

REMAINS OF A GLASS INDUSTRY AND GLASS FINDS FROM HORBAT BIZ‘A

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The salvage excavation at Horbat Biz‘a (see ‘Ad, this volume) unearthed remains of a glass industry and large quantities of glass finds.¹ This report includes a summary of the glass production remains from Areas A, B and C, and a detailed discussion of the glass finds from three selected loci in Area C (L300, L301 and L303). The aim of this report is to bring attention to the large-scale glass activity in the region. Therefore, a brief summary of the glass industry remains found in other salvage excavations in the region is included.

THE GLASS INDUSTRY

The glass industry is usually divided into two production stages: primary, i.e., the raw glass making, and secondary, i.e., the production of glass vessels and objects from raw glass chunks (for further discussion of the terminology and technology, see Gorin-Rosen 2000a; Gorin-Rosen and Katsnelson 2007:124–127, 129, and references therein). The finds from Horbat Biz‘a represent both primary and secondary glass production stages.

Area A

The latest phase of this area dates to the late Byzantine–early Umayyad periods. Some of the remains described below were found atop the Roman buildings of Strata II and III (see ‘Ad, this volume). Most of the glass finds retrieved from this area included the remains of glass production, mainly debris from glass furnaces and raw glass chunks (Fig. 1:1–3). The fragments of glazed bricks (L121, B1050; Fig. 1:1), probably originating in the furnaces’ walls, are similar to those which were found at

Bet Eli‘ezer, Hadera, c. 7 km west of Horbat Biz‘a (Gorin-Rosen 2000a:52–54). This type of debris characterizes raw-glass furnaces, and is not found within glass-workshop debris.

The glazed bricks, together with the large quantities of raw-glass chunks, indicate the existence of a glass industry; however, lacking other evidence, the stage of production, primary or secondary, could not be deduced. The absence of blowing wasters or other glass-working wasters in this area might attest that a raw-glass furnace or furnaces were located nearby. Such furnaces probably supplied raw-glass chunks to a local glass workshop or to glass workshops in the region. Alternately, the raw material could have been exported overseas.

Area B

Two fragments of glass furnaces were retrieved from this area (L200, B2002): one is a large waster fragment, including raw glass of olive-green and bluish-green hue with lime deposits; the other is a small fragment of debris with bluish green glass.

Area C

Remains of glass production were found in all the baskets retrieved from Area C (Loc 300, 301, 302, 303, 307 and 309). The debris comprises remains from the furnaces (Fig. 1:4–6, 15–18), raw-glass chunks of various sizes and hues (Fig. 1:7–12, 19–24, 26), melted glass, drops (Fig. 1:25) and blowing wasters (moils; Fig. 1:13, 14, 27). The moils were left over from the blowing process of vessels with necks, such as bottles, tubes and jugs. Their existence is the strongest evidence for a glass workshop in this settlement or in its industrial area



Fig. 1. Remains of glass production.

◀ Fig. 1

No.	Locus	Basket	Description	Color	Dimensions (cm)
1	121	1050	Fragment of glazed brick: the inner side (left) is burnt with remains of organic material; the glazed surface (right) is green with shinning; some glaze veins are visible	Green	6.0 × 4.0 × 2.5
2	122	1059	Partly vitrified glass with limestone debris, covered with lime deposits	Bluish green	6.5 × 5.0 × 3.5
3	105	1005	Raw glass chunk of deep color covered with lime deposits and crust	Deep Greenish blue	6.0 × 3.0 × 2.5
4	301	3009/1	Fragment of conglomerate of severely heated stone with some veins of glass and partially vitrified glass	Greenish blue	5 × 4 × 3
5	301	3009/3	Fragment of molten glass cooled quickly like drops	Greenish blue	3.0 × 3.5 × 2.0
6	301	3009/3	Fragment of glazed brick	Green	7 × 4 × 2
7	301	3009/3	Raw glass chunk, broken, clear, covered with silver weathering and lime deposits	Green	4.5 × 2.0 × 1.0
8	301	3009/3	Raw glass chunk, broken, clear, covered with silver weathering and lime deposits	Yellowish green	5.0 × 2.5 × 0.8
9	301	3009/2	Raw glass chunk, triangular shape, broken, clear	Yellowish green	3.0 × 3.0 × 0.5
10	301	3009/2	Raw glass chunk, triangular shape, broken, clear	Dark yellowish green	3.5 × 2.2 × 2.0
11	301	3009/2	Raw glass chunk, triangular shape, broken, clear	Bluish green	4.5 × 2.0 × 0.3
12	301	3009/2	Raw glass chunk, rectangular shape, broken, clear, very fine glass with a small patch of limestone	Greenish blue	5.5 × 2.2 × 2.2
13	301	3019	Small fragment of moil with triangular section on one edge, with remains of the blow-pipe	Light green	
14	301	3019	Fragment of cylindrical moil with triangular section on one edge, with remains of the blow-pipe	Light green	
15	303	3020	Fragment of conglomerate of severely heated stone with veins of glass and partially vitrified glass	Greenish blue	10.0 × 5.0 × 3.5
16	303	3020	Fragment of conglomerate of severely heated stone with veins of glass and partially vitrified glass	Greenish blue	7.0 × 4.0 × 1.5
17	303	3020	Fragment of molten glass cooled quickly like drops, covered with lime deposits	Green	4.0 × 3.0 × 1.5
18	303	3020	Fragment of molten glass cooled quickly like drops, covered with lime deposits, flat on the lower side	Deep bluish green	3.5 × 3.2 × 1.2
19	303	3020	Raw glass chunk, broken, clear, on a layer of limestone	Bluish green	5.0 × 5.7 × 2.0
20	303	3020	Fragment of conglomerate of severely heated stone with veins of glass and partially vitrified glass	Bluish	6.0 × 3.5 × 1.2
21	303	3020	Raw glass chunk, broken, clear	Bluish	2.5 × 2.0 × 7.0
22	303	3020	Raw glass chunk, broken, clear	Bluish	1.5 × 2.0 × 1.5
23	303	3020	Raw glass chunk, triangular shape, broken, clear	Olive green	3.0 × 2.4 × 2.0
24	303	3020	Raw glass chunk, broken, triangular shape, clear, covered with lime deposits	Olive green with bluish veins	6.5 × 4.8 × 1.2
25	303	3036	Drop, covered with lime deposits	Greenish blue	4 × 2 × 1
26	303	3036	Raw glass chunk, broken, triangular shape, clear	Greenish blue	6.2 × 2.3 × 1.0
27	303	3036	Small fragment of moil with triangular section on one edge, with remains of the metal blow-pipe	Bluish green	1.2

