

GLASS FINDS FROM THE CRUSADER-PERIOD BATHHOUSE IN 'AKKO (ACRE)

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In the course of the excavation of the bathhouse in Crusader Acre (Smithline, Stern and Stern, this volume),¹ more than 700 glass fragments were discovered, the vast majority of them windowpanes. A few chunks of glass-production debris and 17 vessel fragments were identified. Most of them were too small to draw, but all the types are described below, and all the fragments are included in the discussion.

THE GLASS VESSELS

The majority of the vessels date to the Crusader period. The exceptions are four very small cast-bowl fragments (e.g., Fig. 1:1) and one glass inlay or gaming piece (Fig. 1:2) that date to the late Hellenistic and Early Roman periods, and a fragment of a Byzantine wineglass (not illustrated).

The Hellenistic–Early Roman Period

Cast Bowls.— Four fragments of cast bowls were found. The first (L313, B3071; Fig. 1:1) is of a thick slanting wall of an unusual shade of deep aquamarine, decorated with deep wide grooves. The silver weathering and iridescence that cover the surface do not mask the exceptionally high quality of the fabric and workmanship. The three other fragments are not illustrated. One (L301, B3016) is a rim of a small bowl, with a diameter of about 15 cm; the glass is colorless, the surface is encrusted with thick black and silver weathering and decorated with two horizontal shallow grooves below the rim on the exterior.² A similar cast bowl, with grooves, lower down on the wall, was found in the 'Akko Courthouse Parking Lot site (Avshalom-Gorni 1999: Fig. 22:2).

Another (L516, B5096) is a wall fragment with an incised shallow horizontal groove below the rim. The tip of the rim itself is missing. The third fragment (L528, B5147) is also of a wall, made of colorless glass typical of the Early Roman period.

Inlay or Gaming Piece (L514, B5095; Fig. 1:2).— The oval inlay is of light bluish green glass, covered with silver weathering and iridescence. Its upper face is rounded, the underside flat. Similar glass inlays were found at the Courthouse Site in Acre (Katsnelson, forthcoming); others, which may also be gaming pieces, were found in Jerusalem: in the Jewish Quarter (Area X-2) and in the City of David (Gorin-Rosen 2003: Pl. 15.9:G 106, and see further references therein). Similar objects have been found in various excavations in the eastern Mediterranean, and are usually dated to the Hellenistic and Early Roman periods (see for example a group of 103 pieces in the Israel Museum Collection, Spaer 2001:233, 236, Pl. 41:548 with further discussion and references).

The Byzantine Period

Wineglass (L503, B5014; not illustrated).— One small fragment of a tubular base-ring wineglass was found. This is the most common type of Byzantine wineglass.

The Crusader Period

The Crusader-period finds are the most numerous and varied.

Beakers.— Of the two beakers that were found, one is a small wall fragment decorated with applied prunt, long with a rounded edge (L504,

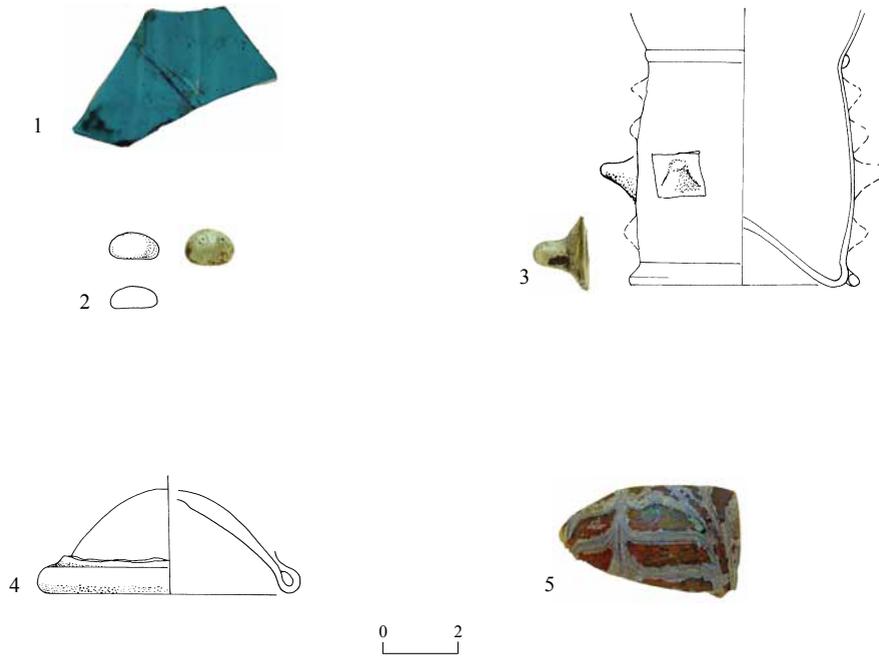


Fig. 1. Glass vessels.

