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Studies

ARCHAEOLOGICAL MATERIAL

THE GLASSWARE FROM MĂLĂIEȘTI ROMAN FORT AND BATH

Abstract: Excavations at Mălăiești Roman Fort and bath (Romania, Prahova County) revealed a small roman fortification and its baths. This paper will attempt to show the significance of the glassware finds through a social-cultural analysis resulting from the way the finds were distributed within the site. Our study describes the glassware fragments found during recent excavations and offers an analysis in the context of the manufacturing processes, spatial distribution, and the circumstances of their discovery as well as the chemical analysis of the typical samples. As an end result, we were able to determine their chronological, morphological, and typological properties.
Key words: *roman glass, fort, bath, 2nd century, glass distribution*

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ARCHAEOLOGICAL BACKGROUND

Mălăiești Roman Fort and Bath (Romania, Prahova County) are situated at the confluence of the Teleajen and Vărbilău rivers. A thorough topographic map of the entire area, including the Roman fort and its baths, was created by Constantin Zagoriț[1]. This marked the beginning of the archaeological research at Mălăiești. Since the 1960s, the fort and the civil settlement have been subjected to a long period of deterioration due to intense land use, and in 1976, the baths were sectioned by a ditch in preparation for the installation of a major water supply pipe. Following the planting of an orchard in 1985 on the entire surface of the fort, Dan Lichiardopol[2] conducted rescue excavations. The most recent archaeological excavations were undertaken between 2011 and 2019[3], during this time the baths and also part of the fort (the fortification system and two barracks) being completely excavated.

Archaeological and geophysical investigations have revealed the form and design of the defensive system, as well as indications of its internal organization[4]. The fort may have accommodated between 600 and 800 men, based on the size of the fort (180 by 160 m), the large number of barracks, and their size and layout. The name of the troop remains unknown.

The bathhouse is situated on the lower terrace adjacent to the plateau where the fort was raised. The building was designed as a *block bath* with two rows of chambers, from which the following were identified: *apodyterium* (cloakroom), *frigidarium* (cold water basin), *tepidarium* (warm water basin),

[1] ZAGORIȚ 1940, 17-22.
[2] ȚENTEA/POPA/CÎMPEANU 2018, 230-231.
[3] ȚENTEA/CĂLINA 2019, 173.
[4] ȚENTEA/POPA/CÎMPEANU 2018.

caldarium (hot water basin), and *laconicum* or *sudatorium* (steam/sauna baths)[5].

According to all the data available so far, it seems Mălăiești Roman Fort and Bath operated only for a short period of time in the second part of Trajan's reign..

DESCRIPTION

The excavations between 2011 and 2019 revealed a total of 160 glassware fragments. Of these, 120 could be attributed to objects with a specified function[6], and 93 of these were subjected to chemical analysis to learn more about their composition (table 2)[7].

The objects include beakers, bowls, jugs, *unguentaria,* cups as well as bottles, jars, window panes and beads. Most of the objects are free blown but there are examples of objects mould-blown or cast. The glassware from Mălăiești is either colourless or light blue-green, light green and pale blue, with the exception of one fragment which is cobalt-blue.

Unguentaria represent the most numerous group among the selected material and is catalogued in two types. The most common type is the Isings 82a1 (7 fragments) characterized by a long neck, a slightly inverted mouth, and a slightly concave base. The Isings 28b has only been identified in 6 specimens characterized by an out-turned rim, cylindrical neck, and conical body with a slightly concave base. Some of the *unguentaria* fragments could not be typologically classified, either by the lack of typical characteristics, or due to an unusual form or characteristic. In this respect one of them is an unusual specimen from which only the pentagonal and slightly concave base were preserved. The first type of *unguentaria* is quite common throughout the Roman Empire especially in the 1st century and early 2nd century AD. Numerous examples are found in Moesia Inferior[8] (Tomis, Callatis, Odessos), Moesia Superior[9], Dacia[10] (Potaissa, Micia, Obreja, Sarmisegetusa-Regia[11]) Pannonia[12] or from Colchester- Britain[13], even in the Sarmatian environment at Oltenița-Ulmeni[14] among many other places. The colours differ, but most are made from naturally coloured glass in shades of yellow, green and pale blue or blue-green. It should be mentioned that all the fragments that have been identified as being part of *unguentaria* containers were recovered only from the bath area. Interestingly, two of the *unguentaria* still had residual remnants of the liquid initially contained by them[15].

In addition to the *unguentaria,* the group of objects made by the free-blowing technique, also included two cups/beakers. The fragments can be characterized by a flat base, decorated with two thin cut lines, side slightly tapering downwards to the bottom and a vertical slightly out-turn rim and horizontal cut-out lines. Both fragments are transparent and were found inside the fort. In terms of chemical analysis[16] it has been determined that both cups were made of Sb-decolorized glass.

The rest of the containers that were made by blowing technique are either cups, bowls or jars whose chemical composition differs from specimens made with ashes from plants, to the classical composition of Roman glass to specimens discoloured with Sb and Mn, recycled but also coloured with cobalt[17]. And the range of colours differs from transparent artefacts, to naturally coloured ones in yellow, green or blue tones to green ones.

Regarding the group of artefacts that were made by using the mould-blowing technique, we were able to identify seven such examples. Six represent bottles of which three can be typologically classified as belonging to the type Isings 50/51. All three examples have a decorated base, the first with circles which are very common[18] throughout the Empire. Two other fragments of the bases of bottles have designs depicting a flower (Fig. 4/5) or a corner dimple with circles-like lines (Fig. 4/6). Glass bottles are quite common in the 2nd century and were designed for liquid storage or transportation[19]. The imprints on the bottom may provide information about the workshop in which they were manufactured or their contents[20]. The three-circle bottle bottom design from Colchester[21] is commonly used as an illustration of the prevalence of circle patterns throughout the Empire. These fragments were fashioned of high quality translucent glass, with a faint green or blue tint. Several manufacture moulds for this kind of containers were discovered in Apulum[22]. Rosettes, which could have had four or six petals, were used to embellish the majority of the base-moulds.[23]

Among the seven mould-blown fragments there is a translucent transparent bowl with decorative elements. Its body is convex and its base is flat with facet-cut ovals equally distributed horizontally throughout its whole body. Two horizontal wheel-cut lines are located directly beneath the rim. Similar examples of such vessels were dated as early as the 2nd century (Tropaeum Traiani[24]).

