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pour l'HISTOIRE du VERRE

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SCHWEIZERISCHES FORSCHUNGSZENTRUM
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SWISS RESEARCH CENTRE
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**VITROMUSÉE
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MUSÉE SUISSE DU VITRAIL
ET DES ARTS DU VERRE
SCHWEIZERISCHES MUSEUM
FÜR GLASMALEREI UND GLASKUNST
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Cover illustration

Goblets with white filigree decoration, produced in Swiss glasshouses, late 17th to early 18th century. From different Swiss public and private collections. For a detailed discussion see: Erwin Baumgartner, *Reflets de Venise*, Bern 2015, p. 254–272, 322–328 and the contribution of Christophe Gerber in the present volume, page 564.

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MOLD-BLOWN GLASS FROM THE ROMAN PROVINCE OF DALMATIA

Berislav Štefanac

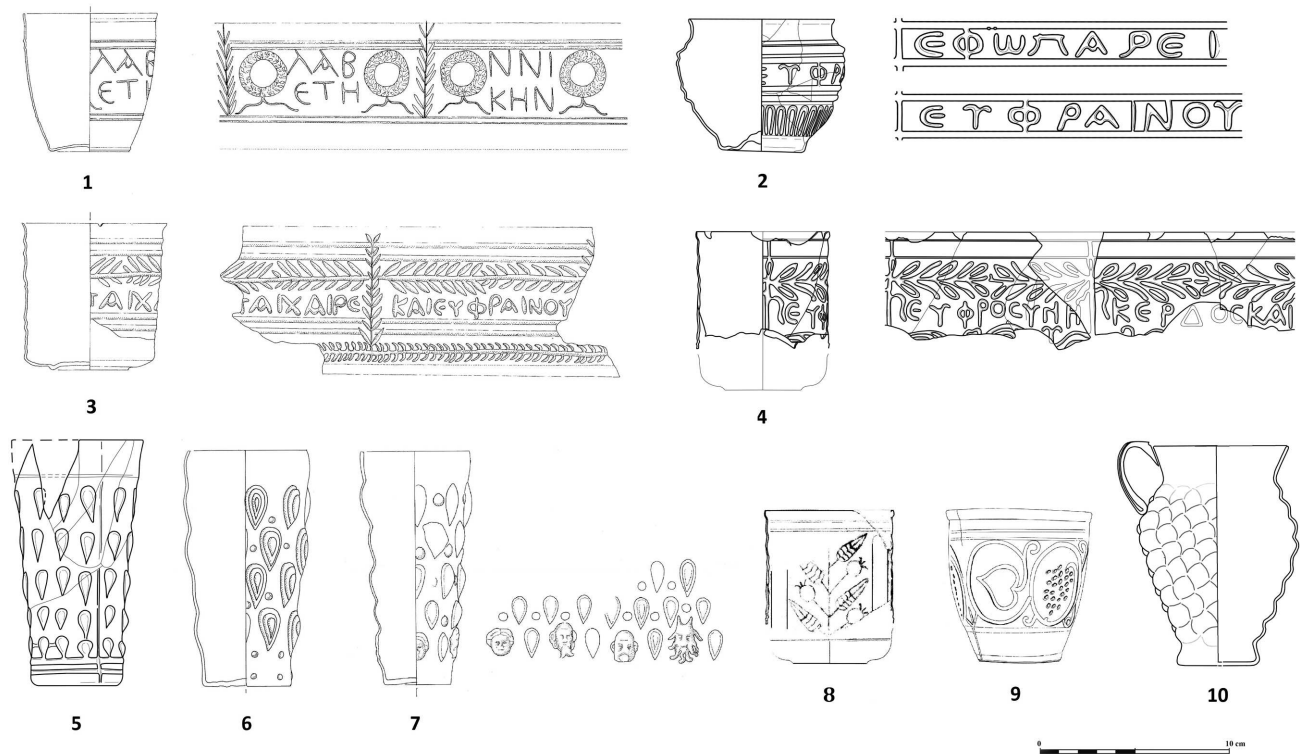


Fig. 1: Mold-blown glass beakers from ancient *Liburnia* (1, 3, 6-7: LARESE 2004; 2, 4: ETEROVIĆ BORZIĆ 2014; 8: unpublished beaker from Zadar – Museum of ancient glass; 9: REISCH 1913; 10: PEROVIĆ 2009).

