

Renata Kucharczyk

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GLASS FROM AREA F ON KOM EL-DIKKA (ALEXANDRIA)

Renata Kucharczyk

Area F on the Kom el-Dikka site in Alexandria apparently served as a dumping ground for urban debris and ashes evacuated from the bath in the course of its long functioning (see above, plan in Fig. 9 on page 39). The dump accumulated quickly starting from the late 4th century, growing into a small mound over the 5th and 6th centuries. The dense concentration of ashes yielded a rich assortment of glass fragments, the majority obviously associated with the bath and its operation. The area was also dotted with pits, resulting for the most part from medieval robbing activity, hence the chiefly Mamluk date of the glass finds from these contexts.

The glass assemblage dated to the Late Roman/Early Byzantine period consists of free-blown utilitarian toiletry articles fashioned as bottles and flasks. (Fragments of deformed bottles resulting from the glass-working process have been noted). The remainder comprises open forms, such as plates/dishes, bowls. Vessels are distinguished by their plainness and simple workmanship. Decorative techniques were rather simple, being limited to threads applied below the rim and on the body to

produce simple coil accents. Threads were also used to form coil bases. Blue blobs were observed. Mould-blown decoration is in evidence in a few cases. Luxury items are represented in limited numbers. Fragments of bracelets and inlays should also be mentioned. Finally, there is a marked abundance of flat windowpanes in the excavated material.

Vessels of this period were blown of ordinary bluish-green and green glass. Another dominant color is yellow and yellowish-greenish, and aubergine glass has also been recorded. Weathering takes the form of irisation, white and black coating, and flaking. Exceptions include fragments of windowpanes made of pale yellowish-greenish glass showing no sign of weathering. Some of the glass finds from the level associated with the Early Roman house was blown of decolorized glass with greenish tinge. The surface in these cases is weathered, resulting in a milky coating and peacock irisation. This assemblage contains many types, which are paralleled by contemporary glass recovered from excavations at nearby Marina-el-Alamein.

PLAIN BOTTLES

Most of the plain bottles are rather small in size. They include items with short necks and flared rims, the latter exhibiting

variations in their finishing (rounded and folded), and plain bases without pontil mark [Fig. 1:1, 6, 10]. The bodies are either

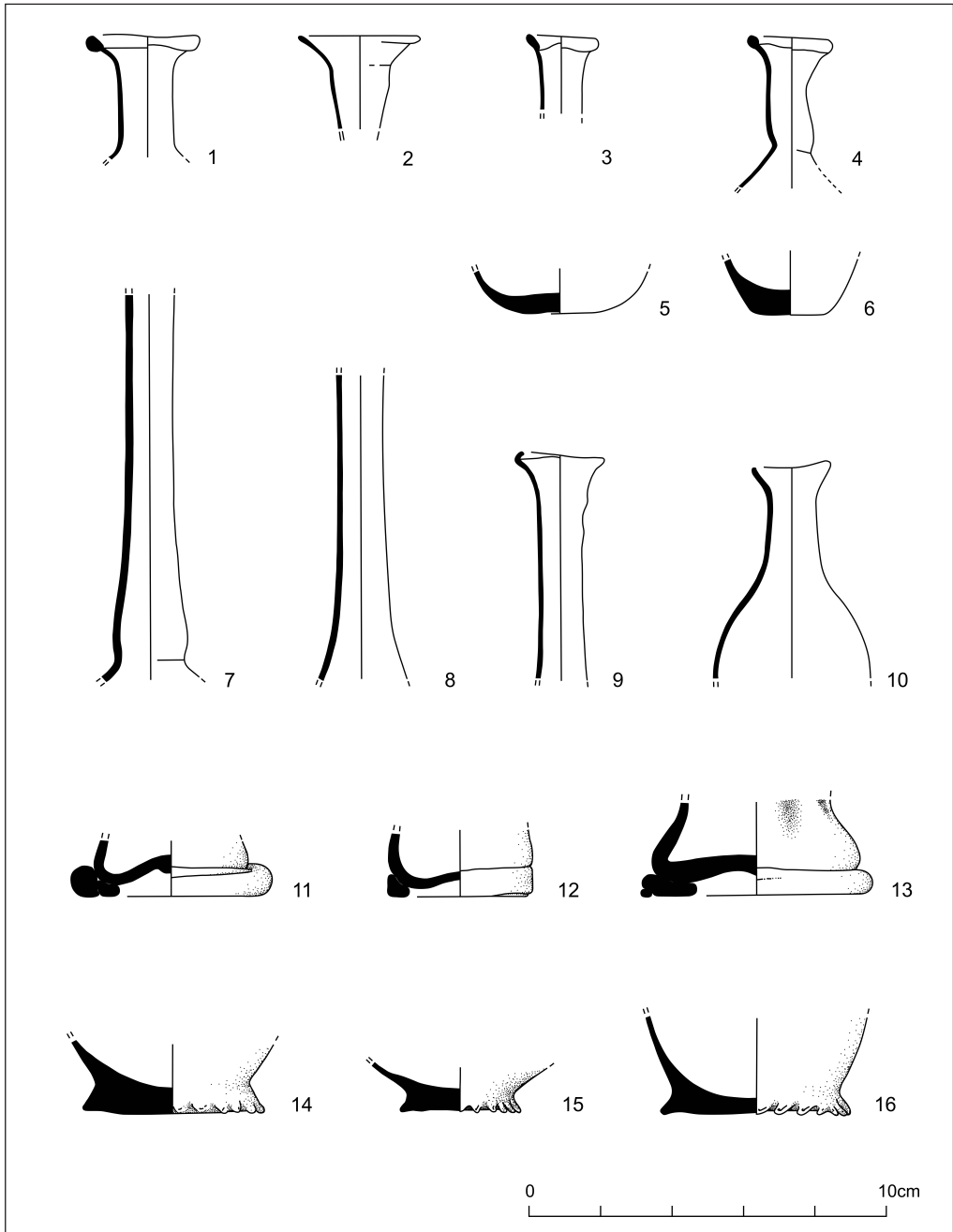


Fig. 1. Fragments of bottles and flasks of different types
 (All drawings R. Kucharczyk, E. Kulicka and M. Momot; digitizing E. Czyżewska, R. Mahler,
 K. Juszczyk)

globular or pear-shaped. Long and narrow cylindrical necks, some of them with uneven walls and wavy, asymmetrical rims, widening towards a most probably globular body, represent bathing oil flasks [Fig. 1:7–9]. These handleless containers for cosmetic use were rather roughly fashioned. The apparent careless execution may indicate cheap local production.

