

LOCAL GLASS PRODUCTION IN THE LATE ROMAN–EARLY BYZANTINE PERIODS IN LIGHT OF THE GLASS FINDS FROM KHIRBAT EL-NI‘ANA*

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PREFACE

Two salvage excavations conducted at Khirbat el-Ni‘ana on behalf of the Israel Antiquities Authority (henceforth IAA) uncovered large quantities of glass vessels in a fairly good state of preservation. The amount of glass, the various shapes, the quality and the fabrics called for further study of the finds, the results of which are hereby presented.¹

The first IAA excavation season, carried out during July–August 1991 by Nitza Bashkin (1995), exposed an industrial area. The second IAA season, directed by Ofer Sion in late 1996–early 1997 (see Sion, this volume), uncovered parts of a cemetery and remains of a pottery workshop dump. The lion’s share of the glass finds date to the fourth and early fifth centuries (all dates are CE, unless stated otherwise).

While studying the glass from both excavations we realized that the material is very similar and that the vessels display distinct characteristics, suggesting they are the products of a local glass workshop. Furthermore, remains of glass production were discovered, mostly in the areas excavated in 1996–1997.

Most of the glass was discovered in tombs, fills of industrial installations and dumps, limiting any stratigraphic contexts. However, the significance of the glass from the site lies in the assemblage attributed to a local glass

workshop and its contribution to the study of ancient glass history.

Most of the vessel types, generally attributed to a wide geographical region, are well-known from collections, yet scarcely found in scientifically excavated sites. Therefore, mapping and dating local glass workshops (see below, Fig. 39) and their products may assist in tracing the origins of vessels from burial complexes, as well as those now located in museums.

A review of the methodological research of glass workshops opens this paper, followed by a typological study of the glass vessels, small glass objects and glass production remains from each of the excavations, accompanied by illustrations and a catalogue of the finds. The glass finds from the 1996–1997 season are presented first, as they comprise a much larger corpus that is the foundation of this study. Vessel types discussed therein are merely recorded in the 1991 assemblage, yet other types, appearing only in the 1991 assemblage, are researched in detail.

A few Late Islamic glass finds were retrieved from the latest phase of occupation at the site excavated in 1996–1997. They are presented separately in Appendix 1, as their forms, fabrics and techniques are very different from those of the early glass.

METHODOLOGICAL RESEARCH OF GLASS WORKSHOPS

Glass production involved two different processes: glass making, the primary stage in which chunks of raw glass were produced from the raw materials, and glass working, in which glass objects were made of molten

*In memory of Michael Miles, our friend and colleague at the IAA glass department, who worked with us for ten wonderful years. Michael drew most of the glass finds from the IAA excavations, including those in this publication. As a draftsman Michael focused almost exclusively on glass, which he brought to life through his artistic talent. Michael’s friendship and work will be cherished by us.

glass. In the glass workshop artisans melted raw glass chunks and recycled glass sherds in small furnaces. They then worked the hot glass to form vessels and objects (Gorin-Rosen 2000a:50). The working area included the furnace, the glass-blower's working table, the blowing tools and the debris of the blowing process (Israeli 2003:94–97). Several glass workshops, dated from the Early Roman, Late Roman, Byzantine and medieval periods, have been uncovered during the past three decades in archaeological excavations in the western and eastern parts of the Roman Empire.² The remains of these workshops corroborate the illustrated depictions of similar installations on Roman oil lamps and medieval manuscripts. These workshops also resemble traditional glass ateliers still functioning today in eastern Mediterranean marketplaces, e.g., in Hebron, Cairo and Damascus (for more information on traditional glassworking, see Nenna 2003).

The archaeological evidence of a glass workshop rarely includes the furnace and the working area; generally it is the production debris that is discovered, either nearby or in a fill farther away from the workshop. The study of glass workshops suggests that piles of blowing leftovers could be discovered very close to the furnace, below the glass-blower's working station, whereas other wasters and raw materials may spread over a larger area. Therefore, it is not essential to find a furnace or glass debris in order to establish the existence of a local glass workshop. The sites of Jerash, Baʿzra and Suweida in Jordan and south Syria, for example, have yielded archaeological evidence of glass production, but so far no remains of furnaces related to glassmaking or glassworking (Dussart 2000:91).

Several years ago Gorin-Rosen addressed the subject of glass workshops and suggested that a site may be identified as a production center if large quantities of similar vessel types are evident alongside production debris, although the original location of the workshop is unknown, as is the case at Khirbat el-Ni'ana (Gorin-Rosen 2000a:56, 58).

Based on data accumulated from many recently excavated sites, it is now evident that large quantities of vessels of the same limited number of types sharing similar decorations, fabric and workmanship, are sufficient to determine the presence of a glass production center, despite the lack of furnace residue or glassworking waste. Occasionally, it is even possible to identify the fingerprints of a specific craftsman in particular features, such as the fashioning and application of handles or trails onto the vessels.

We identified this phenomenon in many of the vessel types from Khirbat el-Ni'ana (see the typological discussion below). We also detected similar manifestations of a single artisan's traits in other glass corpora studied by us, from sites excavated in Israel during the past two decades, as well as other published examples, mostly from this country.

The group most significant in this context is the one from the burial ground at Ḥorbat Qaṣtra, so far only partially published (Gorin-Rosen and Katsnelson 1999; Gorin-Rosen 1998; *Castra* 1999; *New Antiquities* 1997). This group includes numerous jugs, ointment jars and perfume containers that exhibit the current trends in glassware of the fourth–fifth centuries (e.g., decoration with thick glass trails, depressions on the vessel body, ribbing of various types, typical trail handles), yet with a unique touch. This phenomenon was the focus of an exhibition of vessels from Ḥorbat Qaṣtra, as phrased in the catalogue:

“Such a large concentration of identical vessels makes it possible to discern the particular features of the group and seems to indicate the existence of a local workshop. The finish of the vessels is not perfect, and the proportions—of the handles and bases, for example—are in some cases exaggerated. These features, along with the vessels' rather clumsy charm, undoubtedly reflect the particular style and taste of the master artisan of Qaṣtra's glass workshop” (*New Antiquities* 1997:12).

Another group of small jugs sharing similar characteristics was unearthed in Late Roman

burials at Zippori in the lower Galilee, all probably produced in the same local workshop at the site (Israeli 2005:110*).

A group of juglets from Burial Cave 2 at Khirbat el-Shubeika in the western Galilee displays a unique fashioning of the handles and trail decoration. The handles have an irregular cross-section, and the manner in which they are attached to the body (drawn upward and disconnected on the rim) is distinctive. Additionally, at least eight of the juglets exhibit a distinctive handling of an irregular, thick and coarse trail; the trail is attached to the body in a sloppy wedge-shaped blob and crookedly wound several times around the neck, occasionally overlapping the blob (Gorin-Rosen 2002b:307–310, Figs. 3, 4a). This particular treatment of the handles and trails may be identified as the individual imprint of a local glass blower.

Another Late Roman group of juglets from the Tyre cemetery also bears distinctive features, different from those at Khirbat el-Shubeika; these include lack of decoration and careless execution, inattentive to details (Chéhab 1986: Pl. LVI–LVIII). Another group of vessels attributed to local production based on their shapes and fabrics alone, was discovered in burial caves at Ḥorbat Rimmon in the southern Judean Shephelah (Gorin-Rosen 2004d:119*–120*).

In some cases the fingerprints of a group or individual craftsmen were obvious and notable and pointed at a local manufacturer. This allowed the distinguishing of non-local vessels from local products, e.g., at the Late Roman glass factory at Jalame (Weinberg 1988) and the late Byzantine–Umayyad glass workshop in Beirut (Foy 2000:240–282).

The discovery of many local workshops in Israel, as well as the Eastern Mediterranean and Europe, raises questions as to the interactions between them. When a specific type is detected in wide distribution, it may reflect one of several circumstances: mutual influences between regions and workshops, migration of artisans, a parallel or universal fashion, or

a single center supplying all the merchandise. The latter alternative is the least probable during the Late Roman period, when glass manufacture centers flourished throughout the Roman world. Even high quality products were made in the periphery, such as the fine jugs that were produced contemporaneously in both the eastern Mediterranean and the Rhineland (Israeli 2003:185).

Some of the vessels from Khirbat el-Ni'ana have parallels in a very wide geographical area. The bowls with a trail-wound base (Figs. 7; 31:1–5), for example, were collected at the site in rather large numbers and were produced locally. Many trail-wound bases were discovered in Israel and Jordan (see below). Numerous bases identical in shape, yet of brighter colors, were unearthed in north Sinai, along with remains of local glass production.³ Other examples were retrieved from Karanis, Egypt (Harden 1936: Pl. 19:658), Carthage (Sternini 2000:140–141, Figs. 58–62; Tatton-Brown 1984:208, Fig. 68:103–105), Rome (dated to the mid-fourth and fifth centuries; Sternini 1995:249, Pl. 15:188–200; Sternini 2000:140), and southern France (dated to the fifth century; Foy 1995:196, Pl. 7:40–43).

It seems that vessels with a trail-wound base, as well as other types of vessels, were in vogue and widespread all over the Mediterranean during the fourth and fifth centuries, and were produced in many local glass workshops, such as the one at Khirbat el-Ni'ana. The local artisans followed the general fashion, using local fabrics and applying adornment to satisfy local tastes. We, therefore, suggest that during the Late Roman and early Byzantine periods several types of glass vessels were part of a universal trend, resembling that of the *koine* in earlier periods.

On the other hand, some vessels attributed to the local glasswork at Khirbat el-Ni'ana convey a different pattern of distribution. These types appear mostly in sites in Israel, less frequently in the neighboring countries and are missing from European assemblages. One such example is the double kohl tubes (Figs. 17–21, and see

discussion therein), abundant in Palestine in the Late Roman–Byzantine periods.

THE 1996–1997 EXCAVATION

INTRODUCTION

A large amount of glass was unearthed during the excavation season conducted at Khirbat el-Ni'ana by Ofer Sion (this volume).⁴ More than 8000 fragments, including 20 complete and four intact vessels, were discovered in Areas 100 and 101, inside and outside the tombs. About half of the fragments were registered; others were too small to reconstruct their original forms. A summary of the quantities is presented in the following table:

Area	Total Glass Fragments	Non-Diagnostic Body Fragments	Registered Fragments
100	7026	3888	3138
101	1102	97	1005

The amount of glass finds discovered in this short-term salvage excavation is rather large. Yet, such richness is not surprising, considering the quantities of glass and remains of glass production collected in the 1991 excavation at the site (Bashkin 1995, and see below).

Most of the glass finds are dated to the fourth and early fifth centuries. Two glass seals of the sixth–fourth centuries BCE, reused as jewelry, are the earliest finds (Fig. 24:3, 4 and see below). A few Late Islamic glass fragments are associated with the latest phase of occupation at the site (see Appendix 1).

THE GLASS VESSELS OF THE LATE ROMAN AND EARLY BYZANTINE PERIODS

One hundred and thirty-three specimens were selected for presentation. These are the most diagnostic vessels and objects, representing the whole range of types of the Late Roman and early Byzantine periods uncovered at the site. The assemblage comprises tableware, cosmetic containers and oil lamps.

All the vessels were blown, generally of bluish-green glass, ranging from nearly colorless to dark hues. Also frequent is green, occasionally with a yellowish tinge. A few colorless and purple pieces were also found. Some of the glass is streaked by yellow and red veins. Several vessels are decorated with trails, either blue and turquoise or of the same color as the vessel.

The glass finds bear a silver layer of weathering and iridescence, and are generally covered with sand deposits. The glass is very bubbly with black impurities and deformations, the quality of the fabric is rather low and the vessels often display careless workmanship.

The large quantity of glass fragments and their characteristic fabric and workmanship, as well as a rather limited number of types, suggest a local glass production. It is noteworthy that regardless of their provenance (inside and outside the tombs), almost all the vessels (as well as those discovered in the 1991 excavations) were produced in the local workshop.

Since the glass collected in the tombs and in the surrounding area is chronologically homogeneous, it is hereby discussed typologically.

Most of the parallels quoted are from sites in the Syria-Palestine region, assisting in establishing the chronology and geographical distribution of the various types. Some of the types from Khirbat el-Ni'ana also have counterparts in the western part of the Roman Empire, however, as we are dealing with locally produced vessels, it is irrelevant to the following study.

Bowls

Bowls with Rounded Rim (Fig. 1:1–5).—Numbers 1–5 belong to large open vessels, i.e., dishes or shallow bowls with straight or slightly slanted walls. The rims, thickened to varying extents, range in diameter from 200 to 240 mm. Several bowls have marks of exterior polishing on and below the rim. The walls are rather thin and delicate, some slightly bulging (Nos. 4, 5). These bowls usually have a pushed-in ring base. Bowls of this type generally date to the late

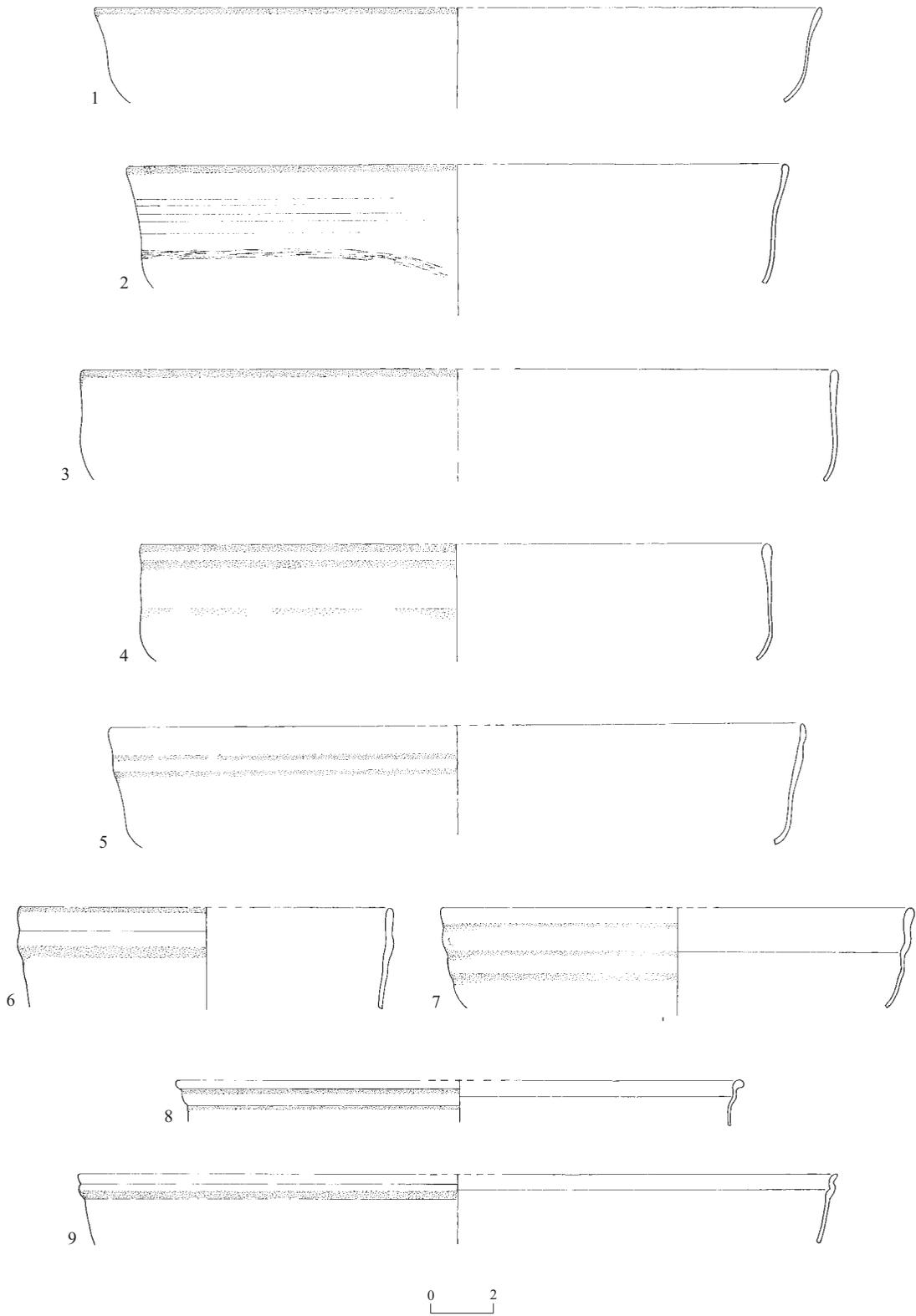


Fig. 1. Bowls with rounded rim.

◀ Fig. 1

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	19	186	Rim D ~230	Light green	Silver weathering, iridescence, sand deposits	Rim fragment; flared rounded rim, thin wall; polishing marks on ext.; low quality fabric
2	9	233	Rim D ~210	Greenish	Silver weathering, iridescence, sand deposits	Rim fragment; slightly flared thickened rim, polished on edge; band of horizontal incisions on lower body, probably polishing marks
3	35	250	Rim D ~240	Greenish	Silver weathering, iridescence, sand deposits	Rim fragment; upright thickened rim; polishing marks on ext.; bubbly glass
4	15	158	Rim D ~200	Light green	Silver weathering, iridescence, patches of pitting	Rim fragment; thickened rounded rim; polishing marks on ext.
5	35	250	Rim D ~220	Greenish	Silver weathering, iridescence, sand deposits	Rim fragment; slightly flared rim with shallow horizontal uneven ridge below it; polishing marks on ext., blowing spirals and black impurities; low quality fabric
6	11	141	Rim D 120	Light green	Silver weathering, iridescence, sand deposits	Rim fragment; upright rim with horizontal ridge below it; polishing marks on ext. below rim
7	9	157	Rim D ~152	Colorless with bluish-green tinge	Silver weathering, iridescence, sand deposits	Rim fragment; rounded rim with shallow horizontal ridge below it; thin wavy wall
8	15	155	Rim D 180–200	Greenish	Iridescence, sand deposits	Rim fragment; flared, rounded, thickened rim with shallow horizontal ridge just below
9	43	257	Rim D ~240	Light greenish-blue	Iridescence, sand deposits, slight pitting	Two rim fragments; shallow horizontal ridge below rim; bubbly glass with black impurities; low quality fabric

third–fourth centuries, like those from burial contexts in the western Galilee, e.g., Asherat, Nahariyya, Ḥanita, and Peqī'in (Gorin-Rosen 1997b:62, Fig. 1:1, and see discussion therein).

Bowls with Rounded Rim and Horizontal Ridge (Fig. 1:6–9).— Bowls Nos. 6–9 have a shallow horizontal ridge below the rim and are distinguished by horizontal ridges forming a wavy wall. Number 6, a deep bowl with vertical walls, has a single horizontal ridge, located 8 mm below the rim; shallow bowl No. 7, with slightly curving walls, has two pronounced ridges. Bowls Nos. 8 and 9 have ridges just below their flared rims.

Recent excavations demonstrated that these bowls were very frequent in the Galilee and were probably produced in the Jalame factory

(Weinberg and Goldstein 1988:45, 47, Fig. 4-6:49–64). Examples were unearthed in burial caves, mostly of fourth-century contexts, particularly in the western Galilee, e.g., at Kisra (Cave 3; Stern 1997: Fig. 2:12), near Kabri (Cave 6; Stern and Gorin-Rosen 1997: Fig. 10:6, 7) and at Ḥ. Sugar (Cave 2; Gorin-Rosen 1997a: Fig. 5:3). Bowls of this type were also found on Mount Carmel, e.g., at Sumaqa, where they are thin and delicate as Nos. 8 and 9 (Lehrer-Jacobson 1998:359, Fig. 1:2, 3) and at Raqit, where they are a little coarser (Lehrer-Jacobson 2003:233, Fig. 1:4–6). The bowls from Khirbat el-Ni'ana belong to the same type as those found elsewhere, yet they are distinguished by their delicate thin wavy wall and shallow ridges. Numbers 8 and 9 also display a thin delicate rim slightly bent outward. These minute differences

may characterize the local workshop products that follow the traditional forms of the period, yet with a special touch.

Bowls with Outfolded Rim (Fig. 2:1-3).— Numbers 1-3 are the upper parts of shallow bowls with curved walls. The rims, slightly

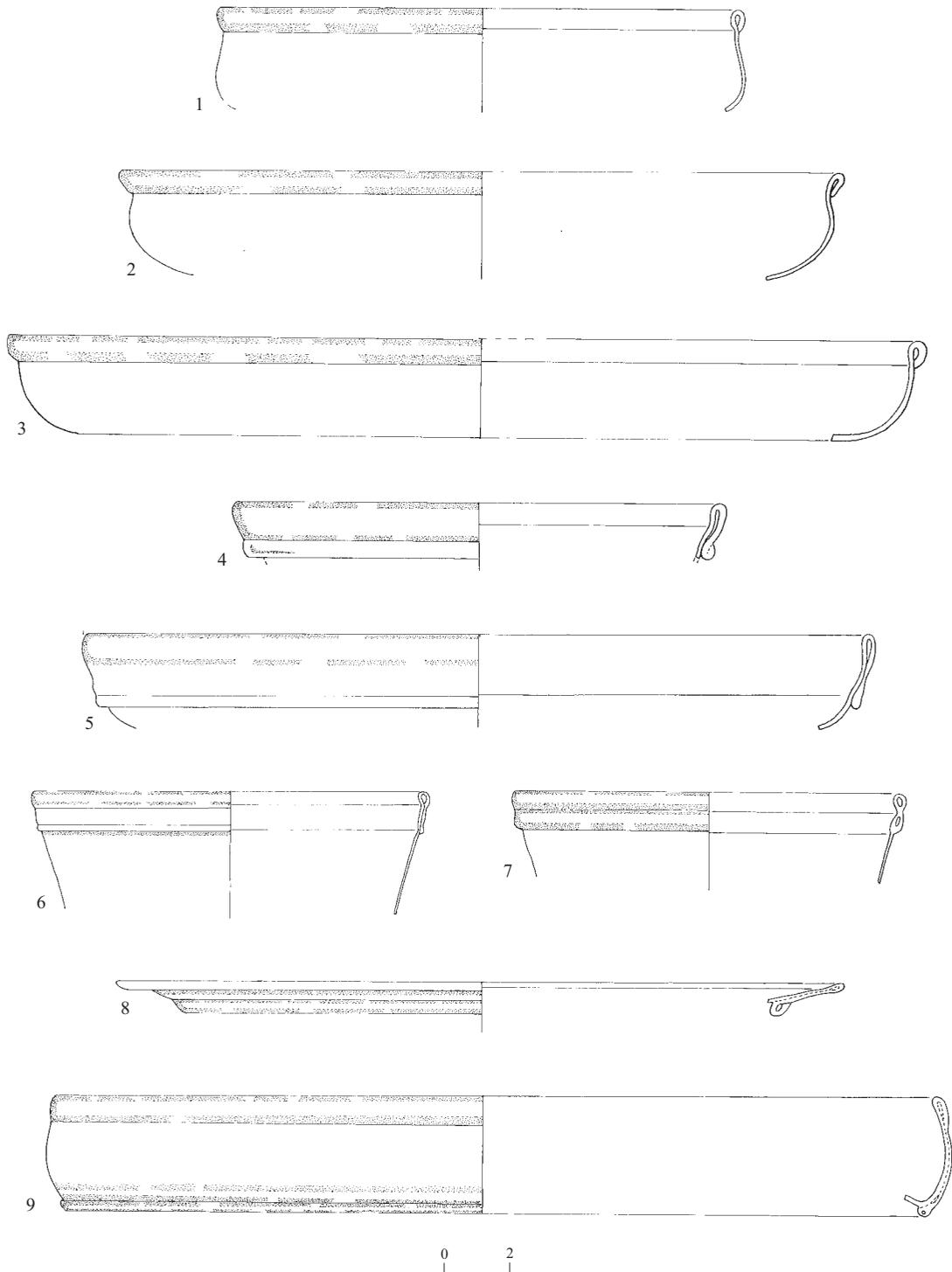


Fig. 2. Bowls with outfolded rim.

◀ Fig. 2

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	11	144	Rim D ~160	Greenish	Black weathering, iridescence, sand deposits, pitting	Rim fragment; upright, outfolded, slightly incurved rim
2	62	312	Rim D 220	Greenish	Iridescence, sand deposits, pitting	Two rim fragments, mended; flared outfolded rim, S-shaped body; polishing marks on ext.
3	9	236	Rim D 280–300	Light bluish-green	Silver weathering, iridescence, sand deposits, pitting	Rim fragment; upright outfolded rim, convex wall; polishing marks on ext.; blowing spirals, large oval bubbles; low quality fabric
4	9	145	Rim D 150	Greenish	Silver weathering, iridescence, sand deposits	Collar rim fragment; wide, almost upright, outfolded rim, thickened at edge of lower fold
5	35	260	Rim D 240	Greenish with yellowish streaks	Silver weathering, iridescence, sand deposits, pitting	Collar rim fragment; wide, almost upright rim, thickened at edge; curved wall
6	9	229	Rim D 120	Colorless with bluish-green tinge	Silver weathering, iridescence, sand deposits	Two collar rim fragments; upright rim with double fold, lower fold pinched
7	9	145	Rim D 120	Almost colorless with greenish-blue tinge	Silver weathering, iridescence	Collar rim fragment; upright rim; uneven hollow folds
8	15	158/1	Rim D 220	Light greenish	Silver weathering, iridescence, sand deposits, pitting	Collar rim fragment; outplayed rim with double fold
9	15	158/2	Rim D 270	Greenish-blue	Silver weathering, iridescence, sand deposits, slight pitting	Collar rim fragment; uneven folds, many long horizontal bubbles and black impurities on rim; low quality fabric

incurved (No. 1), flared (No. 2) or upright (No. 3), are folded outward, forming a hollow tube with a thickened edge. Their diameters range from 150 to 280–300 mm. All known parallels have a low tubular ring base. Variants of shallow bowls with outfolded rims were unearthed at Jalame, within the remains of the factory dump dated to the second half of the fourth century (Weinberg and Goldstein 1988:41–43, Fig. 4-3:14–19).

Bowls with Outfolded Collar Rim (Fig. 2:4–9).— These deep and shallow bowls display versions of the collar rim. The rounded rim was folded outward and then back toward the wall, forming a heavy collar with either a thickened edge (Nos. 4–6) or two hollow folds (Nos. 7–9). Rim fragments resembling Nos.

4–7 are mentioned at Jalame (Weinberg and Goldstein 1988:49, Fig. 4-8:77–82). A deep bowl with an upright collar rim similar to No. 7 was found in Tomb XV at Hanita, dated to the third–early fourth centuries (Barag 1978a:21, Fig. 11:40).

Fragment No. 8 belongs to a shallow bowl or plate with a wide splayed rim. Similarly shaped rims are common on very large dishes, like the well-known decorated plate from Catacomb 15 at Bet She‘arim and two other plates from El-Bassa, all dated to the late fourth century (for a full discussion of the type, see Weinberg and Goldstein 1988:49, Fig. 4-8:80, 81).

The large shallow bowl, No. 9, has a wide upright collar, drawn from the rim down to the bottom of the wall and then folded at the edge. It belongs to a type, probably produced at

Jalame (Weinberg and Goldstein 1988:47–48, Fig. 4-7:71–73). This type is most frequent in the Galilee, e.g., at Meron Strata IV (180–324 CE) and V (324–451 CE) (Meyers, Strange and Meyers 1981: Figs. 9.10:15, 16; 9.11:1–4), and in a fourth-century context at Kisra (Cave 3; Stern 1997:106, Fig. 1:6).

Bowls with Double Fold Below Rim (Fig. 3).— These bowls were found at the site in many versions and relatively large numbers, and represent one of the most frequent types of the local production. A deformed rim of this type (Area 100, L9, B233, not illustrated) reinforces this assertion. Bowls of this type were also retrieved from the 1991 season (Fig. 28).

Numbers 1–8 form a group of rather deep, small- and medium-sized bowls (rim diameters

range from 90 to 140 mm), with convex or tapering walls. The complete vessel (No. 1), with its high, footed, pushed-in ring base, preserves the probable shape of the other bowls in this group. Number 9 and at least two more similar bases (not illustrated) from the site present another version of this base type. The rims are rounded and outsplayed to form a short shelf-like (Nos. 1–4), flared (No. 5), or upright (Nos. 6–8) rim. The most distinctive feature of these bowls is a double fold below the rim, formed as the rim was folded inward, upward and then downward. The location of the fold varies: it is either just below the rim (Nos. 1–5) or farther down the wall (Nos. 6–8). These bowls are often decorated with horizontal trails in turquoise or dark blue, applied and marvered-in at the top of the rim (Nos. 4, 5) or in between the folds (No. 5).

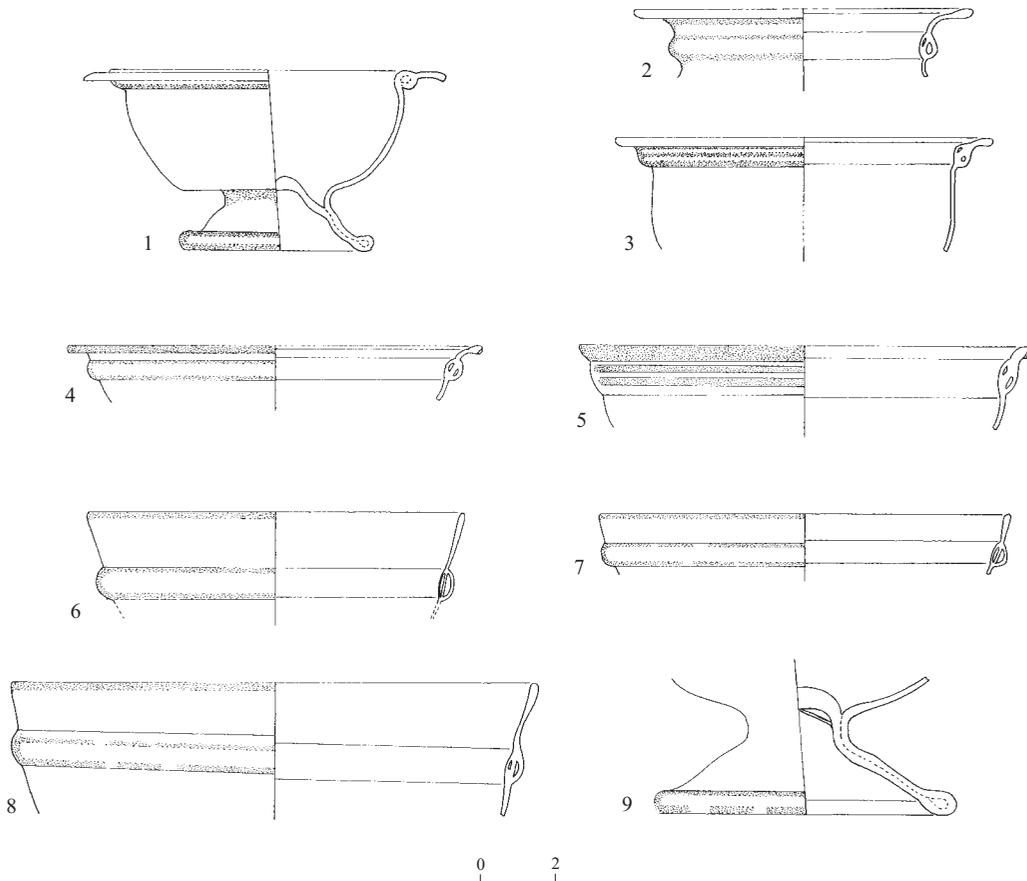


Fig. 3. Bowls with double fold below rim.

◀ Fig. 3

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	53	273	H 50 Rim D 94 Base D 50	Greenish-blue	Silver weathering, iridescence, sand deposits, pitting	Complete profile, mended, missing at rim and body; uneven rounded rim bent outward with hollow fold where rim joins wall; pushed-in, hollow ring base thickened at center; pontil scar, D 12 mm; bubbly glass with black impurities; low quality fabric
2	6	115/1	Rim D 90	Greenish	Silver and black weathering, iridescence, sand deposits	Rim fragment; flared, rounded, thickened rim, polished on edge, with double hollow fold below it; fine fashioning
3	6	11/2	Rim D 100	Bluish-green	Silver and black weathering, iridescence, sand deposits	Rim fragment; flared, rounded, thickened rim with double hollow fold; bubbly glass
4	17	185	Rim D 110	Greenish; turquoise trail	Iridescence, sand deposits, pitting	Rim fragment; flared thickened rim with applied horizontal trail fused-in on edge; long horizontal bubbles on rim, black impurities
5	42	226	Rim D 120	Light bluish-green; blue trails	Silver and black weathering, iridescence, sand deposits	Rim fragment with intricate design; flared thickened rim, with dark blue horizontal trail on its edge and two blue trails in folds, just below the rim
6	9	157	Rim D 100	Greenish	Iridescence, lime deposits	Rim fragment; outplayed rounded rim; fold 15 mm below rim
7	9	187	Rim D 110	Greenish	Silver weathering, iridescence, lime crust	Rim fragment; almost upright, rounded rim with fold 10 mm below rim
8	9	187	Rim D 140	Greenish	Iridescence, sand deposits	Rim fragment; upright rounded rim with uneven double hollow fold 17 mm below rim
9	9	145	Base D 80	Bluish-green	Silver weathering, iridescence, sand deposits, pitting	Part of pushed-in ring base and wall; thickened concavity on base center; pontil scar, D 15 mm, with glass remains

The bowls with the double fold at or just below the rim are known from the Early Roman period up to the early fifth century. The variations in shapes, fabrics and techniques, enable the dating of the whole group of bowls from Khirbat el-Ni'ana to the fourth century rather than earlier.

A complete bowl with a rim like Nos. 2–4, a high tubular ring base and a body decorated with trails, was unearthed in Burial Cave 2 at Khirbat el-Shubeika and dated to the second half of the fourth century (Gorin-Rosen 2002b:304–305, Fig. 1:2, and see references therein). A rim from Ashqelon, resembling No. 4 in shape and decoration was dated by parallels to the third–fourth centuries (Katsnelson 1999:67*, Fig. 1:1,

and see discussion and further references therein). Various bowls with a similar double fold originated in the fourth-century fill of a settling pool at Ras el-'Ein, Shekhem⁵ (Magen 2005: Pl. 15:9–12), and in the Roman baths at Ḥammāt Gader (Cohen 1997:401, Pl. II:3). Several bowls of this type, including parallels to Nos. 2, 3 and 6–8, were discovered at Sumaqa and dated to the mid-fourth century (Lehrer-Jacobson 1998:360, Fig. 1:4, 5). Two bowls similar to Nos. 6–8 were found at Raqit (Lehrer-Jacobson 2003:233–234, Fig. 1:7, 8).

The bowls with a double fold below the rim have various types of bases, all evident at the site. The most frequent is a high tubular ring base (Fig. 6:3–5), as the one on the complete

bowl from Burial Cave 2 at Khirbat el-Shubeika (Gorin-Rosen 2002b:304–305, Fig. 1:2, and see above). Other variants are a high, footed, pushed-in ring base (Fig. 3:1, 9) and a trail-wound base (Fig. 7:6, 7). A complete deep bowl with a rim resembling No. 8 and a trail-wound base, currently in the University of Pennsylvania Museum of Archaeology and Anthropology, is allegedly from Toobas, Syria and dated to the second half of the fourth century (Fleming 1999:95, Fig. E.44).

Deep Bowl with Flared, Cut-Off and Ground Rim (Fig. 4:1).— This hemispherical bowl has a band of horizontal incisions on the wall and a single thin wheel-cut groove farther down the

body. It probably had a rounded bottom with no distinctive base. This type of bowl is dated to the Late Roman period and may have also served as an oil lamp. A shallow version of this bowl was found in the 1991 season (Fig. 29).