(see Discussion, below). Most of the debris found in this area, except for the moils, is similar to the debris found at Khirbat el-Ni‘ana (Gorin-Rosen and Katsnelson 2007:124–127, 129, Fig. 25, and references therein).

THE GLASS VESSELS

Area A

Very few fragments of glass vessels (too small to be drawn) were retrieved from this area, mainly dating to the Byzantine or late Byzantine period. The dated fragments are: bowls with out-folded rims; bowls with a high, tubular ring base; bottles with a multiple trail decoration around the neck or with in-folded rims; and wineglasses with tubular bases. Although some of the shapes were common during the Late Roman and early Byzantine periods, the fabric and workmanship of the vessels point toward a Byzantine- or even a late Byzantine-period date. For a similar Byzantine assemblage in the region, see Horbat Rozez (Winter 2010a).

Area C

The glass vessels in this area were retrieved from three loci (L300, L301, L303). The majority of the finds originated in L300—part of a huge refuse pit, which also included stones, marble and pottery dated by the excavator to the Late Roman and Byzantine periods (see ‘Ad, this volume; Gendelman, this volume). Other vessels were found in the fill (L301, L303) of a Byzantine-period installation. Here follows a description of the vessel types according to loci.

Locus 300, Basket 3001 (Figs. 2, 3)

This is the largest group of glass vessels unearthed during the excavation. They are characterized by their good-quality fabric, delicate walls, fine craftsmanship and homogeneous shapes, probably attesting that they were products of a local workshop. This vessel group finds parallels with the glass vessels found among the debris of the glass workshop at Jalame (Weinberg and Goldstein

1988); however, differences might occur as a result of regionalism or a slightly different date.

Among the published glass assemblages from the region, the finds from Khirbat Ibreiktas (Kletter and Rapuano 1998; Gorin-Rosen 1998), Ḥorbat Mēsar Stratum I (Sa‘id 2009; Katsnelson 2009), Ḥorbat Kosit (East; Katsnelson 2010a) and Nahal Hadera (North; Katsnelson 2010b) are most similar to the glass finds from Ḥorbat Biẓ‘a. The similarities between the material from these sites and the finds from L300 suggest a local production. Based on the parallels mentioned above, the vessels from L300 were dated to the late third–fourth centuries CE.

Bowl with Double Fold below the Rim (Fig. 2:1).—The bowl exhibits a flaring rim with a double hollow fold below it, thickened on both sides. This vessel type appeared during the late first–early second centuries CE and continued up to the fourth–early fifth centuries CE with minor differences. Bowl No. 1 is probably a later subtype, widely distributed in Israel, although only few have been published so far.

Such rims were found in the glass factory dump at Jalame, dated to the second half of the fourth century CE. Weinberg and Goldstein (1988:53–55, Fig. 4–15:109, 112, 113) noted that although these fragments were found at Jalame in relatively small numbers, they should be identified as a local product. Rims of this type were found elsewhere in the region, e.g., at Ḥorbat Mēsar (Katsnelson 2009: Fig. 6:2) and Ḥorbat Kosit (East; Katsnelson 2010a: 137, Fig. 3:15).

Deep Bowl with Flaring Rim and Horizontal Fused-In Trail below It (Fig. 2:2).—This vessel is characterized by its very thin and delicate flaring rim and a wall with a thin horizontal, fused-in trail of the same color below it. Bowls and beakers with applied trails were in use in the Galilee during the third century CE, e.g., in Burial Cave D at Hurfeish (Gorin-Rosen 2002:146*–147*, Fig. 5:13, 14, and see there further references to Nahariyya). The bowls

from Galilee probably represent local products. A wide beaker with a similar fused-in trail below the rim was found in Burial Cave C at Hurfeish, dated to the late third–fourth centuries CE (Aviam and Gorin-Rosen 1997:33–34, Fig. 6:4). Although No. 2 is wider, its shape bears more similarities to beakers than to bowls. It was probably produced locally.