B5041; Fig. 1:3). Originally part of a pruned beaker characteristic of the Crusader period, this is the glass find most indicative of the period in the bathhouse. The glass is colorless with a yellowish tinge, and the surface is covered with brown and silver weathering, iridescence and pitting. There are two types of Crusader-period pruned beakers: one with short prunts, the other with longer protruding ones. This fragment belongs to the second type. Similar vessels were found at the 'Akko Courthouse Site (Gorin-Rosen 1997:79, 82–84, Fig. 2:20–26, see further discussion therein).

The other beaker fragment (L514, B5067; too small to be drawn), is of colorless glass and decorated with a blue trail along the edge of the rim. This type dates to the Crusader period, and examples were found at Acre in other salvage excavations, e.g., in the Hospitaller compound (Gorin-Rosen, in prep.), and in the police compound at central Jaffa (Kishle), in a Crusader context (Gorin-Rosen, forthcoming).

Beaker/Jug.— The pushed-in center of a high tubular ring base of a beaker or jug retains a

crude pontil scar (L511, B5057; Fig. 1:4). The vessel is made of colorless glass and the base is severely corroded and pitted, encrusted with black and silver weathering and iridescence. A number of such bases were found in the excavation (L506, B5043; L507, B5101; L511, B5054; L514, B5061). Similar bases were found in the Crusader tower-complex, in the 'Akko Courthouse Site (Gorin-Rosen 1997:79, 81–82, Fig. 2:12–17, and references therein), as well as in the Souks excavations at Beirut (Jennings 2006:229–231, Fig. 10.10:4, 5, 12, 14).

Bottles.— A small shoulder fragment of a bottle (L504, B5041; Fig. 1:5) was found in the same basket as the pruned beaker (Fig. 1:3). The vessel is made of brown glass and decorated with white trails combed to a spaced-feather design. It belongs to a well-known group named “marvered glass vessels,” whose decoration is based on applied trails marvered to the surface of the glass while hot, and then combed to create various patterns. The vessels are usually made of dark-colored glass with

trails of lighter hues. This technique was most common during the Mamluk period, e.g., a fragment of a brown glass vessel with marvered decoration from a Mamluk context in Area A of the Jewish Quarter excavations in Jerusalem (Gorin-Rosen 2003:385, Pl. 15.9:G 98)—there, it is mentioned that the brown color is not as common as purple, green or blue in Mamluk glass assemblages from Jerusalem (Hasson 1983:110) or Hama, Syria (Riis 1957:63). However, this technique is also known from Crusader contexts, and several fragments of bottles with similar decoration were found in a thirteenth-century dwelling area at Acre (Ha-Abirim Parking Lot; Syon and Tatcher 1998). There is thus no reason to date this fragment later than the Crusader period, especially since no other Mamluk finds were discovered at the site.

The shape can be reconstructed by referring to a contemporary group of complete bottles found in a well during the excavation of St. Tryphon Cathedral at Kotor, a city-port on the eastern Dalmatian coast, near Dubrovnik (Križanac 2001:74–75, Fig. 6–15, Pls. I:5–8; II:9–16)³.

Two other fragments of bottles are too small to be illustrated. One (L338, B3181) has a thin wall and a rounded rim and a funnel-shaped mouth. It was blown into a mold and then twisted. The mold-blown decoration starts on the lower part of the mouth and continues down to the neck. The shape of this fragment and the quality of the glass-fabric date it to the Crusader period. It bears similarities to a bottle from the well at St. Tryphon at Kotor (Križanac 2001:77–78, Fig. 25, Pl. 9:53).

The other fragment (L523, B5140) is of a neck, and has a fold on the outside that was pinched during the shaping of the vessel (L523, B5140). Such pinched folds, on the neck or below the rim, are characteristic of bottles and jugs from the Crusader period. One such bottle was found at Montfort (Dean 1927: Fig. 56:G) and a number are known from Beirut (Jennings 2006:233–235, Figs. 10.16:3, 4; 10.17: on the right).

Jug.— A thin trail handle (L522, B5112), probably of a jug, was found.