INTRODUCTION

Several sites from the Roman province of *Dalmatia* offered exceptionally valuable glass finds from the Early Imperial period. Roman-era Zadar (*Iader*) is one of such sites as well as Nin – *Aenona*, Podgrađe – *Asseria*, Starigrad Paklenica – *Argyrunum*, Skradin – *Scardona*, Bribir – *Varvaria*, Solin – *Salona*, Vid kod Metkovića – *Narona*, Budva – *Butua* and Duklja – *Doclea*. Also, military camps like Burnum and Tullurium had to import large amounts of glass products from all over the Roman Empire. Analyses conducted on a great number of finds indicate that most of them were imported primarily via naval routes, most frequently from the eastern Mediterranean and the Apennine Peninsula. Mold-blown glass products from the Roman province of *Dalmatia* is best documented from the period of the 1st century AD. Recent excavations of the classical antique necropolis in Zadar (ancient *Iader*), as well as a series of papers dealing with the rich material from Iadertinian graves, offer the opportunity to provide a complete overview of the glass inventory from the Early Imperial period.

RESULTS

Recognizable and very valuable relief decorated products from the Syro-Palestinian glassmaking workshops take special place in an abundance of Dalmatian glass finds from the Early Principate period. The chronological span of the glass material extends from the beginning of the 1st to the mid-second century, with an emphasis on the period around mid-first century AD. Although they were not found frequently, they were represented with a number of typological and morphological variants (figures 1-6). Technological and stylistic characteristics of vessels can be related to regions of foundation of glassmaking in which inventiveness in blowing into relief-decorated moulds was elevated to exceptional refinement. After an overview of the rich eastern Adriatic finds (Zadar and Budva) it is justified to acknowledge exceptional craftsmanship of the Syro-Palestinian glassmakers who laid foundations of glassmaking activity and affected development of production in other parts of the Empire.

Very rare mold-blown glass products were found in *Burnum*, *Tullurium* and *Narona*, such as cups signed by *Ennion* and

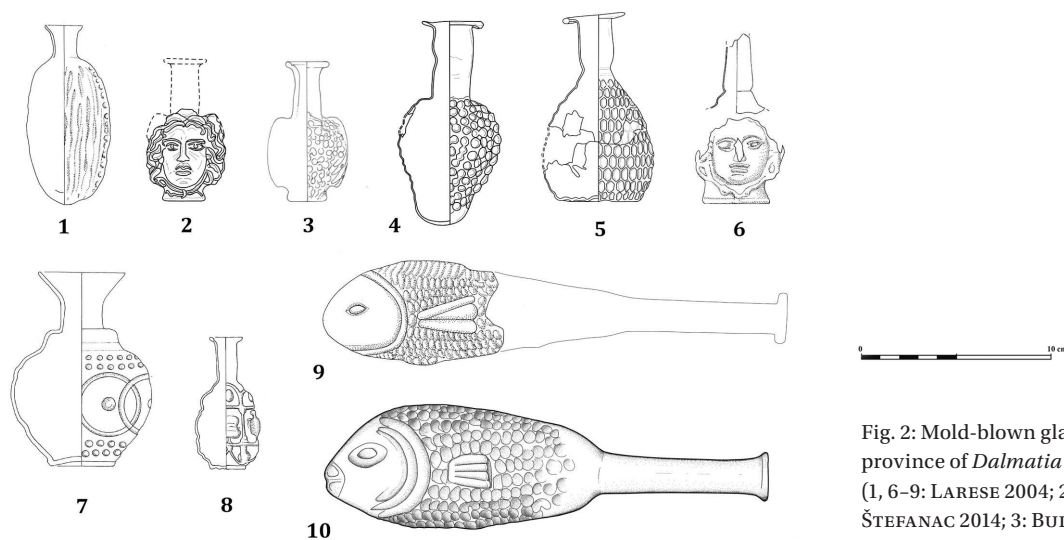


Fig. 2: Mold-blown glass bottles from the province of *Dalmatia* (1, 6-9: LARESE 2004; 2, 4, 5, 10: FADIĆ, ŠTEFANAC 2014; 3: BULJEVIĆ 2010).

Aristeas (figures 6/1-2).¹ Richness and variety of Early Imperial mold-blown vessels from the Zadar region (southern Liburnia) is confirmed once more with a discovery of beakers with Greek inscriptions expressing good wishes λαβε την νικην – ‘Seize victory’ (figure 1/1), ευφραινου εφω παρει – ‘Enjoy whatever you participate in’ (figure 1/2), καταχαιρε (καταχαιρε) και ευφραινου – ‘Be joyful and rejoice’ (figure 1/3), κερδος και ευφροσυνη – ‘Make profit and rejoice’ (figure 1/4),² conical beakers decorated with knot-shaped knobs (figures 1/5-6), beakers with stepped knobs, circular bosses and comedy masks (figure 1/7),³ a beaker with depictions of barley and pomegranates (‘Harvest’ beaker) (figure 1/8)⁴ and beakers with scrolling tendrils of grape bunches and heart-shaped vine leaves (figure 1/9).⁵

An isolated find among the Zadar glass is a cone-shaped cup made of white opaque glass (figure 1/10). A cup is dated by the grave context to the second half of the 1st century.⁶ No exact analogies were found for this item among the published material.