Bowl with Out-Folded Rim (Fig. 2:3).— Bowl No. 3 is characterized by its out-folded, upright rim and slanting wall. Bowls of this type are rather common during the Late Roman and early Byzantine periods, e.g., at Jalame, dated to the second half of the fourth century CE (Weinberg and Goldstein 1988:41–44, Fig. 4-3:30, 31). A similar rim was found in the fill of the Roman painted tomb at Ashqelon, plausibly dating to the fourth century CE (Katsnelson 1999:69*, Fig. 1:4).

Deep Bowls with Upright or Slightly In-Curved Rim with a Slight Ridge below It (Fig. 2:4, 5).— Bowl No. 4 is made of a yellowish green glass, in contrast to the bluish green hues dominating the rest of the assemblage. The general shape of this bowl is rather simple, characterized mainly by a slight curve of the rim and the ridge below it.

Deep bowls with slightly in-curving rims were found at Khirbat Ibreiktas and at Jalame, but without the ridge (Gorin-Rosen 1998:56, Fig. 7:3, and see references to Jalame therein). Shallow bowls with a horizontal ridge were very common during the fourth century CE (see, e.g., the bowls from Jalame: Weinberg and Goldstein 1988:45–47); however, deep bowls were otherwise rare. This bowl-type is rather common at the site, as well as in the region, e.g., at Horbat Mēsar (Katsnelson 2009: Fig. 6:4) and Horbat Kosit (East; Katsnelson 2010a: Fig. 3:11), probably indicating that it was a local type during the fourth century CE.

Small Bowl with Short, Flaring Rim and Slightly Curved Wall (Fig. 2:6).— Bowl No. 6 has a curved wall, similar in shape to a bowl found

at Jalame (Weinberg and Goldstein 1988:40, Fig. 4-1:4). Hemispherical bowls with a flaring rim, a globular body and a concave base were very common during the third and early fourth centuries CE (Gorin-Rosen 2002:153*, Fig. 9:30).

Small Beaker or Bowl with Short, Flaring Rim (Fig. 2:7).—The almost upright wall and flaring rim of No. 7 could have belonged to a beaker, such as those found in Burial Caves A and C at Hurfeish, dated to the third–fourth centuries CE (Aviam and Gorin-Rosen 1997:27–28, 33–34, Figs. 2:4, 6:3), or to a small bowl.

Bowl or Beaker with Slightly Flaring Thickened Rim (Fig. 2:8, 9).—The remaining fragments of this vessel type are small; therefore, they might be assigned to either a deep bowl or a beaker. Both have a slightly flaring and thickened rim. Vessels of this type were also found at Khirbat Ibreiktas, dating to the fourth century CE (Gorin-Rosen 1998:56, Fig. 7:4, and see references therein).

Bowl or Beaker with Applied Horizontal Trail below Rim (Fig. 2:10).—This rim could belong to a deep bowl or a beaker decorated with an applied horizontal trail. Similar bowls and beakers were found at Jalame, dated to the second half of the fourth century CE (Weinberg and Goldstein 1988:55–56, 63, Figs. 4-17:127 [bowl]; 4-25:195, 196, 199 [cups], with further references therein). Two vessels of this type were found at Khirbat Ibreiktas, dated to the fourth century CE (Gorin-Rosen 1998:56, Fig. 7:5, 6). Rims of this type were found in the region, e.g., at Horbat Mēsar (Katsnelson 2009: Fig. 6:6–7), and Horbat Kosit (East; Katsnelson 2010a:139, Fig. 3:17).

Bowls with a Ring Base (Fig. 2:11–13).—Three bowls of this type were found, representing two subtypes: No. 11 is a small, low hollow ring base, probably belonging to a small bowl. A similar base was found at Khirbat Ibreiktas (Gorin-Rosen 1998:56, Fig. 7:8). Vessel Nos.