THE WINDOWPANES

More than 700 windowpane fragments, approximately 500 of them wall fragments, were recovered. All were blown, with a circular or oval outline. They can be divided into two types.⁴

The more common type, known as “bull’s-eye” (Fig. 2:9), is characterized by a folded rim, either hollow/tubular or tooled/pinched. A total of 160 small rim fragments of this type were found; most of them have a thick wall and their center is thickened and crude (Fig. 2:1–9). Their average diameter is 22–32 cm. A small group of “bull’s-eye” panes are finer, with a thin wall and a rather delicate rim fold (Fig. 2:4, 6). Both subtypes were manufactured in various shades, as well as in colorless glass. Most of the panes in the bathhouse were of poor-quality light greenish glass, with many bubbles and black impurities. Some fragments of colorless windowpanes have grayish green, yellowish green, or other undertones. Thirty fragments, among them several rims, are in shades of purple and blue (Fig. 2:8—blue). The only complete “bull’s-eye” windowpanes from our region published so far are from a group that was excavated by Jon Seligman in the Frankish keep at Baysan (Bet She’an; Boas 2010:44, Fig. 7).

Figure 2:9 presents the typical circular or oval windowpane with a tubular folded rim (L324, B3127). The glass is colorless, with a light green tinge, and the surface is covered with silver and black weathering and iridescence. This windowpane is nevertheless exceptional in possessing a painted decoration, which, although severely corroded, is still visible. The corrosion caused the painted-surface layer to detach from the glass, but the image still remains on the fragile weathered layer. The vulnerability of the contact area between the paint and the glass surface may point to cold drawing.⁵ The decoration is too fragmentary to



Fig. 2. Glass windowpanes.

identify the design. Painted windowpanes in the same state of preservation were found in the excavations of the Hospitallers complex at Acre,⁶ but unlike the pane depicted in Fig. 2:9, which retains remains of a black outline around

red coloring, their decoration was primarily black. Painted windowpanes were found at the Crusader fortress at Montfort (Dean 1927:42, Fig. 55), but their manufacturing technique has not been identified.

Only 12 fragments were found of the second type of windowpane. Their outline is circular, with an average diameter of 20–26 cm. Their rim was rounded by fire (Fig. 2:10–12), and is usually thinner than the folded rim of Type 1. Their quality and colors are similar to those of the first type. Three examples are presented in Fig. 2; No. 10 is colorless, Nos. 11 and 12 are of purple glass.

All the windowpanes were broken; the fragments are corroded, their surface covered with a layer of black-silver weathering. This weathering is characteristic of the entire glass assemblage apart from a small group of colorful windowpane fragments, discussed below, whose surface is covered with a layer of a black-rusty-silvery iridescent weathering, almost inseparable from the glass (Fig. 2:11).

Since windowpane fragments form the largest part of the glass finds, restoration was attempted, but almost no joins were found even between fragments in the same basket, and none at all between fragments from different baskets within each locus. Significantly, only few center fragments were identified, although being the thickest part of the pane the centre is most likely to survive, and is easy to identify because remains of the pontil rod are usually visible. Not only was it impossible to reconstruct even a single windowpane, the assorted collection of rims and wall-fragments in many baskets definitely belonged to different panes.

The fragments of colored windowpanes—purple, light purple, blue, and a single brown one—could not be joined. The rim fragments clearly indicate that there were several windowpanes in each of the various colors. Similar colors appear in the glass window recovered from the church at 'Atlit, where they were cut to fit in the small lead frames (Johns 1935:133; Brosh 1999:270).

It appears, therefore, that there is no connection between the findspot of each fragment and its original location in a window. This is probably due to the extensive disturbance

and wall robbing during the Ottoman period (Smithline, Stern and Stern, this volume). Thus, it can only be concluded that the windowpanes originated in the bathhouse building, but it is impossible to determine the original location of the windows themselves.

Assessment of the original location and arrangement of the windowpanes is further complicated by the fact that only a small proportion retains plaster remains. Traces of plaster are common on windowpanes in excavations, especially on rim fragments, but in spite of the relatively large number of rim fragments that were found in the bathhouse (over 150 rim fragments), remnants of plaster are scarce.

The shape of the windows and their frames were probably chosen to match the purpose of the building. If we compare the shape of traditional Ottoman bathhouse roofing with the Crusader glass windowpanes described here, we may reconstruct a dome with many circular panes, their centers protruding outward to collect and concentrate the light. Such windows were still in use in the later Ottoman hammam in Acre.