Bases form a significant component of the assemblage. A noteworthy number was fashioned of one or two horizontally wound trails forming a distinctive footing [Fig. 1:11–13]. The completed trail was flattened slightly to ensure a stable footing. Some of the bases, made of dark blue and green glass, are neatly worked. While all of them came from either jugs or flasks, this type of base may have also been used on other forms, such as wide-mouthed bowls and beakers.

Vessels furnished with such bases must have been especially attractive when the dark, contrasting color of the coil was also used to form handles and rims on a light, transparent body. Contextual dating of our fragments suggests the end of the 4th and beginning of the 5th century when such color combinations were particularly popular. It has usually been supposed that vessels with trail-wound bases are of Egyptian origin. Significant quantities of these bases excavated in the Alexandrian region undoubtedly

acknowledge this notion and point to the local glasshouses (recorded also in Marina el-Alamein (Kucharczyk 2010: Fig. 1:11–12, in this volume); Marea, Kucharczyk 2008: 132, Fig. 46:25, Karanis, Harden 1936: 256, 263, no. 792; attested at Carthage, Sternini 1999: 98–100, Figs 116–132 and on the Palatine, Sternini 2001: 68–70, Fig. 20, particularly multiple-coil bases).

Another type of base was formed by pulling down small points of glass from the basal edge [Fig. 1:14–16]. The “toes” are quite regular in shape and height. They form a ring which was intended to give more stability to the objects, but was also meant as a decorative device. Most of the fragments show fine workmanship. However, their fragmentary nature does not permit the exact forms to be identified; they undoubtedly had their use in the bath for pouring. “Toe” bases have been found on a variety of vessels, including pitchers and sprinklers, used for perfumes and oils, and cups (cf. sprinkler with internal diaphragm from the thick ash layers deposited in the underground service area of the bath: Kucharczyk 2004: 44–45, Fig. 1B; this type of base has been observed also on later, Islamic forms). The quantities in which these two types of bases appear in the excavated material not only attest to their popularity, but also suggest that they were a local product, obviously produced for the open market.

DECORATED BOTTLES

All recorded fragments have either trailed or mould-blown designs, which are, however, poorly represented. The latter include two shards made of good quality light brown glass streaked with purple [Fig. 2:1] and of yellow glass [Fig. 2:2], bearing a geometric design that is familiar in Islamic art and is often associated with long-necked globular

bottles. These are, respectively, big concentric circles in low relief and densely-spaced roundish “cells” constituting a variation on the simple but effective honeycomb pattern. Optic blowing creates an overall decorative motif that is shallower, hence fainter.

The third fragment is thin-walled, made of quality light-green glass. It shows faint

mould-blown decoration composed of apparently either a palm tree or herringbone motif [Fig. 2:3]. It recalls a series of square or hexagonal jugs characteristic of the 6th–early 7th century. Our fragment came from a mixed context. Mould-blown decoration on this type of containers, apparently for holy oil and water, includes religious symbols (Christian and Jewish), beside geometric ones. These symbols are found on a distinctive group of *eulogiai* pilgrim flasks, which were common in Syria and Palestine in the late 6th–mid 7th century AD (cf. Foy 2001: 139, Fig. 1:9; see also Hadad 1997: 198–200).

Other vessels blown into a mold to obtain decoration include fragmentary Janus-head flasks made of dark purple and yellowish glass [Fig. 2:5]. These toilet receptacles have already been attested at the site (Kucharczyk

2004: 43–44, Fig. 1A). In the Alexandrian region, parallels are provided by fragments found recently in a subterranean domestic cistern at Marina el-Alamein (Kucharczyk 2010: Fig. 1:7, in this volume).

The applied ornaments are limited to colored glass threads. A fragment with slightly convex funnel-neck bottle, characteristic of the Early Byzantine period, is decorated with a fine, blue horizontal trail running several times around the upper part of the neck [Fig. 2:6].

A single fragment of side wall from a bottle (from a mixed context) was decorated in the so-called “spectacle” pattern.

Horizontally applied thick threads of dark blue glass were finely tooled to create a sequence of ovals around the body [Fig. 2:4]. The thread frieze was made to stand out in relief. This kind of glass-thread