A small part of the artefacts found are represented by vessels that were made by casting, trimmed on a lathe, polished to the correct shape, and then a facetted design was cut into the walls[25]. Five such vessels have been identified, of which, on further investigation, two fragments were found to be part of the same vessel. All four vessels are either colourless or white-milky coloured. In terms of chemical composition all of these were decolourized with Sb. All beakers fall within the type Isings 21 classification, therefore

[5] ȚENTEA 2018, 135.
[6] 40 fragments are indeterminable or could be part of the same vessels.
[7] BUGOI/ȚENTEA/MANEA 2023.
[8] CHIRIC/BOȚAN 2014, 535.
[9] STOJANOVIĆ *et alii* 2015, 54-55.
[10] BĂLUȚĂ 1978, 101-103.
[11] MATEESCU-SUCIU 2017, 138-141.
[12] LAZAR 2003, 168-197.
[13] COOL/PRICE 1995, 161-162.
[14] BÂRCĂ 2015, 47.
[15] CORTEA/ȚENTEA 2023.
[16] BUGOI/ȚENTEA/MANEA 2023.
[17] BUGOI/ȚENTEA/MANEA 2023.
[18] CHARLESWORTH 1966, 33.
[19] FLEMING 1999, 62-63.
[20] DEVAI 2019, 249, note 2.
[21] COOL/PRICE 1995, 196, Fig. 11.10, 2169, 2172.
[22] PÁNCZÉL 2011.
[23] PÁNCZÉL 2011, 179.
[24] STAWIARSKA 2014, 85.
[25] LAZAR 2003, 94.

Tab. 1. Distribution of glassware from Mălăiești Roman Fort and Bath

Archaeological context	Number in Table 2	Figure
B2, officer basement	77-79	Fig. 2
B3, c1	62- 64	Fig. 2
B3, c4	61	Fig. 2
B3, *via saguralis* & draining channel (P1)	65, 84	Fig. 2
B4	58-60, 72-76, 80, 85	Fig. 2
B4, *via sagularis* & draining channel (P1)	57, 66-71, 81-83	Fig. 2
Bathhouse / Area I – entrance	52-54, 91-93	Fig. 3
Bathhouse / Area II – *apodyterium* / underground technical room near the entrance to the pool with cold water	23-51, 55	Fig. 3
Bathhouse / Area III – draining channel of the basin of *frigidarium* & *latrinae*	56, 86-90	Fig. 3
Bathhouse / Area IV – the waste area behind the bathhouse	1-22	Fig. 3

* B – barracks, c- *contubernium*

one of them has horizontal cordons on the rim, upper and lower body, and a little elevated disc in the middle of the underside of the base. The other two contain a decorative zone composed of closely placed horizontal rows of oval facets. Analogies have also been discovered at Porolissum[26] and Slăveni[27] where fragments of this type of beaker have been identified. The fragment from Slăveni has been dated between the 2nd and mid-3rd centuries. Similar beakers have also been found in the Sarmatian world, notably in the tumular cemetery from Boguslav[28] in the North-Pontic area, dating from middle Sarmatian period (1st and 2nd centuries AD). Roman finds in Sarmatian contexts are not rare, for example at Tochile-Răducani in some burials were found *unguentaria* of the type Isings 28b. [29].

Although being very common in the western half of the Empire, the majority of the findings are from military settings[30]. A. Oliver claimed that these face-cut beakers originated in the eastern part of the Roman Empire[31], but it is more likely that they were luxury items[32] produced in a secondary workshop (as in the case the of Adriatic coast[33]). The chemical composition may also reveal the origin of the workshop where such vessels were made, leading to the theory that the use of antimony[34] (a component identified in all our samples) as an element for glass discoloration is distinctive to Egyptian workshops, followed by those in Campina[35]. Thus yet, the precise workshop for the products from Mălăiești cannot be determined with accuracy. As for the location of the finds, two of them were discovered in the fort and two in the baths.

There is also a small number of small fragments of flat glass, which were probably part of window panes, in total, five such specimens have been found, using the casting and stretching method. All these fragments have been found in the bath area and are naturally coloured in pale shades of blue or are transparent. Four fragments belong to the natron category while one example is obtained by recycling. In general, the windows from bathhouses were facing south and served a dual purpose: they let in natural light and helped to keep the area warm. The heat from the sun might greatly contribute to warming the area even in winter if they used glazed glass[36]. Judging by the thinness and the scarcity of the fragments we found it is more likely that the windows were rather small, used only for minimal lighting.

DISTRIBUTION (see table 2)

The fort provided 29 glass fragments that came from vessels with certain functions, such as cups, bowls and bottles. Most of these fragments were made by the blowing technique.

The bathhouse was divided into four zones, named I through IV, to better grasp the layout and how the artefacts were distributed. In Area I which represents the entrance to the baths, only twenty-nine fragments were discovered that could be assigned to a vessel with a specific function like part of an *unguentarium* and another fragment of a jar. Area II (*Apodyterium* / underground technical room near the entrance to the pool with cold water) is richer in artefacts, as many as 30 fragments were found here, and they all could be assigned to containers with clear functions. Of these the majority are *unguentaria* of the type Isings 82 or Isings 28 but there are also cups, bowls, flasks and beads. Four of the five glass window fragments were found in this area. In Area III (the draining channel of the basin of *frigidarium* & *latrinae*) only six fragments have been discovered, which come either from cups, *unguentaria* or jug handles. In Area IV (the waste area behind the bathhouse) 22 fragments were found, they were part of containers such as bottles, *unguentaria* (the only ones typologically classified) and other fragments from small drinking cups.

[26] GUDEA 1989, 744.
[27] STAWIARSKA 2014, 81.
[28] BÂRCĂ/SYMONENCO 2009, 198.
[29] BÂRCĂ 2006, 178.
[30] COOL/PRICE 1995, 73.
[31] OLIVER 1984, 40.
[32] JACKSON-TAL 2016, 66-68.
[33] LAZAR 2006, 335.
[34] STAWIARSKA 2014, 84.
[35] STAWIARSKA 2014, 84.
[36] RING 1996, 723.

Tab. 2. Catalogue of the glass finds from Mălăiești Roman Fort and Bath according to typological criteria.