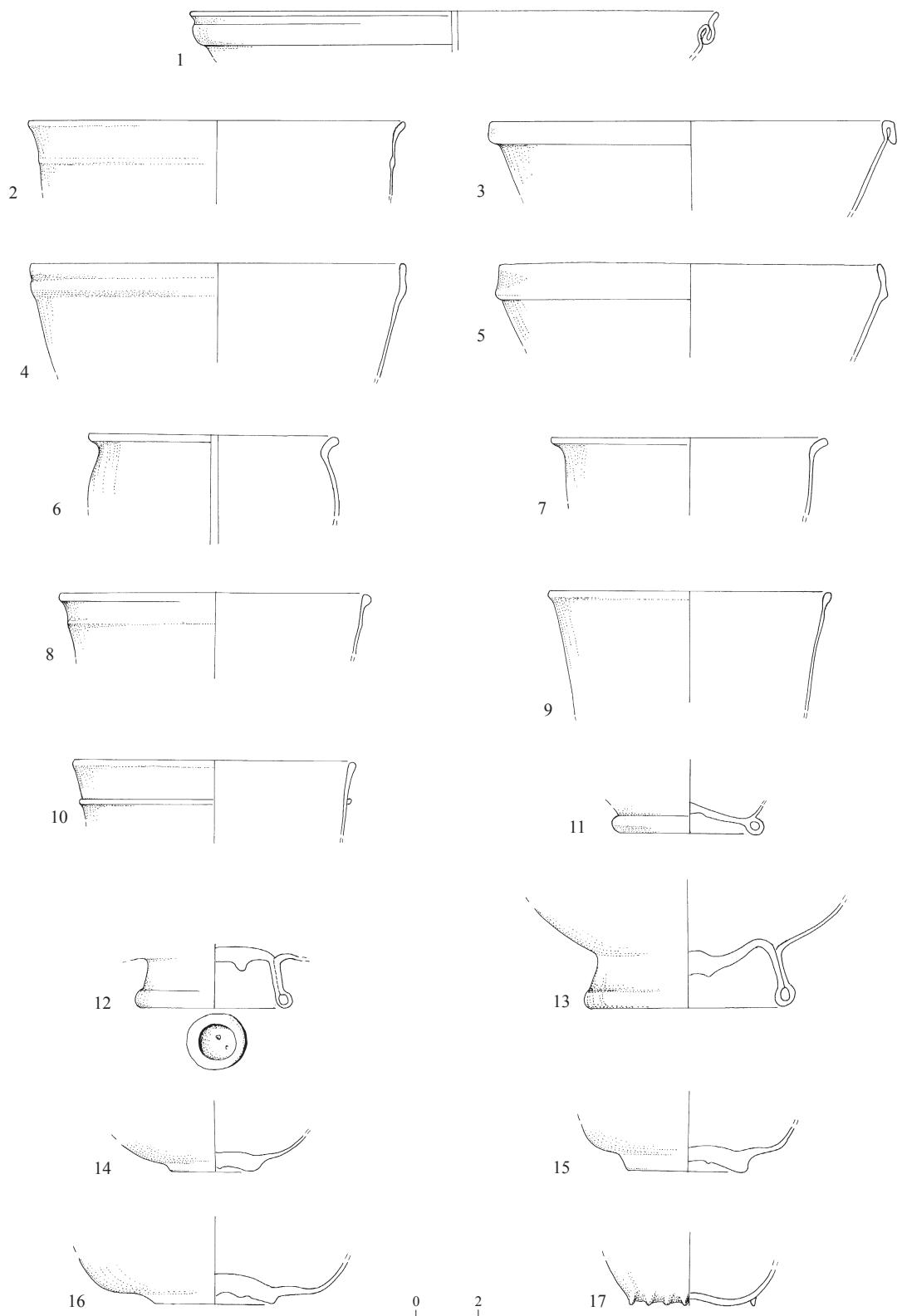


Fig. 2. Glass vessels from L300, B3001.

◀ Fig. 2

No.	Color and fabric	Weathering
1	Bluish green	Black and silver enamel-like crust, pitting
2	Bluish green	Black and silver enamel-like crust, pitting
3	Almost colorless, light bluish green tinge	Black and silver enamel-like crust, pitting, iridescence
4	Yellowish green	Silver weathering removed, slight iridescence
5	Bluish green	Black and silver enamel-like crust, pitting
6	Invisible	Black enamel-like crust, pitting
7	Almost invisible, probably light bluish green	Black enamel-like crust, pitting
8	Invisible	Black and silver enamel-like crust, pitting
9	Bluish green	Black and silver enamel-like crust, pitting, iridescence
10	Bluish green	Silver weathering removed, sand deposits
11	Bluish green	Black and silver enamel-like crust, pitting
12	Bluish green	Black and silver enamel-like crust, pitting, iridescence
13	Bluish green	Black and silver weathering
14	Colorless with greenish blue tinge	Black and silver weathering (removed)
15	Greenish blue	Black and silver weathering (removed)
16	Light bluish green	Black and silver enamel-like crust, pitting
17	Invisible, probably colorless	Black and silver enamel-like crust, pitting

12 and 13 are characterized by high, hollow ring bases with a crude pontil mark. The bottom of No. 12 is flat, with a slight concavity in its center, while No. 13 is concave, with a crude concavity within. Both bowl bases were very common during the Late Roman and early Byzantine periods. Bowls with similar bases were found in the region, e.g., at Horbat Kosit (East; Katsnelson 2010a:135–137, Fig. 2:8, 9), dated to the fourth and early fifth centuries CE.

Bowl-bases such as No. 13 were found in Burial Cave D at Hurfeish, dated to the third century CE (Gorin-Rosen 2002:146*, Fig. 5: 13, 14), as well as in Tomb XV at Hanita, dated to the third–early fourth centuries CE (Barag 1978:19, Fig. 10:34).

Bowl or Beaker with Slightly Concave, Solid Base (Fig. 2:14–16).— Base Nos. 14–16 are similar in shape and workmanship, differing in size. All the bases exhibit the beginning of a slanting wall, rather than an upright one, which might attest that they belong to bowls and not

to cylindrical beakers. Although thick and solid, these bases are different from the solid bases of the beakers, which were also common during the fourth century CE, e.g., at Jalame (Weinberg and Goldstein 1988:60–61). The difference between them is visible mainly in the concavity of their bottoms: the bases of the beakers are usually flat and rather thickened.

Vessels similar to Nos. 14–16 are rather rare in publications, although many have been found lately in salvage excavations in this region, e.g., at Horbat Mēsar, with rims similar to No. 10 (Katsnelson 2009: Fig. 6:7–9). A base of this type was previously found at Mezad Tamar, where it was identified as a beaker with a solid base (Erdmann 1977:114, Pl. 1:14).