Support for this reconstruction may be found in the excavation of the late twelfth-century fortress at Sadr, central Sinai (today Qal'at al-Guindi; Mossakowska-Gaubert 2005). This fortress was built between the years 1170 and 1180 by Saladin, and comprises a number of governor buildings, private houses, mosques, water reservoirs and a bathhouse. Glass windowpanes were found in the hot rooms and in the corridor of the bathhouse. All are circular, with out-folded rims and a concave section, and their diameter is 15–30 cm. Most were made of colorless glass, but some are green, honey-colored and purple (Mossakowska-Gaubert 2005:139, Figs. 169, 170). Originally, these panes were arranged in clusters, forming a rosette pattern or circles. The plaster frames varied: some were circular, others were shaped like stars (Mossakowska-Gaubert 2005: Fig. 166, 167).

GLASS PRODUCTION DEBRIS

Several chunks of glass-production debris were found, varying in quality and in stages of vitrification. They were coated with layers of lime deposits (Fig. 3). Four are of shades of bluish green (Fig. 3:1–4), a color that usually characterizes glass of the Roman–Byzantine era. A fifth is darker, probably purple (Fig. 3:5), a color that was very common during the Crusader period. One noteworthy find (Fig. 3:1) is a chunk that was fused to the bottom of the melting chamber of a raw glass furnace. A piece of the furnace floor is still attached to small glass chunks through the remains of the debris layers. This fragment is very similar to the remains found at Bet Eli‘ezer, near Ḥadera, where a mass production of raw glass took place during the late Byzantine–Umayyad periods (Gorin-Rosen 2000:52–54, Photograph 8). Similar furnaces of a later date were also found at Tyre (Aldsworth et al. 2002).

The four examples in Fig. 3:2–5 are typical pieces of dismantled glass furnaces, showing the conglomerate structure of severely heated stone with some glass and partially vitrified glass. Similar finds dated to the Late Roman and early

Byzantine periods were uncovered at Khirbat el-Ni‘ana in association with the remains of local glass production (Gorin-Rosen and Katsnelson 2007:125–127, 129, Fig. 25:21, 22).

Production refuse was found with the windowpane fragments, and the two are probably contemporary. However, considering the quality of the glass, its fabric, weathering, and other characteristics, the glass debris may also be earlier (see above for the significance of the colors). No other evidence of glass production was found. There were no chunks of raw glass nor was there glass-blowing debris, such as moils or glass-production drops. The only finds that may be associated with a local industry—although not necessarily in this area—are flawed and deformed windowpane fragments, as for example the partly folded unfinished rim fragment in Fig. 2:2. It is possible, however, that these are second-rate windowpanes, or failed attempts at the blowing process. There is likewise the possibility that they were deformed by the heat of the bathhouse furnaces rather than during production.

Glass-production debris was discovered in other excavations at Acre, but there is no



Fig. 3. Glass production debris.

evidence indicating the exact location of a workshop (Gorin-Rosen 1997:75). The closest known glass-production site was excavated about 5 km north of Acre, at Somelaria/Sumeiriya (Giv'at Yasaf), where a complete furnace for manufacturing glass vessels was discovered by Gladys Weinberg (1987). It is

currently on display in the glass pavilion of the Eretz Israel Museum in Tel Aviv. A Crusader city like Acre, however, probably needed more than one glasshouse to meet local needs, as well as specialized workshops to supply the demand for luxury items, or to produce souvenirs for export.

NOTES

¹ I wish to thank the excavators, Howard Smithline and Eliezer Stern, for inviting me to study the glass finds; Carmen Hersh, for the drawings; and Clara Amit, for the photography.

² The grooves on this fragment are unlike those usually found on cast bowls, which are thin and deep (cf. Beirut: Jennings 2006:36, Fig. 2.7; Delos: Nenna 1999:65–70, 77–79, Pls. 15:C108–C110, 16:C112–C118, 17:C120–C126).

³ I wish to thank David Whitehouse for bringing this publication to my attention, and the author, Milica Križanac, for sending me this important book.

⁴ For a discussion of the production of windowpanes see Meyer 1989.

⁵ In cold drawing, the paint is applied to the cold glass with no subsequent application of heat, in contrast to enamel painting, in which the glass is reheated after painting in order to stabilize the colors and preserve them.

⁶ I wish to thank the excavator, Eliezer Stern, for inviting me to study these finds and for his permission to refer to them here, prior to the publication of the final report.

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