Sample number (Figs. 2, 3)	Discovery point	Description	Colour	Manufacturing technique	Isings form	Chemical Group	Analogies	Figures
78	Fort	Fragment of a cup with flat base, decorated with two thin cut lines, side slightly tapering downwards to the bottom	Colourless	Blowing		Sb-decolourized		Fig. 4/1
58	Fort	Fragment of a beaker (?) with vertical rim, straight side tapering into the foot, with horizontal cordons at the rim, and in the upper body. It has a decorative zone of horizontal rows of oval facets closely set	Colourless	Casting	Isings 21	Sb-decolourized	*Porolissum* (GUDEA 1989, 1123, fig. CCLX/9; 1126, CCLIII/1), *Slăveni* (STAWIARSKA 2014, 82, fig.32/30), *Boguslav* (BÂRCĂ/ SYMONENKO 2009, 196, fig. 73/7), *Slava Rusă* (CHIRIAC 2017, 207, pl IV/1); *Cyprus* (OLIVIER 1984, 53, fig. 54); *Augusta Raurica* (FÜNFSCHILLING 2015, 313, kat. 5487-5490); *London* (PRICE/COTTAM 1998, 82, fig. 26b); *Ptuj* (LAZAR 2003, 89, figs. 31, 334); *Colchester* (COOL/PRICE 1995, 74, figs. 398, 400)	Fig. 4/2
61	Fort	Fragment of a beaker (?) with horizontal rows of oval facets closely set	Colourless	Casting	Isings 21	Sb-decolourized	*Porolissum* (GUDEA 1989, 1123, fig. CCLX/9; 1126, CCLIII/1), *Slăveni* (STAWIARSKA 2014, 82, fig. 32/30), *Boguslav* (BÂRCĂ/SYMONENKO 2009, 196, fig. 73/7), *Slava Rusă* (CHIRIAC 2017, 207, pl IV/1); *Cyprus* (OLIVIER 1984, 53, fig. 54); *Augusta Raurica* (FÜNFSCHILLING 2015, 313, kat. 5487-5490); London (PRICE/COTTAM 1998, fig. 26b); Ptuj (LAZAR 2003, 89, figs. 31, 334); Colchester (COOL/PRICE 1995, 74, figs. 398, 400)	Fig. 4/3
26	Baths, area II	Fragment of a beaker with a small pushed-in base ring. A diagonal wall and a small raised disc can be observed at the centre of the underside of the base	Colourless milky	Casting	Isings 21	Sb-decolourized	*Văleni* (IONIȚĂ/URSACHI 1988, fig.36) Rough Castle, Stirlingshire (PRICE/COTTAM 1998, 82, fig. 26d); Colchester (COOL/PRICE 1995, 74, figs. 398, 407)	Fig. 4/4
46	Baths, area II	A beaker fragment with vertical rim and wall that runs diagonally towards the base. It is decorated with two horizontal cordons - one below the rim, and an other in the lower part of the body.	Colourless milky	Casting	Isings 21	Sb-decolourized	*Văleni* (IONIȚĂ/URSACHI 1988, fig.36) Rough Castle, Stirlingshire (PRICE/COTTAM 1998, 82, fig. 26d), Colchester (COOL/PRICE 1995, 74, figs. 398, 407)	Fig. 4/4
83	Fort	Fragment of a flat base bottle with a possible trade mark depicting a flower	Pale green	Mould blowing	Isings 50/51	Outliers	*Apulum* (PÁNCZÉL 2011, p. 187, pl. 2/14/19; p. 186, pl. 1/7.2/8.2/8,3/10.2); Brigetio, Pannonia (DEVAI 2019, p. 251, fig. 4); Zadar, Dalmatia (FADIĆ/ ŠTEFANAC 2009, p. 207, fig. 3/29)	Fig. 4/5

Sample number (Figs. 2, 3)	Discovery point	Description	Colour	Manufacturing technique	Isings form	Chemical Group	Analogies	Figures
66	Fort	Fragment of a flat base bottle with a corner dimple and two lines that originate from some circles	Pale green	Mould blowing	Isings 50/51	RNCBGY2	Colchester (COOL/PRICE 1995, 195, figs. 119, 215); Zadar-Dalmatia (FADIĆ/ŠTEFANAC 2012, 207, figs. 3/22-24, 29-30)	Fig. 4/6
60	Fort	Fragment of a bowl with vertical rim, convex body and flat base. It is decorated with horizontal rows of oval facets which are also found on its base	Colourless	Mould blowing		Sb-decolourized		Fig. 4/7
1	Baths, area IV	Fragment of a square bottle with a folded rim, cylindrical neck, horizontal shoulder, and straight, square-sectioned body with a flat base. It has a ribbon handle with ribs applied to the edge of the shoulder and attached to the neck below the rim. Three concentric circles are present on its base, probably a trade mark of the manufacturer	Pale blue	Mould blowing	Isings 50b	Recycled Sb-Mn glass	*Porolissum* (GUDEA 1989, 1122, CCLIX/7), Fețele Albe (MATEESCU SUCIU 2017, 142, fig. 4; fig. 7/5);*Pervomajsk* (BÂRCĂ/SYMONENKO 2009, 196, fig. 73/3), *Apulum* (STAWIARSKA 2014, 42, fig 18/6); *Tomis* (DRĂGHICI 2012, 213, fig. 13a); Godmanchester, Cambridgeshire (PRICE/COTTAM 1998, 196, fig. b); Colchester (COOL/PRICE 1995, 196, figs. 1110, 2169, 2172)	Fig. 4/8
2	Baths, area IV	Fragment of a *unguentarium*, probably part of its body	Green	Blowing		Recycled/Egyptian impure sands		Fig. 5/9
11	Baths, area IV	Fragment of a *unguentarium* with folded-out rim, cylindrical narrow neck; the constriction at the base of the neck can be seen	Green	Blowing	Isings 28b	Recycled/Egyptian impure sands	*Porolissum* (GUDEA 1989, 1121, CCLVIII/7), Sarmisegetusa-Regia (MATEESCU-SUCIU 2017, 139, fig.1/1, 1/8, 1/9), *Tochile-Răducani T2 M4* (BÂRCĂ 2006, 586, 129/3), *Oltenița-Ulmeni* (BÂRCĂ 2015, fig. 6/6), *Moesia Inferior* (CHIRIAC/ BOȚAN 2013, 447, fig. 10/10); *Noviodunum* (SIMION 1984, 495, fig. XI/7)	Fig. 5/9
6	Baths, area IV	Fragment of a *unguentarium* with folded-out rim, cylindrical long and narrow neck. The constriction at the base of the neck can be observed	Colourless green	Blowing	Isings 82a1	RNCBGY2	*Porolissum* (GUDEA 1989, 1122, CCLIX/5), *Sarmisegetusa-Regia* (MATEESCU-SUCIU 2017, 139, fig.1/2-4), *Tomis* (BUCOVALĂ 1968, 99-100, nr. 183-195)	Fig. 5/10
12	Baths, area IV	Fragment of a *unguentarium* with folded-out and in rim and cylindrical narrow neck	Yellow	Blowing	Isings 82	RNCBGY2		Fig. 5/11
13	Baths, area IV	Fragment of a *unguentarium* with folded-in rim, cylindrical narrow neck	Green	Blowing	Isings 82	RNCBGY2		Fig. 5/12