Several bowls of this type were discovered in the glass factory dump at Jalame, dated to the second half of the fourth century (Weinberg and Goldstein 1988:94–96, Fig. 4-49:477–480). Undecorated pieces were unearthed at the 'Dominus Flevit' compound on the Mount of Olives (Bagatti and Milik 1958:148, Fig. 35:18), Sumaqa (Lehrer-Jacobson 1998:359, Fig. 1:1) and the Late Roman winepress at Akhziv (Syon 1998: Fig. 14:3). Decorated bowls were found in an unstratified context in Ashdod, assigned

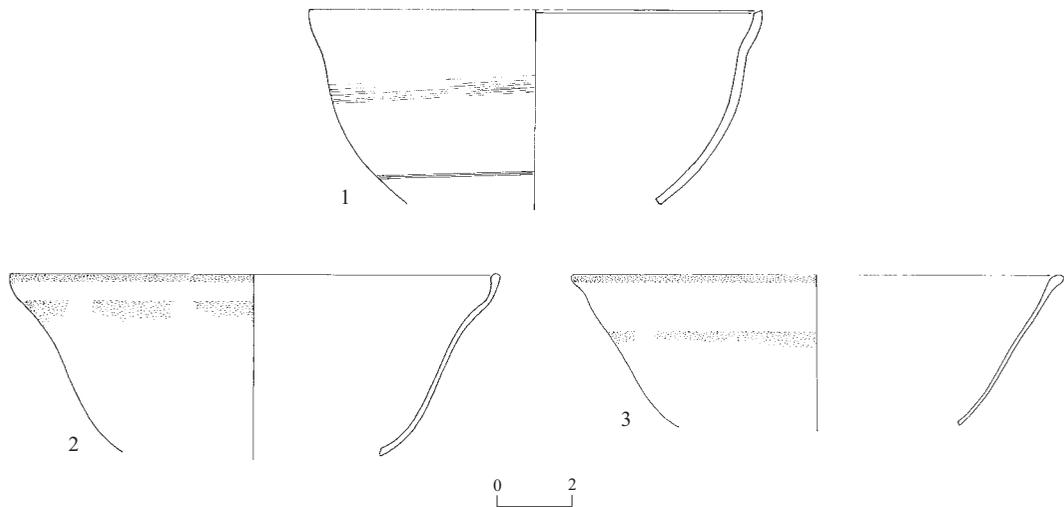


Fig. 4. Various bowls.

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	9	233	Rim D ~120	Greenish	Silver weathering, iridescence, sand deposits, patches of pitting	Deep bowl with flared, cut-off, ground rim	Rim fragment; flared cut-off rim, thick curved walls; bands of horizontal incisions 16 mm and 44 mm below rim; very bubbly glass
2	43	302	Rim D 130	Light green	Silver weathering, iridescence, sand deposits, pitting	Bowl with thickened rounded rim	Two fragments, mended; thickened rounded rim, polished on ext.; tapering walls; bubbly glass; low quality fabric
3	36	202	Rim D 130	Colorless with yellowish-green tinge	Silver weathering, iridescence, sand deposits	Bowl with thickened rounded rim	Rim fragment; flared thickened rim, polished on ext.; thin tapering walls

to the fourth century (Barag 1971:205, Fig. 105:3, 5) and in a fourth-century context at Ḥammad Gader (Cohen 1997:398, Pl. 1:6, 7). Another decorated bowl comes from Burial Cave 1 at Khirbat el-Shubeika (Gorin-Rosen 2002b:291–292, Fig. 2:13). Many plain and decorated bowls of this type were excavated in Beirut, dated to the fifth century (Jennings and Abdallah 2001–2002:242, Fig. 6:11–17) and in Jordan, dated from the fourth to the early sixth centuries (Dussart 1998:61–62, Types BI.221, BI.222, Pl. 4:22–31).

Bowls with Thickened Rounded Rim (Fig. 4: 2, 3).—The rims are rounded and have polishing marks on the exterior. Number 2 has an upright rim, while No. 3 has a flared one. These bowls probably had thickened, concave and flattened bottoms like Fig. 5:3, 5. They are assigned to the Late Roman–early Byzantine periods.

Published parallels are rare. The upper part of a bowl of this type, identified as an oil lamp, was found in a context of the fifth–seventh centuries in the northern church at Rehovot-in-the-Negev (Patrich 1988:139, Fig. 14:32). A small complete bowl, probably of the same type, came from Tomb 295 at Bet She'an, dated to the mid- or late fourth century (Fleming 1997:31, Fig. 14). Similar shallow and deep bowls with thickened concave bottoms, discovered at Ḥammad Gader, were dated, probably erroneously, to the eleventh–twelfth centuries (Cohen 1997:400, Pl. I:8, 9). Several vessels similar in shape and fabric, yet with folded rims, were unearthed in a Byzantine context at Caesarea.⁶ Despite their scarcity among corpora published so far, these bowls were widespread and occasionally appeared in rather large quantities, for example in another assemblage from Caesarea.⁷

Judging by their fabric and workmanship, it is plausible that the bowls with a thickened rounded rim were made in the local workshop.

Bowls with Multiple Wound Trails On and Below Rim and Flat Bottom (Fig. 5:1–5).—These bowls display forms resembling their contemporary undecorated counterparts (Fig.

4:2, 3). Numbers 1–3 have a flared rim, while No. 4 has an upright rim. They are all decorated with an applied blue trail, closely wound several times around the rim and below it.

Bowls with this type of trail-decoration were widely distributed. Most of the parallels come from southern Israel, e.g., two bowls with flared rims resembling Nos. 1–3 from Ashqelon (Katsnelson and Jackson-Tal 2004:100–102, Fig. 1:5, 6) and several variations of trailed bowls from Meẓad Tamar, dated to the late fourth century (Erdmann 1977:107, Pls. 5:515, 523; 6:569, 581). Other examples were found in contexts of the fourth–fifth centuries at the 'En Boqeq fortress (Gichon 1993:435, Fig. 60:21), and in the early Byzantine levels (Phases I, II) at 'Ein ez-Zâra, Transjordan (Dussart 1997:98, Pl. 24:6). Also from Jordan are a rim like No. 1 and a bowl resembling No. 3, both from fifth-century contexts at Petra (Keller 2006:206–207, Pl. 9:g, l). Bowls with trails of varied colors marvered-in below the rim were also collected from the Byzantine cemetery church at Ḥorbat Karkur 'Illit in the northern Negev (Katsnelson 2004:266–267, Fig. 58:6–9).

Farther north, two trail-decorated bowls, one resembling Nos. 1 and 2, and the other similar to No. 3, but with a wide, shelf-like rim, were found at Ḥorbat Nashe in the western Samarian foothills and dated to the Late Roman–Byzantine periods (Jackson-Tal 2004: Fig. 58:2, 3). A small complete bowl, with a rim like Nos. 1 and 2 and a bottom resembling Nos. 3 and 5, was unearthed in a burial cave of the fourth–sixth centuries at Kafr 'Ara (Sussman 1976:99, Fig. 4:10). An upright rim resembling No. 4 and decorated with dark blue trails was discovered at Raqit on Mount Carmel (Lehrer-Jacobson 2003:233, Fig. 1:1). Several variants of similarly trailed bowls were discovered in the Jalame factory dump, dated to the second half of the fourth century, as well as randomly around the site (Weinberg and Goldstein 1988:55–56, Fig. 4-17:129–130).

Numbers 3 and 5 display the bottoms of these trail-decorated bowls. A similar bottom was recovered at Ḥorbat Karkur 'Illit (Katsnelson

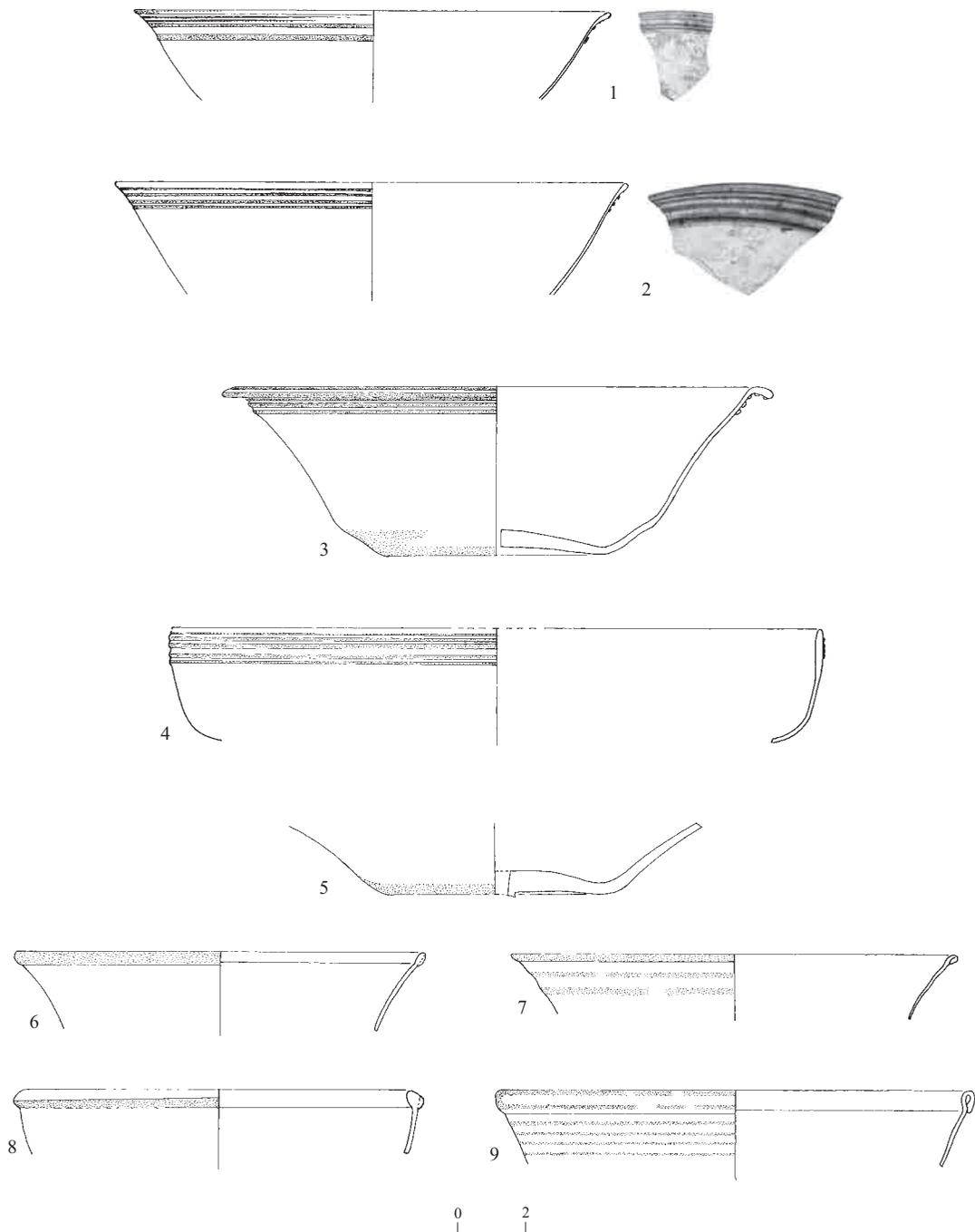


Fig. 5. Various decorated bowls.

2004: Fig. 58:10), together with similar rims (mentioned above).

The characteristic features of these bowls with multiple wound trails on and below the rim

and of at least 12 more similar bowl fragments (not illustrated) from the site, suggest that they were produced locally.

◀ Fig. 5

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	35	245	Rim D 150	Colorless; light blue trails	Yellow patches of weathering, iridescence, pitting	Rim and wall fragment; flared rounded rim with four densely-set horizontal trails, thin wall; black impurities on rim
2	35	245	Rim D 140	Colorless; blue trails	Yellow patches of weathering, iridescence, pitting	Rim and wall fragment; flared rounded rim with densely-set horizontal trails, thin wall
3	35	245	H 50 Rim D 160 Bottom D 65	Yellowish-olive green; blue trails	Silver weathering, iridescence, sand deposits, pitting	Complete profile, mended, most of rim, body and base missing; uneven, flared, overhanging rim with five blue densely-set horizontal trails on and below rim, tapering walls, concave flattened bottom, thickened at center; pontil remains; many large and medium bubbles and black impurities; blowing spirals
4	38	212	Rim D 190	Light bluish-green; blue trails	Silver and yellow patches of weathering, iridescence, pitting	Rim fragment; upright rim with five blue densely-set horizontal trails below rim, straight wall; long horizontal bubbles; low quality fabric
5	32	211	Bottom D 66	Greenish-blue	Silver weathering, iridescence, sand deposits	Bottom fragment; thickened bottom, tapering walls; pontil remains
6	43	1252	Rim D 120	Colorless; blue trail	Silver weathering, iridescence, sand deposits, pitting	Six rim fragments; flared rim with blue horizontal fused-in trail in rim fold; low quality fabric
7	35	260	Rim D 130	Colorless with yellow tinge; blue trail	Silver weathering, iridescence, sand deposits, severe pitting	Rim fragment; flared thickened rim with blue horizontal fused-in trail on edge, very thin wall with horizontal ridges; bubbly glass
8	11	144	Rim D 120	Colorless with greenish tinge; turquoise trail	Silver weathering, iridescence, sand deposits, pitting	Rim fragment; rounded, thickened, incurved rim with applied horizontal fused-in trail below it
9	38	219	Rim D 140	Light bluish-green	Silver weathering, iridescence, sand deposits	Rim fragment; flared outfolded rim, tapering walls; horizontal, probably "optic", mold-blown ribbing on body; very bubbly glass

Bowls with Fused-In Trails On Rim (Fig. 5:6–8).— These bowls are decorated with a single horizontal trail of turquoise or deep blue glass, fused into the fold of the rim. Bowl No. 7 is also decorated with shallow ribbing on the body. No published parallels were found.

Bowl with Mold-Blown Decoration (Fig. 5:9).— This bowl is decorated only on the body with pronounced mold-blown horizontal ribbing. This design is quite frequent on closed vessels of the Late Roman–Byzantine periods, but rather rare on bowls. A few examples have been recently published, e.g., a bowl from Ashqelon decorated with slanted ribs (Katsnelson and

Jackson-Tal 2004: Fig. 1:8), and a vessel with mold-blown diagonal ribbing, from the Byzantine cemetery church at Ḥorbat Karkur ‘Illit in the northern Negev (Katsnelson 2004: Fig. 61:11).

Bowls with Pushed-In Hollow Ring Base (Fig. 6).— These are variants of ring bases that probably belonged to bowls resembling those in Figs. 1–3. Numbers 1 and 2 are of the low ring base subtype, while Nos. 3–7 are of the higher subtype. The bottom, thickened at the center, was pushed-in and a hollow ring, in varied shapes and heights, was tooled out. This is the most prevalent type of bowl base in the

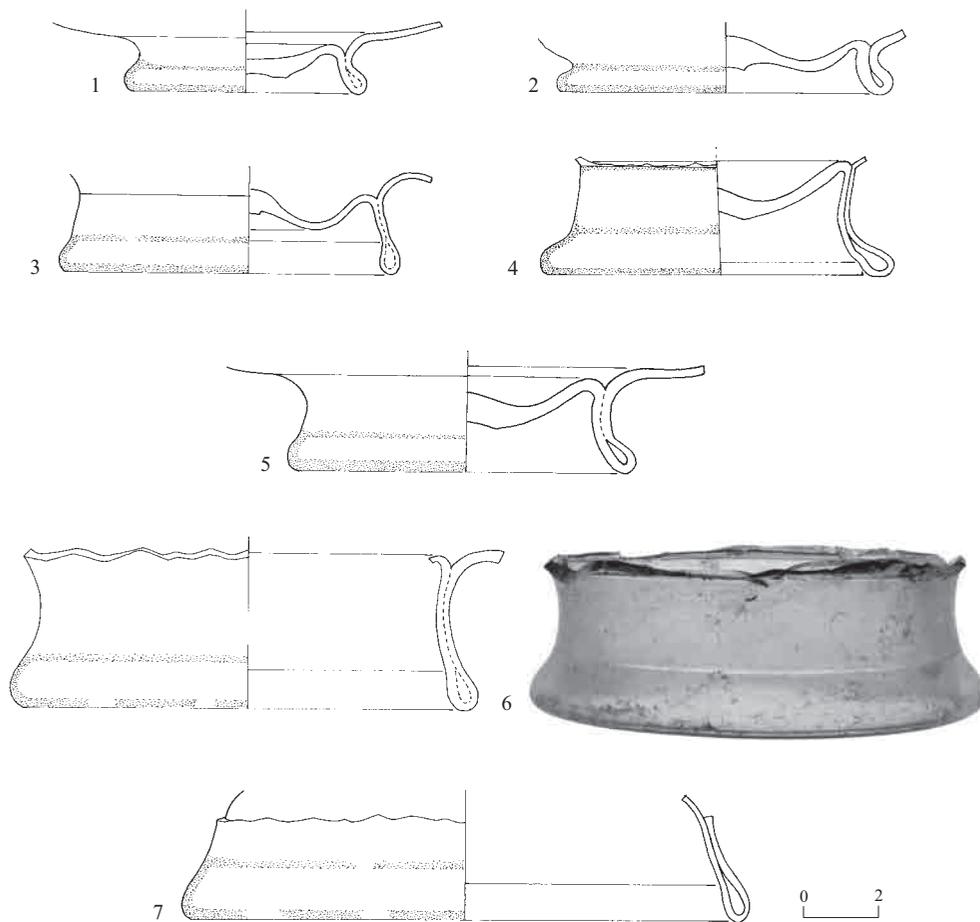


Fig. 6. Bowls with pushed-in, hollow ring base.

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	35	253/1	Base D 63–65	Greenish	Silver weathering, iridescence, sand deposits	Complete base and part of body; outsplayed base with convex floor thickened at center; pontil scar, D 14 mm
2	9	187	Base D 88	Bluish-green	Silver weathering, iridescence, sand deposits	Complete base, mended of two fragments; outsplayed base; pontil scar, D 16 mm, with glass remains
3	5	132	Base D 90	Greenish with yellow streaks	Silver weathering, iridescence, sand deposits, pitting	Complete base and part of wall; base thickened at center with uneven concave floor; pontil scar, D 15 mm
4	19	179	Base D 90	Bluish-green	Sand deposits	Almost complete base; outsplayed, high pushed-in ring base with concavity at center; pontil scar, D 15 mm
5	35	253/2	Base D 90	Greenish	Iridescence, sand deposits	Almost complete base; outsplayed base, thickened at center, with uneven concave floor; pontil scar, D 15–18 mm
6	43	292	Base D 123	Bluish-green	Iridescence, sand deposits	Complete base with broken floor; high hollow ring base
7	8	133	Base D ~150	Greenish	Silver weathering, iridescence, sand deposits, pitting	Base fragment; broken floor; outsplayed base

Late Roman and Byzantine periods. At least two more low ring bases and 15 more high pushed-in ring bases (not illustrated) were collected at the site.

Four pushed-in, hollow ring bases of various sizes, including parallels for Nos. 3–6, were unearthed in a burial cave of the fourth–sixth centuries at Kafr ‘Ara (Sussman 1976:99, Fig. 4:12–15). Similar bases were found at Raqit on Mount Carmel among other vessels dated mostly

to the fourth–fifth centuries (Lehrer-Jacobson 2003:233, 237, Fig. 3:1–5, 10). Late Roman examples of complete bowls with this type of base were discovered in Tomb XV at Hanita (Barag 1978a: Figs. 6:5; 7:9, 10; 10:34; 11:44, and see further discussion and references therein).

Bowls with Trail-Wound Base (Fig. 7).— The most common type of base collected at the site is the trail-wound base. In addition to

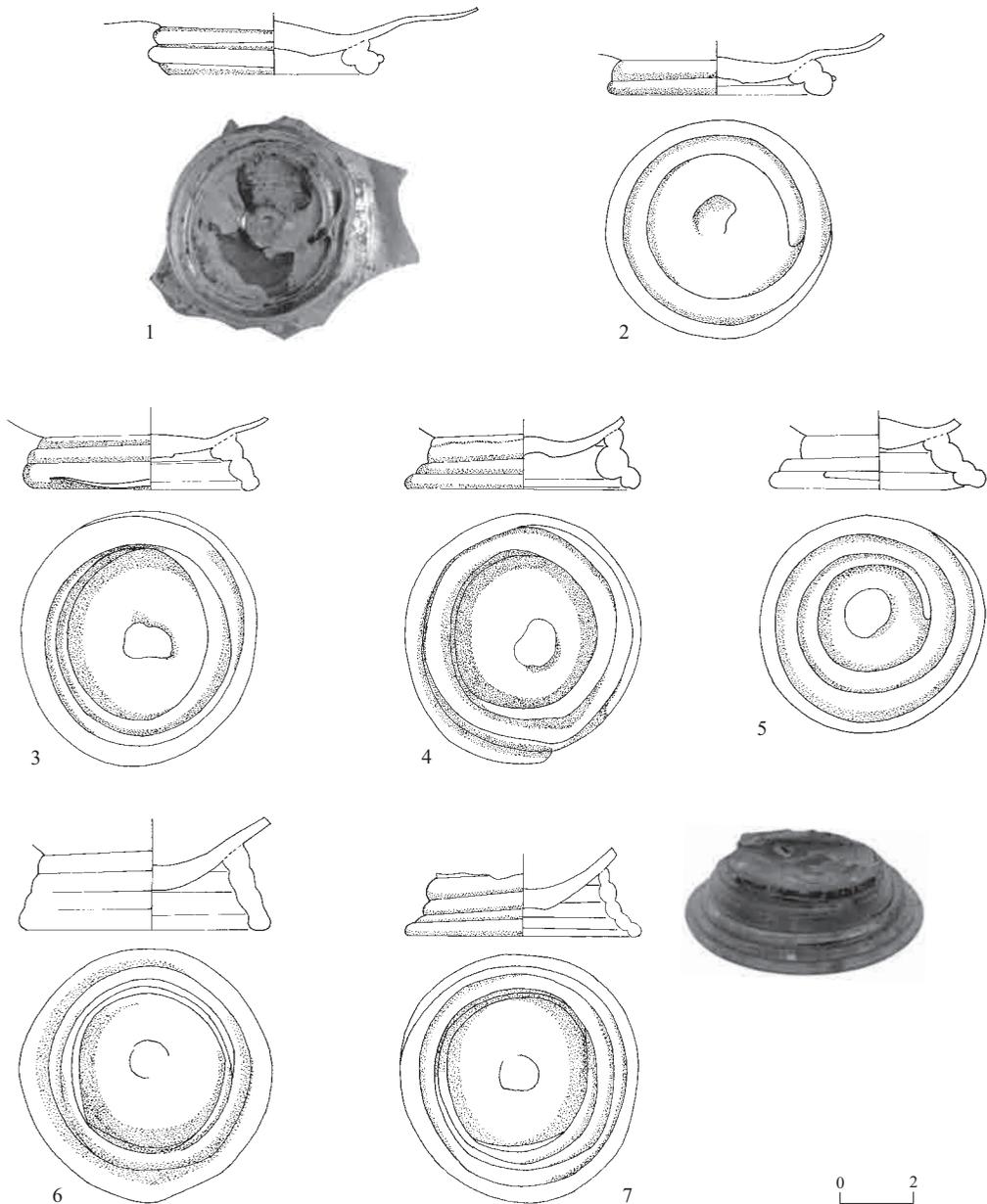


Fig. 7. Bowls with trail-wound base.

◀ Fig. 7

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	35	245	Base D 54	Yellowish-green, darker greenish tinge on bottom	Silver weathering, iridescence, sand crust	Complete base; flat thickened floor; three winds of coil unevenly and slightly sloppily wound; pontil mark with scar, D 16 mm
2	9	229/1	Base D 56–60	Greenish	Silver weathering, iridescence, sand deposits	Complete base; thickened flattened floor; two uneven coil winds; pontil scar, D 15 mm
3	9	229/2	Base D 65–70	Greenish-blue	Silver weathering, iridescence, sand crust	Complete base; thickened convex floor; three uneven coil winds; pontil scar, D 15 mm
4	9	146	Base D 63–67	Bluish-green	Silver weathering, iridescence, sand crust	Complete base; thickened concave floor; three coil winds; pontil scar, D 14 mm
5	19	191	Base D 56–62	Yellowish-green	Silver weathering, iridescence, sand crust	Complete base; high, wide, outplayed base; four coil winds; pontil scar, D 16 mm
6	19	179	Base D 68	Bluish-green, greenish bottom	Silver weathering, iridescence, sand deposits	Complete base; thickened concave floor; four winds of heavy coil, forming solid base; small pontil scar
7	3	112	Base D 62–66	Bluish-green	Silver weathering, iridescence, sand deposits	Complete base; thickened convex floor; five uneven coil winds; pontil scar, D 11 mm; blowing spirals; bubbly glass

the seven bases presented here, at least 45 similar complete or nearly complete bases were documented, as well as dozens of base fragments (not illustrated). The floors of these bases are more or less flat (Nos. 1–5) or convex (Nos. 6, 7). The number of coils ranges from two to five and the diameters from 54 to 70 mm. The bases are made of glass in combinations of green, yellow or greenish-blue; occasionally, the body and base are made of different tinges of the same color.

The bases from the 1996–1997 season at Khirbat el-Ni'ana probably belonged to bowls, judging by their large size and the angle of the wall fragments that survived.⁸ Moreover, most of the trail-wound bases from the 1991 excavation at the site were clearly identified as bowls (Fig. 31:1–5), bar Fig. 31:6 that may have also belonged to a jug or flask.

The published excavated specimens encompass a wide area: several trail-wound bases from the Byzantine fill of the Roman painted tomb at Ashqelon (Katsnelson 1999:69*–70*, Fig. 2:3); a base from 'En Gedi

(Jackson-Tal 2005:77*, Fig. 2:8); two bases from Jerusalem—one from a dwelling cave on the Mount of Olives (Winter 2000: Fig. 10:4), and another, belonging to a handled-jug of the fourth to the early fifth centuries, from Area W in the Jewish Quarter excavations (Gorin-Rosen 2003:387–388, Pl. 15.9:G 104); a few trailed bases from Shekhem—a fourth-century group from a settling pool at Ras el-'Ein, and a base from the amphitheater (Magen 2005: Pls. 18:6–10, 52:7); a base with two wound trails from Khirbat Badd 'Isa (Qiryat Sefer) (Magen, Tzionit and Sirkis 2004:216, Pl. 9:22); a base fragment from the Red Tower (al-Burj al-Ahmar), found in the Byzantine Phase B dated to the fifth–sixth centuries (Pringle 1986:161, Fig. 52:6); a piece from Ḥorbat Nashe in the western Samaritan foothills (Jackson-Tal 2004: Fig. 58:4); similar bases, probably of bowls, from Sumaqa, dated to the fourth century (Lehrer-Jacobson 1998:361, Fig. 1:13, Pl. 6:a); and a base attributed to a jug from Raqit (Lehrer-Jacobson 2003:240–241, Fig. 7:14). Several complete jugs and head-flasks with trail-wound

bases were uncovered in tombs at Ḥorbat Qastra⁹ and at Ṭirat Karmel.¹⁰ A few pieces were excavated in Jordan, e.g., bowl fragments dated to the fourth–fifth centuries from ‘Ein ez-Zâra (Dussart 1997:102, Pl. 29:2a, b) and “coil bases” from ‘Iraq el-Emir (Lapp 1983:51, 58, Fig. 24:15).

The trail-wound bases were uncovered at Khirbat el-Ni‘ana in large numbers compared with other sites, indicating they were locally manufactured at the site. Furthermore, a salvage excavation at Khirbat el-Faṭuna (near Yavne) yielded numerous bases of this type, together

with remains of a local glass industry.¹¹ It can therefore be established that several vessel-types with a trail-wound base were produced in local glass workshops in the region during the Late Roman–Byzantine periods.

Beakers and Wineglasses

Conical Beakers (Fig. 8:1, 2).— Number 1 is a conical beaker with a cut-off rim and wheel-cut grooves. Such beakers generally have a plain base and are decorated with grooves, incisions or applied blobs of dark blue or turquoise glass, such as No. 2. These conical beakers,

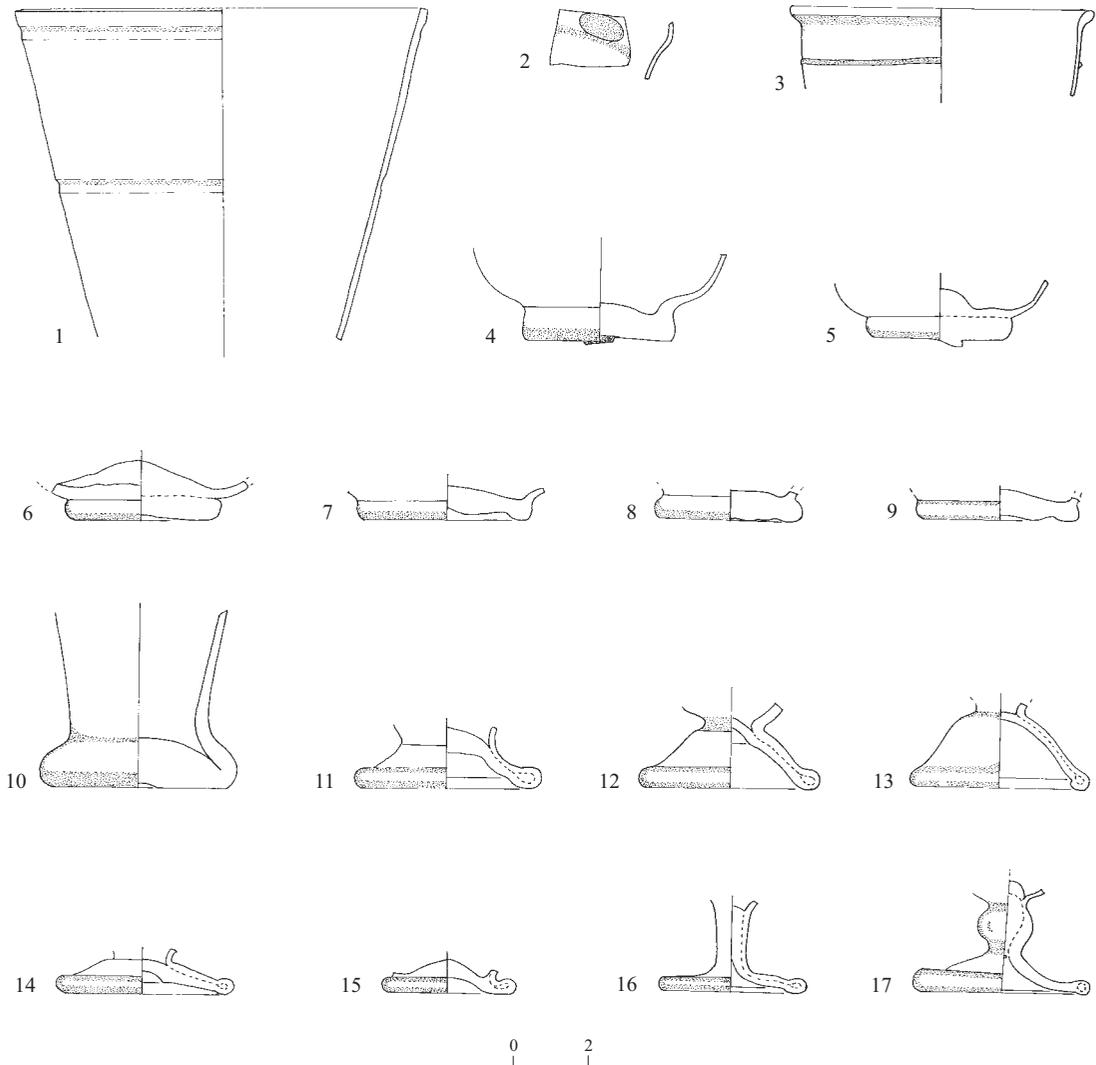


Fig. 8. Beakers and wineglasses.

◀ Fig. 8

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	4	110	Rim D 110	Colorless with greenish tinge	Black weathering, iridescence and pitting	Conical beaker with cut-off rim	Rim fragment; cut-off grounded rim, thick walls; two horizontal grooves: 5 mm and 45 mm below rim
2	9	152	-	Colorless with yellowish tinge; turquoise blob	Silver weathering, iridescence and pitting	Conical beaker with blob	Small body fragment, possibly part of wall close to rim; polishing traces; turquoise blob
3	33	195	Rim D 80	Light green; turquoise trail	Silver weathering, iridescence and sand deposits	Beaker with flared rounded rim and applied trail	Rim fragment; thickened, rounded, flared rim with horizontal turquoise trail below it; cylindrical body
4	32	211	Base D 40	Yellowish-green	Silver weathering, iridescence and sand deposits	Beaker with solid base	Base and wall fragment; solid base, curved wall; pontil scar, D 12 mm, with bluish-green glass remains from pontil
5	19	171	Base D 37-40	-	-	Beaker with solid base	Complete base; flattened base with thickened concavity at center, disk applied to bottom of body; pontil scar with remains of glass from pontil
6	19	171/1	Base D 38-40	Bluish-green	Black and silver weathering, iridescence	Beaker with solid base	Complete base; flattened base with thickened concavity at center, disk applied to bottom of body; pontil scar, D 17 mm, with remains of glass from pontil
7	19	171/2	Base D 45	Greenish	Black and silver weathering, iridescence	Beaker with solid base	Complete base and part of wall; flattened base; pontil scar, D 15 mm
8	9	146	Base D 40	Greenish	Iridescence and black rusty patches	Beaker with solid base	Complete base; flattened solid base; pontil scar, D 8 mm
9	3	108	Base D 42	Greenish-blue	Bronze and silver weathering, iridescence and sand deposits; severely corroded	Beaker with solid base	Complete base; flattened base; pontil scar
10	19	171/3	Base D 50	Greenish- blue	Silver weathering, iridescence and sand deposits	Vessel with thickened flat base	Complete base and part of wall; outplayed, thickened, flattened base; rather thick walls, concave floor; pontil scar, D 14-17 mm
11	19	171/4	Base D 48	Greenish-yellow	Silver weathering, iridescence	Beaker or jug with pushed-in base	Complete base and part of wall; thickened hollow ring base, concave at center; pontil scar, D 15 mm
12	9	236	Base D 48	Bluish-green	Silver weathering, iridescence and sand deposits	Beaker or jug with pushed-in base	Complete base and part of wall; pontil scar, D 15 mm

Fig. 8. (cont.).

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
13	43	261	Base D 46	Greenish	Silver weathering, iridescence and sand deposits	Beaker or jug with pushed-in base	Complete base; deformed around stem; pontil scar, D 11 mm; bubbly glass
14	4	122	Base D 45	Bluish-green	Silver weathering, iridescence, sand deposits and pitting; severely corroded	Beaker or jug with pushed-in base	Complete base; pontil scar, D 11 mm
15	5	125	Base D 34–36	Bluish-green	Silver weathering, iridescence, sand deposits and pitting	Beaker or jug with pushed-in base	Complete base; irregular pushed-in hollow ring base; pontil scar off center, D 10 mm; careless workmanship
16	35	230	Base D 34–38	Colorless with greenish tinge	Silver weathering, iridescence and black rusty crust	Wineglass with cylindrical stem and hollow ring base	Complete foot, deformed; pushed-in base with rounded kick; small pontil scar
17	43	249	Base D 46	Bluish-green	Silver weathering, iridescence and sand deposits	Wineglass with beaded stem and hollow ring base	Complete foot; small concavity on floor, beaded stem, uneven ring base; pontil scar, D 10 mm, with glass remains

widespread during the fourth century in both parts of the Roman Empire, were particularly common in Syria-Palestine and Egypt (e.g., Stern 2001:267, 293–294, Cat. Nos. 157, 158).

Conical beakers were used as lamps, as evident on the mosaic floors of the synagogues at Bet She'an and Ḥammāt Ṭeveriya (Tiberias), in which conical beakers are depicted set on menorah branches. Corroboration for their use as lamps also comes from the oily residue preserved inside conical beakers from Karanis (Stern 2001:268, and see further references therein; Israeli 2003:193).