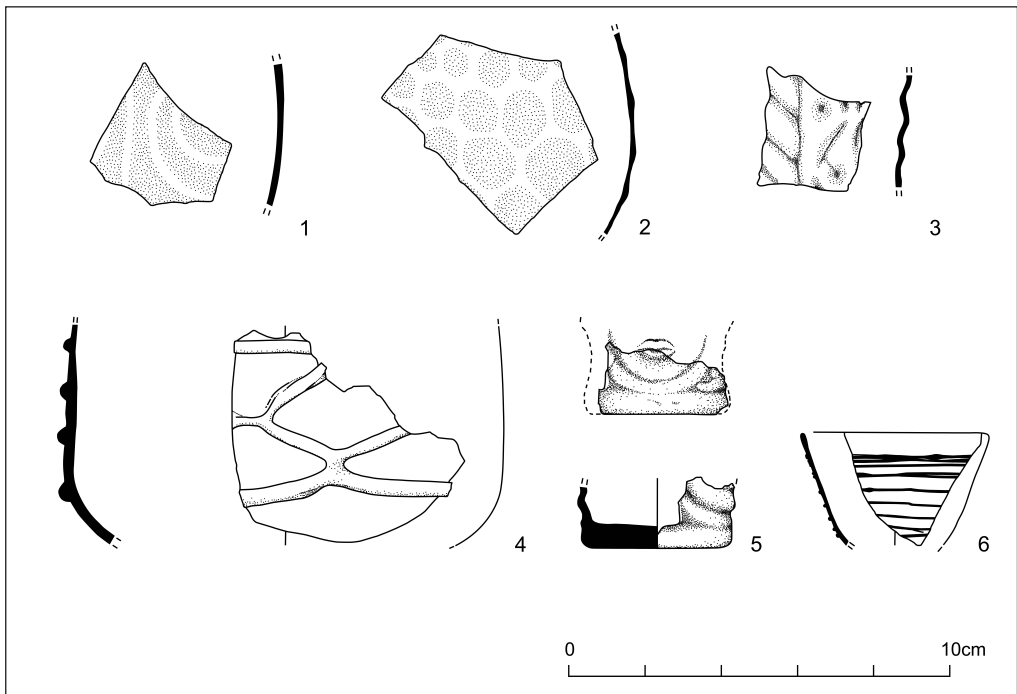


Fig. 2. Fragments of decorated bottles

manipulation on an ordinary bluish-greenish body creates an appealing effect. This surface treatment enjoyed popularity from the 5th through the 6th centuries (design closely comparable with a fragment from Apamea, dated to the 5th–6th century, Pirling 1978: 139–140, Pl. 1:1; for other fragments, see Lester 2004: 60) and

continued to be fashionable in the Egyptian region until the Early Islamic period, as demonstrated by a lamp from Fustat (beaker-shaped lamp, Scanlon and Pinder-Wilson 2001: 65, Pl. 32i). This pattern is characteristic of the transition between late Roman and Early Islamic glass production.

OPEN FORMS

Open forms are clearly among the less frequent finds. They are represented by undecorated tableware such as deep, thin-walled bowls which are characterized by an outfolded, vertical rim [Fig. 3:2–3], and bowls with thickened rim edge and curved sides [Fig. 3:1]. Bowls of this type are typical of assemblages of the 4th and 5th centuries (cf. Jennings 2006 [ed.]: 106–108, Figs 5.20.2 and 5.21.6–7). Associated bases are always of ring form [Fig. 3:4]. Tool marks are visible as slanting lines on the outside of these bases. This kind of embellishment was particularly favored in local workshops in Alexandria, as indicated by the material coming from the excavations at Kom el-Dikka (Kucharczyk 2007a: 51–52, Fig. 3:6–12). Two other fragments belong to bowls or jars, which feature an inward-folded rim and spherical body [Fig. 3:5–6]. A small jar with short neck and thickened rim, and apparently globular body has also been recorded [Fig. 3:7].

An isolated fragment with thin brownish-red trails apparently represents a bowl [Fig. 3:9]. This color is frequently attested on finds from Kom el-Dikka, not only in the form of trails. Vessels decorated with different sizes and shapes of painted brownish-red dots and patches have already been observed at the site. These distinctive features, which are quite uncommon elsewhere, seem to be a hallmark of the

Alexandrian region (Kucharczyk 2005b: 34, Fig. 2:3–5; 2007b: 70–72, Fig. 2:1–3; 2008: 131–132, Fig. 46:23; 2008: 131–132, Fig. 46:23–24). Another piece with a horizontally wound green trail below the rim apparently came from a wineglass [Fig. 3:8].

Among vessels typical of the end of the 4th and the 5th century there are those made by the cracking-off method with the characteristic S-shaped profile. They include a wide-bodied deep bowl [Fig. 3:11], jar [Fig. 3:13] and thin-walled cups/beakers [Fig. 3:10, 12]. These wares could have also been used as lamps.

The presence of a piece of flat bowl/dish with mould decoration comes as a surprise for a number of reasons. The vessel features a short, flared wall of S-shaped profile, slightly incurving, and a cracked-off rim that was left unworked. The exterior of the flat base displays a geometric design of concentric circles within squares with small protruding dots placed in each of the corners [Fig. 4:1]. Interestingly enough, six identical fragments were found a few years earlier during excavations in different areas of the site [cf. Fig. 4, five other fragments illustrated]. The fragments in question merit a couple of remarks. The vessels resemble one another closely in shape, size (diameter 10 cm, height 1.5 cm), thickness, rim finishing and decorative pattern. The surprisingly identical pattern with clearly defined elements in low