Bowl with Pinched Toes around the Base (Fig. 2:17).— Bowl No. 17 is very delicate. The toes are small, identical in size, with equal spaces between them. Bases of this type were widely found; however, most are as yet unpublished. They could belong to bowls or flasks. A few

bases of this type were found in the region, e.g., at Horbat Mēsar (Katsnelson 2009: Fig. 7:6) and at Caesarea Maritima (Israeli 2008:378–379, 404, Nos. 100–102, with further references therein). One base of this type was found at Jalame on the surface (Weinberg and Goldstein 1988:59–60, Fig. 4-22:161, Color Plate 4A, and see reference therein to Nahariyya, dated to the third–first half of the fourth centuries CE, and to earlier examples from Dura Europus, dated to the second or early third centuries CE).

Bottle with Cylindrical Funnel Mouth (Fig. 3:1).— The simple rounded rim at the edge of the cylindrical funnel mouth usually

characterizes large bottles, dated to the Late Roman and Byzantine periods. Such rims were found at Jalame, some within the factory dump (Weinberg and Goldstein 1988:73, Fig. 4-35:295). A varied group of bottles with cylindrical mouths was found at Caesarea Maritima, where it was assigned to the Byzantine period (Israeli 2008:387–388, 415, Nos. 221–227, 231–232).

Bottle or Jug with Funnel Mouth and In-Folded Rim, Decorated with a Single Trail (Fig. 3:2).— The trail is thick, made of the same color as the vessel. Bottles of this type were found in the factory dump at Jalame, dated to the second

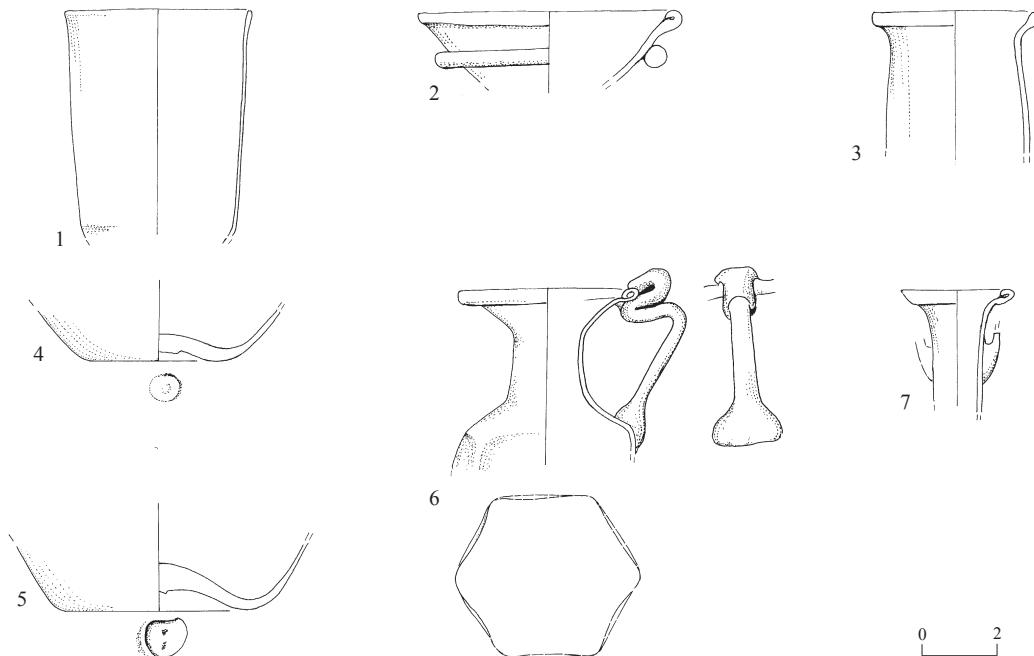


Fig. 3. Glass vessels from L300, B3001.

No.	Color and Fabric	Weathering
1	Light green	Removed
2	Bluish green	Black and silver enamel-like crust, pitting
3	Bluish green	Black and silver enamel-like crust, pitting
4	Greenish blue	Black and silver enamel-like crust, pitting
5	Bluish green	Black and silver enamel-like crust, pitting
6	Light bluish green	Black and silver enamel-like crust, pitting, iridescence
7	?	Black and silver enamel-like crust, pitting, iridescence

half of the fourth century CE (Weinberg and Goldstein 1988:69–70, Fig. 4-31:262, and see further references therein). Since the publication of Jalame, large quantities of such bottles and jugs have been retrieved (see Gorin-Rosen 2009:92–93, Fig. 2.54:3–5, with further references therein), some of which were most probably the products of a local glass workshop during the fourth–early fifth centuries CE.

Bottle with Flaring Rim (Fig. 3:3).—The flaring rim of this vessel was partly folded inward and reheated. The fabric is similar to that of the rest of the group and therefore, might be the product of a local glass workshop.

Bottles or Jugs with Concave Bases (Fig. 3:4, 5).—The two bases are characterized by a thickened concave bottom, pushed in with a crude pontil scar. Both are made of the same fabric and were probably produced locally. Bases of this type are the most common shape of closed vessels from the beginning of glass making up to modern times. They are usually dated by other vessels found in the same context.