Conical beakers also served as drinking vessels, as indicated by a wall painting from a fourth-century tomb at Ostia (Fleming 1997: Fig. 18). Additionally, a conical beaker, a flask and a jug are depicted under an arch, engraved on the large glass plate from Bet She'arim, suggesting that these vessels were used in ceremonial rituals (Israeli 2003:193; Fleming 1997:30–33).

About a hundred fragments of conical beakers were collected at Jalame, mostly from the glass factory dump (Weinberg and Goldstein 1988:87–94, Fig. 4-46, and see therein discussion of the type, its function and technique). Consequently, it was established that at least this one local glass workshop in Palestine produced conical beakers.

Furthermore, recent publications introduced fragments of conical beakers from two fourth-century assemblages, one from Khirbat Badd 'Isa (Qiryat Sefer) (Magen, Tzionit and Sirkis 2004:216, Pl. 9:23), the other from a settling pool at Ras el-'Ein, Shekhem; the latter includes a rim resembling No. 1 and pieces decorated with blobs (Magen 2005: Pl. 17:5, 7, 10–12). Several decorated beakers were sealed in a late fourth-century cistern at Bet Guvrin.¹² Others were uncovered in the Roman baths at Ḥammāt Gader (Cohen 1997:408, Pl. 3:6). The excavations at Baniyas also yielded conical beakers: a complete specimen from the

Pan sanctuary and another from the "Street of Shops" (Gorin-Rosen 2001:69, Cat. Nos. 113, 117).¹³ Another piece was discovered at Horbat Manot in the western Galilee and dated to the fourth century (Yeivin 1958). Two conical beakers decorated with blue and turquoise blobs, now in the Israel Museum collections, were purchased in northern Israel and probably originated from the same site (Israeli 2003:195, Cat. Nos. 229, 230, and see further discussion and references therein). Conical beakers were also unearthed in Jordan, e.g., at 'Ein ez-Zâra, Bozra and Petra (Dussart 1998:78–79, Type BVI.1111a1, BVI.1111a2, Pl. 13:1–5; Keller 2006: Pls. 3:l, m; 13:h, i).

Beakers with Solid Base (Fig. 8:3–9).— Besides the specimens herein presented (Nos. 3–9), at least ten more beaker bases (not illustrated) were unearthed at the site. Number 3 represents the upper part of the vessel with a rounded rim and an applied horizontal trail below it. The body is generally cylindrical.

Numbers 5 and 6 reveal evidence of the manufacturing process: the base was applied when the hot solid gob of glass was pressed against the bottom of the beaker. Beakers of this type were widespread in northern Israel, as well as other regions. They were a major product of the Jalame glass factory, dated to the second half of the fourth century (Weinberg and Goldstein 1988:60–61, Fig. 4-23, and see full discussion therein).

The beakers with a solid base discovered in Israel provide firm dating to the fourth century and are found at nearly every excavation incorporating a phase from this period conducted in the country in the last two decades. Beakers of this type were published, e.g., from a fourth-century winepress at Akhziv (Syon 1998:95–96, Fig. 15:1–5), Giv'at Yasaf (Gorin-Rosen 1999:137–138, Fig. 1:1), and the Roman baths at Hammat Gader (Cohen 1998: Pl. III:14–19). Solid bases were discovered, e.g., at Caesarea (Peleg and Reich 1992: Fig. 18:16), Shekhem (Magen 2005: Pl. 18:14, 15), Şarafand el-Kharab, Nes Ziyona (Gorin-Rosen

2004c:59–60, Fig. 1:1), Ashqelon (Katsnelson 1999:69*, Fig. 2:2) and 'En Gedi (Jackson-Tal 2005:77*, Fig. 2:11, 12). This type of beaker was also widespread in modern-day Jordan, e.g., at Jerash, 'Ein ez-Zâra, 'Amman and Bozra (Meyer 1988:193, Figs. 6:Z, 7:A, B; Dussart 1998:96–98, Type BVIII.121, Pl. 21:18–41).

The large quantity, the fabric and the workmanship of the bases from Khirbat el-Ni'ana may point to a local production.

Beaker or Flask with Solid Flat Base (Fig. 8:10).— This flat base, thickened at the center, belonged to a rather large beaker or flask, probably with a conical body. A two-handled flask with a similar base was unearthed in Burial Cave 3 at Horbat Rimmon (Gorin-Rosen 2004d:119*–120*, Fig. 3:24) and may have been produced at the local workshop there.

Beakers with Pushed-In Base (Fig. 8:11–15).— These pushed-in bases with hollow rings frequently held various Late Roman beakers and jugs (Magen 2005: Pl. 18:16–21). Beakers with this type of base were collected at Jalame (Weinberg and Goldstein 1988:62–63, Fig. 4-24:187–192, and see discussion and references therein, including an example from Samaria). Jugs—some of them complete—with similar bases were found in large numbers at Horbat Qaştra (Gorin-Rosen and Katsnelson 1999:27*, Fig. 51, Color Plate iii:6, 9), and at Jalame (Weinberg and Goldstein 1988:65, 68, Fig. 4-29:242–244, and see discussion therein). Pushed-in bases of this type were also unearthed in the fourth-century winepress at Akhziv (Syon 1998:95, Fig. 15:23, 24).

Wineglasses (Fig. 8:16, 17).— These specimens have a hollow ring base: No. 16 with a solid stem and No. 17 with a beaded stem. These footed bases belonged to wineglasses with rounded rims, often trailed. They are generally dated to the Byzantine period, similar to the ones from Ashqelon (Katsnelson 1999:70*–71*, Fig. 2:9–14). Two similar bases, dated to the late

Byzantine period, were discovered at Khirbat Ṭabaliya (Giv'at Ha-Maṭos), Jerusalem (Gorin-Rosen 2000b:84*–86*, Fig. 2:14, 15, and see further references and discussion therein).

Jars

Small Jars (Fig. 9).— The 1996–1997 season yielded ten small cosmetic jars: five complete, plain and decorated jars presented below (Nos. 1–5; see also Hebrew Cover), and five identical jars (from L44, not illustrated). The vessels are relatively small (60 to 80 mm high) and have a rounded rim and a wide funnel-shaped mouth. Their bodies are rounded or squat and the bottoms are concave, bearing a pontil scar. The jars, bar No. 1, are decorated with horizontal collar folds at the neck (Nos. 2, 4, 5), indents on the body (Nos. 3, 5), or a combination of both (No. 5). The jars are characterized by careless workmanship: sloppy and irregular upper parts (Nos. 2–4) and irregularities in the decorations.

The color scheme of these jars is striking, especially compared with the rest of the assemblage. Three of the jars (Nos. 1, 2, and 5) are purple while the others are of light bluish-green (No. 3) and yellowish glass (No. 4). Among the five non-illustrated jars, two are yellowish-brown and the others are yellowish-green, light green and bluish-green.

The small cosmetic jars belong to a well-known group of vessels, prevalent in burial complexes of the late third to the early fifth centuries in Syria-Palestine (Barag 1970:148–155, and see full discussion therein). This group is rich in variations of shapes, handles and decorations, and several variants of the type were often discovered together (see references below).

Number 1, with a constriction at the base of the neck, has no exact parallel. Number 3 has a plain funnel-shaped neck and rounded indents on the body; it belongs to a subtype that

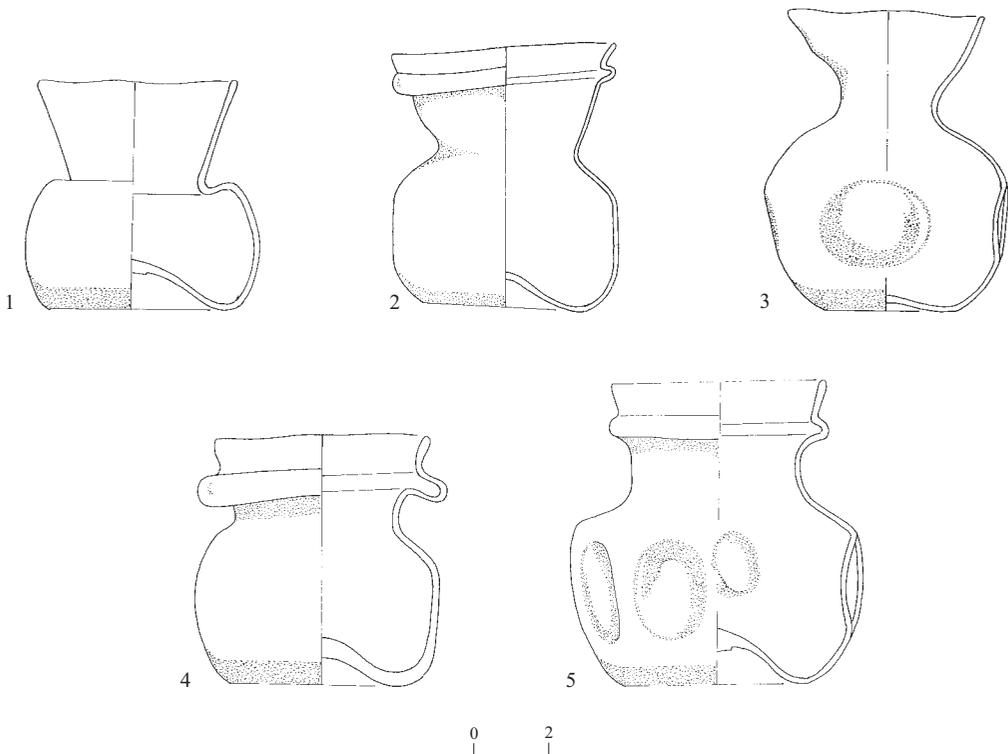


Fig. 9. Small jars.

◀ Fig. 9

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	56	278	H 60 Rim D 50	Purple	Black patches of weathering, iridescence and pitting	Jar with rounded rim and funnel-shaped mouth	Complete, mended, missing at rim and neck; uneven rounded rim, thickened concave bottom; pontil scar, D 10 mm; bubbly glass with black impurities
2	55	297	H 68 Rim D 58	Purple	Black and silver weathering, iridescence and pitting	Jar with rounded rim and open fold	Complete, mended, missing in body and bottom; upper part irregularly shaped, concave bottom; pontil scar, D 15 mm; bubbly glass with black impurities, blowing spirals
3	53	273	H 80 Rim D 52	Light bluish-green	Silver weathering, iridescence and sand deposits; dull surface	Jar with rounded rim, plain neck and indented body	Complete, missing at rim and neck; upper part irregularly shaped, six small indents, flattened concave bottom with no pontil mark; huge bubbles and black impurities; low quality fabric
4	44	247	H 65 Rim D 55	Yellowish with dark yellowish-brown streaks	Silver-gold weathering, iridescence and pitting	Jar with rounded rim and open fold	Complete, mended, missing at body and bottom; upper part irregularly shaped, thickened concave bottom; pontil scar, D 15 mm; bubbly glass with black impurities, blowing spirals
5	45	1382	H 80 Rim D 55	Purple	Silver and black weathering, iridescence and pitting	Jar with rounded rim, open fold and indented body	Complete, mended, missing at rim, mouth, neck and body; ten densely-set irregular rounded and oval indents; concave bottom, thickened at center; pontil scar, D 15 mm

is generally dated to the fourth century (Barag 1970:148–149, Types 6:1 plain, 6:1-1 decorated, Pl. 33:1, 1-1). A small jar resembling No. 3, but with an infolded rim, and another jar with a collar fold like on No. 4, were discovered in a tomb at Beit Fajjar (Husseini 1935: Pl. 85:5, 8), dated by Barag (1970:150) from the mid-fourth to the mid-fifth centuries. Two jars resembling No. 3 in shape and decoration, and another jar, very similar to No. 5, were unearthed in a burial cave at Kafr 'Ara, dated by parallels to the late third–fourth centuries (Sussman 1976:99, Pl. 28:3–5). Several larger, coarse jars, similar to Nos. 2–5, were found in Tomb 200 at Giv'at Sharet, Bet Shemesh, dated from the last quarter of the fourth to the first quarter of the fifth

centuries (Seligman, Zias and Stark 1996:50, 59, Fig. 15:2–4). Another example, similar to No. 4, came from Tomb 201 at Gezer (Macalister 1912: Pl. 119:5), dated by Barag to the late fourth or early fifth centuries (Barag 1970:154, Type 6:18). The largest group of similar jars, unearthed in a burial complex near Kibbutz Palmahim,¹⁴ was dated to the late fourth–early fifth centuries (Gorin-Rosen 1998:20, top photo, the two vessels on front right).

Bottles, Jugs and Juglets

Bottles and Jugs with Constricted Neck (Fig. 10).— These small and medium-sized vessels (66 to 96 mm in height) have a distinctive constriction at the base of the neck. They are

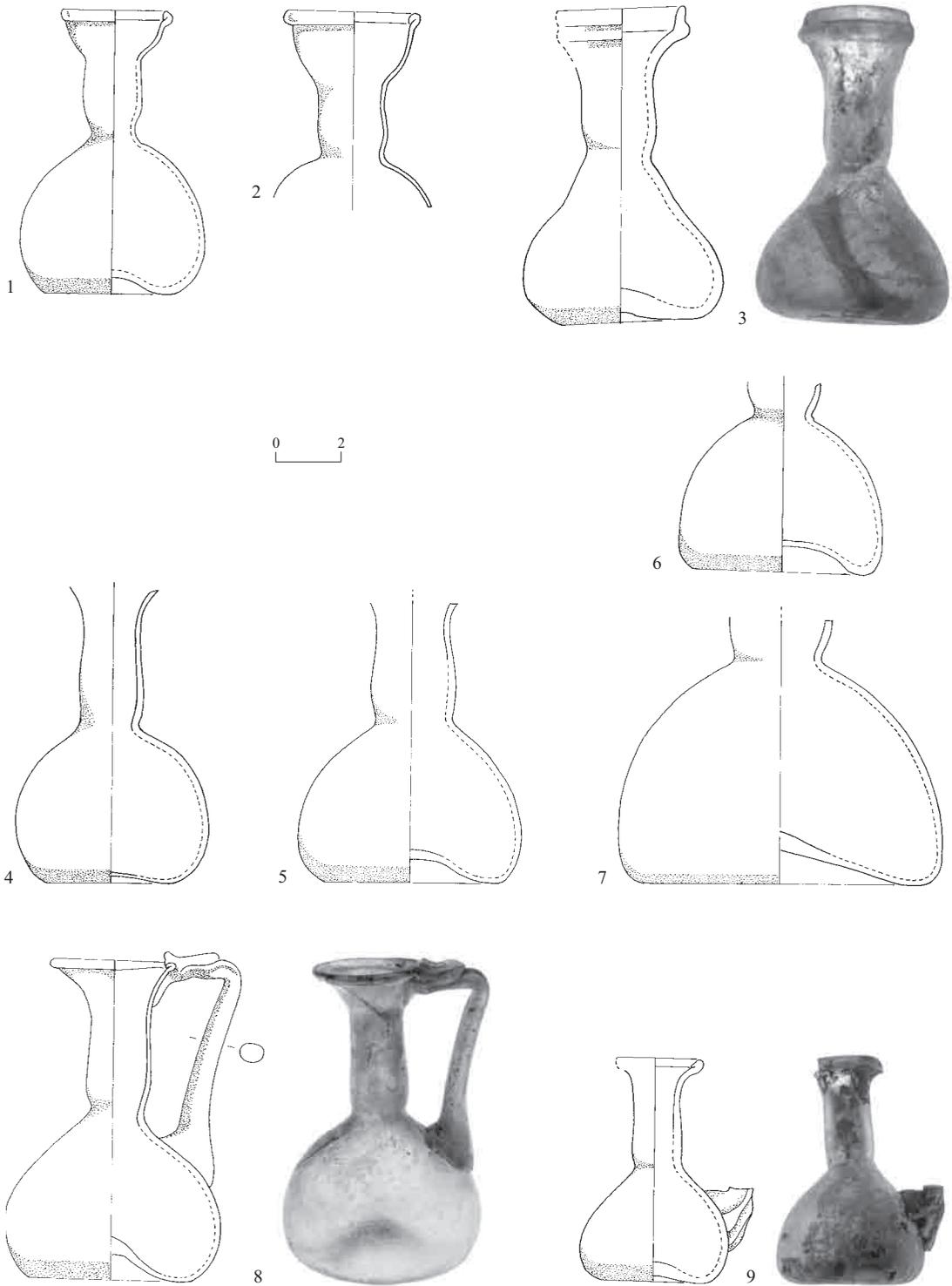


Fig. 10. Bottles and jugs with constricted neck.

◀ Fig. 10

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	57	296	H 84 Rim D 34	Light greenish-blue	Silver weathering, iridescence, sand deposits and pitting	Intact; infolded rim, short constricted neck, piriform body, concave bottom with no pontil mark; bubbly glass with black impurities
2	35	250	Rim D 40	Yellowish-green	Silver weathering, iridescence and sand deposits	Almost complete rim and neck, missing at mouth and rim; infolded rim, funnel-shaped mouth, short constricted neck, slanted shoulder; blowing spirals
3	9	236/1	H 90 Rim D 40 Bottom D 60	Greenish	Silver weathering, iridescence and pitting	Complete, missing at mouth and rim; rounded rim with tooled ridge, rather thick walls, thickened concave bottom; pontil scar, D 12 mm, with glass remains; bubbly glass with black impurities, blowing spirals
4	8	133	Bottom D 55	Bluish-green	Silver and yellow weathering, iridescence, sand deposits and severe pitting	Complete body and part of neck; rim and most of mouth missing; uneven constricted neck, slightly concave bottom with no pontil mark; large oval bubbles; careless workmanship
5	19	186	Bottom D 65	Greenish-blue	Silver weathering, iridescence and sand deposits	Complete body and neck; rim and most of mouth missing; concave bottom with no pontil mark; bubbly glass, blowing spirals
6	55	297	Bottom D 60	Greenish	Silver and yellow weathering, iridescence, sand deposits and pitting	Complete body and part of neck, rim, mouth; most of neck missing; high concave bottom with no pontil mark; blowing spirals
7	9	187	Bottom D 95	Yellowish-green	Silver weathering, iridescence and sand deposits	Complete body and part of neck; rather thick walls, concave bottom thickened at center; pontil scar, D 18 mm; blowing spirals
8	45	1242	H 96 Rim D 40 Bottom D 50	Yellowish-green; bluish-green handle	Silver weathering, iridescence, sand deposits and pitting	Complete, rim mended; uneven infolded rim, thickened concave bottom, asymmetric handle; pontil scar, D 13 mm; very bubbly glass with black impurities
9	9	233	H 65 Rim D 28 Bottom D 35	Greenish-blue	Black and silver weathering, iridescence and sand deposits	Complete, missing at rim, mouth and most of handle; infolded rim, thick walls, thick trail handle; pontil scar, D 10 mm; careless workmanship

characterized by a generally infolded rim (Nos. 1, 2, 8, 9), a short funnel-shaped mouth, a piriform or triangular-sectioned body and a concave bottom, often bearing no traces of the pontil. Numbers 8 (see also English Cover: right) and 9 share similar features with Nos. 1–7 and also have a handle that identifies them as juglets. The rounded handles (on No. 9 only the base of the handle survived) are irregular and too massive in relation to the body. Several additional vessels of this type were discovered in both the 1996–1997 (not illustrated) and the 1991 seasons (Fig. 33:4–10).

Vessels Nos. 1–9 seem to have been made locally on account of their shape, color scale, low-quality fabric and the large quantity from both excavations at the site (Fig. 33:4–10). A few deformed rims of this type (not illustrated), possibly production waste, also support a local origin for these vessels.

Two bottles with a constricted neck were discovered in the cemetery at Ḥorbat Rimmon; they were assigned to a local workshop, based mainly on their fabric and on the entire assemblage, as well as on their resemblance to the group from Khirbat el-Ni'ana (Gorin-Rosen 2004d:117*).

Bottle No. 3 belongs to this group, yet differs slightly with the horizontal ridge below its rounded rim. A bottle with a similar rim was unearthed in the 1991 season (Fig. 33:13). A vessel with a constricted neck and a similar ridge, created by a partly open fold below the rim, was discovered in Burial Cave 3 at Ḥorbat Rimmon, dated to the Late Roman period, particularly the fourth century (Gorin-Rosen 2004d:117*–123*, Fig. 3:13). Another bottle of this type was unearthed in Burial Cave 121 at the ‘Dominus Flevit’ compound in Jerusalem (Bagatti and Milik 1958: Fig. 33:12). A bottle with a trailed rim and a constricted neck was found in the northern cemetery at Samaria and dated to the fourth and fifth centuries (Crowfoot 1957:412, Fig. 95:12, and see therein two examples from Jerusalem). Another example came from the Roman baths at Ḥammāt Gader (Cohen 1997:427, Pl. 8:1).

This type of constricted neck was common in the Late Roman period in the Near East, mostly in Egypt, often on larger and decorated vessels. Many variants were excavated at Karanis, in houses dated later than the year 300 CE (Harden 1936:186, Pl. 17:516, 533, 537). Based on parallels from Karanis, Crowfoot (1957:412) proposed that the bottle from Samaria (mentioned above) was “probably an Egyptian import”. Barag suggested the same, as vessels of this type had rarely been published at the time from sites in Israel (Barag 1970:201, Type 16:9-1, Pl. 44:9-1).

However, we are now convinced that this type of bottle with a constricted neck was locally manufactured; it does bear some characteristics that are also familiar among Egyptian glassware, but the fabrics are different, indicating that the vessels were produced in distinct local glass workshops in Palestine and Egypt (see below, discussion on mutual influences and universal fashion).

Bottles and Jugs with Funnel-Shaped Mouth (Fig. 11).— This group of bottles and jugs belongs to rather familiar types of the Late Roman and early Byzantine periods, and

includes several subtypes, varying in size, rim shape and decoration. Most of the specimens from Khirbat el-Ni‘ana are small and medium-sized. The vessels are generally characterized by a cylindrical neck, a funnel-shaped mouth, a piriform or cylindrical body and a concave or pushed-in hollow ring base.

Numbers 1–4 have an infolded rim and a short funnel-shaped mouth. Vessels of this type were discovered at Jalame, in the factory dump dated to the second half of the fourth century and in pre-factory contexts (Weinberg and Goldstein 1988:72, Fig. 4-33:284–288). Bottles resembling Nos. 1 and 2 were unearthed in the fourth-century fill of a settling pool at Ras el-‘Ein, Shekhem (Magen 2005: Pl. 19:12–15). Number 3 is decorated with an applied trail below the rim; a similar rim was found in the Late Roman winepress at Akhziv (Syon 1998: Fig. 15:19). Number 4 also has a trail handle, identifying it as a jug. Similar jugs were uncovered in various excavations at Ashqelon (Katsnelson 1999:72*–73*, Fig. 3:6, 7; Katsnelson and Jackson-Tal 2004: Fig. 2:3).

Numbers 5–7 have a rounded rim and a short funnel-shaped mouth with a single wound trail. This type of rim may belong to bottles (Nos. 5, 6) or jugs (No. 7). The strap handle of No. 7 is typical of these jugs, resembling those from Burial Caves 2 and 3 at Kisra, dated to the fourth and early fifth centuries (Stern 1997:112–114, Fig. 5:22, 24). Bottles with a funnel-shaped mouth and a single trail were discovered, e.g., at Jalame, mostly in the factory dump (Weinberg and Goldstein 1988:69–70, Fig. 4-31:262–263), and in Burial Cave 3 at Kisra (Stern 1997:110–111, Fig. 4:17). A jug with a rim like No. 6 and a neck resembling No. 8 was also found at Jalame (Weinberg and Goldstein 1988:64–67, Fig. 4-28:217). A few bottles with rims resembling Nos. 5–7 were unearthed in the fourth-century fill of a settling pool at Ras el-‘Ein, Shekhem (Magen 2005: Pl. 19:7–9, 11). Rims such as Nos. 6 and 7 were recovered at ‘En Gedi (Jackson-Tal 2005: Fig. 3:10, 11).

Number 8 displays a neck fragment of a bottle or jug decorated with a single trail on its funnel-

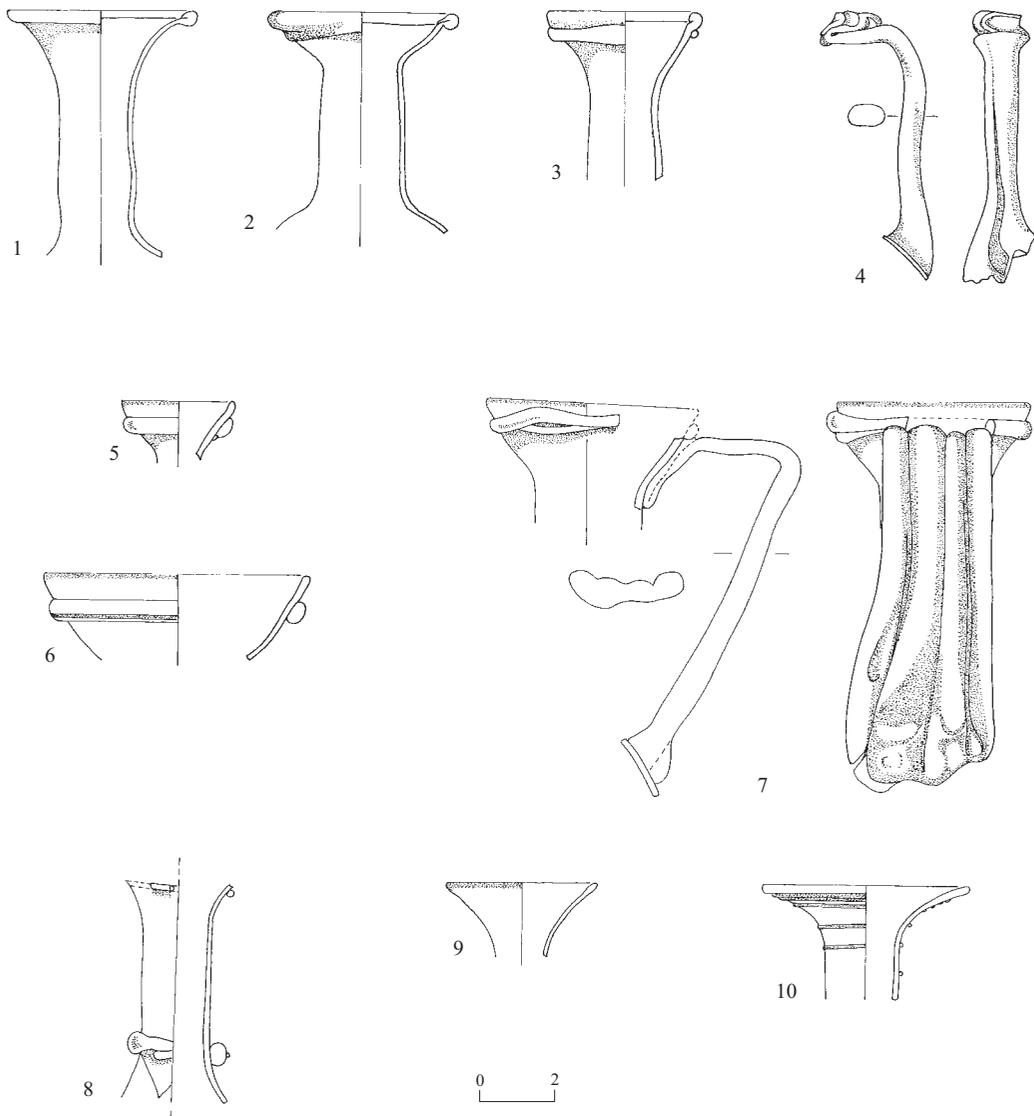


Fig. 11. Bottles and jugs with funnel-shaped mouth.

shaped mouth and another trail wound around the lower part of the neck. A similar jug was found in the Late Roman winepress at Akhziv (Syon 1998: Fig. 15:20).

Number 9 has a rounded rim and a short thin-walled funnel-shaped mouth; No. 10, similar in shape though slightly larger, has a thin trail wound several times below the rim and on the mouth and neck. A bottle with its trail wound like No. 10 was found in the fourth-

century fill of a settling pool at Ras el-'Ein, Shekhem (Magen 2005: Pl. 19:10). Bottles with a rounded rim and a funnel-shaped mouth were common in the Late Roman period, e.g., the piece from Burial Cave 1 at Kabri, dated to the third–early fourth centuries (Stern and Gorin-Rosen 1997:14–16, Fig. 8:16). Jugs with a rounded rim and multiple wound trails were also unearthed at Jalame (Weinberg and Goldstein 1988:64–66, Fig. 4-27:208, 211).

◀ Fig. 11

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	35	253	Rim D 48	Bluish-green	Silver weathering, iridescence and sand deposits	Almost complete rim, missing at neck; infolded rim; bubbly glass
2	35	250	Rim D 46	Greenish	Silver weathering, iridescence and sand deposits	Fragment of rim, neck and shoulder; uneven infolded rim forming a bulge; bubbly glass; careless workmanship
3	9	236/2	Rim D 38	Bluish; turquoise trail	Silver weathering, iridescence and sand deposits	Complete rim and part of neck; partly rounded, partly infolded rim with horizontal applied turquoise trail; black impurities; careless workmanship
4	35	260	-	Greenish	Silver weathering, sand deposits and pitting	Complete handle and part of rim and body; low quality fabric
5	19	171/5	Rim D 30	Light bluish-green	Silver weathering, iridescence, sand deposits and pitting	Rim fragment; rounded rim, funnel-shaped mouth with uneven wound trail; low quality fabric; careless workmanship
6	42	226	Rim D 72	Greenish-blue	Silver weathering, iridescence and slight pitting	Rim fragment; rounded rim with horizontal applied trail containing turquoise streaks; very bubbly glass
7	15	158	Rim D 48–55	Bluish-green with red streaks	Silver weathering, iridescence, sand deposits and pitting	Two fragments and complete handle attached to part of wall, mended; rounded rim with horizontal uneven trail, cylindrical neck, ribbed strap handle (four ribs); bubbly glass with black impurities and red streaks, mainly on handle; low quality fabric
8	19	171/6	-	Light greenish-blue	Silver weathering, iridescence and sand deposits	Neck fragment and part of mouth; cylindrical neck with applied trail on its lower part and on mouth
9	19	243	Rim D 40	Light greenish	Iridescence, sand deposits and pitting	Rim fragment; large vertical elongated bubble on rim
10	45	1265	Rim D 55	Yellowish-green; turquoise trails	Silver weathering, iridescence, sand deposits and pitting	Almost complete rim; flared rim; thin horizontal applied trails wound around rim, mouth and cylindrical neck

Large Bottles with Unfinished Rim (Fig. 12).— Two pieces of this type were collected: a complete vessel and a rim, neck and shoulder fragment of a rather large bottle. Both are characterized by an uneven, unfinished rim with a fire-rounded edge. The complete bottle resembles other large and medium-sized bottles from the site. These bottles support the concept of local production and demonstrate, with their incomplete or crooked rims, how the same workshop may yield some unsuccessful vessels alongside the fine pieces. Moreover, the malformed vessels may have been sold as poor quality, second-rate products.

Large Bottles with Rounded Rim and Funnel-Shaped Mouth (Fig. 13).— These bottles generally have a cylindrical and rather tall neck, a large squat (No. 1) or cylindrical (No. 2) body, and a concave bottom with no pontil mark (Nos. 1, 2). The height of the bottles ranges from 180 to 240 mm. They differ from those mentioned above (Fig. 11:5, 6) by their size and workmanship.

The bottles are decorated with applied horizontal trails on the mouth. Number 1 has a single trail, No. 2 has thin trails set closely, forming a thin band, while No. 4 has thicker trails, forming a thick band. The thin trail on

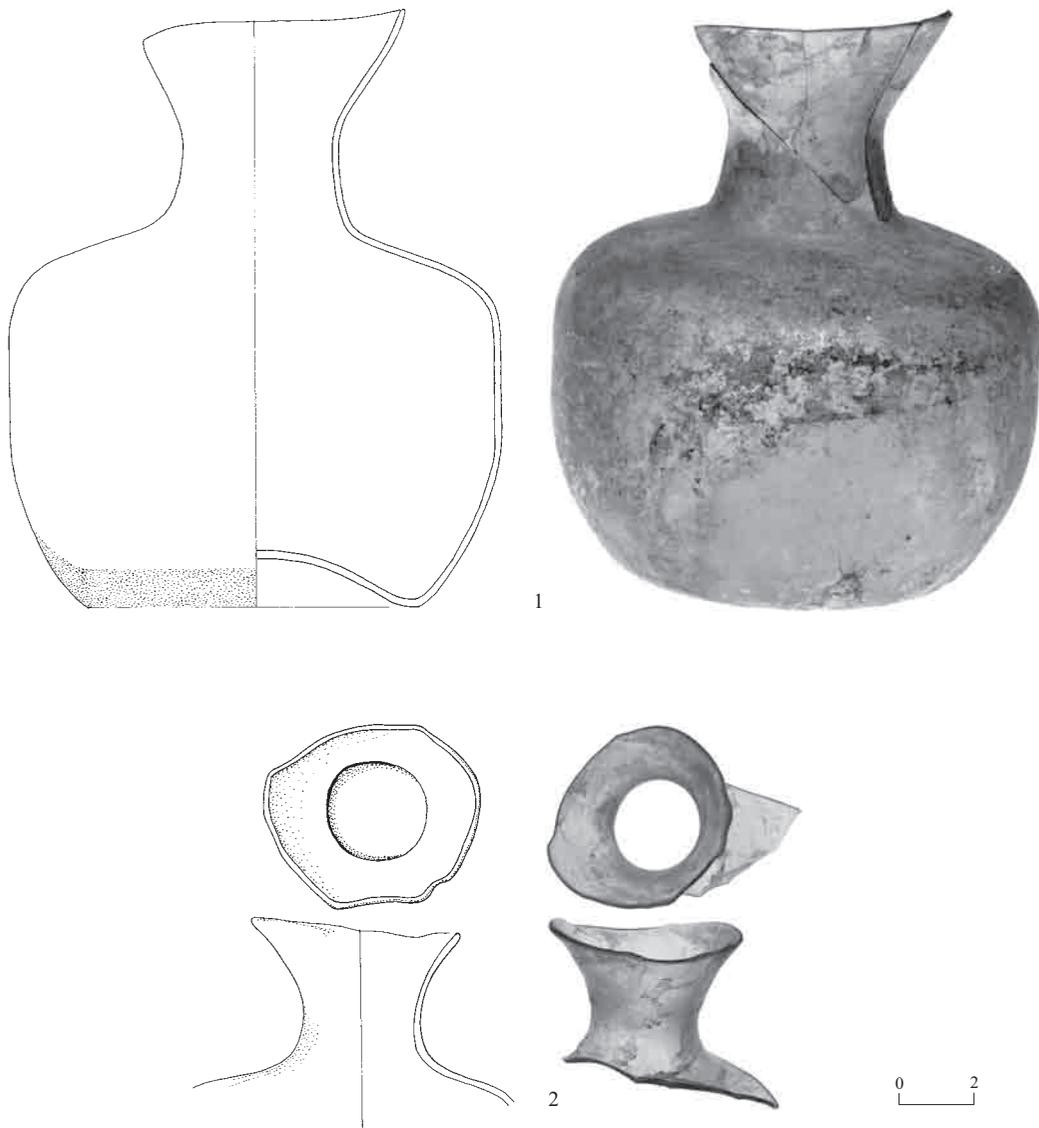


Fig. 12. Large bottles with unfinished rim.

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	50	1308	H 145–155 Rim D 70	Light greenish	Silver weathering, iridescence, sand deposits and pitting	Complete squat bottle, missing at rim, mended; uneven rounded rim, funnel-shaped mouth, short neck, concave bottom with no pontil mark
2	-	5	Rim D 55	Greenish	White and yellow, weathering and pitting	Complete rim and neck; uneven rounded rim, slanted shoulder; blowing spirals

No. 3 is loosely wound, while on No. 5 it is densely wound. Additional bottles of this type (not illustrated) were recovered from the site;

at least five are similar to No. 1, three—to No. 2, two resemble No. 3, and at least eight are similar to No. 4 (including Fig. 25:1).