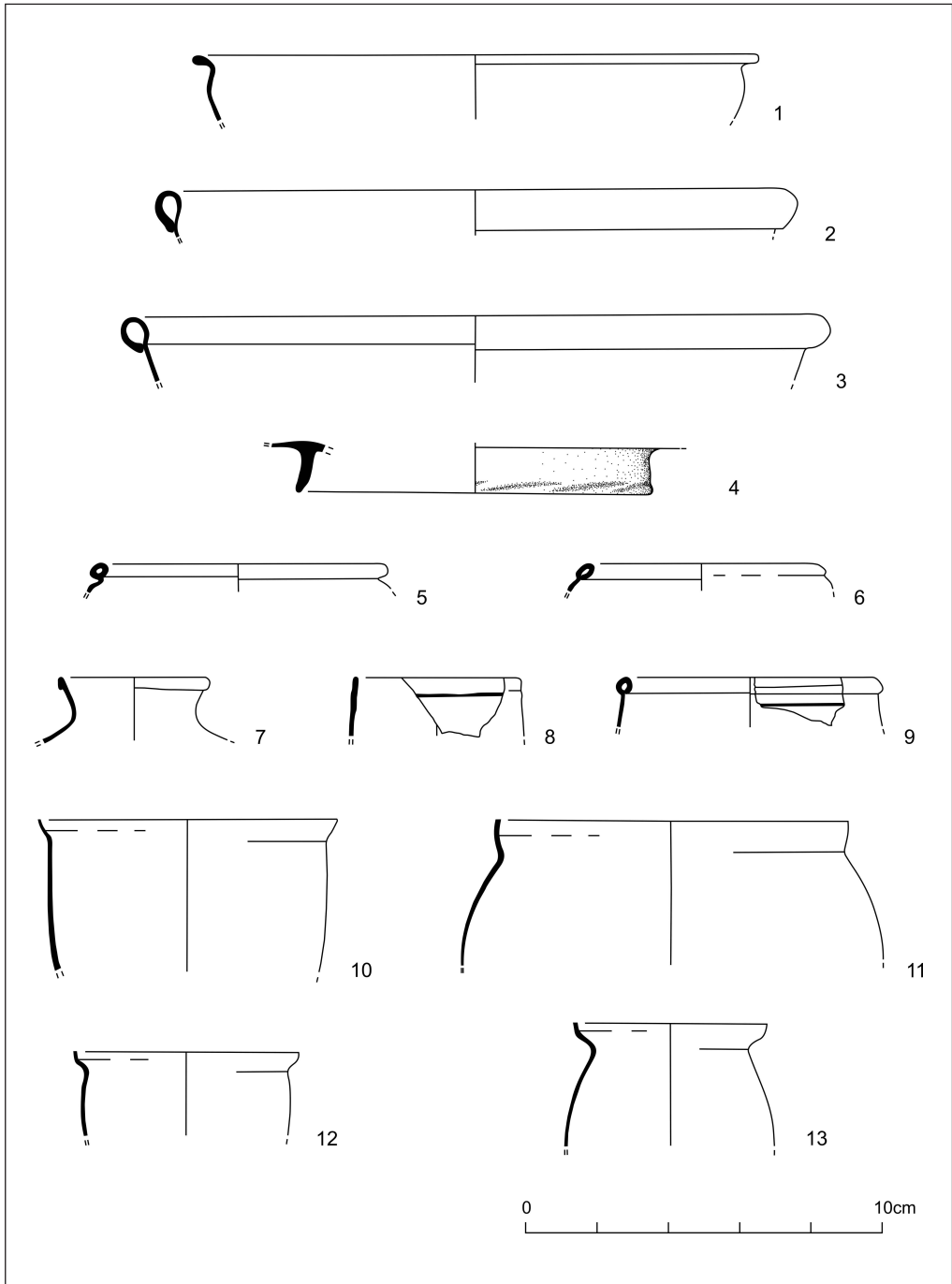


Fig. 3. Fragments of bowls and jars of various types

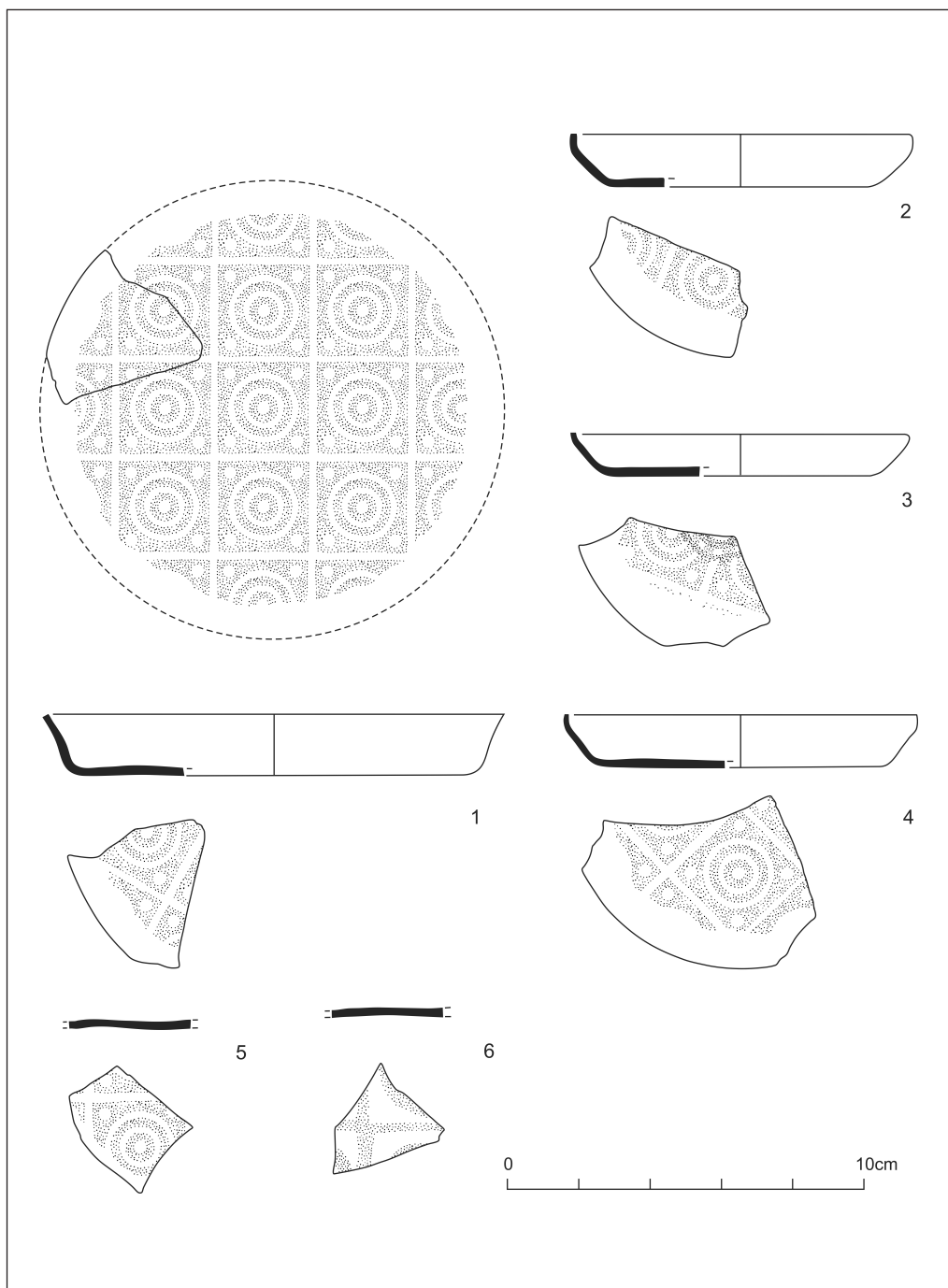


Fig. 4. Fragments of vessels with cracked-off rim and moulded decoration

relief may indicate not only that the vessels came from the same, maybe metal mould, but also that they possibly represent the output of a single, local workshop. The pattern does not extend to the walls of the vessels, but neither does it end at the edge of the base. Certain of the decorative elements were cut-off, suggesting that the mould was bigger compared to the vessel bottom. On one fragment the pattern was spoiled because of poor impression [*Fig. 4:3*]. Except for one yellow piece, they are all of inferior quality, made of greenish glass with many small, countless spherical bubbles and a similar black surface coating as weathering. Since the pattern occurs on the outer surface only, one wonders whether they were actually used as tableware; they could have served as lids instead.

The composition as such on the discussed fragments does not fit with the typical decorative elements observed on vessels with cracked-off rims. Generally, the ornamentation in this group is limited to simple, abraded bands, occasional grooves and colored blobs. The decoration on our examples is quite unusual and unparalleled in the published corpora (e.g. shallow bowl from Bagawat presenting a motif of squares with concentric circles on the bottom, combined with flutes on the body, Nenna 2010: 202, 206, *Fig. 6. cat. 4*, the mid 4th to early 5th centuries AD; see also Whitehouse 2001: 129–130, no. 635: dish, 4th–5th century AD; Follmann-Schulz 2001: 62, 66, *Pl. 4*, four bowls with cracked-off rims adorned with almost identical molded pattern, 4th century).