Sample number (Figs. 2, 3)	Discovery point	Description	Colour	Manufacturing technique	Isings form	Chemical Group	Analogies	Figures
3	Baths, area IV	Fragment of a *unguentarium* with a cylindrical neck; the constriction towards the body can be observed	Green	Blowing	Isings 82a1	Plant ash glass	*Porolissum* (GUDEA 1989, 1122, CCLIX/5), *Sarmisegetusa-Regia* (MATEESCU-SUCIU 2017, 139, fig.1/2-4), *Tomis* (BUCOVALĂ 1968, 99-100, nr. 183-195)	Fig. 5/13
10	Baths, area IV	Fragment of a *unguentarium* with cylindrical neck	Green	Blowing		Plant ash glass		Fig. 5/14
17	Baths, area IV	Fragment of a *unguentarium* with a concave base and bell-shaped body	Pale-green	Blowing	Isings 28b	Recycled Sb-Mn glass	*Porolissum* (GUDEA 1989, 1121, CCLVIII/7), Sarmisegetusa-Regia (MATEESCU-SUCIU 2017, 139, fig.1/1, 1/8, 1/9), *Tochile-Răducani T2 M4* (BÂRCĂ 2006, 586, 129/3), *Oltenița-Ulmeni* (BÂRCĂ 2015, fig. 6/6), *Moesia Inferior* (CHIRIAC/BOȚAN 2013, 447, fig. 10/10); *Noviodunum* (SIMION 1984, 495, fig. XI/7)	Fig. 5/15
16	Baths, area IV	Fragment of a *unguentarium* (?) with a pentagonal, flat base	Green	Blowing		Plant ash glass		Fig. 5/16
32	Baths, area II	Fragment of a bottle or flask with vertical rim and cylindrical neck	Colourless	Mould blowing		Naturally colourless - quartz pebbles		Fig. 5/17
64	Fort	Fragment of the body of a container	Cobalt blue	Blowing		Co-blue		Fig. 5/18
4	Baths, area IV	Fragment of a *unguentarium* with a concave base	Blue green	Blowing	Isings 28b	RNCBGY2	*Porolissum* (GUDEA 1989, 1121, CCLVIII/7), Sarmisegetusa-Regia (MATEESCU-SUCIU 2017, 139, fig.1/1, 1/8, 1/9), *Tochile-Răducani T2 M4* (BÂRCĂ 2006, 586, 129/3), *Oltenița-Ulmeni* (BÂRCĂ 2015, fig. 6/6), *Moesia Inferior* (CHIRIAC/BOȚAN 2013, 447, fig. 10/10); *Noviodunum* (SIMION 1984, 495, fig. XI/7)	
5	Baths, area IV	Fragment of the body of a small container	Blue green	Blowing		Recycled Sb-Mn glass		
7	Baths, area IV	Fragment of a *unguentarium* with folded-out and in rim, with thin lines inside the mouth	Colourless green	Blowing	Isings 82	RNCBGY2		
8	Baths, area IV	Fragment of a unguentarium with *folded*-out and in rim	Colourless green	Blowing	Isings 82	RNCBGY2		
9	Baths, area IV	Fragment from the body of a container	Green	Blowing		Recycled Sb-Mn glass		
14	Baths, area IV	Fragment of a *unguentarium* with slightly concave base and convex body	Green	Blowing	Isings 28b (?)	Plant ash glass	*Porolissum* (GUDEA 1989, 1121, CCLVIII/7), Sarmisegetusa-Regia (MATEESCU-SUCIU 2017, 139, fig.1/1, 1/8, 1/9), *Tochile-Răducani T2 M4* (BÂRCĂ 2006, 586, 129/3), *Oltenița-Ulmeni* (BÂRCĂ 2015, fig. 6/6), *Moesia Inferior* (CHIRIAC/ BOȚAN 2013, 447, fig. 10/10); *Noviodunum* (SIMION 1984, 495, fig. XI/7)	

Sample number (Figs. 2, 3)	Discovery point	Description	Colour	Manufacturing technique	Isings form	Chemical Group	Analogies	Figures
15	Baths, area IV	Fragment of a window pane	Colourless	Casting and stretching		RNCBGY2		
18	Baths, area IV	Fragment of a *unguentarium* with cylindrical neck	Pale-green	Blowing		RNCBGY2		
19	Baths, area IV	Fragment of the body of a container	Colour-less milky opaque	Blowing		Sb-decolourized		
20	Baths, area IV	Fragment of the body of a container	Colourless	Blowing		Recycled Sb-Mn glass		
21	Baths, area IV	Fragment of the body of a container	Colour-less pale green	Blowing		RNCBGY2		
22	Baths, area IV	Fragment of the body of a container	Colourless pale blue	Blowing		RNCBGY2		
23	Baths, area II	Annular melon bead	Cobalt blue	Wound bead		Co-blue		
24	Baths, area II	Fragment of a flask with flared rim, funnel mouth, cylindrical neck	Pale blue	Blowing		RNCBGY2		
25	Baths, area II	Fragment of a *unguentarium* with folded-in rim and cylin-drical neck	Pale green	Blowing	Isings 82a1	Recycled Sb-Mn glass	*Porolissum* (GUDEA 1989, 1122, CCLIX/5), *Sarmisege-tusa-Regia* (MATEESCU-SUCIU 2017, 139, fig.1/2-4), Tomis (BUCOVALĂ 1968, 99-100, nr. 183-195).	
27	Baths, area II	Fragment of a bowl or cup with a slightly out-turn rim and probably convex body	Pale green	Blowing		Recycled Sb-Mn glass		
28	Baths, area II	Fragment of a *unguentarium* with horizontal rim	Pale blue	Blowing		RNCBGY2		
29	Baths, area II	Fragment of the neck of a container	Pale blue	Blowing		RNCBGY2		
30	Baths, area II	Fragment of a *unguentarium* with a slightly concave base	Pale green	Blowing	Isings 28b	RNCBGY2	*Porolissum* (GUDEA 1989, 1121, CCLVIII/7), Sarmisegetusa-Regia (MATEESCU-SUCIU 2017, 139, fig.1/1, 1/8, 1/9), *Tochile-Răducani T2 M4* (BÂRCĂ 2006, 586, 129/3), *Oltenița-Ulmeni* (BÂRCĂ 2015, fig. 6/6), *Moesia Inferior* (CHIRIAC/ BOȚAN 2013, 447, fig. 10/10); *Noviodunum* (SIMION 1984, 495, fig. XI/7);	
31	Baths, area II	Fragment of a bowl or cup with a flat base and convex body	Pale blue	Blowing		RNCBGY2		
33	Baths, area II	Fragment of a *unguentarium* with a slightly concave base, bell-shaped body, cylindrical neck. The constriction at the base of the neck is visible	Pale green	Blowing	Isings 82a1	Recycled Sb-Mn glass	*Porolissum* (GUDEA 1989, 1122, CCLIX/5), *Sarmisege-tusa-Regia* (MATEESCU-SUCIU 2017, 139, fig.1/2-4), *Tomis* (BUCOVALĂ 1968, 99-100, nr. 183-195)	