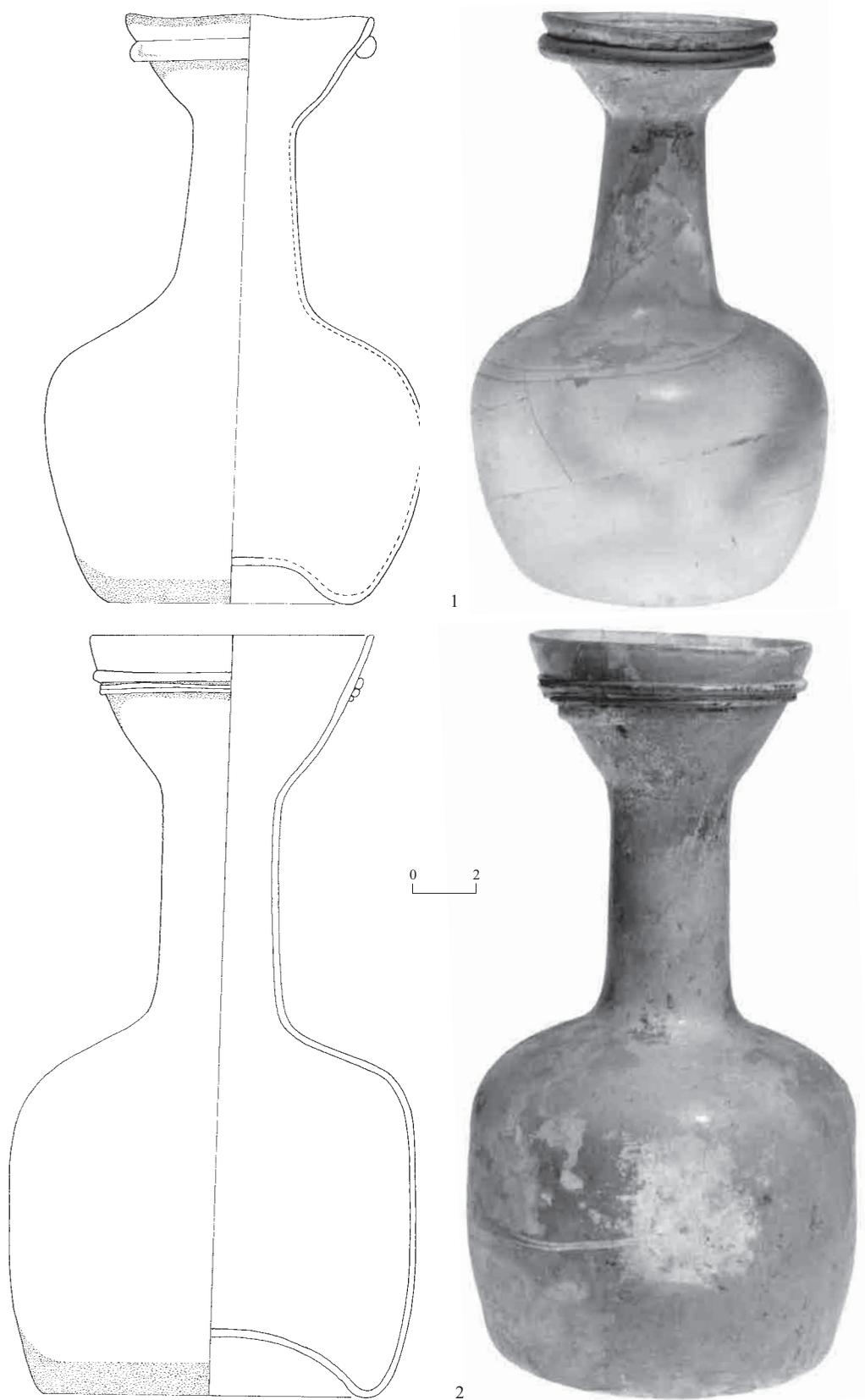


Fig. 13. Large bottles with rounded rim and funnel-shaped mouth.

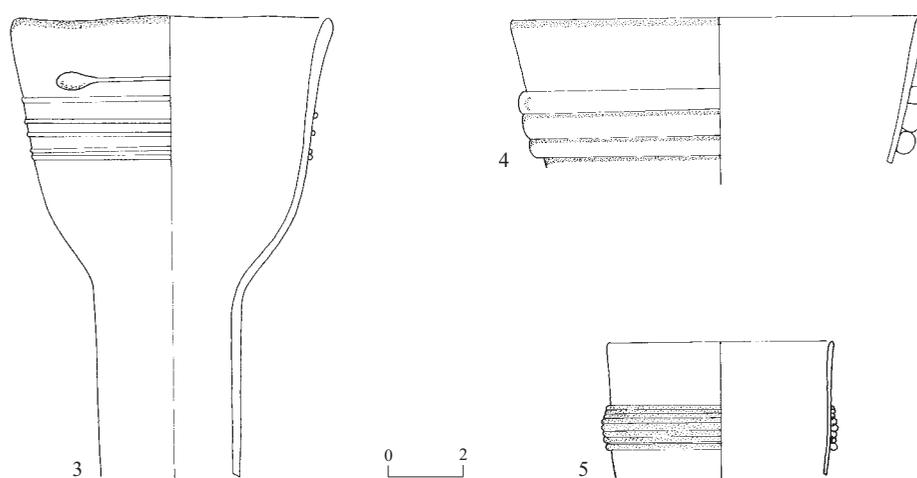


Fig. 13. (cont.).

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	45	1239	H 185 Rim D 75	Bluish-green	Silver weathering, sand deposits and pitting	Intact; thick applied trail below rounded rim, concave bottom with no pontil mark; black impurities
2	55	1320	H 225 Rim D 90	Light bluish-green	Milky silver weathering, iridescence, sand deposits and pitting	Complete, mended, missing at body and bottom; four trail winds on mouth; blowing spirals
3	Surface	1	Rim D 80	Greenish-blue	Silver weathering, iridescence, sand deposits and pitting	Complete rim and part of neck; uneven rounded rim; four thin trail winds on mouth; black impurities
4	23	221	Rim D 110	Bluish-green	Silver weathering, iridescence and sand deposits	Rim fragment; three thick trail winds
5	35	260	Rim D 60	Colorless with light bluish-green tinge; blue trails	Sand deposits and pitting	Two fragments; seven densely-set blue trail winds around cylindrical mouth

This group presents variants of bottles that were common in the region, particularly in the fifth–sixth centuries (Barag 1970:193, Type 15:20, Pl. 42:20). A trailed bottle, very similar to No. 2, was unearthed in a fifth-century tomb at Kafr Dikhrin (Rahmani 1964:52, Fig. 2:1, and see therein example from Jerash, dated to the fifth and early sixth centuries). Another bottle of this type was uncovered in the Byzantine fill of the Roman painted tomb at Ashqelon (Katsnelson 1999:74*, Fig. 4:2). Bottles with decoration resembling Nos. 3 and 4 were found at Ashqelon (Katsnelson and Jackson-Tal 2004:

Fig. 2:4, 5). A bottle with densely wound trails like No. 5 was unearthed in the fourth-century fill of a settling pool at Ras el-‘Ein, Shekhem (Magen 2005: Pl. 19:18).

The large number of vessels, the quality of the fabric and the style of trail winding all attest to these bottles being locally produced at the site.

Bottles with Upright Rim (Fig. 14:1–8).— This group includes various types of plain bottles with an upright rim and a cylindrical neck. The rim is either rounded (Nos. 1, 2, 5) or infolded

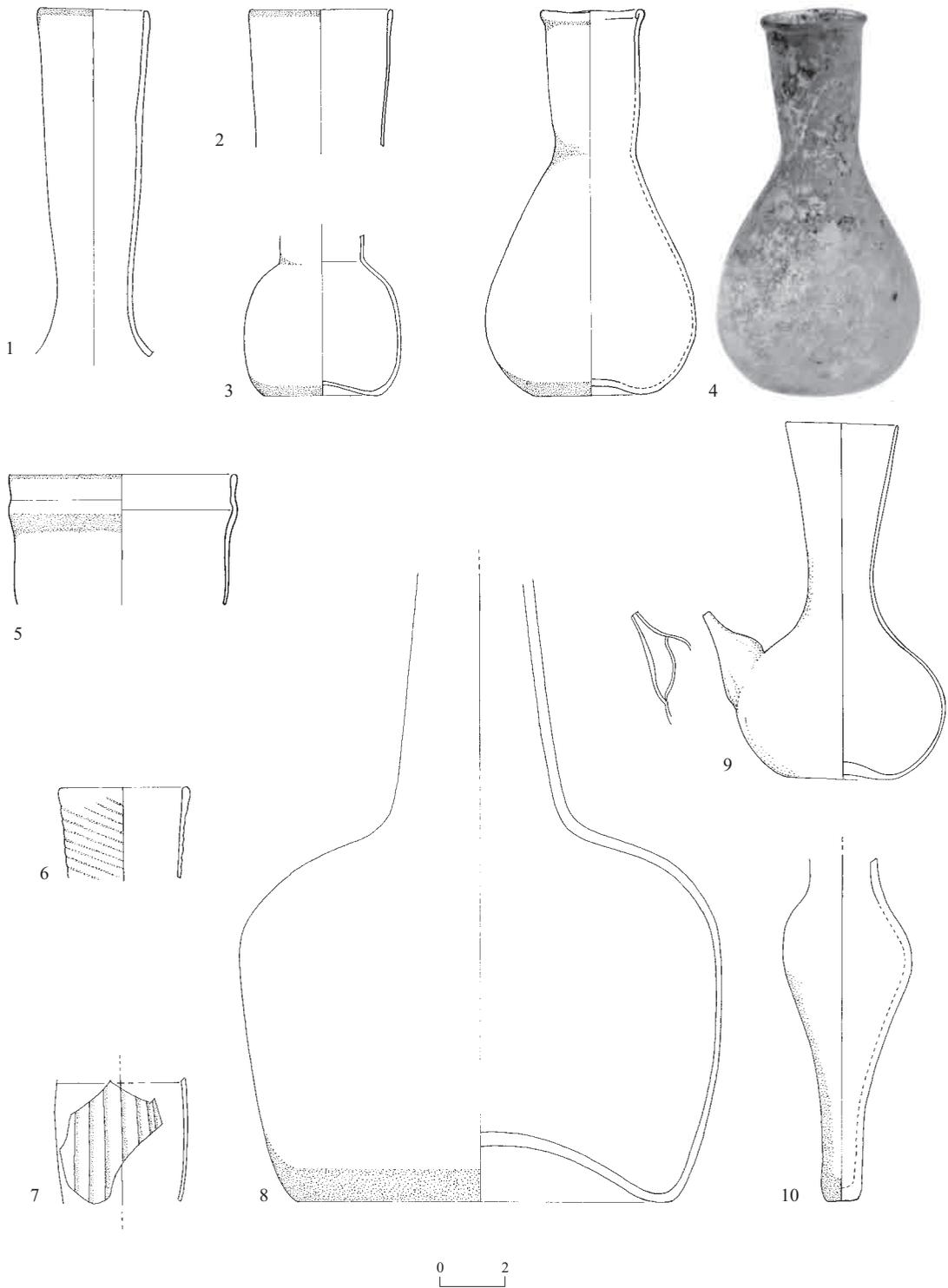


Fig. 14. Bottles with upright rim.

◀ Fig. 14

No.	Loc	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	43	302	Rim D 33	Bluish-green	Silver weathering, iridescence, sand deposits, pitting	Bottle with rounded upright rim and long cylindrical neck	Complete rim and neck; uneven rounded rim; blowing spirals
2	9	229	Rim D 44	Colorless with bluish-green tinge	Iridescence, sand deposits	Bottle with rounded upright rim	Rim fragment; uneven rounded rim; blowing spirals
3	35	245	Bottom D 35	Greenish	Iridescence, sand deposits	Bottle with cylindrical neck and squat body	Bottom and part of neck; concave bottom with no pontil mark
4	45	1264	H 110 Rim D 30 Bottom D 37	Colorless	Silver-milky weathering, iridescence, sand deposits, pitting	Bottle with upright infolded rim and piriform body	Intact; partly infolded rim, concave bottom with no pontil mark
5	35	253	Rim D 70	Greenish	Silver weathering, iridescence, sand deposits	Bottle with rounded upright rim and bulge	Two rim fragments; rounded rim, uneven bulge; very bubbly glass; blowing spirals; low quality fabric
6	35	276	Rim D 40	Greenish-blue	Iridescence, sand deposits	Mold-blown bottle with twisted ribbing	Small rim and neck fragment; uneven rounded rim, cylindrical neck
7	9	229	-	Colorless with bluish-green tinge	Iridescence, sand deposits	Vessel with mold-blown pattern	Small body fragment; shallow, sparsely spaced, vertical, slightly twisted, mold-blown ribbing
8	59	1347	Bottom D 120	Greenish-blue	Silver weathering, iridescence	Bottle with squat body	Complete body and part of neck, mended; tapering neck, concave bottom with no pontil mark; blowing spirals
9	57	256	H 109 Rim D 33 Bottom D 32	Greenish-blue	Silver weathering, iridescence	Spouted bottle	Complete profile, mended, many parts missing; rounded rim, tapering neck, squat body, small spout; black impurities
10	62	310	-	Bluish-green	Iridescence, sand deposits, pitting	Spindle-shaped vessel	Complete body, upper part missing; thickened stem, flattened by pontil; pontil scar, D 9 mm; large round and oval bubbles

(No. 4). The body may be piriform (No. 4) or squat (Nos. 3, 8), and the bottom is generally concave (Nos. 3, 4, 8). Numbers 6 and 7 are decorated with mold-blown ribbing.

Several more bottles of this group (not illustrated) were unearthed at the site: three similar to No. 1; two, as well as a few specimens from the 1991 excavations (Fig. 35:1–3),

resembling No. 3; and a large bottle identical to No. 8.

These types of bottles were frequent in the region during the Byzantine period, particularly in the fifth–sixth centuries. The bottles bearing mold-blown decoration belong to types that continued into the late Byzantine and early Umayyad periods, as attested, e.g., by examples

from Jerusalem (Gorin-Rosen 2000b:87*, trailed: Fig. 2:18, mold-blown: Fig. 2:19).

Bottles of these types were discovered in burial complexes, as well as settlements. Bottles resembling Nos. 1–4 were found in the Byzantine fill of the Roman painted tomb at Ashqelon (Katsnelson 1999:73*–74*, Figs. 3:8–15, and see therein further references to bottles from burial contexts in and around Jerusalem). Another site at Ashqelon also yielded similar vessels, including bottles such as Nos. 1–3 (Katsnelson and Jackson-Tal 2004:105–106, Fig. 2:6, 8, and see further references and discussion therein).

A bottle decorated with mold-blown ribbing similar to No. 6 was found in a rectangular built tomb at Ashqelon, dated to the fourth–fifth centuries (Gorin-Rosen 2002c: Fig. 136:6) and in another site at Ashqelon (Katsnelson and Jackson-Tal 2004:105–106, Fig. 2:13, 14). Another bottle resembling No. 6 was unearthed at 'En Gedi (Jackson-Tal 2005:77*–78*, Fig. 3:2). Two bottles bearing vertical mold-blown ribbing as on No. 7 were uncovered in the 1991 excavations at Khirbat el-Ni'ana (Fig. 35:5, 8).

Despite the scarcity of the pieces, the characteristic shape, decoration and fabric of these bottles may point to a local production.

Spouted Bottle (Fig. 14:9).— This bottle is characterized by an upright rim, a long cylindrical neck slightly tapering downward, and a globular body with a spout applied to it. The shape of the vessel and its fabric assign it to the local glass repertoire, although only this spouted specimen was retrieved from the 1996–1997 excavation, and only two were discovered in the 1991 season (Fig. 34:9, 10).

A similar spouted bottle, discovered in Tomb 200 at Giv'at Sharet, differs only in the applied wound trail on the neck (Seligman, Zias and Stark 1996:58–59, Fig. 16:1), and may have served as a lamp filler. The assemblage from Giv'at Sharet that includes several other parallels to the Khirbat el-Ni'ana vessels, dates from the last quarter of the fourth to the first quarter of the fifth centuries (Seligman, Zias and Stark 1996:59).

Spouted bottles appeared during the Roman period and continued with slight alterations into the Byzantine period (Barag 1970:220–221, Type 23:1 Roman, Type 23:3 Byzantine; Pl. 47: Types 23:1, 23:3, and see further references therein). Two spouted bottles in the Israel Museum collections represent different periods: the earlier one dates to the third–fourth centuries, while the later subtype dates to the sixth–seventh centuries (Israeli 2003:165, Cat. No. 173; 173, Cat. No. 193). The bottle from Khirbat el-Ni'ana displays a combination of those two pieces and probably dates in between, contemporary with the one found at Giv'at Sharet.

Spindle-Shaped Vessel (Fig. 14:10).— This vessel has a spindle-shaped body, resembling not the common elongated spindle-shaped tube,¹⁵ but rather the two-handled flasks, like the one unearthed in Tomb 200 at Giv'at Sharet, dated to a short period of time from the last quarter of the fourth century to the first quarter of the fifth century (Seligman, Zias and Stark 1996:56, 59, Fig. 16:2, and see therein references to Beit Fajjar, Netiv Ha-Lamed-He, Kh. Dikhrin and Gezer). The parallels cited in the Giv'at Sharet report (bar Beit Fajjar) came from sites in the vicinity of Khirbat el-Ni'ana; therefore, we suggest that this vessel was also a local product.

Decorated Vessels

These specimens (Fig. 15) represent varied shapes and decorations. Only one piece of each type was found. These vessels have parallels in other sites in modern-day Israel, as well as in Egypt (Karanis), Syria (Dura-Europos) and Jordan (Abila).

Vessel No. 1 has a different fabric than the other two pieces, and may have, therefore, been brought from a distance rather than made in the local workshop. Numbers 2 and 3, although displaying exceptional shapes, are similar in their fabric to the local products.

Bottle with Pinched Vertical Ribs (Fig. 15:1).— This is a medium-sized bottle, constricted at

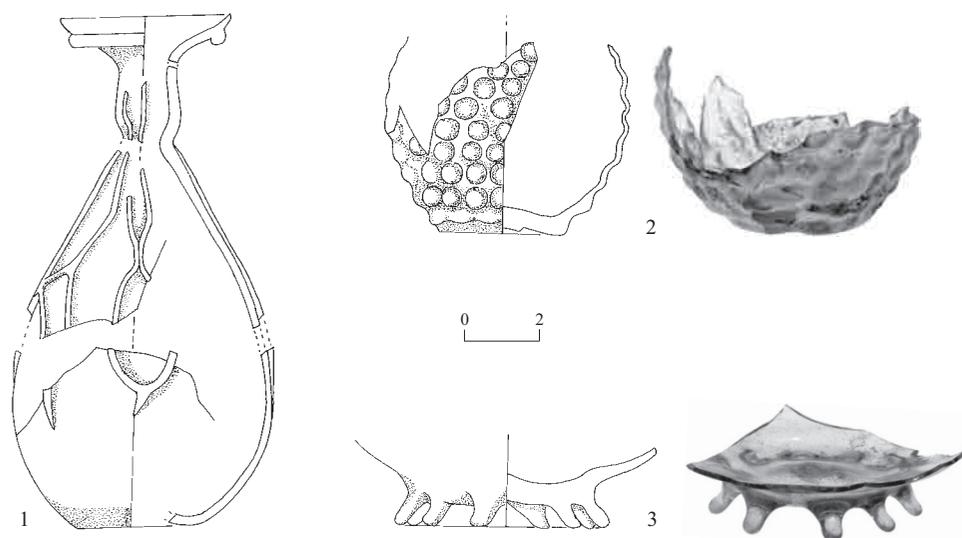


Fig. 15. Decorated vessels.

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	9	248	H 135 Rim D 45	Colorless with light greenish tinge	Yellow and white weathering, iridescence and pitting	Bottle with pinched vertical ribs	Three mended fragments, missing at rim, neck, body and bottom; rounded rim with horizontal trail wound below it, short constricted neck, piriform body with vertical trails pinched into bifurcated design
2	9	152	Base D 33	Bluish-green	Silver weathering, iridescence, sand deposits and pitting	Mold-blown bottle with grape design	Complete base and part of wall, upper part and most of body missing, mended; two mold-seams evident, rather thick walls, thickened concave flattened base; pontil scar, D 12 mm
3	-	4	Base D 46	Greenish-blue	Silver weathering, iridescence and sand deposits	Vessel with 'toe base'	Complete base with part of wall; flat solid base with nine unevenly spaced pinched-out high toes; pontil scar, D 12 mm

the base of the neck. The vessel is decorated with an applied horizontal trail on the funnel-shaped mouth and a vertical pattern of pinched bifurcated ribs on the body. The shape, color, fabric quality and milky weathering are characteristic of the second–third centuries. Examples were found, e.g., at Dura-Europos, the specimens there dated from the second century to 256 CE (Clairmont 1963:48–50, Pl. 23:186–199), and at Karanis (Harden 1936:208, Pl. 18:593).

Pinched vertical ribs continued to appear up to the fourth century, yet on different types of

bottles. A fragment of a similarly decorated bottle was discovered at Jalame near the furnace (Weinberg and Goldstein 1988:80–81, Fig. 4-39:351). Other specimens came from Tomb XV at Hanita (Barag 1978a:23, 26–27, Fig. 12:50) and Samaria (Crowfoot 1957:410, Fig. 94:12). A large bottle from the Franciscan Museum at Nazerat was allegedly unearthed at Bet She'an (Bagatti 1967:229, Fig. 3:78).

Moreover, funnel-shaped mouths adorned with a single trail and constricted necks appear on some of the local types at Khirbat el-Ni'ana (Fig. 33:7–10), suggesting the bottle with

pinched vertical ribs (Fig. 15:1) belonged to the assemblage and was neither earlier in date nor imported.

Mold-Blown Bottle with Grape Design (Fig. 15:2).— This poorly-preserved piece, consisting of the base and a small part of the ovoid body, is part of a mold-blown bottle with grape design. The body was blown into a two-part mold with a stylized grape pattern, comprising rows of hemispherical bulges. The type, known mostly from collections, displays varied upper parts, occasionally with handles. It was recorded mostly in Syria-Palestine and Egypt and dated, primarily on stylistic grounds, to the second–third centuries (Israeli 2003:310, Cat. Nos. 413, 414), with variants dated to the fourth century (Stern 1995:187, 191, Cat. Nos. 120–128, and see full discussion therein).

The closest parallel to the Khirbat el-Ni'ana piece is a grape bottle unearthed in a Late Roman tomb at Ḥorbat Qaṣṣra (Gorin-Rosen and Katsnelson 1999: Color Plate iii:2). Two body fragments of grape vessels were uncovered in a settling pool at Ras el-'Ein, Shekhem and dated to the fourth century (Magen 2005: Pl. 20:8, 9). A similarly decorated bottle with a funnel-shaped mouth and a collar above the shoulder was discovered in Burial Cave D at Naẓerat (Feig 1990:78–79, Figs. 10:18; 11:4). The vessel, found together with a third-century flask, was erroneously dated to the second–third centuries.¹⁶ A similar bottle, said to have been unearthed at Bet She'an in 1932, is in the Franciscan Museum at Naẓerat (Bagatti 1967:228–229, Fig. 3:77). Another bottle from Bet She'an is in the collections at the Rockefeller Museum, Jerusalem (Israeli 2003:310). A bottle with grape design was unearthed in Tomb L-2 at Abila that was in use in the fourth–sixth centuries (Fuller 1987:146, Fig. 118B). A similar flask was found at Karanis (Harden 1936: Pl. 18:628).

Vessel with 'Toe Base' (Fig. 15:3).— The base probably belonged to a bowl or a flask. This type of base was frequent from the second century

onward, yet rarely published. The earlier finds were uncovered at Karanis (Harden 1936:194, 219–220, Pl. 19:678, 681, 682, 708) and at Dura-Europos, in a context of the second or early third centuries (Clairmont 1963:50–51, Pls. 5:204–208; 6:211).

'Toe bases' continued into the Late Roman period. Two bases of this type were unearthed in Late Roman contexts at the courthouse site in 'Akko (Avshalom-Gorni 1999: Fig. 22:3).¹⁷ Fragments of 'toe bases' were found in an unstratified context at Jalame (Weinberg and Goldstein 1988:59–60, Fig. 4-22:161) and in Tomb I at Nahariyya, dated to the third century and the first half of the fourth century (Barag 1970:141, Type 3:25, Pl. 32:25). Another base was recently published from the hippodrome at Shekhem (Magen 2005: Pl. 41:15), and other specimens were uncovered along the southern coast of Israel, e.g., Ashqelon.¹⁸

A 'toe base' was found at Jerash, in Phases 1–3, dated to the first–third centuries (Kehrborg 1986: Fig. 9:9). These bases were widespread in north Sinai, where they are dated mostly to the fourth–fifth centuries.¹⁹

The fabric of the 'toe base' from Khirbat el-Ni'ana resembles that of other vessels from the site. Additionally, the 'toes' are rather long and thick, evenly spaced and carefully worked compared with 'toe bases' from other sites. Furthermore, the same basket also yielded two glass wasters. All three factors suggest it is a local product.

Cosmetic Tubes

Several types of cosmetic vessels with a single or double tube were collected at the site. Most of them are complete or missing small parts. They belong to a well-known group of vessels used as cosmetic containers, for instance for kohl, often discovered with a bronze or ivory applicator or kohl stick. These vessels are found in Late Roman and early Byzantine complexes, mostly tombs.

The tubes from Khirbat el-Ni'ana share features such as fabric, style and workmanship, indicating a local workshop at the site.

The single tubes are characterized by an applied trail-wound base. They are all decorated with either applied trails or mold-blown ribbing, while the double tubes are all plain.

Double tubes—plain, as in Khirbat el-Ni'ana, or, more often elsewhere, decorated with applied trails—are a frequent find in excavations in Israel, Jordan and Syria. They appeared in the middle of the fourth century and continued to prevail with small alterations up to the late Byzantine period (Barag 1970:175–177, Types 12:2, 12:3, Pl. 39:2, 3).

The numerous double tubes from Khirbat el-Ni'ana have two tubular-shaped containers made by pinching the parison. They are classified by their varied handles into three groups: tubes with two handles (Fig. 18), three handles (Fig. 19) and elaborate handles (Figs. 20, 21). The tubes and handles bear great resemblance, as if made by the same local glass craftsman. Tubes of the three groups were discovered together and are therefore dated to the same period, indicating that handles cannot serve as chronological factors, as had been suggested in the past (Barag 1970:176, see discussion of Type 12:2-3).

Single Tubes with Applied Base (Fig. 16).—

These single tubes, two of them complete (Nos. 1, 2; see also English Cover: left, center), have a nearly cylindrical body, slightly constricted where it meets the funnel-shaped mouth. The rims are infolded and the handles are generally drawn from the body up to the rim. Number 1 is flanked by crude handles, too massive in proportion to the body. Number 2 has two short handles and a basket handle on top. These handles were formed by drawing a glass trail from the body up to the rim, then over the vessel to the other side of the rim, then attaching it to the body. The most characteristic feature of these vessels is the trail-wound base, created by a massive trail wound once or twice and applied to the thickened bottom and then flattened while the glass was still hot. The tubes are decorated in various techniques, including horizontally-wound applied trails (No. 1) and vertical (No. 2) or twisted (No. 3) mold-blown ribbing.

The single-tube cosmetic vessels are rather common finds in Late Roman (mid-third to fourth centuries) burial complexes excavated in Israel (Barag 1970:155–158, Type 7, Pl. 35:1–3, and see further discussion and references

Fig. 16 ▶

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	59	1353	H 95	Light bluish-green tinge; bluish-green handles and trail	Silver weathering, iridescence and sand deposits	Two pieces, mended, missing at body and trail, deformed at neck; thick trail wound to form base; pontil scar, D 12 mm; black impurities on base
2	45	1241	H 140 Rim D 35 Base D 30	Yellowish-green body; bluish-green handles and base	Silver weathering, iridescence and sand deposits	Intact, crack below rim; infolded rim, funnel-shaped mouth, vertical mold-blown ribbing on body, shallower toward base; handles drawn of single trail, from wall to rim, over rim and to other side; applied trail base with pontil scar, D 14 mm; bubbly glass with black impurities
3	42	226	Base D 30–37	Bluish-green	Silver weathering, iridescence and sand deposits	Two fragments of base and part of wall; thick walls, vertical mold-blown ribbing on body, uneven, flattened, oval trail base; pontil scar, D 15 mm; careless workmanship
4	9	229	Base D 37	Greenish	Silver weathering, iridescence and sand deposits	Complete base; thick, flattened trail base with small concavity on floor center

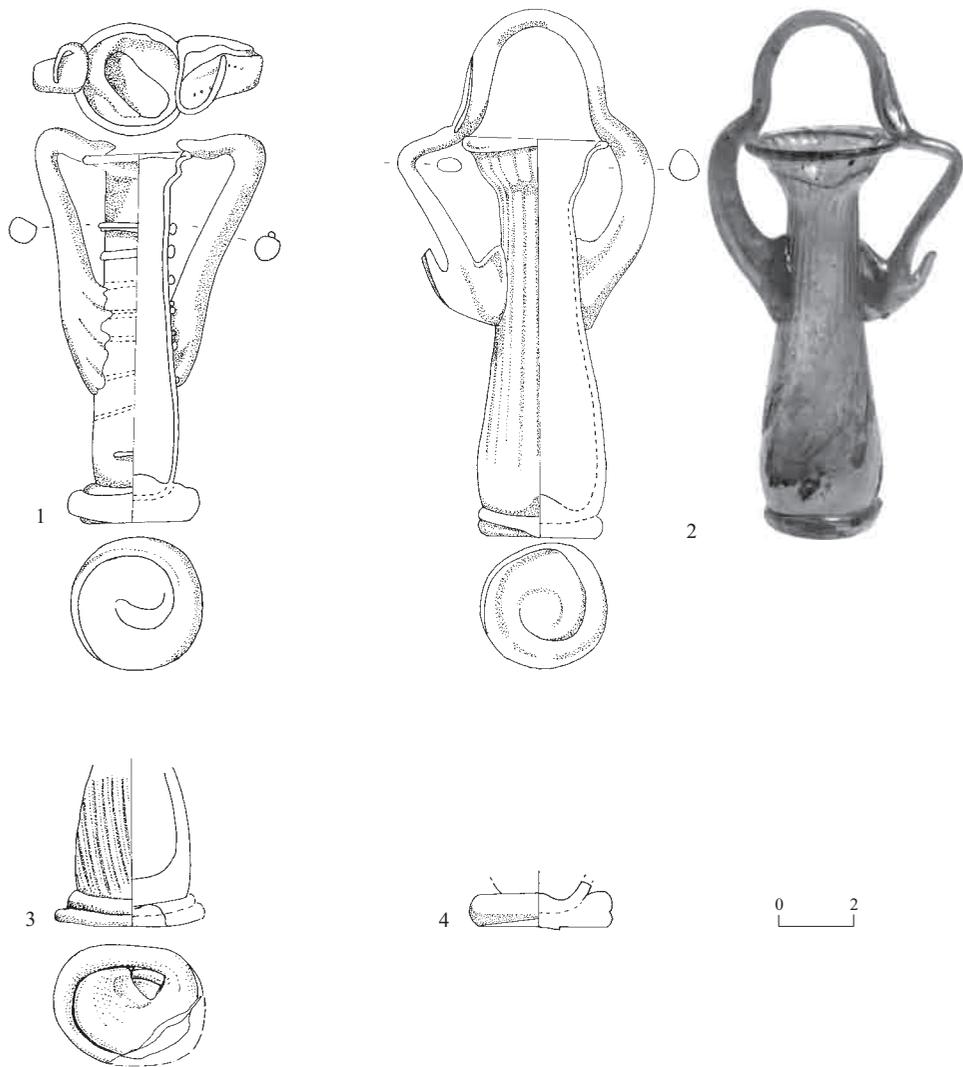


Fig. 16. Single tubes with applied base.

therein). The single tubes appear in various forms, with or without handles, with trailed or ribbed decoration, and generally mounted on a pushed-in, hollow ring base, like the one from Tomb 200 at Giv'at Sharef, dated to the last quarter of the fourth and the first quarter of the fifth centuries (Seligman, Zias and Stark 1996:50, 56, 59, Fig. 17:1).

The specimens from Khirbat el-Ni'ana with trail-wound bases and massive uneven handles probably represent early Byzantine production, continuing the Late Roman tradition. Only very few excavated parallels were published so far,

e.g., a trailed tube with basket handles and an applied base from Tomb 1 at Netiv Ha-Lamed-He, dated to the late fourth–early fifth centuries (Barag 1974:82, Fig. 2:3, and see an example from Tell en-Nasbe therein).

The general shape of the tubes and their decoration seem disproportional and carelessly made, attesting to a local production.

Plain Double Tubes with Two Handles (Figs. 17:1, 2; 18).— These cosmetic vessels are plain and uneven, with an unevenly infolded rim and tooling marks on the body. The bottoms are



Fig. 17. Cosmetic vessels: (1) Fig. 18:1; (2) Fig. 18:2; (3) Fig. 19:3; (4) Fig. 21; (5) Fig. 20.

thickened, convex and unevenly flattened by the pontil. Small handles on both sides are drawn up from the body to the rim (Barag 1970:176, Type 12:2, Pl. 39:2). At least four additional vessels of this subtype (not illustrated) were collected at the site.

Although more examples of decorated double tubes have been published than of plain ones, only the plain vessels are mentioned hereby. A double tube with two crude handles was discovered at Giv'at Sharet, in Tomb 200 dated to the last quarter of the fourth and the first quarter of the fifth centuries (Seligman, Zias and Stark 1996:50, 59, Fig. 17:2).²⁰ This piece also sheds light on the use of these vessels as kohl tubes; it was found together with a bronze spatula and bore dark residue that was tested to be galena, the basic material used in the manufacture of kohl (Seligman, Zias and Stark 1996:50).

Similar double tubes with two handles were found, e.g., in burial caves at Ḥorbat Ḥanut,²¹ and in Cave D at Nazerat (Feig 1990:78–79, Fig. 10:17).²² Another example was unearthed at Abila, Jordan, in Tomb L-2 dated to the fourth–sixth centuries (Fuller 1987:145–146, Fig. 118A).

The variations in the shape of the handles and their workmanship, either crude or delicate, are the minute fingerprints of a local workshop and even of a glass artisan.

Plain Double Tubes with Three Handles (Figs. 17:3; 19).—These tubes are similar to those with two handles (Fig. 18), yet have an additional basket handle over the vessel, attached to the top of the small side handles (Barag 1970:177, Type 12:3, Pl. 39:3).