BEAKERS

Two thick, solid bases [*Fig. 5:1–2*] apparently belong to the tall beakers. Usually they feature a body which is broadest near the base, slightly concave sides and a plain, flaring rim, occasionally thickened. A horizontal trail usually appears near the rim or in the middle of the vessel. Such beakers which served as a receptacle for salves and cosmetics are a common form in the Syro-Palestinian region in the 4th and earlier 5th century. It does not seem to have been produced in Egypt. This form is very rare in

the West (cf. Hayes 1975: 103–104, nos 373–377), but was a major product of the Jalame glass factory in the second half of the 4th century (cf. Weinberg and Goldstein 1988: 60–63, *Figs 4–23*). Another pad-base fragment [*Fig. 5:3*] probably belongs to a beaker or drinking cup. Similar fragments are recorded at Dura Europos and Jerash (Clairmont 1963: 97–98, *Pl. X*, nos 432–442, beakers assigned to the 2nd or first half of 3rd century; Meyer 1987: 193, *Fig. 6:Z-dd*: Early Byzantine period).

LAMPS

Lamps are less numerous. They are represented by three major types. A fragment of the thin uneven side wall with infolded, almost vertical rim made of blue thread may have come from a tumbler-

shaped lamp [*Fig. 5:4*]. This type was either freestanding, or suspended by its three small simple loop handles attached at the top to a rim with an internal fold [*Fig. 5:5–6*]. The second type is represented by the side walls