Hexagonal Jug (Fig. 3:6).—Jug No. 6 has a short funnel mouth, an in-folded rim, a short cylindrical neck and the beginning of a carinated shoulder. The trail handle was applied from shoulder to rim and then folded upward. The body is irregular in shape or hexagonal. No remains of a mold-blown design are visible. There is no exact parallel for this vessel from published excavations. An intact, mold-blown octagonal juglet was found in a burial cave at Nahal Hadera (North), within a group dated to the late third–fourth centuries CE (Katsnelson 2010b:150–151, Fig. 6, and see further discussion and parallels therein). This octagonal juglet bears similarities to jug No. 6 in the shape of its mouth and rim, the connection of the handle to the rim and the general shape of the shoulder.

Cosmetic Tube (Fig. 3:7).—Fragment No. 7 is the upper part of a cosmetic tube with a

flared, in-folded rim and two applied handles drawn from the neck upward. A complete tube with three similar handles was found in Tomb 5 at Jatt (Porath et al. 1999:45, Fig. 33:1, dated after Barag 1970:155–156, Fig. 35:1 to the third–fourth centuries CE). A similar tube was found in Burial Cave 124 at Nahal Hadera (North; Katsnelson 2010b:145–147, Fig. 2:9).

Locus 301, Baskets 3009 (Fig. 4:1–6) and 3019 (Fig. 4:7, 8)

The following group includes various types of Byzantine-period glass vessels. Although all of them are diagnostic fragments of well-known types, they have special characteristics, which might imply they were produced in a local workshop.

The majority of the fragments belong to various types of hanging oil lamps, which had wicks in their centers. The wick holders were made either of metal wires—some were found in excavations in Israel—or clay. Five clay wick holders, which were found in this locus (see Gendelman, this volume: Fig. 4:20, including references to Bet She‘an and Caesarea), attest to their usage at this site. The use of simple clay wick holders within glass oil lamps was probably more intensive than has been recorded from excavations in the region (see Foy 2011:212–215, 239: Fig. 13).²

Bowl with Out-Folded Hollow Rim (Fig. 4:1).—Fragment No. 1 is part of a rather large bowl. Although bowls with out-folded, hollow rims were very common during the Late Roman period, e.g., at Jalame (Weinberg and Goldstein 1988: Fig. 4-3:15–17), this upright, wide rim seems to be of a later subtype, dated to the Byzantine period (see, e.g., Tirat Ha-Carmel; Pollak 2005:10*, Fig. 2:15).

Bowl-Shaped Oil Lamps (Fig. 4:2–5).—Vessel Nos. 2 and 3 are bowl-shaped oil lamps, usually with three handles. The handles are round, thick and short, drawn from the body up to the rim. They differ from the common, Byzantine-type oil-lamp handles in shape, length and angle,

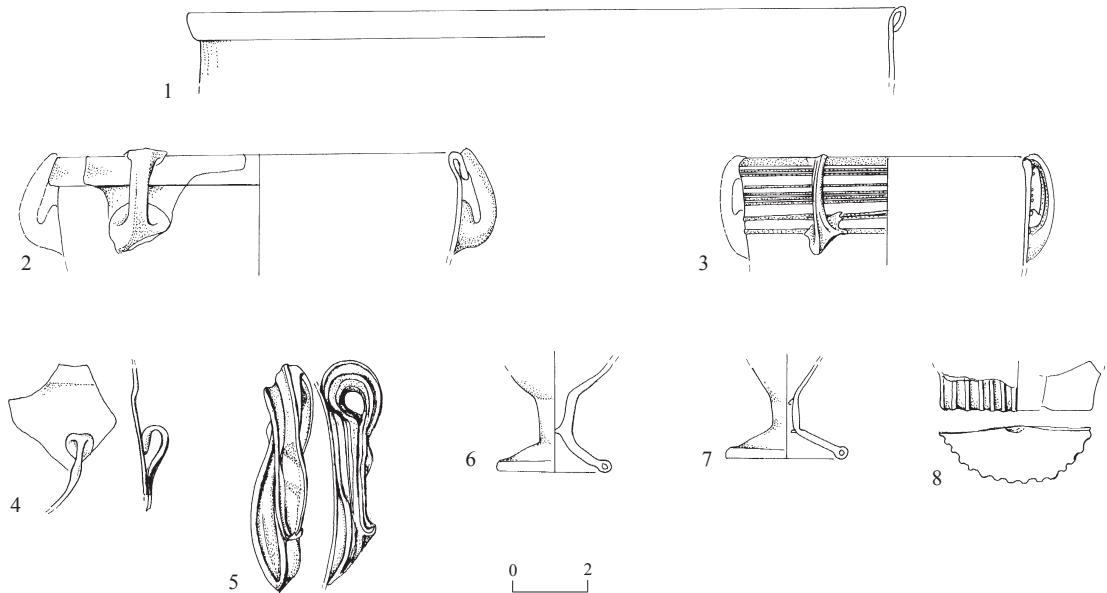


Fig. 4. Glass vessels from loci 301 and 303.

No.	Locus	Basket	Color and Fabric	Weathering
1	301	3009/2	Light green, bubbly glass with impurities	Silver weathering and few sand deposits
2	301	3009/2	Bluish, fairly good quality	Sand deposits
3	301	3009/2	Light bluish green glass with bluish trails and handle, black impurities in the blue glass	Silver weathering and sand deposits
4	301	3009/1	Light green	Sand deposits
5	301	3009/1	Greenish yellow	Silver weathering and sand deposits
6	301	3009/1	Light bluish green	Silver weathering and sand deposits
7	303	3020	Greenish	Silver weathering and sand deposits
8	303	3020	Greenish blue	Sand deposits, slight iridescence and pitting

e.g., from Khirbat Tabaliya, Jerusalem (Gorin-Rosen 2000b:90*-91*, Fig. 3:31–32, and see further references therein). The similarity in the workmanship of the handles might point to a local production, or to a single source for both lamps.

