them one that is still active) belonged to the settlement and should be dated to Iron I, the only period when a constant water supply was essential. All these installations have short shafts and resemble the bell-shaped pits, although they are much larger and deeper. As at Kh. Za'kuka, at the one-period sites of Kh. Raddana (Lederman 1999:39) and Kh. ed-Dawwara, several pits on the slopes and in the sites' centers (Finkelstein 1990:163) were recorded as cisterns.

The last features attributed to Iron I are the drum-shaped or cylindrical pits discovered in the 2006 survey. Their attribution to this period is based on the pottery retrieved from fill in Silo 104 (= Table 1: No. 6; Plan 3; Fig. 15). The evidence indeed seems to point to the use of these installations as stores for agricultural products harvested by the inhabitants of the settlement. Silos, whether rock-hewn or excavated and stone-lined, are considered one of the hallmarks of Iron I sites, as attested at Kh. Raddana and 'Izbet Zar'ata Stratum II (Calloway and Cooley 1971:13, Fig. 3; Finkelstein 1986:18–20, Fig. 4).

The discovery of the settlement at Kh. Za'kuka adds another dimension to distribution patterns of rural settlement in the Jerusalem area during Iron I and to patterns of settlement in the Central Hill Country.

NOTES

¹ Following a request to construct a private house, IAA inspector Bilal Touri dug four trenches along two terraces using a tractor. Ancient remains observed in the upper terrace required a manual excavation. The salvage excavation (Permit No. A-4759) was directed by the author in March and May 2006 on

behalf of the IAA with the support of Yuval Baruch and the assistance of Tania Kornfeld (plans), Michal Birkenfeld (GPS), Emanuel Eisenberg (field photography), Tsila Sagiv (studio photography), Leticia Barda (maps) and Irena Lidsky-Reznikov (drawing of finds).

² Anat Cohen-Weinberger conducted the petrographical examination of the pottery.

³ The author wishes to thank Prof. Amos Kloner for his kind permission to publish the pottery he collected at Kh. Za'kuka, Site 120.

⁴ At Kh. Raddana, 137 such flint hammers were found, making them the most popular stone tool found at the site.

⁵ The three types suggested by Beeri actually refer to different versions of one type implementing the same technology for the pressing system (Beeri 2008).

⁶ The author wishes to thank the directors of the Tel Bet Shemesh excavations, Dr. Shlomo Bunimowitz and Dr. Zvi Lederman, for permission to cite this unpublished information.

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