A similar vessel with a crude basket handle and uneven side handles was discovered with a bronze spatula in a Roman–Byzantine mausoleum at Khirbat Sabiya, dated from the late third or early fourth centuries up to the fifth or sixth centuries (Ayalon 1994: Figs. 5:8; 6). Other such double tubes were unearthed at Tell en-Nasbe, in Tomb 33 dated to the late fourth–early fifth centuries (McCown 1947:107, Fig. 105:1) and at Gezer, in Tomb 156 (Macalister 1912: Pl. 108:7), dated by Barag to the mid-seventh century (Barag 1970:175, 177, Type 12:3, and see additional references therein). Another similar vessel, in the University of Pennsylvania Museum of Archaeology and

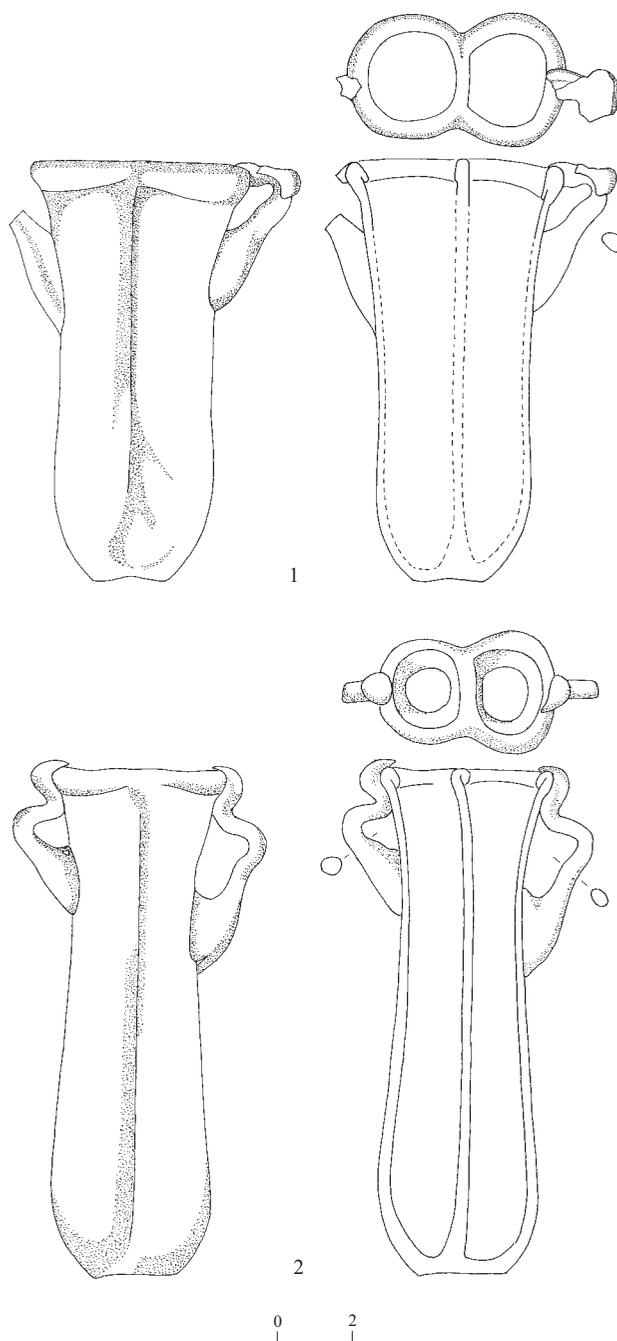


Fig. 18. Plain double tubes with two handles.

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	62	310	H 110	Greenish-blue	Iridescence and sand deposits	Complete (almost intact), part of handle missing; small uneven handles; pontil scar, 6 × 13 mm; bubbly glass
2	45	1272	H 130	Yellowish-green	Silver weathering, iridescence and sand deposits	Complete, missing at rim; asymmetric tubes; pontil scar, 8 × 14 mm; bubbly glass

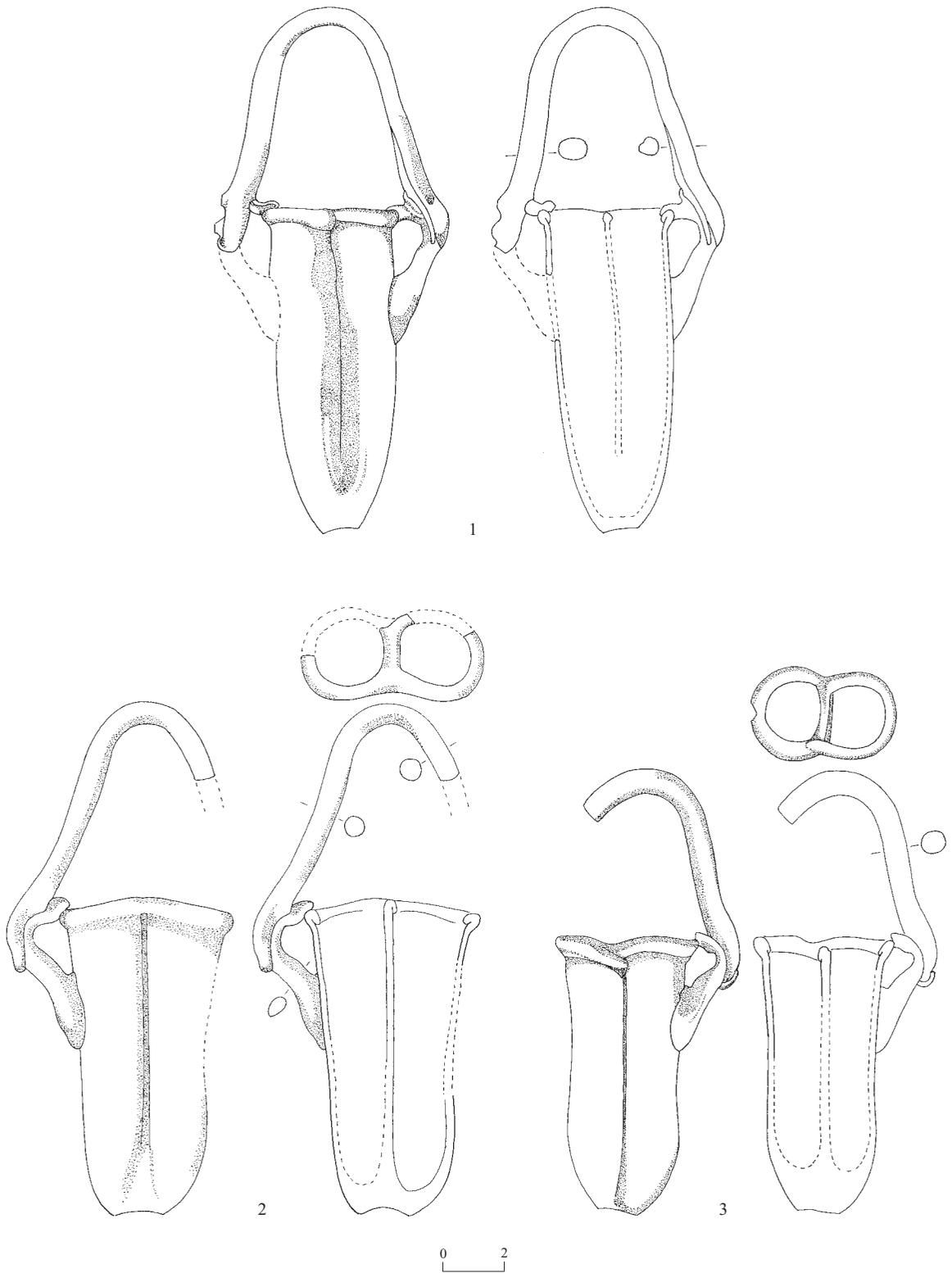


Fig. 19. Plain double tubes with three handles.

◀ Fig. 19

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	62	312	H incl. handle 166	Greenish	Iridescence, sand deposits, pitting	Complete, handle and part of one tube missing, one tube deformed; tubes not pinched at bottom, allowing for material to move between the tubes; thin wall separating the tubes; pontil scar, D 4 × 10 mm
2	62	310/1	H incl. handle 164	Greenish	Iridescence, sand deposits	Complete, mended, missing at rim, handle and tubes; uneven infolded rim; pontil scar, 4 × 15 mm; very bubbly glass with impurities; careless workmanship
3	62	310/2	H incl. handle 140	Bluish-green	Iridescence, sand deposits	Complete, handle and part of one tube missing; uneven infolded rim, pontil scar, 7 × 14 mm; very bubbly glass with black impurities on handle; careless workmanship; discovered with metal spatula

Anthropology, is said to have originated in Tell Nimrin in Israel (Fleming 1999:106, Pl. E.107).

The three plain double tubes with three handles from Khirbat el-Ni'ana are very similar in shape, quality and workmanship, and point to a local production.

Plain Double Tubes with Elaborate Handles (Figs. 17:4, 5; 20; 21).— The plain body of these nearly complete specimens is flanked by two small side handles and adorned by multiple applied basket handles rising over the rim. Two additional double tubes of this subtype (not illustrated; L57, B289; L62, B313) were registered at the site. Barag noted that all examples of this type known at the time have decoration on the body and that no undecorated specimen was recorded. He classified the decorated type and dated it particularly to the fifth century (Barag 1970:177–178, Type 12: 5-1, Pl. 39:5-1, and see therein references to Bet 'Anyā and Yaffo). A very similar double tube with elaborate handles, in the University of Pennsylvania Museum of Archaeology and Anthropology, is dated to the fifth century and said to have originated in Lydda (Lod) (Fleming 1999:106, Fig. E.49).

The double tubes with elaborate handles from Khirbat el-Ni'ana are very similar in shape,

quality and workmanship, pointing to a local production.

Bowl-Shaped Oil Lamps

The specimens from the site (Fig. 22) represent several variants of bowl-shaped oil lamps, generally discovered in public buildings, as well as private dwellings. They were frequent in the eastern Mediterranean during the fifth–seventh centuries. The bowl-shaped oil lamps from Khirbat el-Ni'ana are dated the latest among the Late Roman–early Byzantine group, yet they constitute earlier versions of the well-known Byzantine types.

Bowl-Shaped Oil Lamps with Oufolded Rim and Three Handles (Fig. 22:1, 2).— Despite their tiny dimensions, these fragments clearly represent the type of oil lamp most frequent during the Byzantine period and into the Umayyad period. Examples have been discovered, e.g., at Ashqelon (Katsnelson 1999:78*, Fig. 5:1–3; Katsnelson and Jackson-Tal 2004:106, Fig. 3:1, and see further references therein).

Bowl-Shaped Oil Lamps with Crude Loop Handles (Fig. 22:3).— This handle belonged to a suspended oil lamp with three handles applied on the body at mid-height. Occasionally, the

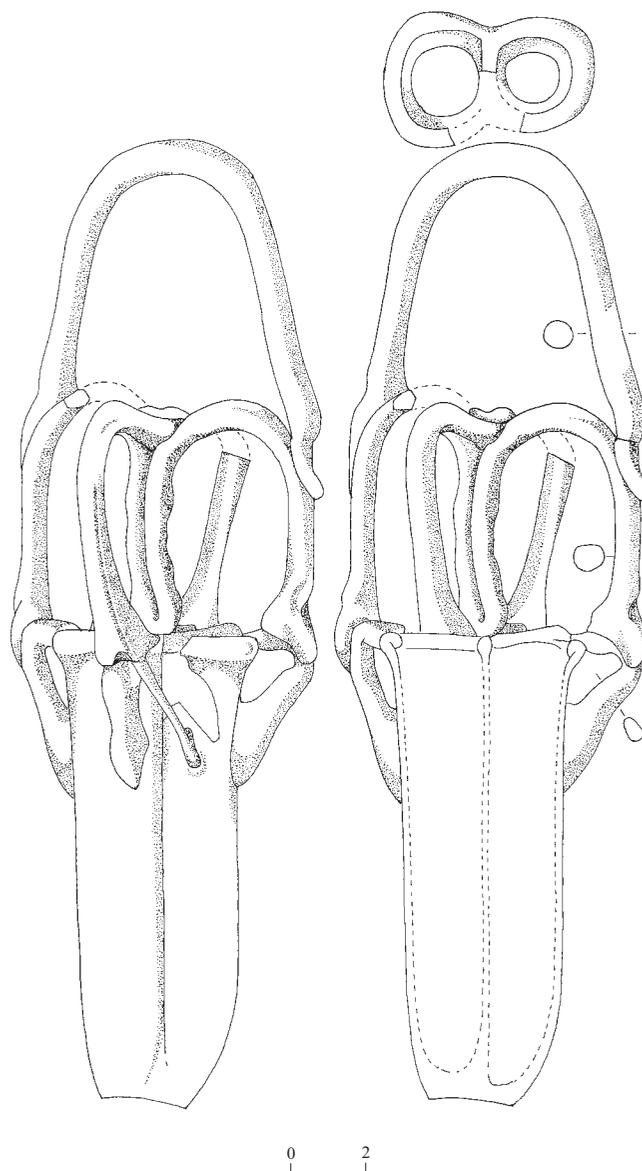


Fig. 20. Plain double tube with elaborate handles.

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	61	305	H incl. handles 245	Greenish; olive-green handles	Silver weathering, iridescence and sand deposits	Complete, mended, missing at rim, body and handles; elaborate basket handles applied over side handles; pontil scar, 13 × 22 mm; very bubbly glass with black impurities

bowl of this vessel type was globular and the rim cut off. This type of oil lamp was discovered in Byzantine and late Byzantine contexts. A nearly complete example was unearthed in Tomb 231 at the 'Dominus Flevit' compound (Bagatti and

Milik 1958:147–148, Fig. 35:12). A similar piece came from Ashqelon (Katsnelson and Jackson-Tal 2004:106, Fig. 3:2, and see therein references to examples from Jerusalem and Rehovot-in-the-Negev).

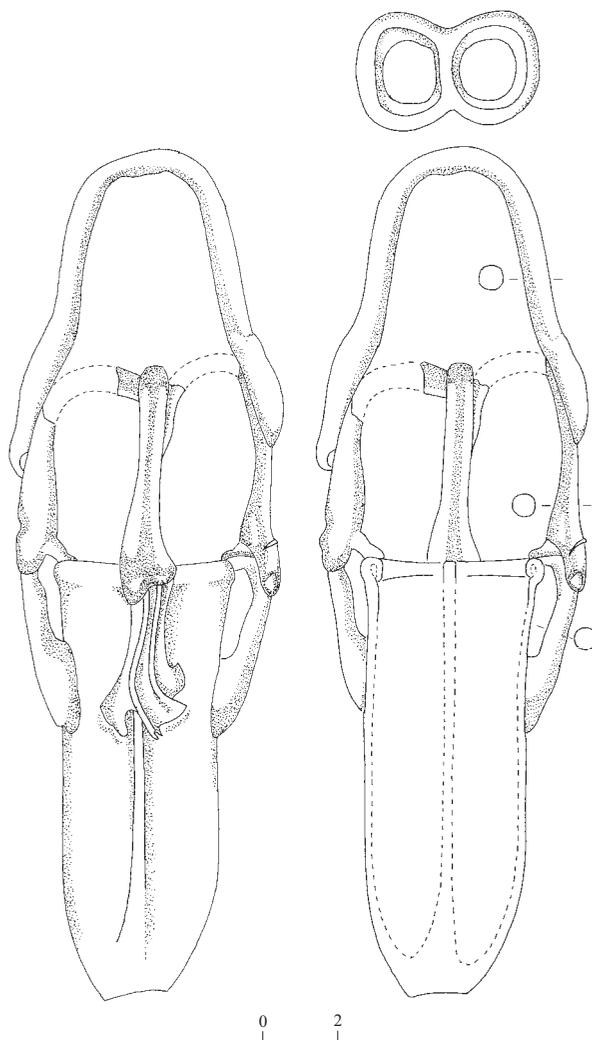


Fig. 21. Plain double tube with elaborate handles.

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	62	312	H incl. handles 220	Greenish	Iridescence and sand deposits	Complete, almost intact, missing at central basket handle; elaborate basket handles of different trails applied over side handles; tooling marks on middle handles; pontil scar, 5 × 14 mm

Bowl-Shaped Oil Lamps with Wick Tube (Fig. 22:4, 5).— These fragments represent another variant of oil lamp with a wick tube fixed on the bowl floor. This type has the same rims and handles as Fig. 22:1, 2. The bottom is generally thickened and concave or pushed-in with a tubular ring base. An incomplete specimen was found in the Byzantine baptistery at Nir Gallim,

dated to the fifth–sixth centuries (Gorin-Rosen 2002c:123–124, Fig. 2:5, and see therein parallels from Ashqelon, Jerusalem, Bet She’an and the Negev, and a complete example from Samaria).

Bowl-Shaped Oil Lamps with Hollow Stem (Fig. 22:6–8).— Number 6 conveys the complete profile of this type of oil lamp; No. 7

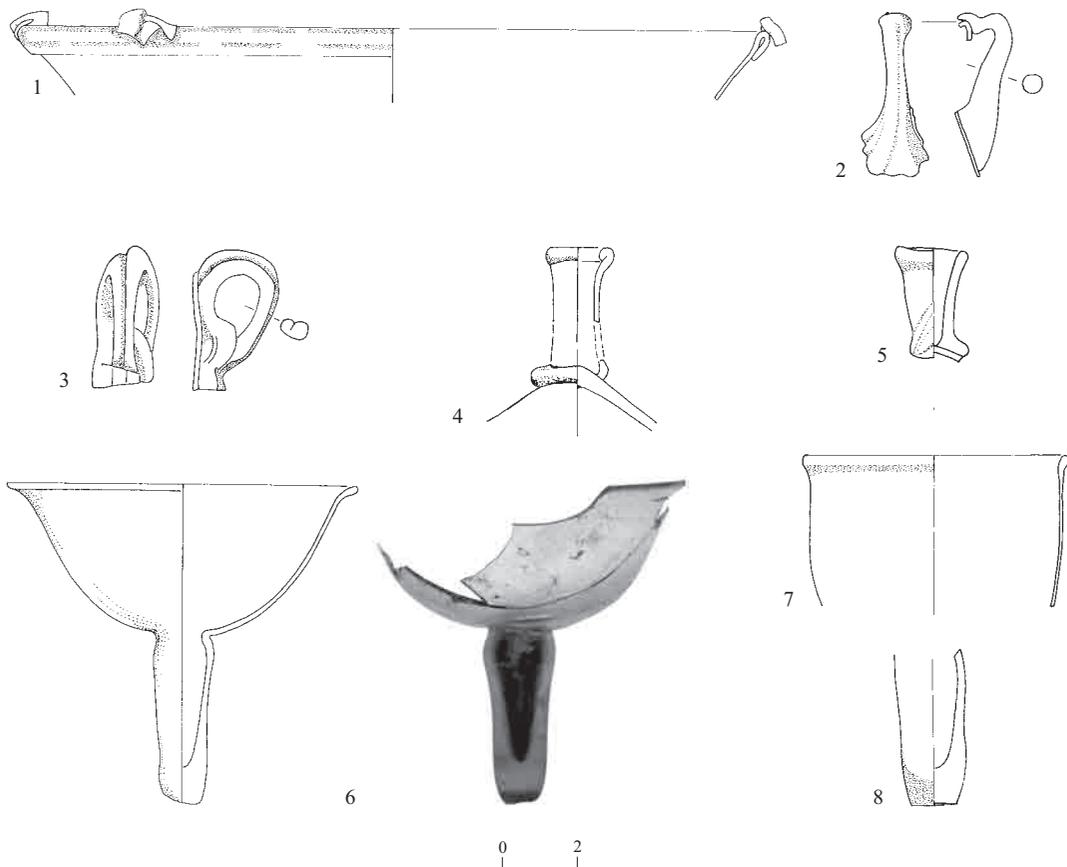


Fig. 22. Bowl-shaped oil lamps.

also displays a rounded rim, yet a different body shape. Three more stems (not illustrated), resembling Nos. 6 and 8, were collected at the site. Several rims and stems of similar lamps were recovered in the baptistery at Nir Gallim, dated to the fifth–sixth centuries (Gorin-Rosen 2002c:122–123, Fig. 2:1–4, and see further discussion and references therein).

The stems from Khirbat el-Ni'ana are rather short and have a slight indent and a constriction where they join the body. This may be a characteristic feature, indicating a local workshop. Stemmed bases of this type were widespread, and when discovered in large homogenous groups, may attest to local production. About 400 oil-lamp stems were recovered at Caesarea Maritima (Peleg and Reich 1992:155–158, Figs. 19, 20, and see

further references therein). They were found in a locus that “probably served as a dump □ perhaps as waste from a neighboring glass factory or simply as a garbage heap” (Peleg and Reich 1992:158). Despite their dubious provenance in a “garbage heap”, these specimens represent the vessels in daily use in the city, vessels that were probably manufactured locally. Another large group of stems comes from Samaria, where some 40 stems of the hollow type were discovered in the glass factory area (Crowfoot 1957:414–415, Figs. 96:2, 6; 98:4).

THE GLASS OBJECTS

Forty-eight small glass objects were uncovered in Tombs I and VI during the 1996–1997 excavation at Khirbat el-Ni'ana. Forty-one

◀ Fig. 22

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	35	245	Rim D 200	Greenish	Silver weathering, iridescence, sand deposits	Bowl-shaped oil lamp with outfolded rim and three handles	Rim fragment; remains of handle on rim edge
2	15	155	-	Bluish-green	Silver weathering, iridescence, sand deposits	Bowl-shaped oil lamp with outfolded rim and three handles	Rim fragment and complete handle; folded rim; bubbly glass, black impurities
3	9	145	-	Greenish	Silver weathering, iridescence, sand deposits	Bowl-shaped oil lamp with crude loop handles	Complete handle; small strap handle and part of body
4	19	171/7	-	Greenish	Silver weathering, iridescence, sand deposits, pitting	Bowl-shaped oil lamp with wick tube	Base and tube fragment and rim fragment; concave bottom
5	9	236/1	H 31–33 Rim D 17–19	Greenish	Iridescence, sand deposits	Bowl-shaped oil lamp with wick tube	Complete wick-tube and part of bottom; infolded rim, tube twisted at bottom; black impurities; low quality fabric
6	19	179/1 179/3	Rim D 92 Stem D 22	Bluish-green	Silver weathering, iridescence, sand deposits, pitting	Bowl-shaped oil lamp with hollow stem	Complete, mended; flared rounded rim, curved wall; hollow stem, constricted at joint with bowl, flattened by pontil
7	9	236/2	Rim D 72	Light green	Iridescence, sand deposits, pitting	Bowl-shaped oil lamp	Rim fragment; uneven, rounded, thickened rim; rather thin wall; blowing spirals
8	19	179/2	Stem D 12	Bluish-green with yellow streaks	Silver and black weathering, iridescence and sand deposits	Bowl-shaped oil lamp with hollow stem	Almost complete stem; hollow stem, flattened by pontil

specimens, including numerous beads, a pendant, a bracelet and two seals, were selected for this publication (Figs. 23, 24).

Glass Beads

The corpus from Khirbat el-Ni'ana comprises simple unadorned beads, as well as beads decorated with trails or spots. These types of beads are generally attributed to the fourth–fifth centuries. The glass beads were generally manufactured by winding or folding a gob of glass around a rod (probably of metal), followed by tooling (for a general discussion on the technology of ancient glass beads, see Spaer 2001:45–48). Most of the beads display low

quality glass and careless workmanship, with pronounced marks of unfinished tooling. The beads were possibly produced locally, together with glass vessels found at the site.

The plain cylindrical and hexagonal beads (Nos. 24–30) were probably drawn from glass tubes and tooled, whereas the faceted beads (Nos. 31–33) were probably rod-formed and then molded or ground. The glass is largely translucent and of various tinges of deep bluish-green; it is of better quality than the beads discussed above.

Plain Beads (Fig. 23:1–12).— These beads are mostly opaque and occasionally translucent.

The colors are dark, generally blue and green appearing as black; it is difficult to distinguish the colors of the beads due to their poor preservation. Numbers 1–7 are rounded squat beads of uneven shapes and have a characteristic conical perforation. Number 1 bears pronounced tooling marks, evident on its

wavy surface. Numbers 8–12 are small beads of undefined shape with pronounced tooling marks; No. 12 probably had a trailed body.

Trailed Beads (Fig. 23:13–21).— Numbers 13–20 are decorated with an applied trail in a wavy pattern. Their irregular bodies are rounded

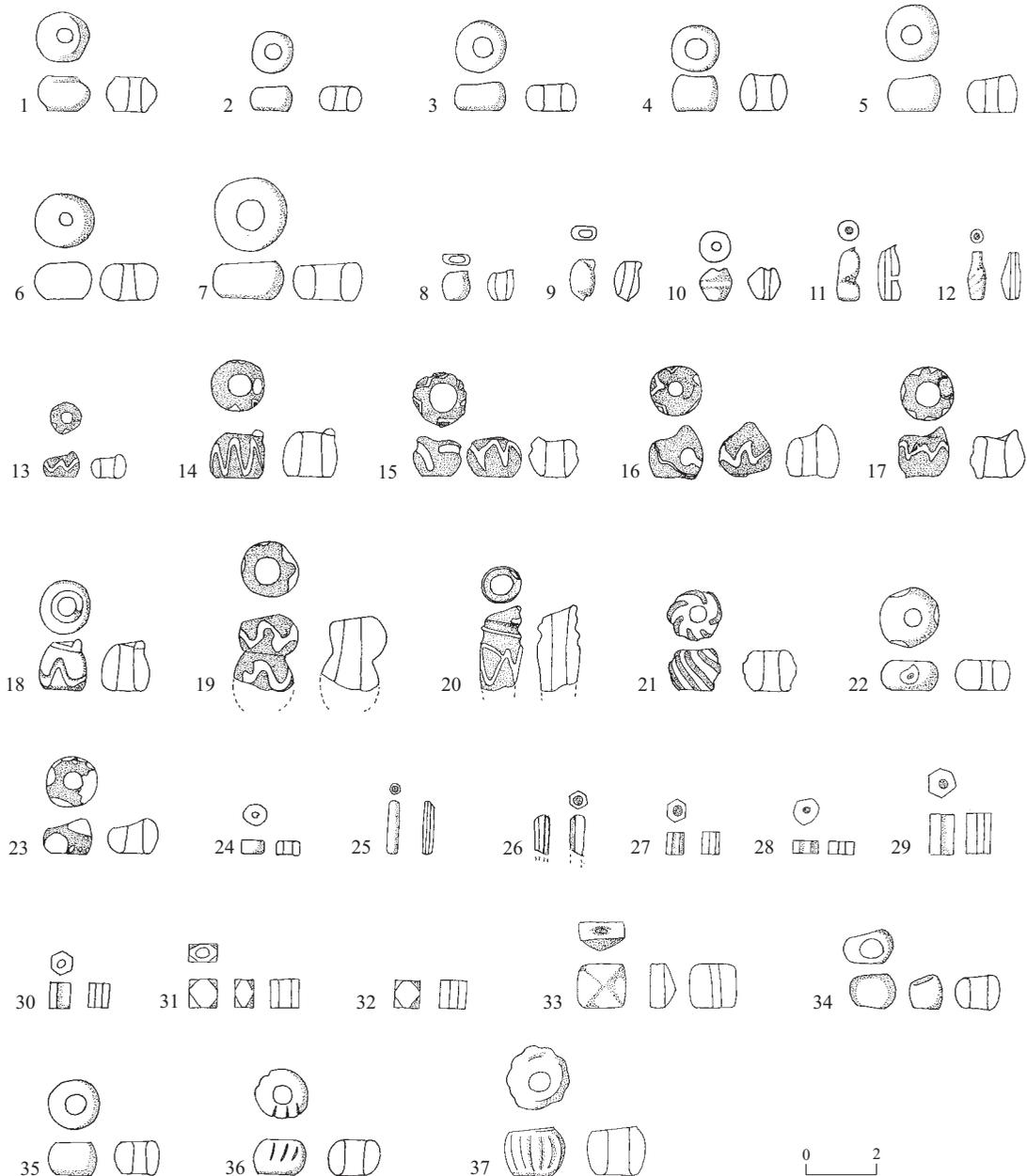


Fig. 23. Beads.

◀ Fig. 23

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	57	295	H 11 D 14	Dark blue, opaque	Silver iridescence, lime deposits, pitting	Plain, irregularly rounded	Conical perforation; pronounced tooling marks
2	53	273	H 7 D 12	Uncertain dark, opaque	Lime deposits, severe pitting	Plain, irregularly rounded and squat	Conical perforation
3	56	278	H 8 D 15	Dark blue, dull surface	Lime crust, pitting	Plain, irregularly rounded and squat	Flattened, polished at ends
4	57	295	H 10 D 14	Uncertain dark, opaque	Lime deposits, severe pitting	Plain, irregularly rounded and squat	Conical perforation
5	53	271	H 11 D 15	Dark blue(?), dull surface	Lime deposits, pitting	Plain, irregularly rounded and squat	Irregular
6	56	278	H 10 D 16	Greenish, transparent	Silver iridescence, lime deposits, pitting	Plain, rounded	Small conical perforation
7	53	271	H 11 D 20	Uncertain dark, opaque	Lime deposits, pitting	Plain, rounded and squat	Wide perforation, D 9 mm
8	53	271	H 8 W 8	Yellowish, transparent	Iridescence, pitting	Plain, oval, flattened on both sides	Almost complete, pronounced uneven seam; black impurities
9	53	273	H 12 D 6	Uncertain, transparent	Black and gold crust, severe pitting	Plain, oval, unevenly flattened on both sides	Almost complete, pronounced uneven seam
10	57	295	H 9 D 10	Yellowish-green, transparent	Black and silver crust, pitting	Plain, biconical	Small perforation, pronounced uneven seam
11	53	271	H 15 D 6	Dark blue, dull surface	Black rusty weathering, silver iridescence, lime deposits, severe pitting	Plain, cylindrical	Irregularly tooled with hole at one side
12	53	271	H 13 D 6	Dark blue, dull surface	Black rusty weathering, silver iridescence, lime deposits, severe pitting	Plain, piriform	Irregular, small perforation, traces of spiral trailing(?)
13	59	1353	H 6 D 10	Uncertain dark; white trail	Lime deposits, severe pitting	Irregularly rounded, trailed	Small, wavy trail-design
14	57	295	H 14 D 15	Uncertain dark; white trail	Lime crust, severe pitting	Almost cylindrical, trailed	Zigzag trail, its end-blob on edge; conical perforation
15	57	289	H 11 D 14	Uncertain dark; white trail	Black weathering, lime deposits, severe pitting	Irregularly rounded, trailed	Zigzag trail, wide conical perforation, D 8 mm
16	57	295	H 10 D 15	Uncertain dark, dull surface; yellow and white trail	Black crust, pitting	Uncertain shape, trailed	Irregular; wavy trail

Fig. 23 (cont.).

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
17	56	278	H 14 D 14	Uncertain dark; yellow and white trail	Iridescence, yellow crust, severe pitting	Irregularly rounded, trailed	Irregular; wavy trail; conical perforation
18	57	295/1	H 14 D 14	Uncertain dark; uncertain color of trail	Black rusty weathering, severe pitting	Piriform, trailed	Wavy trail, its end-blob on edge; conical perforation
19	57	295/2	H ~30 D 18	Uncertain, dark, dull surface; red trail	Black rusty crust, severe pitting	Double, rounded, trailed	Partly missing; irregular; wavy trail; wide cylindrical perforation
20	57	295/3	Preserved H 23 D 12	Dark blue; white trail	Yellow crust, pitting	Cylindrical	Partly missing; irregular; zigzag trail
21	57	295/4	H 12 D 15	Red, blue and white trail, opaque	Rusty crust, severe pitting	Rounded, trailed	Trails wound in spiral design; conical perforation
22	53	271/1	H 8 D 16	Dark green(?), opaque, remains of yellow, greenish and white 'eyes'	Severe pitting	Rounded and squat, 'eye' (?) pattern	Flattened on both sides; three rounded 'eyes'; poor preservation
23	53	271/2	H 8–10 D 13–14	Dark blue, opaque, white-yellow 'crumbs'	Severe pitting	Rounded, 'crumb' pattern	Small and medium irregular 'crumbs'
24	56	278/1	H 4 D 6	Dark blue(?), translucent	Silver and black crust, iridescence	Cylindrical	Small, irregular
25	56	278/2	H 15 D 4	Bluish-green, translucent	Black crust, severe pitting	Cylindrical,	Missing at top
26	56	278/3	D 4	Bright greenish (emerald), translucent	Silver iridescence, pitting	Hexagonal section	Irregular, partly missing
27	53	271/3	H 5 D 8	Bright greenish (emerald), translucent	Silver and black crust, pitting	Hexagonal section	
28	53	271/4	H 7	Colorless with yellowish tinge, translucent	Silver crust, pitting	Hexagonal section	Small, irregular; small perforation; tooling marks
29	45	1267	H 8 D 12	Bright green, translucent	Silver weathering, pitting	Hexagonal section	
30	56	278	H 8 D 6	Bluish-green, translucent	Silver weathering, pitting	Hexagonal section	
31	57	295	H 8 L 8 W 5	Blue, translucent	Silver iridescence, pitting	Faceted	Each of four facets bears lozenge framed by triangles in corners; wide perforation, D 3 mm
32	59	1359	H 7 L 6	Blue, translucent	Silver crust, pitting	Faceted	Broken in two; each of four facets bears lozenge framed by triangles in corners

Fig. 23 (cont.).

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
33	59	1353	H 6 L 12/14	Bright greenish (emerald), translucent	Silver iridescence, lime deposits, pitting	Faceted	Almost square, flattened bottom; single perforation
34	53	273	H 10 D 12	Light bluish-green	Severe pitting	Faience(?); rounded, unevenly flattened on both sides	Conical perforation
35	56	278	H 13 D 12	Light bluish-green	Severe pitting	Faience(?); rounded	
36	57	295	H 15 D 14	Light bluish-green	Severe pitting	Faience(?); rounded, ribbed	Uneven diagonal ribs
37	53	271	H 14 D 16	Light bluish-green	Lime deposits, severe pitting	Faience(?); rounded, ribbed	Uneven vertical ribs; wide conical perforation, max. D 7 mm

and squat. Number 19 is a double rounded bead; No. 20 has a cylindrical body. The colors of the body are generally unidentifiable, probably dark blue or green, while the trails are white and yellow. The fabric quality of both the beads and the trails is very poor.

Trailed beads were particularly common in the Late Roman period. A group of similar beads was discovered at Horbat Qastra, in tombs dated mostly to the Roman and Byzantine periods (Spaer 2001:102–103, Fig. 47).²³ A bead resembling Nos. 14–17 was unearthed in a rectangular tomb at Ashqelon, dated to the fourth–fifth centuries (Gorin-Rosen 2002a:87*–88*, Fig. 136:16). Beads of this type were also found in burial caves in the Galilee, e.g., a bead resembling No. 20, from Cave 3 at Kisra, dated to the fourth–early fifth centuries (Stern 1997:126, Fig. 14:75).

Number 21 is exceptional in its elaborate, yet hardly preserved pattern: an originally red field adorned with spiral bands of a blue trail, framed by thinner white trails.

'Eye' and 'Crumb' Beads (Fig. 23:22, 23).— These barrel-shaped beads are simple versions of their archetypes. Bead No. 22, poorly

preserved, has an 'eye' pattern, probably made of three colors. Number 23 is a 'crumb' bead, the likes of which were uncovered, e.g., in Cave 1 at Akeldama (Winter 1996:113–114, Fig. 7.2:10–12, and see further references therein).

Cylindrical, Hexagonal and Faceted Beads (Fig. 23:24–33).— Numbers 24–30 are plain cylindrical and hexagonal beads. Beads resembling No. 29 were found in Burial Cave 2 at Khirbat el-Shubeika, dated from the Late Roman to the Umayyad periods (Katsnelson 2002:326, Fig. 2:9).

Beads Nos. 31–33 were molded or ground into facets, imitating precious stones. Numbers 31 and 32 are complex versions, named 'cornerless cube' beads, typical of many Roman and post-Roman sites in the region (Spaer 2001:64, 74, Nos. 48, 49). Similar beads were recovered from Cave 3 at Kisra, dated to the fourth–early fifth centuries (Stern 1997:126, Fig. 14:72, 73).

Number 33 is a larger pyramidal bead with a single perforation. This type of bead, generally used as a double-perforated spacer, is dated around the third century and is considered

a local product. Parallels are known, e.g., from Tomb XV at Ḥanita, Bet She'arim and Jerusalem (Spaer 2001:75, No. 53).

Faïence(?) Beads

These rounded squat beads (Fig. 23:34–37) are severely corroded. Although no glaze survived on the surface, they may have been made of faïence. These beads were formerly referred to as 'frit beads'. Numbers 34 and 35 are plain, whereas Nos. 36 and 37 are tool-ribbed. Similar plain and ribbed beads are common finds in burial contexts of the Late Roman and Byzantine periods, e.g., from Cave 1 at Akeldama (Winter 1996:114–115, Fig. 7.2:17, 18, and see further references therein).