Sample number (Figs. 2, 3)	Discovery point	Description	Colour	Manufacturing technique	Isings form	Chemical Group	Analogies	Figures
34	Baths, area II	Fragment of a window pane	Colourless pale blue	Casting and stretching		RNCBGY2		
35	Baths, area II	Fragment of a *unguentarium* with a concave base, narrow and cylindrical neck and bell-shaped body	Pale blue	Blowing	Isings 28b	RNCBGY2	*Porolissum* (GUDEA 1989, 1121, CCLVIII/7), Sarmisegetusa-Regia (MATEESCU-SUCIU 2017, 139, fig.1/1, 1/8, 1/9), *Tochile-Răducani T2 M4* (BÂRCĂ 2006, 586, 129/3), *Oltenița-Ulmeni* (BÂRCĂ 2015, fig. 6/6), *Moesia Inferior* (CHIRIAC/BOȚAN 2013, 447, fig. 10/10); *Noviodunum* (SIMION 1984, 495, fig. XI/7)	
36	Baths, area II	Fragment of a *unguentarium* with bell-shaped body, cylindrical, narrow neck. The constriction at the base of the neck is visible	Colourless pale blue	Blowing	Isings 28b	RNCBGY2	*Porolissum* (GUDEA 1989, 1121, CCLVIII/7), Sarmisegetusa-Regia (MATEESCU-SUCIU 2017, 139, fig.1/1, 1/8, 1/9), *Tochile-Răducani T2 M4* (BÂRCĂ 2006, 586, 129/3), *Oltenița-Ulmeni* (BÂRCĂ 2015, fig. 6/6), *Moesia Inferior* (CHIRIAC/BOȚAN 2013, 447, fig. 10/10); *Noviodunum* (SIMION 1984, 495, fig. XI/7)	
37	Baths, area II	Fragment of a bowl or cup with a slightly out-turn rim and probably convex body	Pale blue green	Blowing		Recycled Sb-Mn glass		
38	Baths, area II	Fragment of a bowl (?) with a narrow tubular rim, with the edge bent out and down	Colourless	Blowing		Mn-decolourized		
39	Baths, area II	Fragment of the body of a container	Pale blue	Blowing		RNCBGY2		
40	Baths, area II	Fragment of a *unguentarium* with an out-turned rim, cylindrical narrow neck	Pale blue	Blowing		RNCBGY2		
41	Baths, area II	Small ribbon curved handle with a vertical rib	Pale blue			RNCBGY2		
42	Baths, area II	Fragment of a slightly concave base	Pale blue	Blowing		RNCBGY2		
43	Baths, area II	Fragment of a window pane	Colourless	Casting and stretching		Recycled Sb-Mn glass		
44	Baths, area II	Fragment of the body of a container	Pale blue	Blowing		RNCBGY2		
45	Baths, area II	Fragment of a window pane	Pale blue	Casting and stretching		RNCBGY2		
47	Baths, area II	Fragment of a base (?)	Colourless	Casting		Sb-decolourized		
48	Baths, area II	Fragment of the body of a container	Green	Blowing		Plant ash glass		
49	Baths, area II	Fragment of a narrow tubular rim	Pale green	Blowing		RNCBGY2		
50	Baths, area II	Fragment of glass waste/scrap	Green			RNCBGY2		

Sample number (Figs. 2, 3)	Discovery point	Description	Colour	Manufacturing technique	Isings form	Chemical Group	Analogies	Figures
51	Baths, area II	Fragment of a narrow tubular rim	Colourless	Blowing		Sb-decolourized		
52	Baths, area I	Fragment of a *unguentarium* with cylindrical neck	Pale green	Blowing		Recycled Sb-Mn glass		
53	Baths, area I	Fragment of the base (?) of a container	Green	Blowing		Plant ash		
54	Baths, area I	Fragment of the body of a container	Colourless	Blowing		Sb-decolour-ized		
55	Baths, area II	Fragment of a window pane	Colourless pale blue	Casting and stretching		RNCBGY2		
56	Baths, area III	Fragment of the body of a container with horizontal trails	Colourless	Blowing		RNCBGY2		
57	Fort	Fragment of a rim (?) of a vessel	Pale blue	Blowing		RNCBGY2		
59	Fort	Fragment of the body of a container with two sets of trails	Colourless pale blue	Blowing		RNCBGY2		
62	Fort	Fragment of glass waste/scrap	Green			RNCBGY2		
63	Fort	Fragment of a narrow, cylindrical container neck	Pale green	Blowing		RNCBGY2		
65	Fort	Fragment of a bottle (?)	Colourless	Mould blowing		Naturally colourless - quartz pebbles		
67	Fort	Fragment of the body of a container	Pale green Colourless	Blowing		Outliers		
68	Fort	Fragment of the body of a container	Colourless	Blowing		Sb-decolourized		
69	Fort	Fragment of a tubular narrow rim (?)	Pale green	Blowing		RNCBGY2		
70	Fort	Fragment of the body of a container	Pale blue	Blowing		RNCBGY2		
71	Fort	Fragment of a ribbon handle with multiple ribs - probably from a bottle (?)	Pale blue green			RNCBGY2		
72	Fort	Fragment of the body of a container	Colourless	Blowing		Sb-decolour-ized		
73	Fort	Fragment of the foot of a beaker/goblet (?)	Pale blue green	Blowing		RNCBGY2		
74	Fort	Fragment of a prismatic container body (?)	Pale green	Blowing		RNCBGY2		
75	Fort	Fragment of the body of a container	Pale blue	Blowing		RNCBGY2		
76	Fort	Fragment of a bowl or a cup with a flat base	Pale blue	Blowing		RNCBGY2		