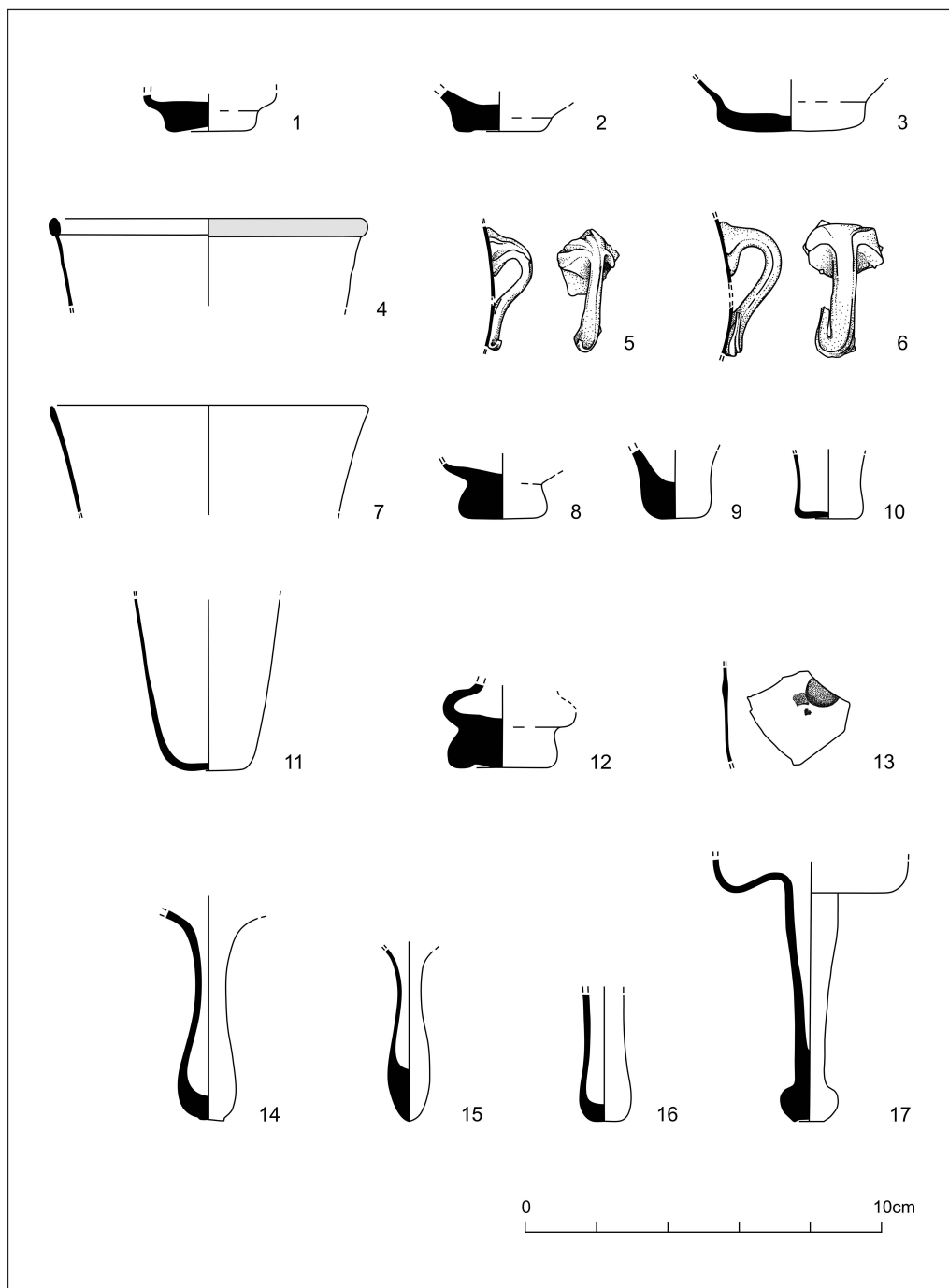


Fig. 5. Fragments of lamps and beakers of various types

of conical vessels featuring slightly thickened, rounded rim and different types of bases [Fig. 5:7–12]. There is one instance of a fragment with applied blue blobs [Fig. 5:13]. The stemmed lamps are represented by different types of hollow stems: rounded, pointed, flattened with parts of the pontil still attached [Fig. 5:14–16]. These types, already attested at the site, however typical of Late Roman/Early Byzantine assemblages,

belong to long-lived forms and continued to be popular throughout the Islamic period (Kucharczyk 2005a: 55–57, Fig. 1:11; 2007a: 46–50, Figs 1-2; 2007b: 73–74, Fig. 3:1–4). The long stem terminating in a solid bulb [Fig. 5:17] belongs to another type of suspended lamp dated from the Byzantine through Mamluk periods (Hadad 1998: 67–68, type 2, nos 37–38, 42). In Egypt, numerous parallels can be cited, among others, from Fustat, Raya, el-Tur.

BRACELETS

The ashes deposit yielded a few fragments of bracelets. One piece corresponds to Spaer's Type A1: monochrome, undecorated, circular section, seamed [Fig. 6:2] and four fragments to Spaer's Type A2a: monochrome, undecorated, semicircular section, rounded (Spaer 1988: 54) [Fig. 6:1]. Our pieces are made of opaque black and olive-green glass. They bear signs of tooling inside. The bracelets are of uneven width and thickness. One fragment with vertical ribbing belongs to Spaer's Type

B2(b): monochrome, made of dark glass, tooled, semicircular in cross-section, 3rd–4th centuries AD (Spaer 1988: 55; for fragments from Egypt: Karanis, Harden 1936: 282–283, Pl. XXI, no. 846; Fayum, Tait 1991: 60-61; Elephantine, Rodziewicz 2005: 94, Pl. 8:166, 179; Kucharczyk forthcoming; also found at Marina el-Alamein, Kucharczyk 2010, in this volume) [Fig. 6:3]. Our fragments came from a context assigned to the end of the 4th–mid 5th century.

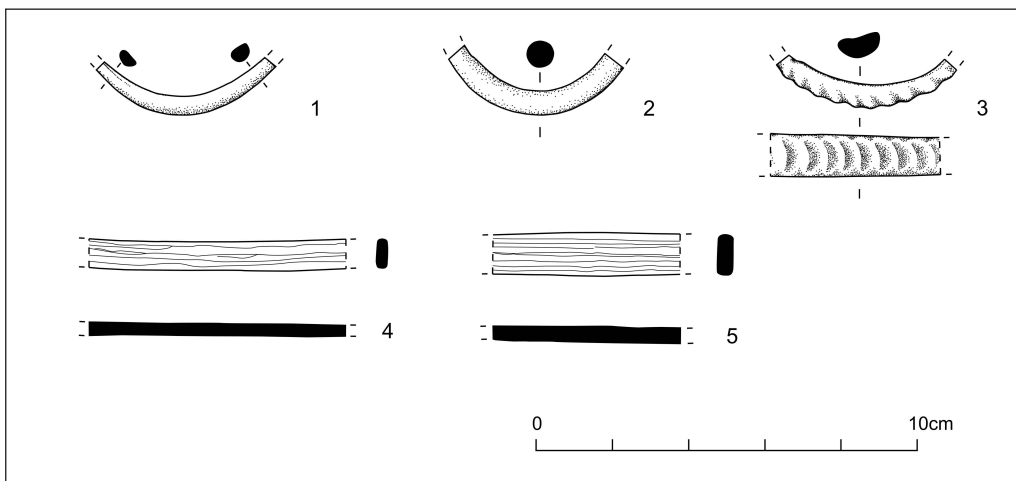


Fig. 6. Bracelets (1–3) and inlays (4–5)

MISCELLANEOUS

Somewhat surprising were considerable quantities of fragments of elongated monochrome bar-shaped inlays (attested also in previously excavated material). These narrow pieces, mostly rectangular in section, were made of opaque aubergine-colored glass. The upper surface retains longitudinal striations [*Fig. 6:4–5*]. They were made apparently in a roller mold as demonstrated by their glossy surface on one side and dull surface on the other, and by their rounded edges. Meant to imitate precious or semi-precious stones, they could

have been inlaid on the edges or sides of wooden furniture, boxes or other objects with a flat surface, being glued in place. They may have also been part of a wall mosaic from the nearby bath. Most of them come from contexts assigned to the end of the 4th–mid 5th century (comparable to finds from Corinth, see Weinberg 1952: 143–144, no. 106, 4th century AD; see also Stern 1993: 43–46, assemblage of monochrome fragments of rectangular bar-shaped inlays dated to the first half of the 1st century AD).