Miscellaneous Small Objects

Pendant (Fig. 24:1).— This is a small conical pendant with a loop twisted where it joins the body. It is a crude version of a familiar local type known as 'simple looped pendant'. Similar pendants were discovered, e.g., in Burial Cave 1 at Khirbat el-Shubeika, dated to the Late Roman and Byzantine periods (Katsnelson 2002:323, Fig. 1:24, 25) and in the tombs of the fourth–sixth centuries at Ḥorshat Ṭal (Spaer 2001:176, Fig. 81, two top rows).

Bracelet (Fig. 24:2).— This is a fragment of a circular-sectioned twisted bracelet. This type of twisted monochrome bracelet is broadly considered pre-Islamic (Spaer 1988:59, Fig.

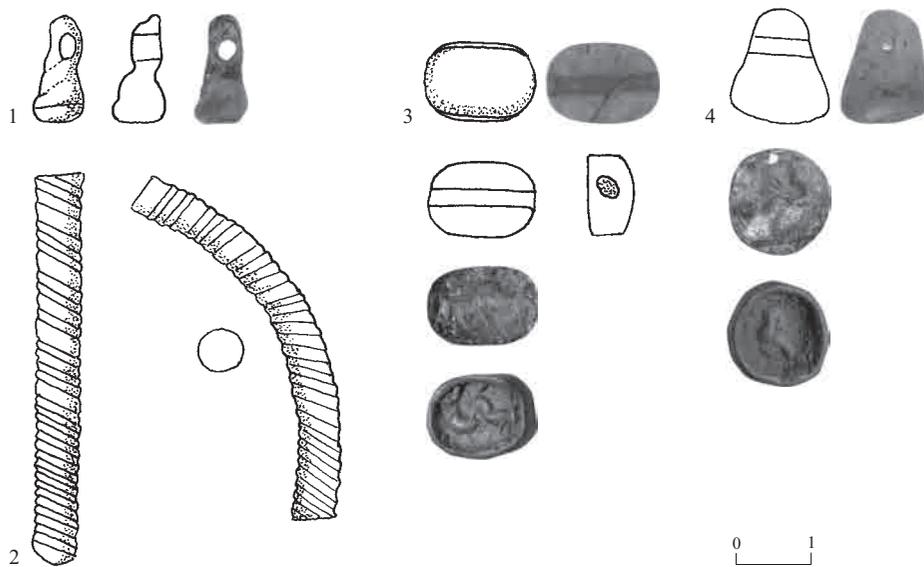


Fig. 24. Miscellaneous small objects.

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	56	277	H 14 D 6	Yellowish	Silver iridescence, lime deposits, pitting	Conical pendant	Irregular, twisted body; horizontal perforation
2	9	152	-	Purple, translucent	Silver and black iridescence	Monochrome twisted bracelet	Circular section; twisted, densely-set ribs
3	53	273/1	W 10 L 15	Greenish-blue, translucent	Silver iridescence, severe pitting	Tooled, scaraboid seal with design	Semicircular section; single perforation; zoomorphic design
4	53	273/3	H 17 W 13	Greenish-blue, translucent	Silver weathering, lime deposits, pitting	Tooled, conical seal with design	Horizontal perforation; anthropomorphic design

11). A similar bracelet, dated to the Late Roman–Byzantine periods, came from Giv‘at Yasaf (Gorin-Rosen 1999:137, Fig. 1:4), and another was unearthed in the ‘Dominus Flevit’ compound, in Tomb 221 (Bagatti and Milik 1958: Fig. 37:34), probably dated to the middle or the second half of the third century (Barag 1970:29).

Seals (Fig. 24:3, 4).— These two pieces were made of bright hues of greenish-blue translucent glass. The quality is quite mediocre, judging by their carelessly executed shapes and designs. These two perforated seals bear intaglio images; they may have been used as either seals or amulets. Seals of this type are usually dated to the Persian period (Ornan 2001: Cat. Nos. 505–519) and were probably produced in a Syro-Phoenician workshop (Bianchi 2002:174, NE. 27a–d, and see therein a group of contemporary specimens from the Borowski collection). These specimens are the earliest glass objects recorded at Khirbat el-Ni‘ana, yet they correspond to the Late Roman–early Byzantine corpus, reused as beads or amulets.

Seal No. 3 is scaraboid and perforated lengthwise. It depicts a molded, rather than engraved, unclear intaglio scene, portraying two left-facing animals: a lion(?) with a raised tail pursuing another animal, its form uncertain. No parallels to this scene were located. Quite a few Persian-dated glass scaraboids were discovered in Israel, including some from the vicinity of Khirbat el-Ni‘ana (Brandl 2000).

Number 4 is a conical seal with a small perforation at the top. It has a molded intaglio motif depicting a long-bearded male head facing right. Conical glass seals were quite common in the eastern Mediterranean region. A very similar seal of unknown provenance, in the British Museum collections, dates to the late sixth–late fourth centuries BCE (Barag 1985:58, No. 106). A conical seal depicting a sphinx found at Dor dates to the late sixth–fifth centuries BCE (Spaer 2001:216, Fig. 90). Another contemporary seal depicting a lion has been recently published from a tomb at Ḥorbat Zikhrin (Jackson-Tal 2007: Fig. 3:1).

REMAINS OF GLASS PRODUCTION

The remains of glass production unearthed during the 1996–1997 excavation in several locations were rather scant compared with the large quantity of glass vessels. These remains include deformed vessels, glass drops, several chunks of raw glass and a few fragments of furnace debris (Fig. 25). However, these constitute only some of the types of evidence expected to be found in a glass workshop location.

Completely missing from the site (from both the 1996–1997 and the 1991 seasons) are the most diagnostic remains of glass blowing, which indicate the location of a furnace. These are moils, also called ‘overblows’—the glass originally in contact with the blowpipe, and pontil knock-offs—the hot glass blobs affixed to the pontil and used to attach it to the vessel; both turn into cullets after the vessel is removed from the pontil.

On the whole, the production debris from Khirbat el-Ni‘ana resembles that discovered at the Jalame glass workshop, dated to the second half of the fourth century (Weinberg 1988, and see below for specific details). The complete late-Byzantine glass workshop unearthed at Bet She’an in the past decade is also a good example and a source of comparable information (Gorin-Rosen 2000a:59–60).

Deformed Vessels (Fig. 25:1–4).— A few fragments of deformed vessels were found at the site. The deformations were probably the outcome of faults during the blowing or annealing processes. All the deformed vessels belonged to types prevalent in the assemblage in rather large quantities. For instance, No. 1 is a bottle with a wide funnel-shaped mouth decorated with thick trails, similar to Fig. 13:4; the rim and handle fragment, No. 2, belonged to a jug, probably similar to those in Figs. 10:8 and 11:4; the deformed upper-part of a double kohl tube, No. 3, resembles those in Figs. 17–20. Except for these recognizable vessels, the excavation yielded additional deformed necks



Fig. 25. Remains of glass production.

◀ Fig. 25

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
1	15	158	-	Greenish-blue	Silver and brown weathering, sand deposits	Fragment of deformed rim; large bottle with funnel-shaped mouth decorated with thick wound trails
2	9	152	-	Light greenish-blue	Silver weathering, iridescence and sand deposits	Fragment of deformed neck and handle
3	43	252	-	Greenish-blue	Silver and brown weathering, iridescence and sand deposits	Fragment of deformed vessel, probably a double tube with infolded rim; black impurities; low quality glass
4	19	191	-	Greenish-blue	Silver and brown weathering, iridescence and sand deposits	Fragment of deformed neck, partly double-walled
5	9	163	L 55	Greenish	Silver crust partly removed, iridescence and severe pitting	Lower part of elongated cylindrical glass drop with rounded edge; vertical tool marks at mid-height
6	-	3	L 50	Greenish-blue	Silver weathering, iridescence, sand deposits and severe pitting	Lower part of elongated cylindrical glass drop with rounded edge; very bubbly glass
7	43	257	L 70	Greenish with yellowish streaks	Silver and brown weathering, iridescence, sand deposits and severe pitting	Lower part of elongated cylindrical glass drop with rounded edge; bubbly glass
8	9	152	-	Greenish	Silver weathering, iridescence and sand deposits	Fragment of deformed drop with remains of metal from blow pipe or pontil
9	19	165	L 100	Greenish-blue	Slight silver weathering and iridescence	Raw glass chunk, broken, clear, very fine glass
10	43	257	L 60	Bluish-green with yellowish streaks	Slight silver weathering, iridescence and pitting	Raw glass chunk, broken, clear, bubbly glass
11	51	274	L 60	Bluish-green with yellowish streaks	Silver weathering, iridescence, sand deposits and pitting	Raw glass chunk, broken, clear glass
12	43	296	L 50	Greenish	Slight silver weathering, iridescence and sand deposits	Raw glass chunk, broken, clear glass
13		3	L 50	Greenish with yellowish-brown streaks	Slight silver weathering, iridescence and sand deposits	Raw glass chunk, broken, clear glass
14	43	296	L 50	Greenish with yellowish-brown streaks	Slight silver weathering, iridescence and sand deposits	Raw glass chunk, broken, clear glass
15	5	125	L 55	Yellowish-brown with green streaks	Slight silver weathering and iridescence	Raw glass chunk, broken
16	45	1259	L 35	Greenish	Dull surface, iridescence and sand deposits	Small raw glass chunk, dull glass with lime impurities
17	-	4	L 40	Greenish-blue and green; not homogeneous	Silver and brown weathering, iridescence and sand deposits	Small raw glass chunk, broken, very clear glass
18	-	4	L 55	Greenish with yellowish streaks	Silver and brown weathering and sand deposits	Raw glass chunk, broken, clear glass

Fig. 25 (cont.).

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Description
19	-	4	L 50	Bluish	Silver and brown weathering and sand deposits	Raw glass chunk, broken, clear glass
20	7	1015	L 30	Bluish-green	Silver weathering, iridescence and sand deposits	Small raw glass chunk with remains of furnace floor on lower part; dull glass with lime impurities
21	-	6	L 85	Light blue, opaque; white and green streaks	Sand deposits	Fragment of furnace wall, with some glass on side, most not vitrified
22	22	1126	-	Bluish	Silver weathering, iridescence and sand deposits	Furnace floor with glass layer on top

and body fragments (not illustrated). Deformed vessels were also discovered in the factory dump at Jalame (Weinberg 1988:35, Fig. 3-12).

Glass Drops (Fig. 25:5–8).— The elongated glass drops are characterized by a cylindrical or squat shape with a rounded edge and are all broken at the top. They are made of greenish-blue, bluish-green and greenish glass and some have yellowish streaks. Although some of the drops resemble the solid stem of bowl-shaped oil lamps, it is obvious that these pieces are production debris rather than fragments of vessels.

Similar drops, identified as ‘test drops’, were found in the debris of the Jalame glass workshop. Weinberg singled them out as the most interesting group of objects discovered in the factory dump, easily explained by reference to modern glassmaking procedures: “When a new batch is prepared, a small amount of glass is taken from the furnace on the end of a pontil and allowed to hang down, thus forming an elongated drop. By examining the quality and viscosity of this drop, the glassmaker determines whether the batch is sufficiently melted and the quality of the glass satisfactory.” (Weinberg 1988:36, Pl. 3-8B). These glass drops, which “seem not to have been noted at ancient or medieval glasshouse sites” (Weinberg 1988:36), have so far served as a significant indication of glassmaking traditions in Palestine during the Late Roman and Byzantine periods.

In addition to these well-shaped drops, irregular drops with remains of metal from the blowpipe or the pontil were also collected at the site (No. 8). Similar wasters were found at Jalame, identified as “blobs pulled out and tooled” (Weinberg 1988:35: Fig. 3-10).

Raw Glass Chunks (Fig. 25:9–20).— Numerous raw glass chunks were unearthed at the site. They range in size from 30 mm long to 100 mm long. Most of the chunks are of bluish-green hues; some are green with yellowish streaks; others are yellowish-brown with green streaks. The glass is characterized by a fine, clear fabric. One piece displays a lower-quality fabric, less clear and dotted with impurities (No. 16), another bears the remains of the tank floor (No. 20). Most of these chunks were broken, as attested by Nos. 9–15 and 17–19.

Large quantities of raw glass chunks are a typical find around glass workshop locations. Piles of lumps were stored at the Bet She’an workshop, in the main room near the furnace, against the walls, in the storeroom and in the courtyard (Gorin-Rosen 2000a:59–60).

Raw glass chunks were traded and purchased for remelting in furnaces; they are mentioned in ancient sources, e.g., the Babylonian Talmud (Weinberg 1988:25, also see n. 2).

Debris from Glass Furnaces (Fig. 25:21, 22).— Several pieces of dismantled glass



Fig. 26. Glass vessels from the 1991 excavation.

No.	Fig.	No.	Fig.
1	29:1	9	33:7
2	31:3	10	34:3
3	31:2	11	34:9
4	31:5	12	35:9
5	31:6	13	35:1
6	31:4	14	35:2
7	33:4	15	35:5
8	33:5	16	35:4

furnaces were unearthed at Khirbat el-Ni'ana. They convey the conglomerate structure of the severely-heated stone, with some veins of partially-vitrified glass and opaque layers (No. 21).

The site also yielded fragments of the furnace floor, with a glass layer on top (No. 22). Occasionally, glass that seeped during the production process appeared in small holes and cracks in the stone. These specimens of dismantled glass furnaces indicate that the raw glass chunks were melted in limestone containers of a kind also used in the Jalame glass workshop (Weinberg 1988:31).

THE 1991 EXCAVATION

INTRODUCTION

Although smaller and less diverse than the 1996–1997 assemblage, the group of glass vessels from the salvage excavation conducted at the site in 1991 by Nitza Bashkin (1995:59–61) is significant in expanding the corpus of types produced in the local workshop (see Preface).²⁴

THE GLASS VESSELS OF THE LATE ROMAN AND EARLY BYZANTINE PERIODS

Some two hundred fragments, including four complete vessels, were collected during the 1991 excavation (Fig. 26). About 80% of the vessels were discovered inside a pool (L141) in the industrial area (Bashkin 1995:59) and three were retrieved from another pool (L143). The rest of the glass finds were scattered at the site. Seventy-four glass vessels are hereby presented, following the typology of the 1996–1997 glass finds (see above); vessel types studied therein are briefly recorded, while those appearing only in the 1991 group are discussed in length.

All the vessels were blown, generally of light green, greenish-blue and bluish-green glass. A few vessels are yellowish-green, olive-green and colorless. Several vessels are decorated with trails, either blue and turquoise or of the same color as the vessel.

The vessels bear a silver layer of weathering and iridescence, and are generally covered with sand deposits. The glass is very bubbly with black impurities and blowing spirals, the quality of the fabric is rather low and the workmanship often careless.

Bowls

Shallow Bowls with Rounded Rim (Fig. 27: 1, 2).— These bowls usually had a low hollow pushed-in ring base, such as Fig. 30:5–7. This type of bowl was very common during the fourth century. Numerous examples were unearthed in the 1996–1997 excavations (Fig. 1:1–4).

Bowls with Outfolded Rim (Fig. 27:3–8).— These bowls are more varied and common, and appear in a small shallow version (No. 3) and a deeper one (No. 4). Numbers 6–8 are characterized by an upright rim with a wide fold. Numbers 5 and 6 were discovered together with a low hollow ring base (Fig. 30:6); this base belonged to the same bowl as either No. 5 or No. 6. These bowls resemble the ones in the 1996–1997 assemblage (Fig. 2:1–6).

Vessel with Infolded Rim (Fig. 27:9).— As infolded rims are generally common on bottles and jugs, yet very rare on bowls (Weinberg and Goldstein 1988:50), this piece is either a plate or a deformed vessel. A very similar rim (not illustrated; light bluish; L9, B152) was uncovered in the 1996–1997 season, in the same basket with glass production remains (Fig. 25:2, 8).

Deep Bowls with Double Fold Below Rim (Fig. 28).— These bowls display uniformity in shape, fabric and workmanship characteristic of a craftsman's fingerprint, suggesting they are the work of a local artist. A wider range of variations is evident among the bowls from the 1996–1997 assemblage (Fig. 3).

Shallow Bowls with Cut-Off Rim (Figs. 26:1; 29).— These bowls, known as 'segmental bowls', usually bear horizontal incisions or

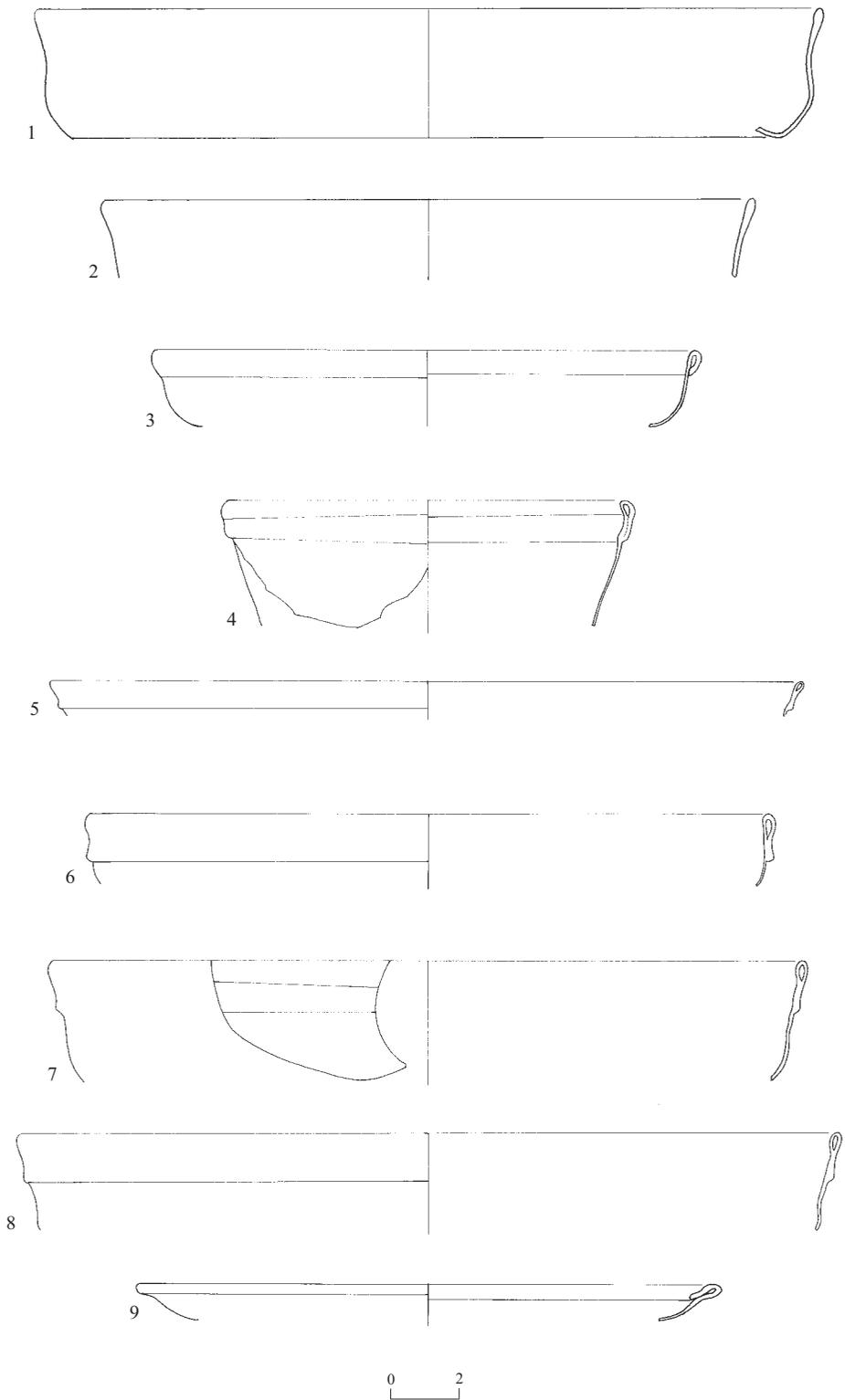


Fig. 27. Various bowls.

◀ Fig. 27

No.	Loc.	Reg. No.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	141	20	Rim D 230	Light green	Silver weathering and iridescence	Shallow bowl with rounded rim	Third of rim and part of wall; thin wall; polishing marks on ext.
2	141	58	Rim D 190	Light greenish-blue	Silver weathering and iridescence	Shallow bowl with rounded rim	Small rim fragment
3	141	52	Rim D 160	Very light green	Silver weathering, iridescence and sand deposits	Shallow bowl with outfolded rim	Rim and wall fragment; thin wall; bubbly glass; polishing marks on ext.
4	141	54	Rim D 119	Light bluish	Silver weathering	Bowl with outfolded rim	Third of rim and part of wall; uneven fold, thin wall; bubbly glass
5*	143	1	Rim D 220	Light bluish-green	Gold and silver weathering, iridescence	Bowl with outfolded rim	Rim and wall fragment; very thin wall; very bubbly glass; low quality fabric
6*	143	2	Rim D 195	Light bluish-green	Gold and silver weathering, iridescence	Bowl with outfolded rim	Almost half of rim and part of wall; very thin wall; very bubbly glass; low quality fabric
7	141	57	Rim D 220	Light greenish-blue	Iridescence	Bowl with outfolded rim	Small rim and wall fragment; thin wall; bubbly glass
8	141	22	Rim D 238	Light bluish	Silver weathering and iridescence	Bowl with outfolded rim	Small rim and wall fragment; thin wall; bubbly glass with black impurities
9	141	49	Rim D 170	Light greenish-blue	Silver weathering and iridescence	Shallow bowl with infolded rim	Almost half of rim and part of wall; thin wall; bubbly glass with black impurities

* One of these two rims belonged to the same vessel as base Fig. 30:6, discovered in the same basket; the fabric of all three is very similar.

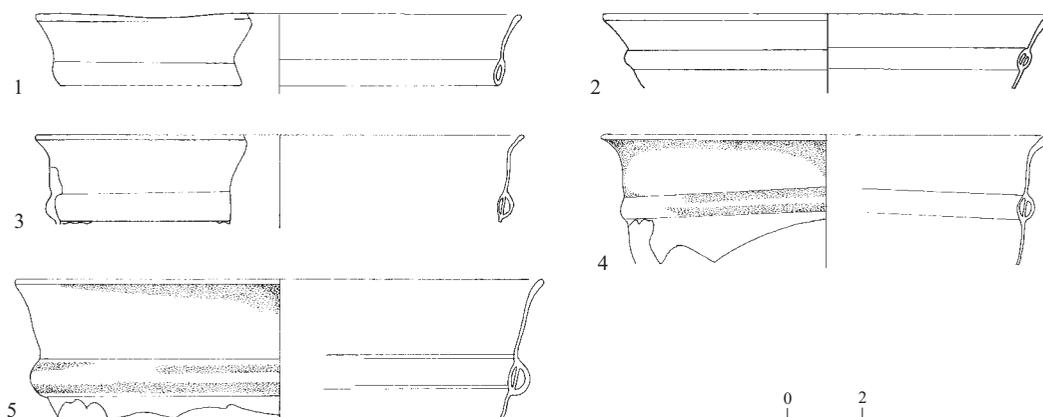


Fig. 28. Bowls with double fold below rim.

◀ Fig. 28

No.	Loc.	Reg. No.	Dimensions (mm)	Color	Weathering	Description
1	141	50	Rim D 129	Light yellowish-green	Silver weathering and iridescence	Rim and wall fragment; hollow double fold, very thin wall
2	141	51	Rim D 120	Yellowish	Silver weathering and iridescence	Rim and wall fragment; hollow double fold, very thin delicate wall; polishing marks on ext.
3	141	53	Rim D 130	Light bluish-green	Silver weathering and iridescence	Rim and wall fragment; hollow double fold, very thin wall; bubbly glass; polishing marks on ext.; blowing spirals
4	141	19	Rim D 119	Light yellowish-green	Silver weathering and iridescence	Rim and wall fragment; uneven hollow double fold, very thin wall; bubbly glass; polishing marks on ext.
5	141	21	Rim D 140	Light bluish-green	Iridescence	Almost half of rim and part of wall; uneven, wide, hollow double fold, thin wall; bubbly glass with black impurities; polishing marks on ext.

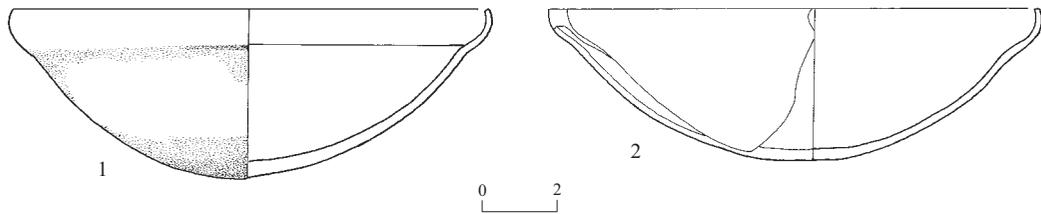


Fig. 29. Shallow bowls with cut-off rim.

No.	Loc.	Reg. No.	Dimensions (mm)	Color	Weathering	Description
1	141	12	H 45 Rim D 127	Light green	Silver weathering, iridescence and pitting	Complete profile, about a third missing; cut-off unworked rim, shallow hemispherical body, thick convex bottom with no pontil mark; bubbly glass; polishing marks on ext., usage marks and scratches on int.
2	141	27	H 40 Rim D 130	Light bluish-green	Silver weathering	Complete profile, about a half missing; cut-off unworked rim, shallow hemispherical body, thick convex bottom with no pontil mark; very bubbly glass; polishing marks on int. and ext., usage marks and scratches on int.

incised patterns. The fabric and workmanship of these bowls point to their local manufacture. The 1996–1997 assemblage has no exact parallel, yet includes a deeper bowl with a cut-off rim and incised lines (Fig. 4:1). A bowl of this type, although with a flared rim, was uncovered in a settling pool at Ras el-‘Ein, Shekhem, dated

to the fourth century (Magen 2005: Pl. 17:1). Several similar bowls were unearthed in Beirut and dated to the fifth century (Jennings and Abdallah 2001–2002:242, Fig. 6:11, 12, 15).

Shallow and Deep Bowls with Pushed-In Hollow Ring Base (Fig. 30).— The bases are

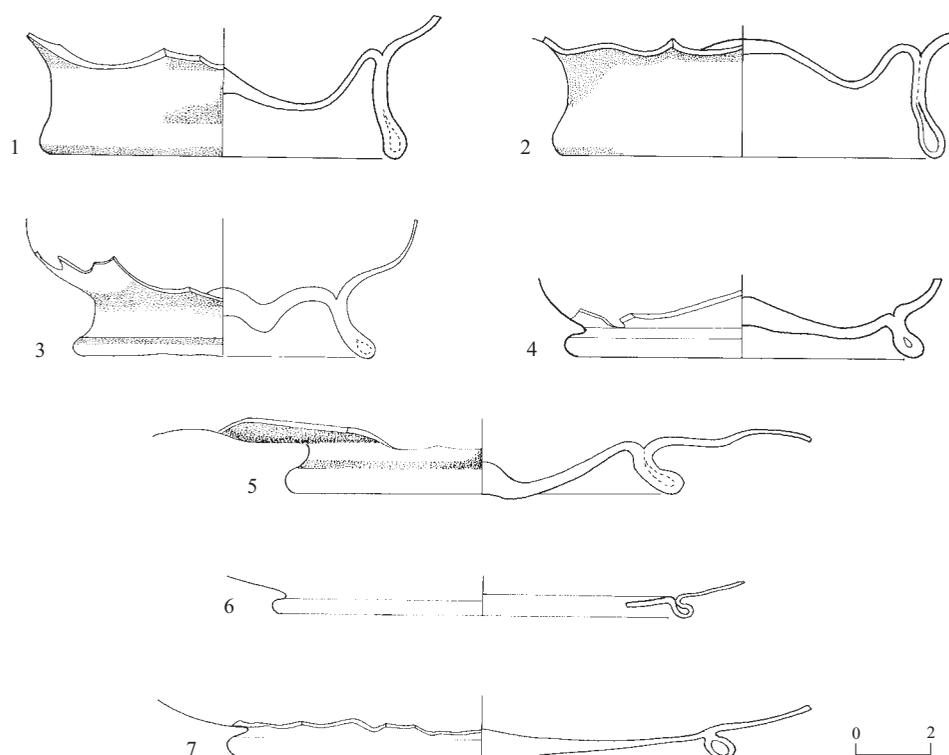


Fig. 30. Bowls with pushed-in, hollow ring base.

No.	Loc.	Bask./ Reg. No.	Dimensions mm	Color	Weathering	Description
1	132	561	Base D 97	Greenish-blue	Silver weathering, iridescence and pitting	Complete base and part of wall; pontil scar, D 13 mm
2	25	382/1	Base D 100	Greenish-blue	Silver weathering and iridescence	Almost complete base; pontil scar, D 15 mm; very bubbly glass
3	141	59	Base D 80	Light bluish	Silver weathering, iridescence and pitting	Complete base and part of wall; large pontil scar, D 17 mm, with remains of glass and metal from pontil
4	141	60	Base D 90	Yellowish-green	Silver weathering and iridescence	Almost complete base and wall; thick wall; pontil scar, D 14 mm, with remains of glass from pontil; bubbly glass; blowing spirals
5	141	7	Base D 103-105	Greenish-blue	Iridescence	Complete base and part of wall; thick convex bottom with pontil scar, D 13 mm; usage scratches on int.
6*	143	3	Base D 110	Light bluish-green	Gold and silver weathering, iridescence	Base and wall fragment; thin wall; very bubbly glass
7	141	8	Base D 130	Light bluish	Iridescence and pitting	Almost complete base, mended; thick flat bottom with pontil scar, D 15 mm

* This base belonged to the same vessel as one of two rims (Fig. 27:5, 6), discovered in the same basket; the fabric of all three is very similar.

classified by their height into high (Nos. 1–3) and low (Nos. 4–7) bases. Both subtypes were also discovered in the 1996–1997 excavation (only high bases are illustrated; Fig. 6:1–7). Bowls with low bases like Nos. 6 and 7 and rims similar to Fig. 27:1 were unearthed in Tomb XV at Ḥanita, dated to the second half of the third and first half of the fourth centuries (Barag 1978a: Fig. 7:15, 16).

Bowls with Trail-Wound Base (Figs. 26:2–6; 31).— This type of base, the most frequent base collected at the site, belonged to bowls and jugs of various shapes and sizes (see the group from the 1996–1997 season, Fig. 7 and discussion therein). Figure 31:1–5 belonged to large deep bowls. A similar bowl with a rim resembling those presented in Fig. 28, presumably from Syria and dated to the second half of the fourth

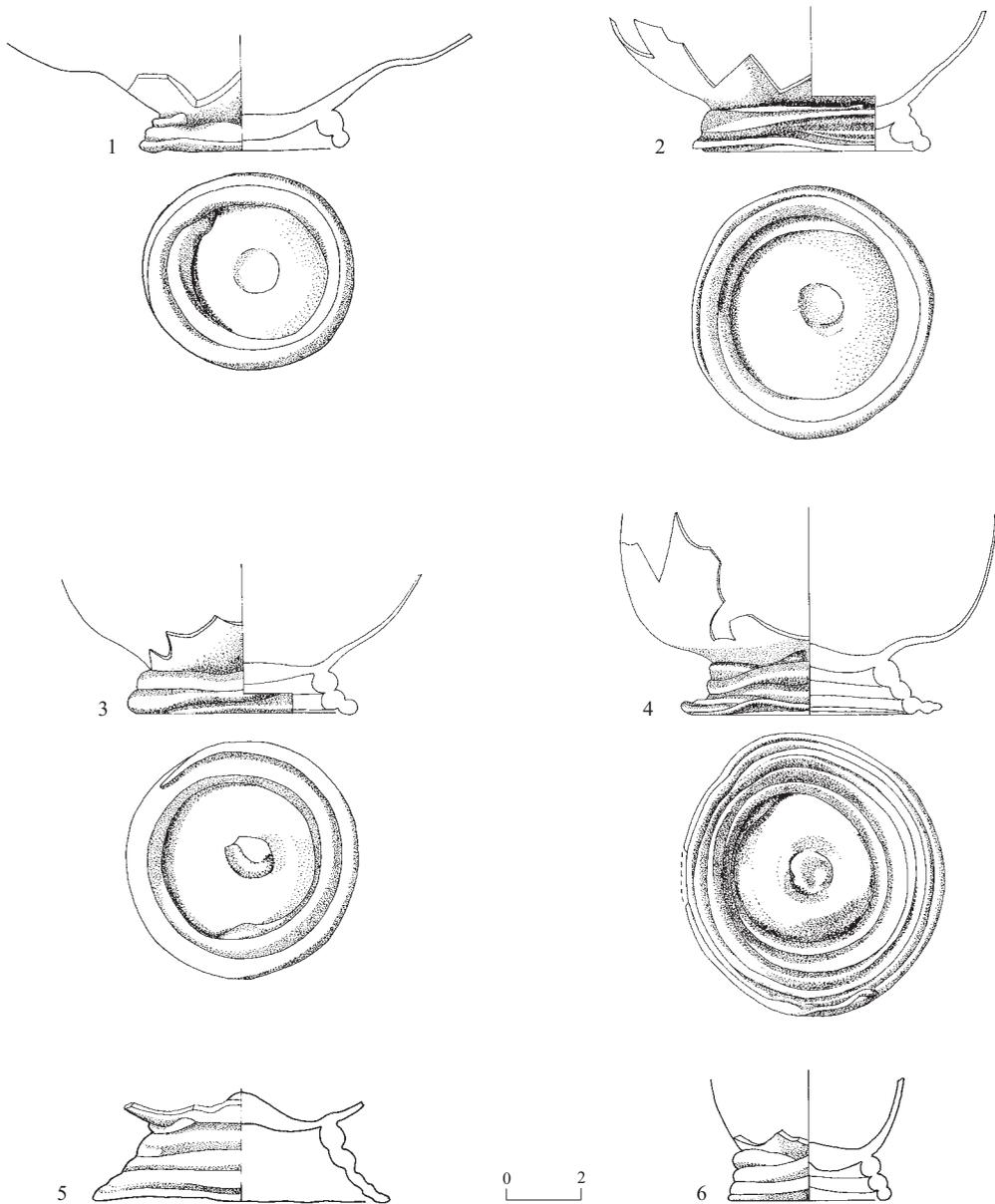


Fig. 31. Bowls with trail-wound base.

◀ Fig. 31

No.	Loc.	Bask./ Reg. No.	Dimensions (mm)	Color	Weathering	Description
1	132	607/4	Base D 56	Bluish-green	Silver weathering and iridescence	Complete base and part of wall; thin delicate wall; trail of same color, irregularly wound; pontil scar, D 12 mm
2	141	37	Base D 64	Bluish-green	Silver crust, iridescence and sand deposits	Complete base and part of wall; thin delicate wall; trail of same color, irregularly wound; pontil scar, D 12 mm; blowing spirals
3	141	61	Base D 60	Light bluish-green	Silver weathering, iridescence and sand deposits	Complete base and part of wall; thin wall; trail of same color; pontil scar, D 14 mm, off-center
4	141	9	Base D 60	Greenish	Silver weathering and iridescence	Complete base, mended; four irregular winds of trail of same color; pontil scar, D 14 mm; very bubbly glass
5	141	62	Base D 80	Light bluish-green	Silver weathering and sand deposits	Almost complete base; five winds of trail of same color; large pontil scar; blowing spirals
6	141	40	Base D 43	Greenish-blue	Silver weathering, iridescence and sand deposits	Complete base and wall; trail of same color; pontil scar, D 12 mm

century, is in the collections of the University of Pennsylvania Museum of Archaeology and Anthropology (Fleming 1999:95, Fig. E.44). Figure 31:6 is smaller and cylindrical or conical, and probably represents another closed vessel, such as a jug.²⁵

Beakers

Beakers with Solid Base (Fig. 32:1–3).— Bases resembling Nos. 1 and 2 were recovered during the 1996–1997 season (Fig. 8:4–6). Base No. 3 is slightly more convex, and may have belonged to a juglet. It was probably produced in the same method, yet for a vessel with different proportions.