Sample number (Figs. 2, 3)	Discovery point	Description	Colour	Manufacturing technique	Isings form	Chemical Group	Analogies	Figures
77	Fort	Fragment of the base (?) of a container	Pale blue	Blowing		RNCBGY2		
79	Fort	Fragment of a slightly out-turn rim of a vessel	Pale green	Blowing		RNCBGY2		
80	Fort	Annular bead with trail decoration around sides.	Cobalt blue	Wound bead		Co-blue		
81	Fort	Fragment of a neck and a handle, probably from a bottle (?). The handle is applied just below the rim edge	Pale green	Mould blowing		RNCBGY2		
82	Fort	Fragment of the body of a container	Colourless	Blowing		Sb-decolourized		
84	Fort	Fragment of a container with a small tubular pushed-in base ring colour	Pale green	Blowing		RNCBGY2		
85	Fort	Fragment of a cup or a bowl with a vertical slightly out-turn rim and horizontal cut-out lines	Colourless	Blowing	Isings 12/29	Sb-decolourized		
86	Baths, area III	Fragment of an out-turn rim, cylindrical neck	Pale green	Blowing		RNCBGY2		
87	Baths, area III	Fragment of an out-turn rim of a vessel	Colourless pale green	Blowing		RNCBGY2		
88	Baths, area III	Fragment of a small ribbon handle with a vertical rib	Pale green	Free forming		RNCBGY2		
89	Baths, area III	Fragment of a handle (?)	Pale blue	Free forming		RNCBGY2		
90	Baths, area III	Fragment of a cup or bowl with a flat base	Pale blue	Blowing		RNCBGY2		
91	Baths, area I	Fragment of a unguentarium (?) with a slightly concave base	Pale blue	Blowing	Isings 28b	RNCBGY2	*Porolissum* (GUDEA 1989, 1121, CCLVIII/7), Sarmisegetusa-Regia (MATEESCU-SUCIU 2017, 139, fig.1/1, 1/8, 1/9), *Tochile-Răducani T2 M4* (BÂRCĂ 2006, 586, 129/3), *Oltenița-Ulmeni* (BÂRCĂ 2015, fig. 6/6), *Moesia Inferior* (CHIRIAC/BOȚAN 2013, 447, fig. 10/10); *Noviodunum* (SIMION 1984, 495, fig. XI/7)	
92	Baths, area I	Fragment of the body of a container	Colourless	Blowing		Sb-decolourized		
93	Baths, area I	Fragment of a jar (?) with a concave base	Colourless	Blowing		Sb-decolourized		

* RNCBGY2 represents Roman naturally coloured blue green yellow glass presumably of Levantine origin

DISCUSSION

M. Smith argues that commonplace items, such as household furniture, containers, and utensils, are appreciated for both their social and functional content, *with social content being expressed through decoration, form, and material selection*[37]. The concept of luxury has constantly developed over time, and it can be misconstrued with the concept of necessity depending on the individual's socioeconomic context. In *Social life of things,* A. Appadurai[38] states that we should *regard luxury as a special register of consumption* which is defined not by the intrinsic value of the object but by its context. Thus the author considers that to be a luxury product it must fulfil at least one of five criteria which refer to: restriction to elites, the difficulty of purchase, semiotic virtuosity, specialized knowledge or linkage with body, person or personality.

As mentioned above, only two fragments[39] are proper luxury goods in terms of intrinsic values (according to the chemical analysis), the rest of the artefacts represent common vessels. Around this time (1st -2nd c. AD), the most valuable glass vessels were those that were entirely transparent and resembled rock crystal containers[40]. There are two glass fragments in the examined group which are made from naturally colourless - quartz pebbles. Sample no. 32 represents a bottle or flask with a vertical rim and a cylindrical neck (Fig. 5/17). Unfortunately, we have yet to establish an analogy, as the fragment is uncommon for Roman glass. A possible bottle fragment represents the second sample (sample no. 65).

Moreover, the type Isings 21 glasses are part of a broader group of vessels made of discoloured glass that have facet-cut decoration and are formed in moulds[41] in a time when translucent glass was highly praised[42] and in fashion in the last period of the 1st century.

To better understand socio-spatial organization or to gain new insights into the variety of people who lived within Roman military bases, Penelope Allison had argued[43] that activities inside early Roman military stations can be examined using artefact distribution, spatial analyses that are using GIS technology *open up new lines of inquiry.*[44] More than that, Allison used an attribution technique for objects that can be linked to particular activities and social groups and recognizes variations in object use, which more likely represent historical patterns of use[45].

Typically, drinking vessels were prevalent in the fort, whereas *unguentaria* containers seem to be limited to the bathhouse. Additionally, the fort has fewer glass artefacts than the baths do. The barracks area and two complexes known as C1 and C2 are where the majority of the glass artefacts from the fort were found. While C2 stands for the latrines, C1 represents the centurion's cellar, which had a brick-paved floor on which were found fragments of amphorae and a bronze pot[46].

In complex C1, a part of a cup was found that had a flat base, two thin cut lines as decoration, and sides that tapered slightly downward to the bottom. This type of vessel was used for drinking[47]. Given that wine might have been kept in those amphorae and then poured into a jug of some sort, the pairing of glass cups with this ensemble is rather obvious. Unfortunately, the material found in C2 was extremely fragmentary without being able to give any clues about the type of vessel it belonged to.

The area with the most glass material finds is the hot water pool, in addition to numerous drinking containers and *unguentaria*, fragments of window glass and a bead were also discovered. We can imagine that this room had windows and that the participants did not leave all their possessions in the changing room. This is supported by the discovery of numerous coins in this room.

According to the analysis of the glass material discovered in the baths, drinking was a common activity while taking a bath. On the other hand, the bottles did not have to be filled with wine; they could also include tiny glass containers to distribute the olive oil to the participants, which was used in the bathing ritual.

Whitmore's study[48], which examines material finds, particularly small finds, from 13 Roman baths, suggests that food may have been prepared in these locations and drinking was a common activity. Aside from *unguentaria*, the most frequent forms of glass vessels were cups, goblets, jugs, and bottles. We are not shown the place of discovery in all of the cases, but most often the sewer appears as the place of discovery.

As with the Mălăiești Roman Baths, part of the glass artefacts was discovered in Area I in the vicinity of the sewer. Fragments from a *unguentarium* and the bases of drinking vessels were found in this area. In the *tepidarium* area, mainly handles that could come from jugs but also fragments of *unguentaria* were identified. Being a passing area, it is understandable why some of the material has been uncovered here, with all the attendees transiting this area.

The most intriguing situation is in Area IV of the baths, where all of the glass fragments were discovered outside the enclosure, but close to the southern wall. Nails and fragments of metal and ceramic objects were discovered alongside the glass vessels. By analysing the entire set, one can observe that the majority of the vessels are *unguentaria*, followed by bottles and items made of milky-colourless glass. Given that they were discovered in a small area, we can conclude that this spot serves as a sort of disposal pit/area for broken or non-usable objects.

[37] SMITH 1999, 109.
[38] APPADURAI 1986, 38.
[39] BUGOI/ȚENTEA/MANEA 2023.
[40] PLINIUS, *Nat.Hist.*, XXXVI, 67.
[41] LAZAR 2021, 339.
[42] FLEMMING 1999, 44.
[43] ALLISON 2013.
[44] ALLISON 2013, 48.
[45] ALLISON 2013, 4-10.
[46] ANGHELUȚĂ *et alii* 2022, 185-187; ANGHELUȚĂ/ȚENTEA/DOZSA 2022.
[47] ISINGS 1957, 27-30.
[48] WHITMORE 2013.