Among the earliest mold-blown vessels are small cylindrical pyxides ornamented with a variety of decorative palmettes (figure 6/3). Except examples from Trilj near Split (*Tilurium*)⁷ and Vid near Metković (*Narona*),⁸ one yellowish pyxis was excavated at Zadar.⁹ Only few identical pyxides were found at north Italian sites¹⁰ which would suggest a western origin. A mid-first century date is indicated by excavations from all of Dalmatian sites.

Several examples of a finely ribbed hemispherical bowls (figure 6/4) were found in *Iader*, *Fulfinum*, *Tilurium* and *Narona*.¹¹ More are known from Claudian to late Neronian contexts. Bowls of this type have been found in most parts of the Roman Empire.¹² The place of production is uncertain, though it was often assumed to be centred in Syria or Palestine.¹³ On the other side, the large number of finds concentrated in the western half of the Roman Empire led some authors to suggest that finely ribbed bowls may have been made in western workshops.¹⁴

Other rare finds include different types of bottles (figures 2/1-10; figures 5/18-20) and juglets with various decorations

(figures 3/1-9; figures 5/1-8).¹⁵ Mold-blown juglets from Zadar (*Iader*) can be categorized, according to the diversity of the motifs and the shape of the body, into eight groups:

- Small cylindrical jugs with mixed symbols – pair of strigils, vase with two handles and four different plants with vertical stem (figure 3/1)
- Small cylindrical jugs with Dionysiac symbols (figures 3/2-3)
- Small cylindrical jugs with one pair of floral sprays (figure 3/4)
- Small pear-shaped jugs decorated with an acanthus scroll and a hunting scene (hunt-and-scroll jugs) (figure 3/5)
- Small ovoid jugs with band of lozenges (figure 3/6)
- Small jugs with ovoid bodies decorated with tendril-scroll motifs (figure 3/7)
- Small ovoid jugs decorated with vertical relief ribs (figure 3/8)
- Small jugs with bi-conical bodies decorated with relief arcades and lines (figure 3/9).

1 BULJEVIĆ 2004, 188–189; BORZIĆ 2008, 98; BORZIĆ 2011, 79–91; BULJEVIĆ 2014, 61–67.

2 RAVAGNAN 1994, 124; ETEROVIĆ 2011, 321–333; ETEROVIĆ BORZIĆ 2014, 367–376.

3 FADIĆ 2005, 75–98.

4 ‘Harvest’ beaker is an unpublished find from wider Zadar area (Museum of ancient glass, inv. no. A14325). The body decorated in relief with two concentric bands below the rim, the main frieze composed of groups of ears of barley and pomegranates.

5 Beakers with scrolling tendrils were found at several sites in *Dalmatia* (REISCH 1913, 89, no. 231, Zadar; FADIĆ 1982, 124, no. 54, Osor; GLUŠČEVIĆ 1986, 258, Zaton near Nin).

6 PEROVIĆ 2009, 185–192.

7 BULJEVIĆ 2013, 466–467, fig. 3/3.

8 BULJEVIĆ 2004, 189, no. 11.

9 Yellowish cylindrical pyxis (h = 3.9 cm) was found on the roman necropolis in Zadar (Museum of ancient glass, inv. no. A8198, archeological excavations 1989, incineration grave no. 329, early Claudian context).

10 PASSI PITCHER 1987, 140–141, fig. 82–83 (Nave, near Brescia); FACCHINI 1999, 218, no. 525 (Villa Bartolomea, near Verona); STERN 1995, 66.

11 Finely ribbed hemispherical bowls were found at several sites in Croatia (BULJEVIĆ 2004, 190, no. 15; BULJEVIĆ 2013, 468, no. 6; STARAC and NOVAK 2005, 11; PEROVIĆ 2008, 20, no. 2). Most of the Zadar (*Iader*) finds are still unpublished.