Beakers and Jugs with Pushed-In Ring Base (Fig. 32:4–6).— Number 4 represents a rather small vessel, probably a small beaker or a juglet, while Nos. 5 and 6 probably belonged to jugs or juglets. Several bases of this type were found in the 1996–1997 excavations (Fig. 8:11–15).

Bottles and Jugs

Bottles and Jugs with Funnel-Mouth (Fig. 33:1–3).— These vessels are generally of small or medium size. Number 1 is very delicate and

of high quality fabric. Number 2 is broken; it could have belonged to a bottle with an infolded rim as No. 3, or to a bottle resembling Fig. 33:13, with its wide ridge just below the rim (see below). At least three similar vessels were unearthed in the 1996–1997 excavation (Fig. 11:9).

Bottles and Jugs with Funnel-Shaped Mouth and Narrow Neck (Figs. 26:7–9; 33:4–13).— In addition to the pieces presented below, the 1991 excavation yielded several more fragments of this type (not illustrated). The better preserved ones display a typical, usually triangular body (Fig. 33:4–7). Some have a constriction at the base of the neck (Fig. 33:4–10). Figure 33:5 bears shallow mold-blown ribs, resembling those on other bottles from this corpus (Fig. 35:5, 8) and on a bottle discovered in the 1996–1997 excavation (Fig. 14:7). Several are adorned with a single horizontal trail on the mouth (Fig. 33:7–12), exactly like their counterparts from the 1996–1997 season (Fig. 10:1–9). Figure 33:13, with its wide ridge just below the rim, resembles an example from the 1996–1997 season (Fig. 10:3). The decoration, fabric and workmanship of these vessels are very similar

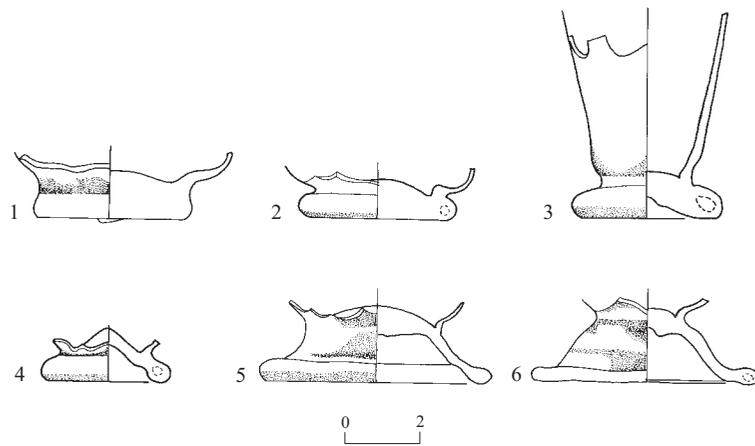


Fig. 32. Various bases.

No.	Loc.	Bask./ Reg. No.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	132	613/2	Base D 40	Green with olive green streaks	Silver weathering, iridescence, sand deposits and pitting	Beaker with solid base	Complete base and part of wall; thick flat solid base; pontil scar, D 13 mm, with remains of glass from pontil
2	141	63	Base D 36	Bluish-green	Silver weathering and iridescence	Beaker with solid base	Complete base and part of wall; thick flat solid base; pontil scar, D 13 mm, with remains of glass from pontil
3	141	42	Base D 38	Greenish	Silver weathering, iridescence and pitting	Vessel with thickened concave solid base	Complete base and part of wall; crude, thick pushed-in base; pontil scar, D 10 mm, with remains of metal from pontil
4	141	46	Base D 34	Light bluish	Silver weathering and iridescence	Vessel with small pushed- in ring base	Complete base; hollow ring base; scar with remains of glass from pontil
5	141	38	Base D 60	Light bluish	Silver weathering and iridescence	Vessel with pushed-in hollow ring base	Complete base and part of wall; thin wall; pontil scar with remains of glass from pontil; very bubbly glass; fine workmanship
6	141	39	Base D 60	Light grayish- green	Black and silver weathering and iridescence	Vessel with high pushed- in hollow ring base	Complete base and part of wall; thin wall; pontil scar with remains of glass from pontil; very bubbly glass; fine workmanship

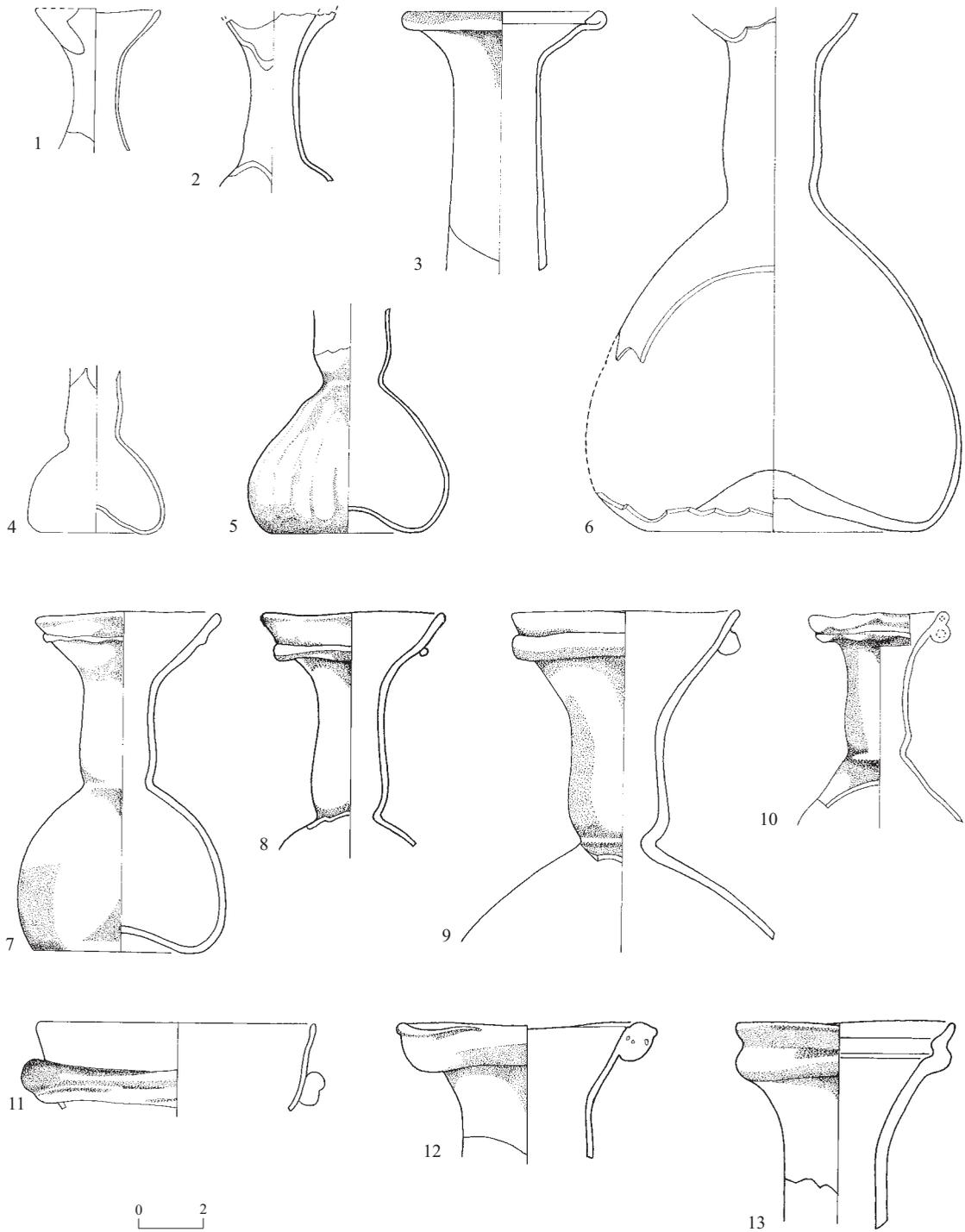


Fig. 33. Various bottles and jugs.

◀ Fig. 33

No.	Loc.	Bask./ Reg. No.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	141	29	Rim D 38	Colorless	Silver weathering, iridescence and pitting	Bottle or jug with funnel-shaped mouth and rounded rim	Rim and neck fragment; rounded rim, thin delicate wall; black impurities
2	132	607/2	-	Greenish-blue	Silver weathering, iridescence and sand deposits	Bottle or jug with funnel-shaped mouth	Mouth, neck and shoulder fragment, rim edge broken
3	142	247	Rim D 63	Olive green	Silver weathering, iridescence and pitting	Bottle or jug with funnel-shaped mouth and infolded rim	Almost complete rim and neck; short funnel-shaped mouth with unevenly infolded rim; bubbly glass with black impurities; blowing spirals
4	141	28	Base D 40	Light blue	Gold and silver weathering and iridescence	Bottle or jug with constricted neck and triangular body	Complete body and bottom, and part of neck; uneven constriction on neck, small body; pushed-in bottom with pontil remains
5	141	24	Base D 45	Light green	Silver weathering iridescence, sand deposits and pitting	Bottle or jug with constricted neck and triangular body	Complete body and bottom, and part of neck; triangular body with sparsely spaced, shallow, vertical mold-blown ribbing; concave bottom with no pontil scar; bubbly glass with black impurities; blowing spirals
6	141	10	Base D 95	Light green	Silver weathering and iridescence	Bottle or jug with constricted neck and triangular body	Neck and shoulder fragment and separate bottom fragment; constricted neck; thick pushed-in concave bottom with pontil scar, D 13 mm; bubbly glass
7	141	13	Rim D 57 Base D 53	Light bluish-green	Black and silver weathering, iridescence and pitting	Bottle or jug with constricted neck and triangular body	Almost complete bottle, missing at body, mended; flaring rounded rim with thin applied trail of same color; funnel-shaped mouth, short constricted neck, concave bottom with no pontil mark; bubbly glass; blowing spirals
8	141	4	Rim D 56	Light green; turquoise trail	Iridescence and sand deposits	Bottle or jug with constricted neck	Rim and neck fragment; short funnel-shaped mouth with thin trail of contrasting color; constricted neck, narrow body; bubbly glass with black impurities
9	141	32	Rim D 70	Greenish-blue	Black and silver weathering, iridescence and sand deposits	Bottle or jug with constricted neck and triangular body	Complete rim and neck, and part of shoulder; short funnel-shaped mouth with thick trail of same color; prominent constriction; thick wall
10	132	607/3	Rim D 43	Light green	Black and silver weathering, iridescence and sand deposits	Bottle or jug with constricted neck and triangular body	Complete rim and neck, and part of shoulder; unevenly infolded rim; short funnel-shaped mouth with uneven, thick trail of same color; prominent constriction, thick wall; bubbly glass with black impurities

Fig. 33 (cont.).

No.	Loc.	Reg. No.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
11	141	17	Rim D 86	Light green	Silver weathering, iridescence, sand deposits and pitting	Bottle with funnel-shaped mouth and single trail	Part of rim and complete trail; rounded rim, short funnel-shaped mouth with thick irregular trail of same color; bubbly glass with black impurities
12	141	35	Rim D 75	Bluish-green	Silver weathering, iridescence, sand deposits and pitting	Bottle with funnel-shaped mouth and single trail	Small rim and neck fragment; rounded rim with very thick, irregular trail; short funnel-shaped mouth; bubbly glass with black impurities; very careless workmanship
13	141	33	Rim D 68	Light green	Silver weathering, iridescence, sand deposits and pitting	Bottle with funnel-shaped mouth and ridge below rim	Complete rim and part of neck; irregular, rounded rim; funnel-shaped mouth with uneven, open ridge below rim; thick wall

and therefore suggest they are another product of the local glass workshop.

Jugs with Constricted Neck (Figs. 26:10; 34:1–3).— At least three vessels with their handles preserved may be confidently classified as jugs. Number 3 preserved its entire profile, with a characteristic triangular body and a constricted neck. The handle of No. 1 is drawn diagonally to the rim and misplaced, suggesting careless workmanship. A complete jug of this type and a small specimen with its handle broken were unearthed during the 1996–1997 excavation (Fig. 10:8, 9).

Bottles with Applied Trails on Mouth and Neck (Fig. 34:4–8).— Each of these bottles represents a subtype and is discussed separately. Although they resemble specimens from the 1996–1997 corpus, they are not identical and are therefore classified as subtypes.

Bottle No. 4 is thin-walled and delicate and has an upright rim and multiple thin trails wound horizontally on the neck. Similar bottles, though with a thicker wall, were discovered at Jalame, some in the factory dump, dated to the second half of the fourth century, and others

in the Byzantine winepress (Weinberg and Goldstein 1988:70–71, Fig. 4-32:272, 274).

Number 5 has a slightly flared rim and a wide cylindrical neck decorated with thin wound trails, three of which survived. Number 6 has a wide funnel-shaped mouth with multiple trails wound on its upper part, a short narrow neck and a slanted shoulder.

Number 7 is a funnel-shaped mouth decorated with a few wound trails. A similar piece was found at Jalame and identified as different than the local types (Weinberg and Goldstein 1988:71–72, Fig. 4-32:282).

Number 8 represents another subtype with an upright rim and a cylindrical neck decorated with trails on its upper portion and on its lower end, above the shoulder. The yellowish color of this bottle is rare among the vessels in the assemblage, yet it is identical to that of Fig. 34:10, suggesting both fragments belonged to the same bottle.

Spouted Bottles (Figs. 26:11; 34:9, 10).— These bottles are similarly shaped and probably represent another local type. Number 10 may have belonged to the same bottle as Fig. 34:8 (see above), thus establishing at least two subtypes

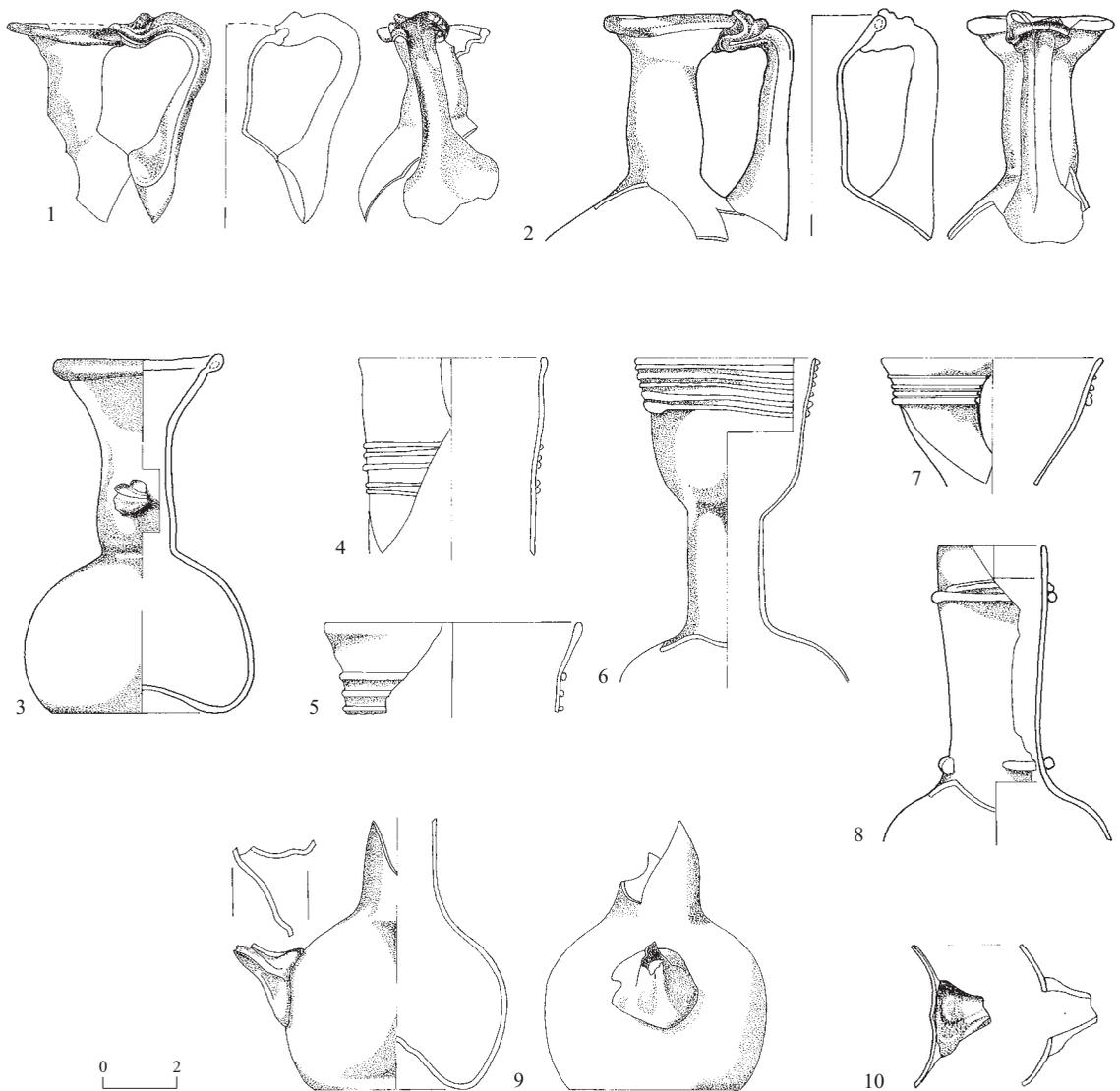


Fig. 34. Various bottles and jugs.

of spouted bottles in the assemblage: plain and decorated. A spouted vessel was also recovered during the 1996–1997 season (Fig. 14:9).

Bottles with Upright Rounded Rim, Wide Cylindrical Neck and Cylindrical or Squat Body (Figs. 26:12–16; 35:1–9).— The most homogeneous group from the 1991 season consists of plain bottles (Nos. 1–4, 6, 7, 9, and at least 20 more pieces, not illustrated) and

two mold-blown ribbed bottles (Nos. 5, 8). The bottles range from small (Nos. 1 and 2) to medium-sized (Nos. 3, 4, 9), to large (No. 7). They are plainly shaped without a pontil and hence the rims are simply cut or fire-finished. The mold-blown bottle (No. 5) has no pontil scar as well, and the rim is of the upright and rounded type (No. 8). Their outstanding uniformity of shape, fabric and workmanship suggests they are local products.

◀ Fig. 34

No.	Loc.	Bask./ Reg. No.	Dimensions (mm)	Color	Weathering	Type/ Subtype	Description
1	141	6	Rim D 32	Light green; greenish handle	Silver weathering and iridescence	Jug with constricted neck	Part of rim, neck and shoulder with complete handle, mended, deformed; uneven infolded rim, short uneven neck, trail handle; thin wall
2	141	5	Rim D 38	Bluish-green	Silver weathering, iridescence and sand deposits	Jug with constricted neck	Almost complete rim and neck, part of shoulder and complete handle; uneven infolded rim, trail handle; short, uneven, slightly constricted neck; bubbly glass with impurities
3	141	11	Rim D 45 Base D 48	Light green	Silver weathering, iridescence and pitting	Jug with constricted neck	Complete, broken handle; uneven infolded rim, funnel-shaped mouth, constricted neck, concave bottom with no pontil mark; bubbly glass
4	132	607/1	Rim D 50	Greenish	Silver weathering, iridescence and sand deposits	Bottle with cylindrical mouth and applied trails	Rim and neck fragment; rounded rim, cylindrical mouth with five thin trails of same color; bubbly glass with impurities
5	141	18	Rim D 70	Light green; turquoise trails	Silver weathering, iridescence and sand deposits	Bottle with cylindrical mouth and applied trails	Small rim fragment; rounded rim; trails of contrasting color wound around mouth
6	132	607	Rim D 50	Light greenish- blue; blue trails	Gold weathering, iridescence and severe pitting	Bottle with cylindrical mouth and applied trails	Rim, neck and shoulder fragment, mended; uneven rounded rim, funnel-shaped mouth with six uneven thin trails of contrasting color; very thin wall
7	132	613/3	Rim D 60	Light green; turquoise trails	Silver weathering, iridescence and sand deposits	Bottle with funnel- shaped mouth and applied trails	Rim and mouth fragment; rounded rim; funnel-shaped mouth with four uneven trails of contrasting color; clear glass; fine workmanship
8	141	2	Rim D 30	Yellowish*	Silver weathering	Bottle with trails applied below rim and around neck	Rim, neck and shoulder fragment, mended; rounded upright rim with applied trail wound twice below rim and another trail wound on base of neck
9	141	23	Base D 44	Light green	Silver weathering, iridescence, sand deposits and pitting	Spouted bottle or jug	Complete body and part of neck; squat globular body with spout at mid-height; high concave bottom with pontil scar, D 15 mm, and remains of glass from pontil; thin delicate wall; bubbly glass with black impurities
10	141	3	-	Yellowish*	Silver weathering	Spouted bottle or jug	Wall fragment with complete spout; bubbly glass with black impurities; careless workmanship

* The yellowish hue of Nos. 8 and 10 is unique and rare in the assemblage.

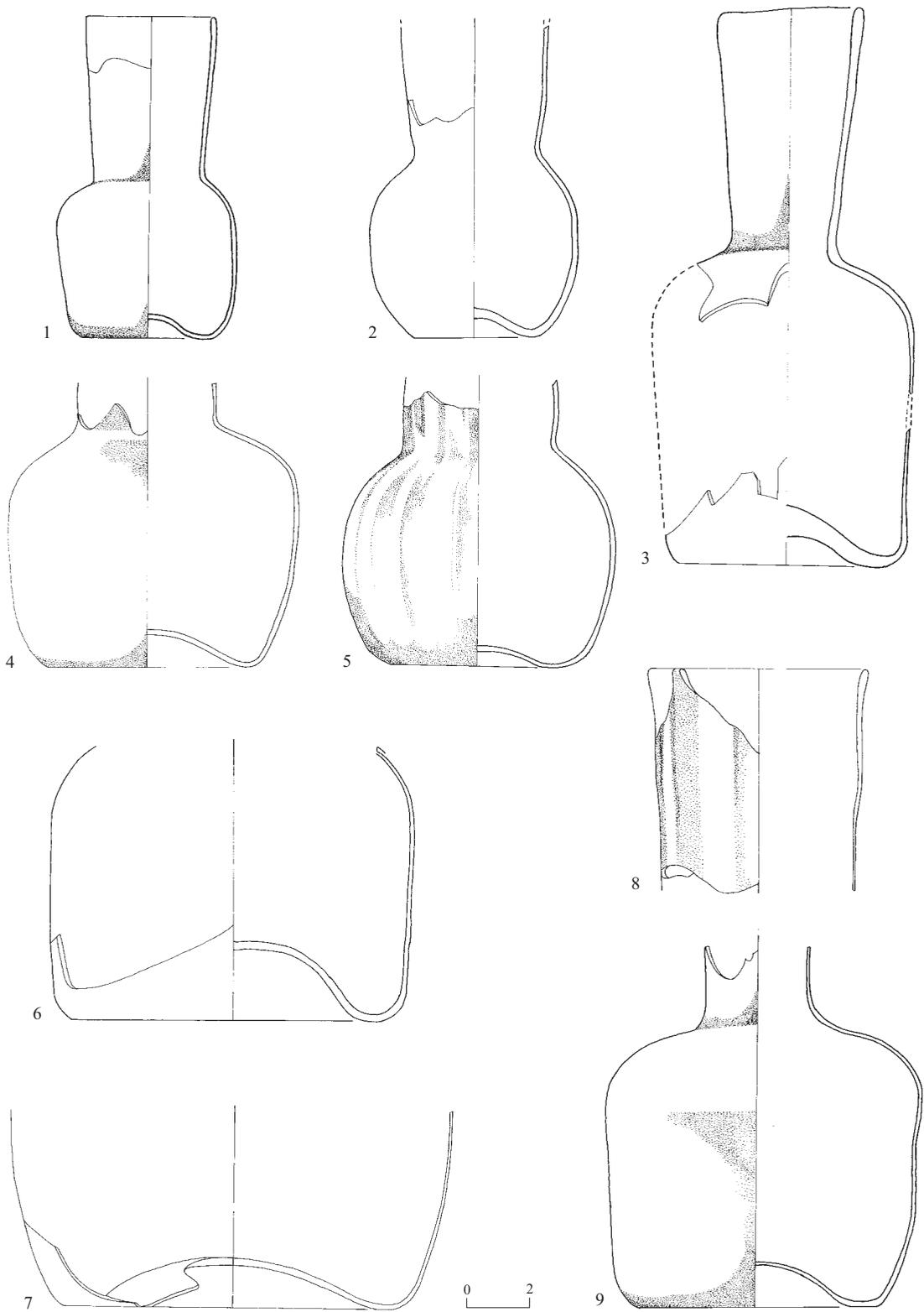


Fig. 35. Bottles with cylindrical neck and cylindrical or squat body.

◀ Fig. 35

No.	Loc.	Bask./ Reg. No.	Dimensions (mm)	Color	Weathering	Description
1	141	31	Rim D 45	Light green	Silver weathering, iridescence, sand and lime deposits	Almost complete; part of rim broken; rounded rim, thin delicate wall, concave bottom with no pontil mark; bubbly glass with black impurities; blowing spirals; low quality fabric
2	141	14	Rim D 40	Light bluish-green	Silver weathering, iridescence and pitting	Almost complete body and neck, mended, rim missing; globular squat body; concave bottom with no pontil mark; bubbly glass; blowing spirals; low quality fabric
3	134	399	Rim D 45 Base D 70	Greenish-blue with slight grayish tinge	Silver weathering, iridescence and pitting	Two fragments: complete rim and neck with part of shoulder; complete bottom with part of wall; rounded rim; thick concave bottom with pontil scar, D 13–15 mm, and remains of glass from pontil; bubbly glass with black impurities; blowing spirals; low quality fabric
4	141	30	Base D 65	Light green	Silver weathering, iridescence and sand deposits	Complete body, bottom and part of neck; thin wall; concave bottom with no pontil mark; bubbly glass; blowing spirals
5	141	25	Base D 60	Light green	Silver weathering, iridescence and sand deposits	Complete body, bottom and part of neck; sparsely spaced, mold-blown, vertical ribbing on neck and body; thin wall; concave bottom with no pontil mark; bubbly glass; blowing spirals; fine workmanship
6	141	15	Base D 105	Bluish-green	Iridescence and pitting	Complete bottom and part of wall; thin wall; concave bottom with no pontil mark; blowing spirals
7	141	16	Base D 105	Bluish-green	Iridescence and pitting	Bottom and wall fragment; thin wall; concave bottom with no pontil mark; bubbly glass; blowing spirals
8	141	34	Rim D 70	Light green	Iridescence and pitting	Rim and neck fragment; rounded rim; shallow, sparsely spaced, mold-blown, irregular vertical ribbing on neck; bubbly glass with black impurities; blowing spirals; low quality fabric
9	141	26	Base D 80	Colorless with greenish tinge	Silver weathering, iridescence, sand deposits and pitting	Complete body and bottom and part of neck; thin wall; concave bottom with no pontil mark; bubbly glass with black impurities; blowing spirals

Only very few bottles of this type were found in the 1996–1997 excavation; a piece resembling No. 6 was recorded (Fig. 13:2). Bottles similar to Nos. 1 and 2 were unearthed in Tomb 215 at the 'Dominus Fleuit' compound on the Mount of Olives (Bagatti and Milik 1958:144–145, Fig. 34:4, 5).

Cosmetic Tubes

Double Tubes (Fig. 36).— These two fragments of cosmetic double tubes discovered in the 1991 excavation were also local products. Number 1 is a very small base fragment with remains from both tubes. Number 2 represents a double

tube with elaborate handles like those in the 1996–1997 assemblage (Figs. 20, 21); what survived are only the remains of two basket handles applied above the rim and part of the upper basket handle drawn over it.

Bowl-Shaped Oil Lamps

The few fragments of oil lamps (Fig. 37) retrieved during the 1991 season included most of the types in the 1996–1997 corpus.

Bowl-Shaped Oil Lamp with Three Handles (Fig. 37:1).— Although missing the rim, No. 1 probably belonged to a bowl-shaped oil lamp

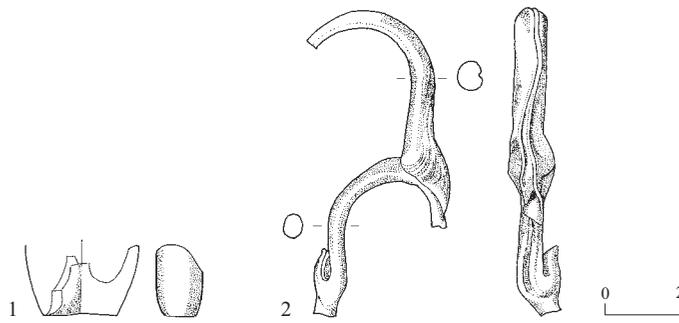


Fig. 36. Double tubes.

No.	Loc.	Bask.	Color	Weathering	Type/Subtype	Description
1	133	453	Green	Silver weathering and iridescence	Double tube	Small bottom fragment; remains of one tube, the other broken; large pontil scar
2	141	-	Greenish-blue	Silver weathering, iridescence and pitting	Double tube with elaborate handles	Part of basket handle on top of another handle; bubbly glass with black impurities

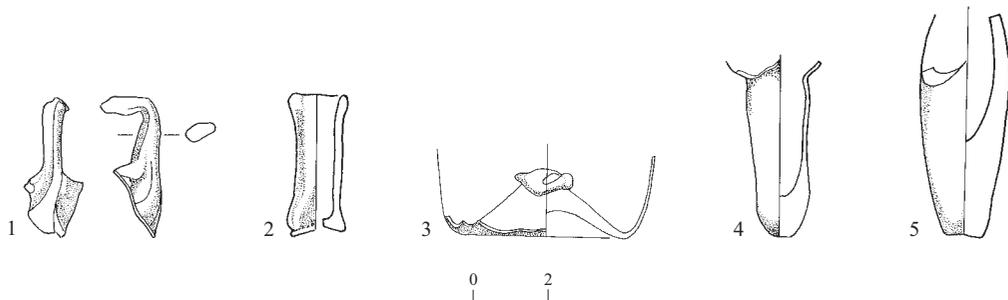


Fig. 37. Oil lamps.

No.	Loc.	Bask./ Reg. No.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	25	382/2	-	Greenish	Silver weathering and iridescence	Bowl-shaped oil lamp with three handles(?)	Complete handle, deformed; black impurities
2	141	45	-	Light green	Silver weathering and iridescence	Bowl-shaped oil lamp with wick tube	Complete wick tube, broken where joins vessel; very bubbly glass with black impurities
3	141	47	Bottom D 46	Yellowish-green	Silver weathering and iridescence	Bowl-shaped oil lamp with wick tube	Almost complete bottom with part of wall and remains of wick tube; concave bottom, pontil scar with remains of glass from pontil; bubbly glass
4	141	44	Stem D 5	Bluish-green	Silver weathering and iridescence	Bowl-shaped oil lamp with hollow stem	Complete stem; hollow
5	141	43	Stem D 9	Olive-green	White enamel-like weathering and iridescence	Bowl-shaped oil lamp with hollow stem	Almost complete stem; unevenly thick walls, thick bottom

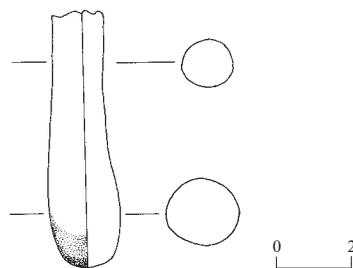


Fig. 38. Remains of glass production.

No.	Loc.	Bask.	Color	Weathering	Type/ Subtype	Description
1	132	613/4	Bluish green with olive-green streaks	Silver weathering, iridescence and pitting	Drop	Complete lower part of glass drop; rounded bottom, circular section

with three handles, resembling those from the 1996–1997 excavation (Fig. 22:1, 2).

Bowl-Shaped Oil Lamp with Wick Tube (Fig. 37:2, 3).— The complete wick tube (No. 2) and the bowl with remains of a wick tube on its floor (No. 3) represent oil lamps with a wick tube applied to their floor center. Two specimens of this type were found in the 1996–1997 excavation (Fig. 22:4, 5).

Bowl-Shaped Oil Lamp with Hollow Stem (Fig. 37:4, 5).— Number 4 is identical to the stem of a complete oil lamp from the 1996–1997 season (Fig. 22:6), characterized by a slight constriction where it joins the body and a slight bulge on the stem. Number 5 is curved and partially solid.

REMAINS OF GLASS PRODUCTION

Only one definite piece of production debris was found in the 1991 excavation. It is a glass drop (Fig. 38) similar to the drops from the 1996–1997 season (Fig. 25:5–8), identified as ‘test drops’. This drop joins the other finds associated with glass production discovered at the site and further supports the existence of a glass workshop at Khirbat el-Ni’ana.

Furthermore, the excavator detected glass slags in a deposit near a mosaic pavement (Bashkin 1995:59).

SUMMARY AND DISCUSSION:

LOCAL PRODUCTION OF GLASS VESSELS AT KHIRBAT EL-NI’ANA—THE BROADER SCOPE

The large quantity of glass vessels and the remains of production debris uncovered at Khirbat el-Ni’ana prompted a comprehensive study of the typological and technological aspects of the glass repertoire. Both issues induced special attention to the distribution and chronology of the assemblage. These subjects were discussed above and are therefore not addressed here. The following observations focus on the production of glass vessels, rather than raw glass, during the Late Roman and Byzantine periods.

Production of glass vessels was widespread during the Late Roman period in both the eastern and western parts of the Roman Empire. Glass blowing, invented about four hundred years earlier, had already been extensively experimented and had reached its technological and artistic peaks, unsurpassed until this day (for a synopsis on the invention of glass blowing, see Israeli 2003:95–97). The local glass workshops supplied most of the demand for glass vessels and objects. The workshop at Khirbat el-Ni’ana, for example, manufactured tableware, such as bowls, beakers and bottles, alongside cosmetic jars and tubes.

The study of glass workshops in present-day Israel is based primarily on the detailed report

on the glass workshop at Jalame, excavated and published by Gladys Weinberg (1988). The Jalame workshop yielded remains of a furnace, raw material, debris of glass blowing and hot glassworking, as well as an abundance of glass vessels. It was dated by the excavators to the second half of the fourth century, however further studies of the pottery and the coins suggested it had continued to function in the fifth century. Yet, although it is dated to the early Byzantine period, the Jalame repertoire represents Late Roman traditions. One criterion for this assertion is the small amount of typical Byzantine vessels, such as wineglasses and oil lamps, compared with the numerous bowls, beakers and jugs characteristic of the Late Roman period. The vessel shapes in the glass repertoire from Khirbat el-Ni'ana closely resemble those from Jalame and demonstrate the same proportions, i.e., only two wineglasses

(Fig. 8:16, 17) and 13 oil lamps (Figs. 21, 37) among more than 8000 fragments unearthed at the site.

The map (Fig. 39) dotted with sites featuring glass workshops draws on two main sources of information: published material, as well as unpublished material studied by the IAA glass department over the last two decades. The map provides a general impression of the volume and distribution of glass production in Palestine in the Late Roman and Byzantine periods. The sites recorded on the map yielded glass manufacture remains; most of them also contained vessels resembling those discovered at Khirbat el-Ni'ana, discussed above. Sites where a local industry was identified based solely on the vessels discovered there were not set on the map (e.g., Khirbat el-Shubeika and Ḥorbat Rimmon; see above, Methodological Research of Glass Workshops).