WINDOWPANES

Windowpanes form an important part of this assemblage. While they are a common find in the Kom el-Dikka excavations, this is the first time that such large fragments of panes executed by the cylinder-blown method have been recorded. They are distinguished by quality light yellowish-greenish glass, transparent and translucent, containing numerous big and small, elongated bubbles which are a feature characteristic of this particular manufacturing process. Rounded indentations on one side and corresponding bulges on the other, apparently tooled, are visible on the surface.

The recovered fragments, none of which preserves an edge (biggest piece 15 x 13 cm), came from rectangular or square flat panes of 1.5 mm thickness, glossy on both sides. The original sizes cannot be established. They were installed undoubtedly in the large bath windows where quantities of flat glass were required. This notable find can now be added to the growing body of evidence for 4th–5th century flat windowpanes. One should note fragments of waste material, including folded windowpanes, recovered from the dig as they are undisputed proof of glass-working on the site.

GLASS FROM THE EARLY ROMAN HOUSE

Excavations in the Early Roman house in Area F revealed only a few pieces of glass. These include a fragment of toilet sprinkler flask made of colorless glass. It has a fairly short cylindrical neck constricted at the base and a thick, folded “collar-like” rim widening toward a pear-shaped body [*Fig. 7:4*]. A flat, solid base may belong to a

beaker [*Fig. 7:3*]. Another base of a colorless bowl with light greenish tinge was found misshapen, possibly due to the heat of an intense fire rather than representing manufacturing waste [*Fig. 7:1*]. All these fragments were recovered from a context associated with 2nd–3rd century AD pottery.

In addition, two domed gaming counters were recovered. One is ordinary and colorless with greenish tinge, the other represents mosaic glass, made of opaque yellow and emerald green canes [Fig. 7:2]. Counters of this kind may have also been used as wall decoration, since some have

been found in their original settings. In Egypt, they have been excavated in astonishingly large numbers.

A few mosaic glass tesserae of various colors were also recorded. They probably derived from a mosaic once adorning the floor of the excavated house.

INTRUSIVE FRAGMENTS

A few fragments of vessels representing Islamic types are intrusive and found their way into the record with the fill of medieval robbing pits. They include the neck of a small blue bottle with distinctive single bulge common in Early Mamluk times [Fig. 7:7]. Numerous examples of such specimens have already been attested on Kom el-Dikka (Kucharczyk 2005b: 31–33, Fig. 1:14–16). From the same context comes a thick-walled *omom*, a sprinkler for expensive perfumes. This very common

form in late Islamic glass had a globular body with the opposite sides slightly flattened and a tapered neck with characteristic narrow opening [Fig. 7:5].

Yet another fragment worthy of attention is a base section from a large pruned beaker made of good quality, clear, light yellow glass. Eight preserved large “toes” were tooled around the basal edge. Decorative glass attachments in the shape of simple prunts applied to the exterior also distinguish this piece [Fig. 7:6]. They are of

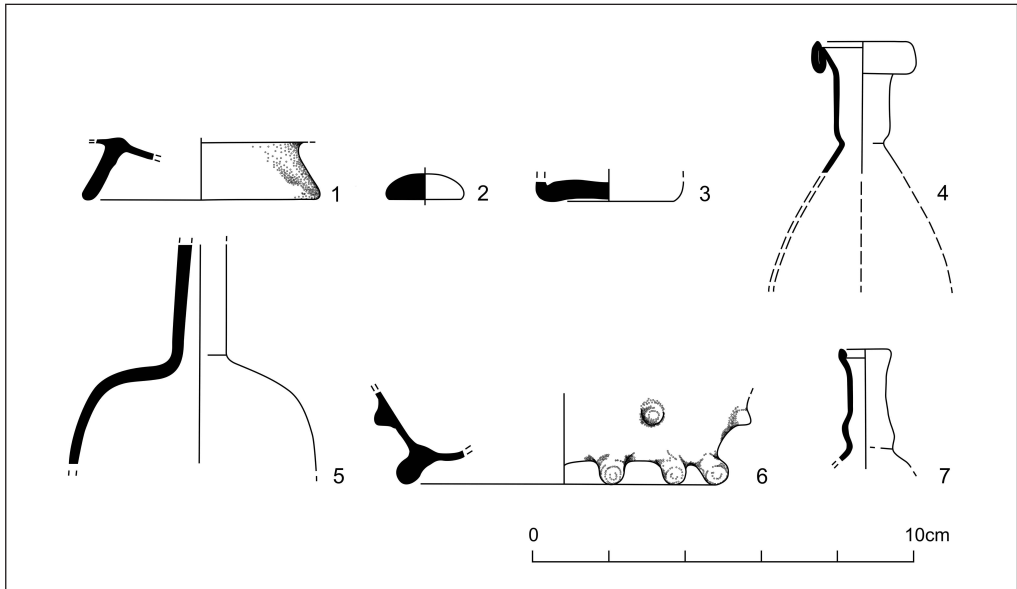


Fig. 7. Vessel fragments from the Early Roman House (1–4) and intrusive fragments (5–7)

the same color as the body. Excavations at Kom el-Dikka have produced 14 fragments of this form so far. Most of the fragments are too small to support a reconstruction of the shape and hence preclude determination of the beaker type. A few pieces with such decoration were recorded at Quseir al-Qadim (Meyer 1992: 81, 88–89). This

form was first identified by Weinberg in the glasshouse of the agora at Corinth and dated to the 11th–12th centuries (Weinberg 1952: 87–88, Fig. 14:742, 744; 1975: 136–137). Recently, a 13th or 14th century AD dating for this type of vessel has been proposed (Whitehouse 1991: 73–78).

REFERENCES

Clairmont, Ch.W.

- 1963 *The Glass Vessels. The Excavations at Dura Europos: Final Report IV. Part V*, New Haven: Dura Europos Publications

Follmann-Schulz, A.-B.