Vessel No. 2 is characterized by a slightly incurving, out-folded hollow rim. Such oil lamps are most common during the Byzantine period. The lamps found in Israel are generally similar, with only small differences, e.g., in the tooling of the handles.

Vessel No. 3 is characterized by an upright rounded rim, decorated with applied horizontal blue trails on and below the rim. This type of decoration is very common in Byzantine and

late Byzantine wineglasses, e.g., at Jerusalem and Ashqelon (Katsnelson 1999:70*-71*, Fig. 2:9–11). The three handles, probably used for suspension, and its use as an oil-lamp, are rather rare, possibly suggesting it is a local product. The decoration of the horizontal trails on No. 3 resembles that of a shallow bowl found in a burial cave at Kafr ‘Ara, a few kilometers north of the site (Sussman 1976:96, 99, Fig. 4:10). Although the vessel from Kafr ‘Ara differs in shape and has no exact parallel, it also might be a product of a local glass workshop, as I believe is No. 3.

Fragment No. 4 may represent a small part of an uneven cut-off rim with a tiny handle. This vessel is characterized by its thin wall and

delicate handle. It is one of the main Byzantine subtypes (see also Gorin-Rosen and Winter 2010:174). Oil-lamp fragments of the same subtype were found in excavations at Caesarea Maritima (Peleg and Reich 1992:155–156, Fig. 18:19; Israeli 2008:381–382, 407, Nos. 137–139). Oil lamps of this type are usually globular with an uneven cut-off rim, like the vessel found in Tomb 231 at the Dominus Flevit compound, Jerusalem, dating from the end of the third up to the mid-fourth centuries CE (Bagatti and Milik 1958:147–48, Fig. 35:12, Fot. 125:14). Barag noted that even if this lamp is from the mid-fourth century CE (the latest date of the tomb), it still presents the earliest appearance of the type (Barag 1970:183–184, Pl. 40:10).

Handle No. 5 probably belongs to a bowl-shaped oil lamp with three large, crude, ribbon suspension handles with a small ear-shaped hole and an elongated strap applied to a rather thin wall (see also Gorin-Rosen and Winter 2010:174). The geographically closest parallel to this subtype was unearthed at Ramat Ha-Nativ (Cohen 2000:172, Pl. IV:51)—no identification of the vessel type or date were offered there. A similar handle was found in the Northern Church at Reḥovot-in-the Negev (Patrich 1988:140–141, Pl. XIV:38). Handles of the same type, although with a smaller strap, were found at Khirbat Ṭabaliya, Jerusalem, dated to the late Byzantine period (Gorin-Rosen 2000b:89*–90*, Fig. 3:27, 28, and see further references therein to Jerash, ‘Araq el-Amir, Meẓad Tamar and Jalame).

Wineglass with Small Ring Base (Fig. 4:6).— Wineglass No. 6 is small, with a short cylindrical foot and a small ring base. This is the most common wineglass type of the Byzantine period, sometimes also continuing into the Umayyad period. To mention just a few finds from the region: Haifa, Kh. Tin’ani, dated to the sixth–seventh centuries CE (Gorin-Rosen 1999a:31, Fig. 36:11), the Byzantine Church at Shave Ziyyon (Barag 1967:67–68, Fig. 16:15, 17), Nazerat (Bagatti 1969: Fig. 237:29–32) and

Jerusalem (Gorin-Rosen 1999b:210–212, Fig. 2:25; 2000b:85*–86*; and see further references therein). This type has a wide distribution, covering Israel, Syria, Lebanon and Jordan (Dussart 1998:115–121, Pl. 27–28: BIX.1).

Locus 303, Basket 3020 (Fig. 4:7, 8)

Wineglass with Small Ring Base (Fig. 4:7).— Vessel No. 7 is a wineglass with a small ring base and a short cylindrical foot, of the same type as Fig. 4:6, above.

Bottle or Jug with Mold-Blown Vertical Ribbing (Fig. 4:8).— Fragment No. 8 is a flat, solid base of a bottle or jug, decorated with mold-blown vertical ribbing. The shape and workmanship of the vessel is very common, resembling the mold-blown vessels from Khirbat Jarrar (Gorin-Rosen 2004a:17*–18*, Fig. 27:2). These vessels were probably made in a local glasshouse. The evidence of local glass production at Horbat Biz‘a, as well as at Jatt and Horbat Mēsar, further support this assumption.

DISCUSSION: GLASS INDUSTRY REMAINS IN THE REGION

Surveys and salvage excavations conducted in the region unearthed a rather large quantity of glass-making remains (see Fig. 1). Some of these finds were previously only briefly noted, and some are as yet unpublished. The glass production evidence from Horbat Biz‘a is thus very important, as it represents both primary and secondary glass-making stages.