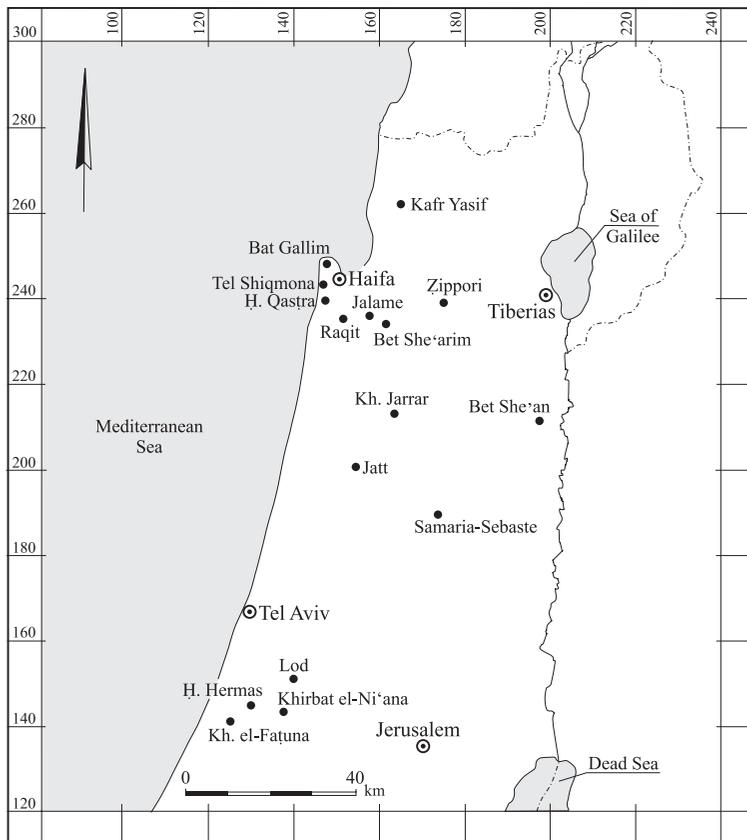


Fig. 39. Selected glass workshops of the Late Roman and early Byzantine periods.

The glass workshop at Khirbat el-Ni'ana, the subject of this study, is not the only one identified in the Shephelah region. Salvage excavations conducted at nearby Lod unearthed several pieces of production debris, including blowing leftovers (moils), glass drops and small raw glass chunks, within a Late Roman–early Byzantine assemblage.²⁶ An industrial facility at Ḥorbat Hermas, between Rehovot and Yavne, exposed remains of raw glass production and glass vessel making, including numerous blowing leftovers and furnace debris (Gorin-Rosen 2006:34*–35*, and see further references therein). Another local workshop was detected at Khirbat el-Faṭuna, also in the vicinity of Yavne, where numerous trail-wound bases were uncovered among remains of a glass industry.²⁷

Glass workshops were identified farther north and northeast, e.g., at Samaria-Sebaste (Crowfoot 1957:404–405), at Bet She'an—a well-preserved facility dated to the Byzantine period (Gorin-Rosen 2000a:59–60), at Jatt on the Samarian foothills, yielding remains of glassworking (Gorin-Rosen 2004b:26*), and at Khirbat Jarrar, where numerous pieces of industrial debris, including glass drops, chunks of raw glass and overblows, were collected on the surface and dated to the Late Roman–early Byzantine periods (Gorin-Rosen 2004a:17*).

A similar pattern of densely located remains of Late Roman–Byzantine glass workshops is apparent in other regions: In the Haifa area—Ḥorbat Qastra, Shiqmona and Bat Gallim;²⁸ in the lower Galilee and the Jezreel Valley—Bet She'arim, Jalame, Zippori and Raqit (Lehrer-Jacobson 2003:247); and in the western Galilee, e.g., Kafr Yasif (Gorin-Rosen 2000a:57–59, and see further references therein).

The abundance of glass workshops and their distribution indicate that glass vessel production was practiced in major cities, such as Lod, Samaria, Bet She'an and Zippori, as well as in small villages, such as Khirbat el-Ni'ana and most of the other sites mentioned above.

Moreover, calculations of the amount of glass produced in ancient Palestine at these sites and others located in present-day Jordan

and Lebanon, show that it far exceeded even an excessive consumption by the local population. This observation raises the probability of export to other markets, at least of a portion of the products. This speculation, along with a comprehensive investigation of local glass production, entails further research.

APPENDIX 1: MAMLUK GLASS FINDS FROM THE 1996–1997 EXCAVATION

A few glass finds from Area 101 of the 1996–1997 excavation at Khirbat el-Ni'ana correspond to the poor architectural remains of the latest occupation phase at the site during the Mamluk period (see Sion, this volume). They are contemporary with the pottery (de Vincenz and Sion, this volume) and the clay lamps (Sussman, this volume). The glass finds hereby presented include two marvered pieces, two bracelets and a plaque.

Vessels with Marvered Decoration (Fig. 40: 1, 2).— These two small fragments of purple vessels with marvered decoration represent the most characteristic decorated types of the Mamluk period.

Number 1 is a thick incurved rim of a large purple bowl, decorated with marvered trails of opaque greenish-blue glass. Bowls of this type were discovered in Area T of the Jewish Quarter excavations in Jerusalem and dated from the late thirteenth to the fifteenth centuries (Brosh 2005a:186; 2005b:22–23, 36–37, Figs. 17.1, 17.2, and see further references and discussion therein). Several fragments of this type were found in salvage excavations in Jerusalem and Ramla.²⁹

Number 2 belongs to a cosmetic bottle with an incurved or infolded rim, a short neck and a conical or pyramidal body. Complete specimens, presumably from Egypt or Syria, are dated to the twelfth–thirteenth centuries (Carboni 2001:304, Cat. Nos. 80a, b, and see further references therein). Fragments, usually bases, of bottles of this type were discovered in excavations

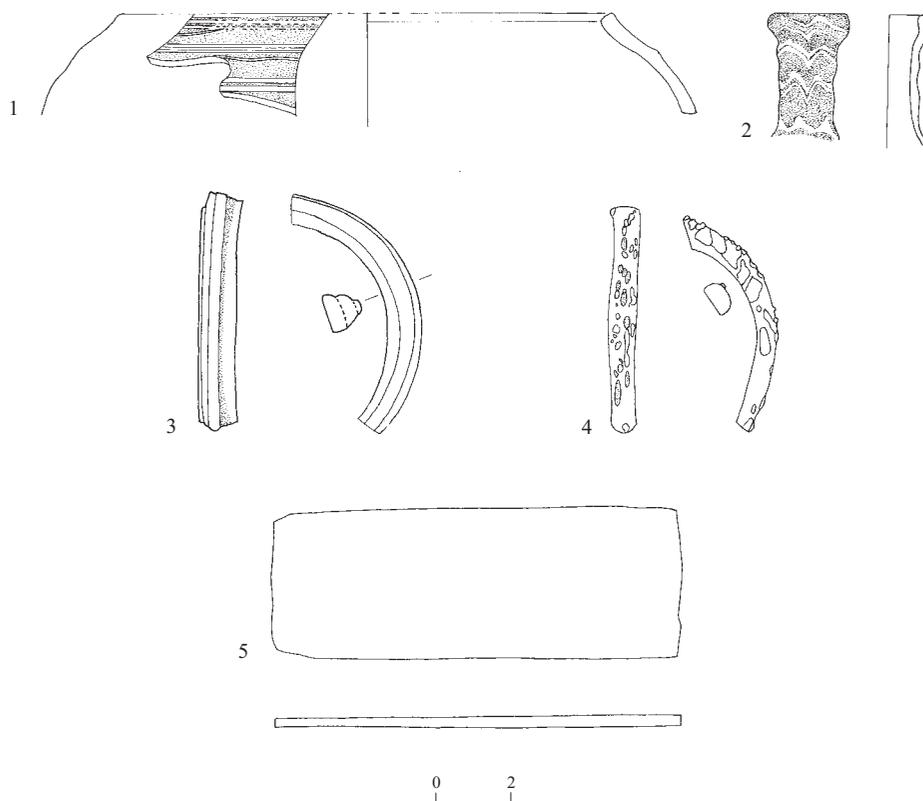


Fig. 40. Mamluk glass.

No.	Loc.	Bask.	Dimensions (mm)	Color	Weathering	Type/Subtype	Description
1	23	1154	Rim D 130–150	Purple, opaque; greenish-blue trail	Thick black crust, severe pitting	Trailed bowl with incurved rounded rim	Rim fragment; flattened rim, thick uneven walls; horizontal applied marvered trail, closely wound from rim downward onto wall
2	28	1199	Rim D 20	Purple; white trail	Iridescence, black crust, severe pitting	Trailed bottle with rounded rim	Complete rim and neck; incurved rim with uneven bulge below; horizontal applied marvered trails in zigzag pattern
3	38	1249	-	Purple, translucent	Iridescence, black crust, pitting	Triangular- sectioned bracelet	Fragment; applied trail forming a triangular-sectioned bracelet
4	12	1054	-	Deep blue or purple, translucent; white, red and yellow crumbs	Bronze iridescence, severe pitting	Semicircular- sectioned bracelet with crumbs	Fragment; irregular, multicolored crumbs
5	62	313	H 108 W 40 Th 2	Light greenish	Sand deposits	Plaque	Complete; finished at four edges, smoothed on both sides

in Israel, e.g., at Giv'at Yasaf (Gorin-Rosen 1999:138–139, Fig. 1:9, and see therein parallels from Bet Yerah, Yoqne'am, Ḥamma and Quseir

al-Qadim). Four bottles of purple glass with white marvered trails were unearthed in Area T of the Jewish Quarter excavations and dated to

the Mamluk period (Brosh 2005b:25–26, 45–47, Figs. 22:35, 23:8, and see further references and discussion therein).

Bracelets (Fig. 40:3, 4).— Bracelets of two types were collected. Number 3 is decorated with an applied trail forming a triangular section. Number 4 is dotted with uneven multicolored crumbs, classified by Spaer as local, of the “Pre-Ottoman Islamic period” (Spaer 2001: 202, Cat. No. 469, and see further references therein). Both types of bracelets were unearthed at Giv'at Yasaf (Gorin-Rosen 1999:138–139, Fig. 1:10, 12) and attributed to the Umayyad through the Mamluk periods. However, the nature of the bracelets from Khirbat el-Ni'ana suggests they are of Mamluk date.

Plaque (Fig. 40:5).— The rectangular, light greenish glass plate is smooth on both sides and finished on all four edges. Its surface is covered

with a thin characteristic layer of iridescence, pointing to a medieval date. The function of this plaque is unclear; it may have served as a mirror or an inlay.

Smaller circular plaques, known as ‘magic mirrors’, were often inlaid in objects serving in burial practices in the region from the fifth century (Rahmani 1964:55–60, and see discussion and interpretations therein). However, the plaque from Khirbat el-Ni'ana is larger and rectangular, and its fabric seems later in date. Three thin, colorless and octagonal plaques were discovered in Tomb 17 at Tel Mevorakh, dated to the late twelfth–thirteenth centuries (Barag 1978b:5–7, Fig. 11, and see further references therein). Although painted and of a different shape, these plaques probably served the same purposes as those from Khirbat el-Ni'ana. A similar rectangular plaque was recently recovered at Kefar Sava, in a cemetery dated to the Mamluk–Ottoman periods.³⁰

NOTES

¹ We are grateful to our colleague Tamar Winter, who edited this paper, for her guidance, help and encouragement throughout the process. We also wish to thank our colleagues Yael Israeli and Maud Spaer for their helpful comments on earlier versions of this paper, and Marie-Dominique Nenna for her comments.

² An extensive discussion on workshops is beyond the scope of this paper; research of glass workshops is currently taking place in France, Italy, Switzerland, Great Britain and Germany (see e.g., Nenna 2000; Foy 2003).

³ The glass finds were studied by Yael Gorin-Rosen and Tamar Winter of the IAA. Thanks are due to Eliezer Oren of the Ben-Gurion University of the Negev, who headed the North Sinai Survey, for the opportunity to study the glass finds before their return to the Egyptian authorities.

⁴ We wish to thank the excavator, Ofer Sion, for the opportunity to study the glass finds. Many thanks are also due to Olga Shorr and Mireia-Timna Elper for the glass restoration, to Clara Amit and Tsila Sagiv for the photography, to Michael Miles for drawing

the vessels and objects, and to Carmen Hersch for additional drawings.

⁵ The numerous glass vessels unearthed in the fill of a settling pool at Ras el-'Ein, Flavia Neapolis, Shechem, were recorded by Sivan Sarig, guided by Yael Gorin-Rosen. Plates and a short description of the vessels were published, yet without further discussion (Magen 2005). However, this group is very important for the study of Late Roman glass in the region. Some types appear there in the greatest quantity so far published, while others are represented by a single piece, the only one of their type from a methodical excavation published so far. The richness of shapes and decorations, as well as the large quantity and quality of the material, allow us to suggest that most of the vessels from the settling pool at Ras el-'Ein are of local origin.

⁶ Unpublished, courtesy of Yosef Porath.

⁷ The glass finds from the University of Haifa excavations at Caesarea Maritima, headed by Joseph Patrich, were studied by Yael Israeli.

⁸ The bases from Khirbat el-Ni'ana belonged to bowls; however, bases of this type may have also

held closed vessels, such as jugs and flasks. The only complete vessel with a trail-wound base published from excavations in the region is a flask from Tomb E220 at Samaria (Crowfoot 1957: Fig. 94:13). All other examples from Syria-Palestine published to date are in museum collections. Among them are groups of Late Roman fine jugs and head flasks with multiple trail-wound bases, dated to the fourth–fifth centuries (e.g., Whitehouse 1997:367–374, Pl. 1–3; Israeli 2003:187, 190–191, Cat. Nos. 221, 224–226).

⁹ The glass from Horbat Qastra is being studied by Yael Gorin-Rosen and Natalya Katsnelson. Thanks are due to Ze'ev Yeivin and Gerald Finkielsztein, directors of the excavations, for permission to cite these finds.

¹⁰ The glass from Tirat Karmel was studied by Ruth E. Jackson-Tal and Natalya Katsnelson. We wish to thank the excavator Shalom Yankelevitch for permission to cite these finds.

¹¹ The glass vessels were studied by Ruth E. Jackson-Tal. The excavation was conducted by Kamil Sari and we thank him for permission to cite these finds.

¹² The cistern at Bet Guvrin was excavated by Amos Klöner and Michael Cohen and we thank them for permission to cite these finds.

¹³ The Pan sanctuary was excavated by Zvi Uri Maoz and the “Street of Shops” by Vassilios Tzaferis and Shoshana Israeli; we thank them for permission to cite these finds. The publication cited (Gorin-Rosen 2001) is an exhibition catalogue, not a scientific publication.

¹⁴ The excavation was conducted by Shlomo Pipano. The glass finds have not been studied, yet several vessels were preliminarily published in the catalogue of the exhibition “Ancient Glass from the Holy Land” (Gorin-Rosen 1998).

¹⁵ The elongated spindle-shaped tube, generally 30–50 cm long, was popular in both parts of the Roman Empire, particularly in the fourth century CE (Weinberg and Goldstein 1988:74; Isings 1957:126, Form 105; Barag 1970:220, Pl. 47:4).

¹⁶ Feig dated this cave to the second–third centuries, although the parallels quoted for the tubes date from the late third to the fourth centuries (Feig 1990:78).

Moreover, Barag (1970:175) noted that this subtype appeared around the middle of the fourth century and not earlier.

¹⁷ Another piece was recorded during the first season conducted by Moshe Hartal. The glass finds are to be published in the IAA Reports series by Natalya Katsnelson.

¹⁸ The excavation at the Ashqelon Marina was conducted by Shoshana Israeli.

¹⁹ See n. 3.

²⁰ The numerous references cited on p. 58 of the Giv'at Sharef publication are of decorated double tubes, many of which were discovered in the vicinity.

²¹ The site at Horbat Hanut was excavated by Radwan Badhi and the glass was studied by Ruth E. Jackson-Tal.

²² See n. 16.

²³ See n. 9.

²⁴ We wish to thank the excavator, Nitza Bashkin for the opportunity to study the glass finds. Thanks are also due to Olga Shorr for the glass restoration, to Michael Miles for drawing the vessels and to Clara Amit for the photography.

²⁵ See n. 8.

²⁶ The site at Lod, *Newe Yaraq*, was excavated by Eli Yannai and Radwan Badhi and the glass was studied by Yael Gorin-Rosen and Ruth E. Jackson-Tal. We thank the excavators for permission to quote this information prior to the final report.

²⁷ See n. 11.

²⁸ The glass from Shiqmona and Bat Gallim was studied by Yael Gorin-Rosen. We wish to thank the excavators, Raz Kletter and Dror Barshad, for permission to cite these finds.

²⁹ The glass vessels from both excavations were studied by Yael Gorin-Rosen. Thanks are due to Gideon Avni, who headed the Herod's Gate excavations, and to Raz Kletter, excavator of the site at Ramla.

³⁰ The glass vessels were studied by Natalya Katsnelson. The excavation was conducted by Amir Gorzalczy, to whom we thank for permission to cite this find.

REFERENCES

- Avshalom-Gorni D. 1999. 'Akko, The Court Parking Lot: Second Season, 1995. *ESI* 19:12*-14*.
- Ayalon E. 1994. A Roman-Byzantine Mausoleum at Kh. Sabiya, Kefar Sava. *'Atiqot* 25:27-39 (Hebrew; English summary, pp. 189*-190*).
- Bagatti P.B. 1967. I vetri del Museo Francese di Nazaret. *LA* 17:223-240.
- Bagatti P.B. and Milik J.T. 1958. *Gli scavi del 'Dominus Flevit' (Monte Oliveto-Gerusalemme) I: La necropoli del periodo romano*. Jerusalem.
- Barag D. 1970. *Glass Vessels of the Roman and Byzantine Period in Palestine*. Ph.D. diss. The Hebrew University, Jerusalem (Hebrew).
- Barag D. 1971. The Glass Vessels. In M. Dothan ed. *Ashdod II-III: The Second and Third Seasons of Excavations 1963, 1965 ('Atiqot [ES] 9-10)*. Jerusalem. Pp. 202-205, 219.
- Barag D. 1974. A Tomb Cave of the Byzantine Period near Netiv Ha-Lamed He. *'Atiqot (HS) 7:81-87* (English summary, p.13*).
- Barag D. 1978a. *Ḥanita, Tomb XV: A Tomb of the Third and Early Fourth Century CE ('Atiqot [ES] 13)*. Jerusalem.
- Barag D. 1978b. Three Glass Plaques. In E. Stern. *Excavations at Tel Mevorakh (1973-1976) 1: From the Iron Age to the Roman Period (Qedem 9)*. Jerusalem. Pp. 5-7.
- Barag D. 1985. *Catalogue of Western Asiatic Glass in the British Museum I*. London.
- Bashkin N. 1995. Khirbat Ni'ana. *ESI* 13:59-61.
- Bianchi R.S. 2002. Catalogue of the Ancient Near Eastern Glass. In R.S. Bianchi. *Reflection on Ancient Glass from the Borowski Collection: Bible Lands Museum Jerusalem*. Mainz am Rhein. Pp. 163-174.
- Brandl B. 2000. A Persian-Period Phoenician Glass Scaraboid from Cave 2 Near the Holyland Hotel, Jerusalem. *'Atiqot* 40:25-31.
- Brosh N. 2005a. Islamic Glass Finds of the Thirteenth to Fifteenth Century from Jerusalem, Preliminary Report. In *Annales du 16^e Congrès de l'Association Internationale pour l'Histoire du Verre (London 2003)*. Nottingham. Pp. 186-190.
- Brosh N. 2005b. *A Mamluk Glass Workshop in Jerusalem: Marvered Glass*. M.A. thesis. Tel Aviv University. Tel Aviv (Hebrew).
- Carboni S. 2001. *Glass from Islamic Lands: The Al-Sabah Collection, Kuwait National Museum*. New York.
- Castra 1999. *Castra at the Foot of Mount Carmel, the City and Its Secrets* (Haifa Museum, The National Maritime Museum Exhibition Catalogue). Haifa.
- Chéhab M.H. 1986. *Fouilles de Tyr IV: La nécropole (BMB 36)*. Paris.
- Clairmont C.W. 1963. The Glass Vessels. In A. Perkins ed. *The Excavations at Dura-Europos IV-V*. New Haven.
- Cohen E. 1997. Roman, Byzantine and Umayyad Glass. In Y. Hirschfeld. *The Roman Baths of Hammat Gader: Final Report*. Jerusalem. Pp. 396-429.
- Crowfoot G.M. 1957. The Glass. In J.W. Crowfoot, G.M. Crowfoot and K.M. Kenyon. *Samaria-Sebaste III: The Objects from Samaria*. London. Pp. 403-422.
- Dussart O. 1997. Les verres. In C. Clamer. *Fouilles archéologiques de 'Ain ez-Zâra/Callirrhoe villégiature hérodienne* (Bibliothèque archéologique et historique 147). Beirut. Pp. 96-102.
- Dussart O. 1998. *Le verre en Jordanie et en Syrie du Sud* (Bibliothèque archéologique et historique 152). Beirut.
- Dussart O. 2000. Quelques indices d'ateliers de verriers en Jordanie et en Syrie du sud de la fin de l'époque hellénistique à l'époque islamique. In M-D. Nenna ed. *La route du verre: Ateliers primaires et secondaires du second millénaire av. J.-C. au Moyen Âge* (Travaux de la Maison de l'Orient Méditerranéen 33). Lyon. Pp. 91-96.
- Erdmann E. 1977. Die Glasfunde von Mezad Tamar (Kasr Gehinije) in Israel. *Saalburg Jahrbuch* 34:98-146.
- Feig N. 1990. Burial Caves at Nazareth. *'Atiqot (HS) 10:67-79* (English summary, p. 17*).
- Fleming S.F. 1997. Late Roman Glass at the University of Pennsylvania Museum: A Photo Essay. *Expedition* 39:25-41.
- Fleming S.J. 1999. *Roman Glass: Reflections on Cultural Change*. Warminster, Penn.
- Foy D. 1995. Le verre de la fin du IV^e au VIII^e siècle en France Méditerranéenne, premier essai de typochronologie. In D. Foy ed. *Le verre de l'Antiquité tardive et du haut Moyen Âge: typologie-chronologie-diffusion* (Association Française pour l'Archéologie du Verre, 8^e rencontre. Guiry-en-Vexin, 18-19 novembre 1993). Guiry-en-Vexin. Pp. 187-242.
- Foy D. 2000. Un atelier de verrier à Beyrouth au début de la conquête islamique. *Syria* 77: 239-290.
- Foy D. 2003. *Coeur de verre: production et diffusion du verre antique* (Exhibition Catalogue). Gollion.

- Fuller M.J. 1987. *Abila of the Decapolis: A Roman Byzantine City in Transjordan*. Ph.D. diss. Washington University. St. Louis, Mo.
- Gichon M. 1993. *En Boqeq: Ausgrabungen in Einer Oase am Toten Meer I*. Mainz am Rhein.
- Gorin-Rosen Y. 1997a. The Glass Vessels. In M. Aviam and E.J. Stern. *Burial Caves Near Ḥ. Sugar*. 'Atiqot 33: 96–98 (Hebrew; English summary, p. 16*).
- Gorin-Rosen Y. 1997b. Glass Vessels from Burial Caves in Asherat. 'Atiqot 33:61–67 (Hebrew; English summary, pp. 12*–13*).
- Gorin-Rosen Y. 1998. *Ancient Glass from the Holy Land* (Fine Arts Museum of San Francisco and the Israel Antiquities Authority, Exhibition Catalogue). San Francisco.
- Gorin-Rosen Y. 1999. The Glass Vessels from Giv'at Yasaf (Tell Er-Ras). 'Atiqot 37:137–140 (Hebrew; English summary, p. 175*).
- Gorin-Rosen Y. 2000a. The Ancient Glass Industry in Israel: Summary of the Finds and New Discoveries. In M-D. Nenna ed. *La route du verre: Ateliers primaires et secondaires du second millénaire av. J.-C. au Moyen Âge* (Travaux de la Maison de l'Orient Méditerranéen 33). Lyon. Pp. 49–63.
- Gorin-Rosen Y. 2000b. The Glass Vessels from Khirbet Ṭabaliya (Giv'at Hamatōs). 'Atiqot 40:81*–94* (Hebrew; English summary, pp. 165–166).
- Gorin-Rosen Y. 2001. Glass Objects. In J.F. Wilson ed. *Rediscovering Caesarea Philippi: The Ancient City of Pan* (Exhibition Catalogue). Malibu, Calif. Pp. 42–44, 69–70.
- Gorin-Rosen Y. 2002a. The Glass Finds. In D. Varga. *Ashqelon, Afridar and Barnea' (A)*. *HAESI* 114:87*–88*.
- Gorin-Rosen Y. 2002b. The Glass Vessels. In D. Avshalom-Gorni and A. Tacher. *Excavations at Khirbet el-Shubeika 1991, 1993. Eretz Zafon: Studies in Galilean Archaeology*. Haifa. Pp. 288–231 (Hebrew).
- Gorin-Rosen Y. 2002c. A Group of Glass Vessels from Nir Gallim. 'Atiqot 43:119–126.
- Gorin-Rosen Y. 2003. Glass Vessels from Area A; Addendum: Glass Vessels from Areas W and X-2. In H. Geva ed. *Jewish Quarter Excavations in the Old City of Jerusalem Conducted by Nahman Avigad, 1969–1982 II: The Finds from Areas A, W and X-2, Final Report*. Jerusalem. Pp. 364–386; 387–400.
- Gorin-Rosen Y. 2004a. The Glass Finds. In I. Jabour. *Khirbat Jarrar*. *HAESI* 116:17*–18*.
- Gorin-Rosen Y. 2004b. The Glass Finds. In K. Sa'id. *Jatt (B)*. *HAESI* 116:26*.
- Gorin-Rosen Y. 2004c. Glass Vessels from a Salvage Excavation at Šarafand el-Kharab, Nes Zīyyona. 'Atiqot 46:59–64 (Hebrew; English summary, pp. 131*–132*).
- Gorin-Rosen Y. 2004d. The Glass Vessels from the Cemetery at Ḥorbat Rimmon. 'Atiqot 46:113*–124*.
- Gorin-Rosen Y. 2006. The Glass Finds from Ḥorbat Hermas. 'Atiqot 51:33*–35* (Hebrew; English summary, p. 236).
- Gorin-Rosen Y. and Katsnelson N. 1999. The Glass Vessels. In Z. Yeivin and G. Finkielsztejn. *Ḥorbat Castra 1993–1997*. *HAESI* 109:27*.
- Harden D.B. 1936. *Roman Glass from Karanis: Found by the University of Michigan Archeological Expedition in Egypt, 1924–1929* (University of Michigan Studies, Humanistic Series XL1). Ann Arbor.
- Husseini S.A.S. 1935. A Fourth Century A.D. Tomb at Beit Fajjar. *QDAP* 4:175–177.
- Isings C. 1957. *Roman Glass from Dated Finds*. Groningen–Djakarta.
- Israeli Y. 2003. *Ancient Glass in the Israel Museum: The Eliahu Dobkin Collection and Other Gifts*. Jerusalem.
- Israeli Y. 2005. Glass Vessels from Zippori. 'Atiqot 49:107*–111* (Hebrew).
- Jackson-Tal R. 2004. The Glass Finds. In A. Mettens. *Ḥorbat Nashé*. *HAESI* 116:32*–33*.
- Jackson-Tal R.E. 2005. The Glass Vessels from 'En Gedi. 'Atiqot 49:73*–82* (Hebrew; English summary, p. 138).
- Jackson-Tal R.E. 2007. Early Roman and Early Byzantine Glass Vessels from T2 and T4 near Ḥorbat Zikhrin. 'Atiqot 56:59–63 (Hebrew; English summary, p. 76*).
- Jennings S. and Abdallah J. 2001–2002. Roman and Later Blown Glass from the AUB Excavations in Beirut (Sites BEY 006, 007 and 045). *ARAM* 13–14:237–264.
- Katsnelson N. 1999. Glass Vessels from the Painted Tomb at Migdal Ashqelon. 'Atiqot 37: 67*–82*.
- Katsnelson N. 2002. The Glass Ornaments. In D. Avshalom-Gorni and A. Tacher. *Excavations at Khirbet el-Shubeika 1991, 1993. Eretz Zafon: Studies in Galilean Archaeology*. Haifa. Pp. 322–330 (Hebrew).
- Katsnelson N. 2004. Glass Objects. In P. Figueras. *Horvat Karkur 'Illit. A Byzantine Cemetery Church in the Northern Negev. Final Report of the Excavations 1989–1995* (Beer-Sheva Archaeological Monographs 1). Be'er Sheva'. Pp. 265–291.

- Katsnelson N. and Jackson-Tal R.E. 2004. The Glass Vessels from Ashqelon, Semadar Hotel. *'Atiqot* 48:99–109.
- Kehrberg I. 1986. Summary Report on Glass. In F. Zayadine ed. *Jerash Archaeological Project 1981–1983 I*. Amman. Pp. 375–384.
- Keller D. 2006. *Petra: Ez Zantur III 1: Die Gläser aus Petra*. Mainz am Rhein.
- Lapp N.L. 1983. Ancient Glass. In N.L. Lapp ed. *The Excavations at Araq el-Emir I* (AASOR 47). Pp. 43–62.
- Lehrer-Jacobson G. 1998. The Glass from Sumaqa. In S. Dar. *Sumaqa: A Jewish Village on the Carmel*. Tel Aviv. Pp. 359–372 (Hebrew).
- Lehrer-Jacobson G. 2003. The Glass Vessels from Horvat Raqit. In S. Dar. *Raqit Marinus Estate on the Carmel, Israel*. Tel Aviv. Pp. 233–247 (Hebrew).
- Macalister R.A.S. 1912. *The Excavation of Gezer III*. London.
- Magen Y. 2005. *Flavia Neapolis: Shekhem in the Roman Period* (JSP 5). Jerusalem.
- Magen Y., Tzionit Y. and Sirkis O. 2004. Khirbet Badd 'Isa □ Qiryat Sefer. In Y. Magen, D.T. Ariel, G. Bijovsky, Y. Tzionit and O. Sirkis. *The Land of Benjamin* (JSP 3). Jerusalem. Pp. 179–241.
- McCown C.C. 1947. *Tellen-Naşbeh 1: Archaeological and Historical Results*. Berkeley and New Haven.
- Meyer C.L. 1988. Glass from the North Theatre Byzantine Church, and Soundings at Jerash, Jordan, 1982–1983. *BASOR Supplement Series* 25:175–222.
- Meyers E.M., Strange J.F. and Meyers C.L. 1981. *Excavations at Ancient Meiron, Upper Galilee, Israel 1971 □ 72, 1974 □ 75, 1977* (Meiron Excavation Project III). Cambridge, Mass.
- Nenna M-D. ed. 2000. *La route du verre: Ateliers primaires et secondaires du second millénaire av. J.-C. au Moyen Âge* (Travaux de la Maison de l'Orient Méditerranéen 33). Lyon.
- Nenna M-D. 2003. Les ateliers traditionnels d'aujourd'hui: des modèles pour l'archéologie? In D. Foy. *Coeur de verre: production et diffusion du verre antique* (Exhibition Catalogue). Gollion. Pp. 52–59.
- New Antiquities* 1997. *New Antiquities: Recent Discoveries from Archaeological Excavations in Israel* (Brochure of the exhibition at the Israel Museum, Jerusalem, winter 1997–98). Jerusalem.
- Ornan T. 2001. Seals of the Late Iron Age and the Persian Period. In M. Spaer. *Ancient Glass in the Israel Museum: Beads and Other Small Objects*. Jerusalem. P. 219.
- Patrich J. 1988. The Glass Vessels. In Y. Tsafrir, J. Patrich, R. Rosenthal-Heginbottom, I. Hershkovitz and Y.D. Nevo. *Excavations at Rehovot-in-the-Negev I: The Northern Church* (Qedem 25). Jerusalem. Pp. 134–141.
- Peleg M. and Reich R. 1992. Excavations of a Segment of the Byzantine City Wall of Caesarea Maritima. *'Atiqot* 21:137–170.
- Pringle D. 1986. *The Red Tower (al-Burj al-Ahmar): Settlement in the Plain of Sharon at the Time of the Crusaders and Mamluks A.D. 1099–1516*. London.
- Rahmani L.Y. 1964. Mirror Plaques from a Fifth-Century A.D. Tomb. *IEJ* 14:50–60.
- Seligman J., Zias J. and Stark H. 1996. Late Hellenistic and Byzantine Burial Caves at Giv'at Sharef, Bet Shemesh. *'Atiqot* 29:43–62.
- Sion O. This volume. Excavations at Khirbat el-Ni'ana.
- Spaer M. 1988. The Pre-Islamic Glass Bracelets of Palestine. *JGS* 30:51–59.
- Spaer M. 2001. *Ancient Glass in the Israel Museum: Beads and Other Small Objects*. Jerusalem.
- Stern E.J. 1997. Burial Caves at Kisra. *'Atiqot* 33:103–135 (Hebrew; English summary, p. 17*).
- Stern E.J. and Gorin-Rosen Y. 1997. Burial Caves Near Kabri. *'Atiqot* 33:1–22 (Hebrew; English summary, pp. 7*–8*).
- Stern E.M. 1995. *Roman Mold-Blown Glass: The First through Sixth Centuries* (The Toledo Museum of Art). Toledo, Ohio.
- Stern E.M. 2001. *Roman, Byzantine, and Early Medieval Glass (10 BCE–700 CE): Ernesto Wolf Collection*. Ostfildern-Ruit.
- Sternini M. 1995. Il vetro in Italia tra V–IX secoli. In D. Foy ed. *Le verre de l'Antiquité tardive et du haut Moyen Âge: typologie-chronologie-diffusion*. (Association Française pour l'Archéologie du Verre, 8^e rencontre. Guiry-en-Vexin, 18–19 novembre 1993). Guiry-en-Vexin. Pp. 243–289.
- Sternini M. 2000. Les verre romain d'après les fouilles italiennes à Carthage (1973–1977). *Annales du 14^e Congrès de l'Association Internationale pour l'Histoire du Verre. Venezia-Milano 1998*. Lochem. Pp. 137–141.
- Sussman V. 1976. A Burial Cave at Kefar 'Ara. *'Atiqot (ES)* 11:92–101.
- Sussman V. This volume. The Clay Oil Lamps from Khirbat el-Ni'ana.
- Syon D. 1998. A Winepress at Akhziv. *'Atiqot* 34:85–99 (Hebrew; English summary, p. 7*).
- Tatton-Brown V.A. 1984. The Glass. In H.R. Hurst and S.P. Roskams. *The Excavations at Carthage, The British Mission I, 1: The avenue du président Habib Bourguiba, Salamambo; The Site and Finds Other than Pottery*. Sheffield. Pp. 194–212.

- de Vincenz A. and Sion O. This volume. Two Pottery Assemblages from Khirbat el-Ni'ana.
- Weinberg G.D. 1988. The Glass Factory and Manufacturing Processes. In G.D. Weinberg ed. *Excavations at Jalame: Site of a Glass Factory in Late Roman Palestine*. Columbia, Mo. Pp. 24–37.
- Weinberg G.D. and Goldstein S.M. 1988. The Glass Vessels. In G.D. Weinberg ed. *Excavations at Jalame: Site of a Glass Factory in Late Roman Palestine*. Columbia, Mo. Pp. 38–102.
- Whitehouse D. 1997. A Distinctive Group of Late Roman Glass Vessels. In B. Magnusson ed. *Ultra terminum vagari. Scritti in onore di Carl Nylander*. Rome. Pp. 367–375.
- Winter T. 1996. Jewelry and Miscellaneous Objects. In G. Avni and Z. Greenhut. *The Akeldama Tombs: Three Burial Caves in the Kidron Valley, Jerusalem* (IAA Reports 1). Jerusalem. Pp. 109–116.
- Winter T. 2000. The Glass Vessels. In J. Seligman and R. Abu-Raya. *Dwelling Caves on the Mount of Olives (Et-Tur)*. *Atiqot* 40:132–133.
- Yeivin S. 1958. A year's work in Israel. *Archaeology* 11:239, 241.