- 2001 Die Produkte der Glasshütten im Hambacher Frost, *AnnAIHV* 15 (New York, 2001), Corning, NY: AIHV, 62–67

Foy, D., Picon, M., Vichy, M.

- 2001 Verres omeyyades et abbassides d'origine égyptienne: Les témoignages de l'archéologie et de l'archéométrie, *AnnAIHV* 15 (New York, 2001), Corning, NY: AIHV, 138–143

Hadad, S.

- 1997 Hexagonal mold-blown bottles from the Byzantine period at Bet Shean, Israel, *JGS* 39, 198–200
 1998 Glass lamps from the Byzantine through Mamluk periods at Bet Shean, Israel, *JGS* 40, 63–75

Harden, D.B.

- 1936 *Roman Glass from Karanis*, Ann Arbor: University of Michigan Press

Hayes, J.

- 1975 *Roman and Pre-Roman Glass in the Royal Ontario Museum, A Catalogue*, Toronto: Royal Ontario Museum

Jennings, S. (ed.)

- 2006 Vessel glass from Beirut. Bey 006, 007 and 045 [=Archaeology of the Beirut Souks, 2], *Berytus* 48–49, 2004–2005, Beirut: American University of Beirut

Kucharczyk, R.

- 2004 Two Roman toilet bottles from Kom el-Dikka, *PAM* XV [=Reports 2003], 43–45
 2005a Glass finds from the Basilica in Marea, 2004, *PAM* XVI [=Reports 2004], 55–59
 2005b Islamic glass from the auditoria on Kom el-Dikka in Alexandria, *PAM* XVI [=Reports 2004], 31–41
 2007a Late Roman/Early Byzantine glass from the Auditoria on Kom el-Dikka in Alexandria, *PAM* XVII [=Reports 2005], 45–53
 2007b Late Roman/Early Byzantine glass from the Basilica in Marea, *PAM* XVII [=Reports 2005], 70–74

- 2008 Glass from the bath and *saqiya* in Marea [in:] H. Szymańska, K. Babraj (eds), *Byzantine Marea. Excavations in 2000–2003 and 2006, Marea I*, Kraków: Archaeological Museum
- 2010 Glass from Houses 1 and 2 in Marina el-Alamein, *PAM XIX [=Reports 2007]*, 114–130 (in this volume)
- forthcoming The glass finds [in:] S.E. Sidebotham, I. Zych (eds), *Berenike 2008 and 2009, Report*, Warsaw: PCMA and Warsaw University Press (in press)
- Lester, A.
- 2004 Glass and metal objects [in:] Y. Hirschfeld (ed.), *Excavations at Tiberias, 1989–1994 [=IAA reports, 22]*, Jerusalem: Israel Antiquities Authority
- Majcherek, G.
- 2010 Alexandria. Excavations and preservation work. Preliminary report, 2006/2007, *PAM XIX [=Reports 2007]*, 31–48 (in this volume)
- Meyer, C.
- 1987 Glass from the North Theater and Byzantine Church, and soundings at Jerash, Jordan (1982–1983), *BASOR*, Suppl. 25, 175–222
- 1992 *Glass from Quseir Al-Qadim and the Indian Ocean Trade [Studies in Ancient Oriental Civilization, 53]*, Chicago
- Nenna, M.-D.
- 2010 The glass vessel decor of a funerary chapel in the Bagawat necropolis, Kharga Oasis, Egypt [in:] J. Drauschke, D. Keller (eds), *Glass in Byzantium — Production, Usage, Analyses. International Workshops organized by the Byzantine Archaeology, Mainz, 17th–18th of January 2008, Römisch–Germanisches Zentralmuseum, Mainz*, 199–214
- Pirling, R.
- 1978 Die Römischen und Byzantinischen Glasfunde von Apamea in Syrien, *AnnAIHV* 7 (Berlin–Leipzig, 1977), Liège: AIHV, 137–147
- Rodziewicz, M.
- 2005 Small finds [in:] *Elephantine XXVII: Early Roman Industries on Elephantine [=AV 107]*, Mainz am Rhein: Philipp von Zabern
- Scanlon, G.T., Pinder-Wilson, R.
- 2001 *Fustat Glass of the Early Islamic Period: Finds Excavated by the American Research Center in Egypt, 1964–1980*, London: Altajir World of Islam Trust
- Spaer, M.
- 1988 The pre-Islamic glass bracelets of Palestine, *JGS* 30, 51–61
- Stern, E.M.
- 1993 The glass from Heis [in:] J. Desanges, E.M. Stern and P. Ballet (eds), *Sur les routes antiques de l'Azanie et de l'Inde. Le fonds Révoil du Musée de l'homme [=Mémoires de l'Académie des inscriptions et belles lettres, Nouvelle série 13]*, Paris: de Boccard, 21–61
- Sternini, M.
- 1999 I vetri provenienti dagli scavi delle missione italiana a Cartagine (1973–1977), *JGS* 41, 83–103
- 2001 Reperti in vetro da un deposito tardoantico sul colle Pallatino, *JGS* 43, 21–75
- Tait, H.
- 1991 *Five Thousand Years of Glass*, London

Weinberg, G.D.

- 1952 *Corinth XII: The Minor Objects*, Princeton, NJ: American School of Classical Studies at Athens

Weinberg, G.D., Goldstein, S.M.

- 1988 The glass vessels [in:] G.D. Weinberg (ed.), *Excavations at Jalame: Site of Glass Factory in Late Roman Palestine: excavations conducted by a joint expedition of the University of Missouri and the Corning Museum of Glass*, Missouri: University of Missouri Press, 39–102

Whitehouse, D.

- 1991 Glassmaking at Corinth: A reassessment [in:] D. Foy, G. Sennequier (eds), *Ateliers de verriers de l'Antiquité à la période pré-industrielle*, Rouen, 73–82
- 2001 *Roman Glass in The Corning Museum of Glass*, II, Corning, New York: The Corning Museum of Glass