The primary stage of glass-making is attested at the site by the glazed mudbricks and raw-glass chunks retrieved from Area A (see above). The secondary glass making stage is usually identified by glass blowing remains. These include leftover fragments from the blowing process, e.g., edges of metal pontils with remains of glass, “moils” (e.g., Fig. 1:13, 14, 27), blowpipe crack-offs, drops, deformed pieces and small discs or “buttons” of glass applied to the pontils’ edge during

the process of knocking-off the vessel at the end of the blowing process. Various such remains were found in the debris of the glass workshop at Jalame, dated to the second half of the fourth century CE (Weinberg 1988:24, 37, Pl. 3-5:A-F) and within the remains of the local glass workshop at Khirbat el-Ni‘ana (Gorin-Rosen and Katsnelson 2007:124–129, Fig. 25). The secondary stage of glass production from Ḥorbat Biẓ‘a is presented in small chunks of raw glass, as well as fragments of the lower parts of furnaces. The floors of the secondary furnace are different from the floors of the primary glass furnaces, e.g., at Bet Eli‘ezer, Hadera (Gorin-Rosen 2000a:52–54, Color Photo 8), and usually contained superposed layers of dirty glass and debris and thus, indicate glass blowing.

Glass-making and glass-working activities have been extensively attested to in the region (see, e.g., Gorin-Rosen and Katsnelson 2007:147). The following discussion summarizes the information accumulated here-to-far from the region, from sites that are distanced at a radius of c. 5 km from Ḥorbat Biẓ‘a.

Baqā el-Gharbiya Area.—Glass fragments, as well as remains of glass working, were found 300 m west of the bathhouse remains at Baqā el-Gharbiya (Gorin-Rosen 2001:69*–70*, n. 3).³ Recently, Katsnelson (2010a; 2010b) published two glass assemblages from the Baqā el-Gharbiya area: one from Ḥorbat Kosit (East) and the other, from Nahal Hadera (North). These two groups bear many similarities to the glass finds from Ḥorbat Biẓ‘a.

Katsnelson suggested that the vessels from Ḥorbat Kosit (East) were produced in a local glass workshop, based on their unity in fabrics and shapes, as well as the predominance of specific types in the assemblage (Katsnelson 2010a:133, 141, and see further discussion therein). The vessels from Nahal Hadera (North) originated in a burial cave (No. 124), all of them “exhibiting certain similarities in shape and pattern, probably presenting the work

of a local craftsman” (Katsnelson 2010b:143). The assemblage from Ḥorbat Kosit (East) was dated to the fourth–early fifth centuries CE (Katsnelson 2010a:133), and the vessels from Nahal Hadera (North) were dated to the late first–second centuries and late third–fourth centuries CE (Katsnelson 2010b:151). These finds point to a long tradition of glass working in the region, beginning in the late first century and continuing throughout the Byzantine period.

Tel Jatt.—On the northeastern slope of Tel Jatt (Sa‘id 2004:26*) numerous fragments of glass vessels and remains of glass production were unearthed (Gorin-Rosen 2004b:26*). A rather large (length 0.22 m) raw-glass lump/chunk of greenish blue hue was retrieved, its upper part flat, its lower section naturally broken. This might attest that the lump originated from the top of the glass furnace. A few small chunks and a deformed fragment were retrieved as well. These might point to a secondary production stage, i.e., a glass workshop at the site. There is no further evidence for this production, neither large amounts of debris nor bricks, and therefore, I cannot yet suggest a primary production at the site. The glass vessels found at Tel Jatt date primarily to the Byzantine period (Gorin-Rosen 2004b:26*; see also Porath et al. 1999:70–71).

Horbat Mēsar.—Salvage excavations at the site revealed remains of glass-production activities (Katsnelson 2009; Sa‘id 2009). The majority of the glass finds date from the third to the early fifth centuries CE (Stratum I), although some earlier glass vessels, dated to the second century CE (Strata II–III), were found as well. Another, yet unpublished excavation at the site, yielded glass fragments, mainly dating to the fourth–fifth centuries CE,⁴ as well as the remains of a secondary glass industry, including small chunks of raw glass, deformed vessels and debris from a glass furnace.

Horbat Nazur.— A rather large amount of glass vessels (700 fragments, of which 10% were diagnostic) was found during a salvage excavation at Horbat Nazur (Winter 2010b:99*), c. 2 km north of Horbat Biz‘a. Most of the vessels in that glass assemblage are simple common types. Winter (2010b:103*) has suggested they were locally made, as some of the vessels have crude pontil marks or even remains of glass from the pontil, which usually point to mass production of daily-use vessels in the local workshops. This assemblage was dated to the Byzantine period.

The evidence pertaining to glass-production activities in the region of Horbat Biz‘a exhibits a long-lived tradition, spanning the Early Roman–Byzantine periods. The variety of vessel types, and the quality of their fabrics and workmanship, point to them being a branch of the local economy. The dense distribution of glass-production sites in the region suggests the possibility that each village or settlement exploited a small, local workshop that supplied its community’s needs (see also Gorin-Rosen and Katsnelson 2007:145–147) or exported glass to markets farther afield.

NOTES

¹ I wish to thank Uzi ‘Ad for inviting me to study this material. The glass was restored by Olga Shorr, drawn by Carmen Hersh and photographed by Clara Amit.

² For similar finds from Medinet Madi, Fayum, Egypt, see Silvano 1999:15, Pl. VIIb.

³ Doron Lipkonski, the area supervisor, gave me the fragment to study.

⁴ The excavation was conducted by Morad Tabar and Mohammad Abu Fana (Permit No. A-3925). The glass is being studied by the author.

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