CONCLUSIONS

Of the 160 fragments of glassware identified during the archaeological excavations between the years 2011-2019, we were able to establish the functionality for a number of 120 items, of which 93 were chemically analyzed. We were able to perform the typological analysis for a much smaller number of fragments, only 24 (see table 2, column 6).

The glass from of Mălăiești Roman Fort and Bath is interesting especially from a chronological point of view, considering that the military base was in operation for a very short period of time, only a few years. The way the glass vessels were distributed around the baths and the fort indicates normal social activities and moreover underlines the fact that drinking was practised in the baths.

Two cases stand out, that of Area IV, which represents a rubbish dump where all objects that could no longer be used were thrown away, and the C1 complex, where glass beakers were found together with amphorae and other metal objects in a cellar belonging to an officer.

Regarding the price of glass vessels, this demonstrates that the occupants could have afforded more expensive glass vessels rather than basic containers. We can argue that the people who live in the fort follow the trends in glass manufacture at a time when Seneca[49] writes that fruits look much lovelier floating in a glass vase and colourless glass is becoming increasingly popular emulating rock crystal containers.

A more detailed analysis of how categories of objects associate and how they are distributed should be conducted to better capture the social behaviour of those living on the military base. This will be possible following the completion of the study of all material categories that can be associated with the glassware presented here.

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[49] SENECA, *Naturales Quaestiones*, I, 6.

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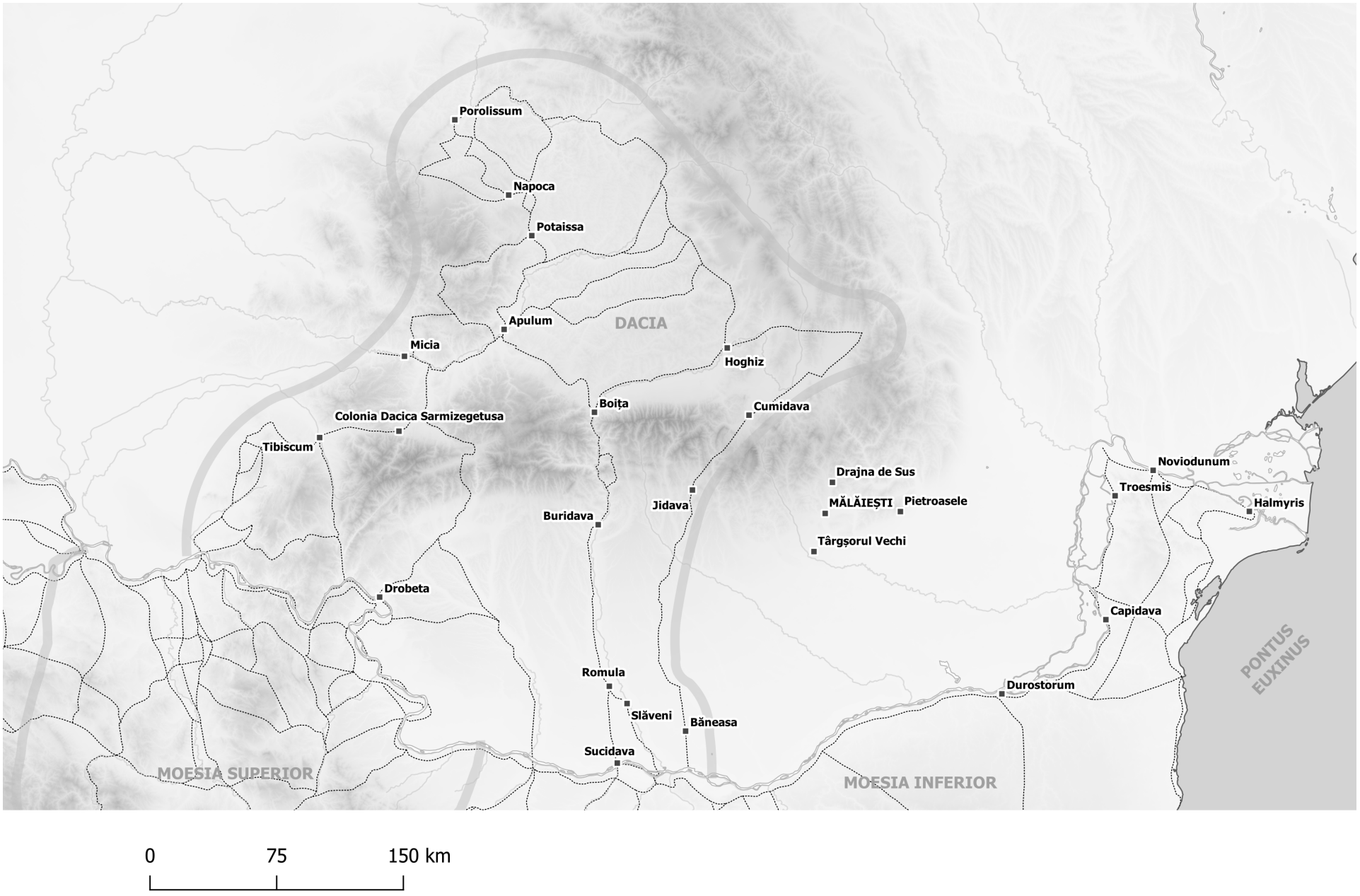

Fig. 1. The location of Mălăiești Roman Fort.

Fig. 2. The distribution of glass finds discovered in the fort.

I. 91, 92, 93, 52, 53, 54.

II. 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 55.

III. 56, 86, 87, 88, 89, 90.

IV. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22.

Fig. 3. The distribution of glass finds discovered in the baths.

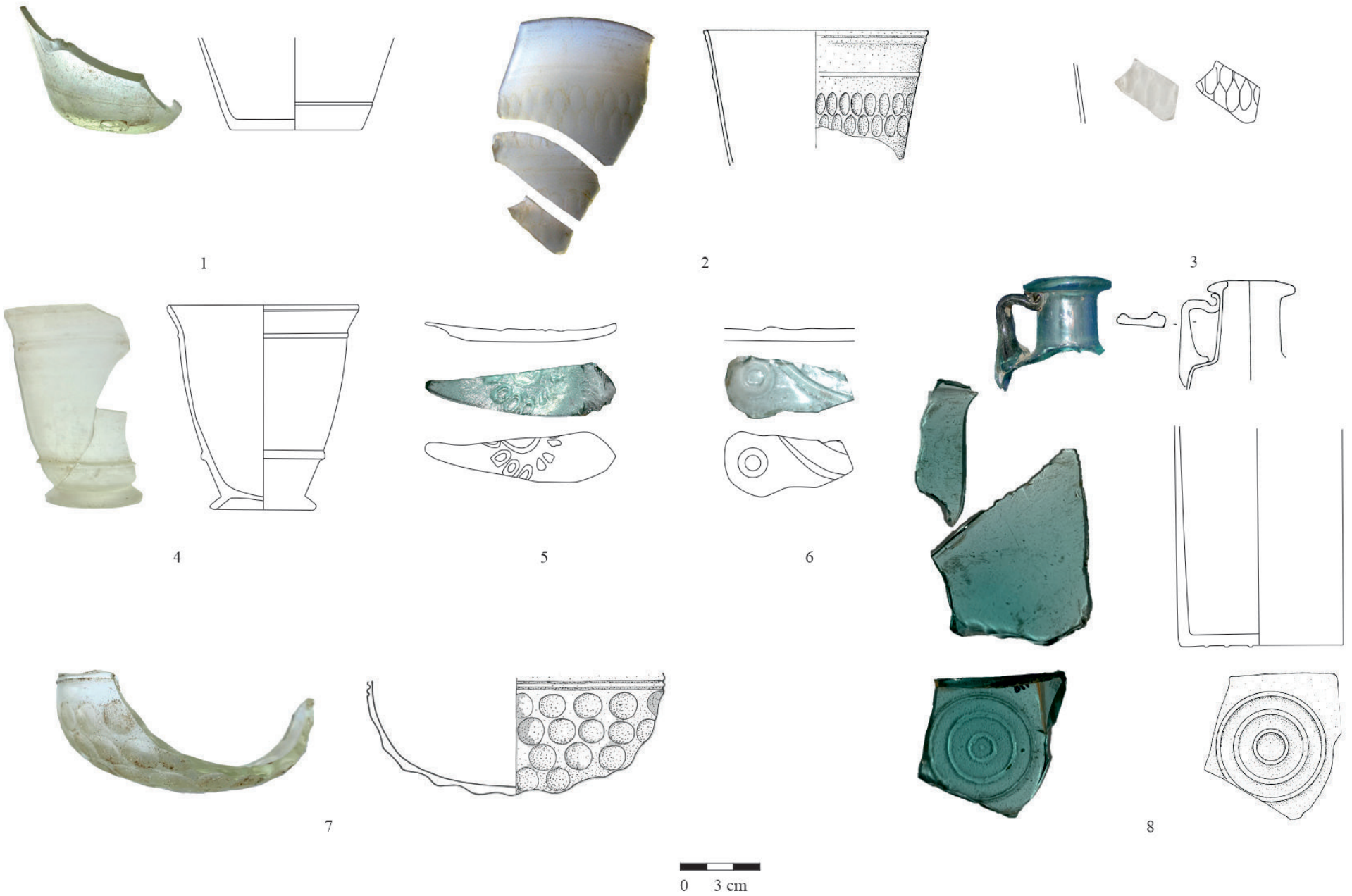

Fig. 4. Glass finds from Mălăiești Roman Fort and baths.

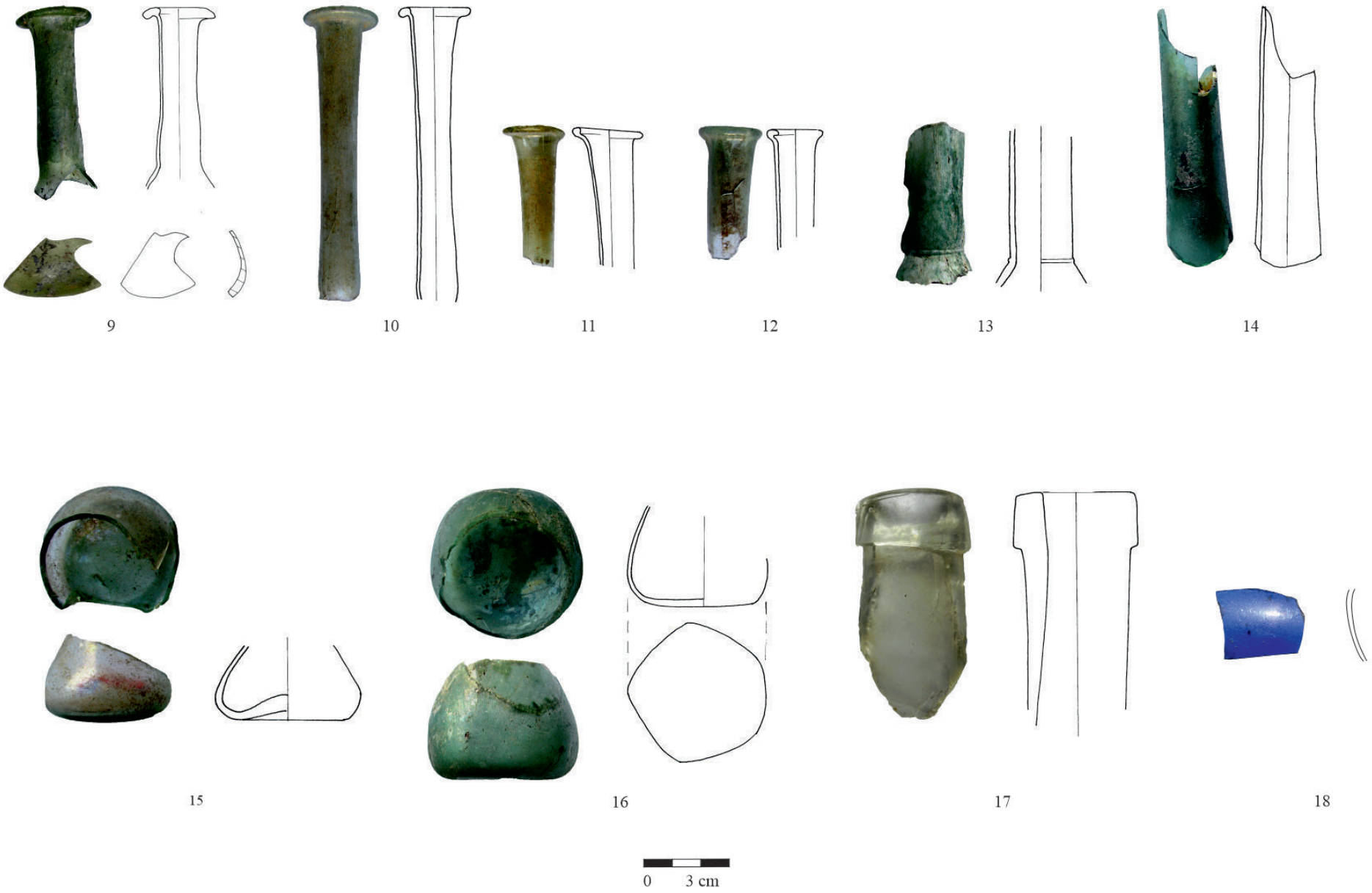

Fig. 5. Glass finds from Mălăiești Roman Fort and baths.