12 PRICE 1991, 72; STERN 1995, 112; WHITEHOUSE 2001, 14; FONTAINE and ROUSSEL-ODE 2010, 188–189; FOY 2010, 311.

13 BERGER 1960, 55.

14 STERN 2001, 54–55.

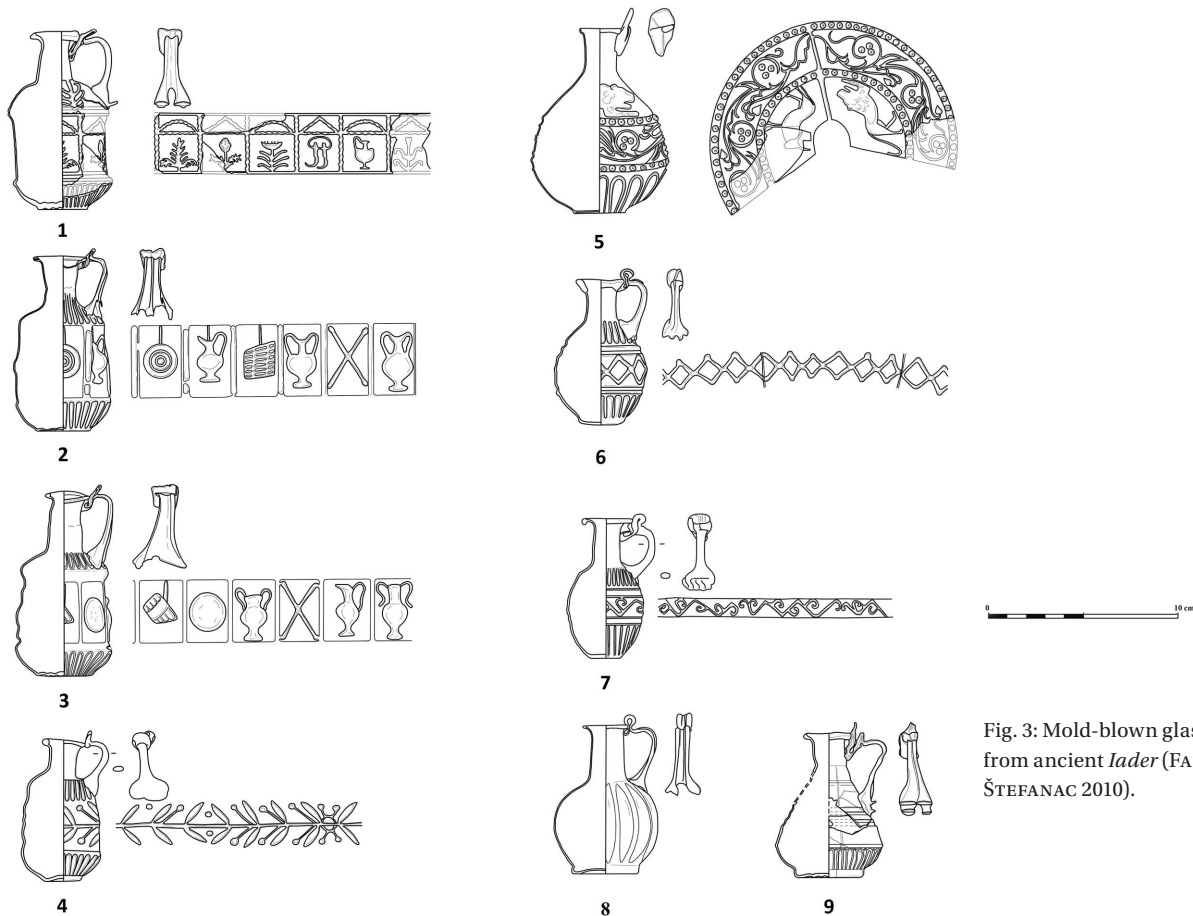


Fig. 3: Mold-blown glass juglets from ancient *Iader* (FADIĆ and ŠTEFANAC 2010).

Differences in quality and decorations indicate several centres of productions in the eastern parts of the Roman Empire.

Moreover, throughout Dalmatia amphoriskoi with interesting relief motifs (figures 4/1-9; figures 5/9-17) such as an amphoriskos with a mythological depiction of Ajax can be found.¹⁶

Recent publications offered rare examples, including a fish-shaped bottle (figure 2/10),¹⁷ juglets with Dionysiac symbols (figures 3/2-3),¹⁸ a bottle in the shape of two Medusa's heads (figure 2/2),¹⁹ grape-shaped flasks (figures 2/3-4),²⁰ and a unique find from the Roman military camp *Burnum* – a fragmented example of small lenticular bottle with a depiction of Medusa's head (figure 4/9).²¹

From the repertoire of imported Early Imperial glass products unearthed at the Roman necropolis in Zadar, two bulbous bottles with two handles stand out (figure 4/10).²² They were most likely used as *aryballoi*. Bottles are decorated with a central band of lozenges bordered above and below by tongues. Similar mold-blown decoration can also be seen on an amphoriskos from Nin (*Aenona*)²³ (figure 4/1) and a small jugs from Zadar (*Iader*)²⁴ (figure 3/6). Their origin can be linked to the production of Syro-Palestinian workshops from the first half of the 1st century. Both specimens belong to luxury artefacts blown into a two-part relief-ornamented mould with decoration reflecting the style of the period in which they were produced. A reflection

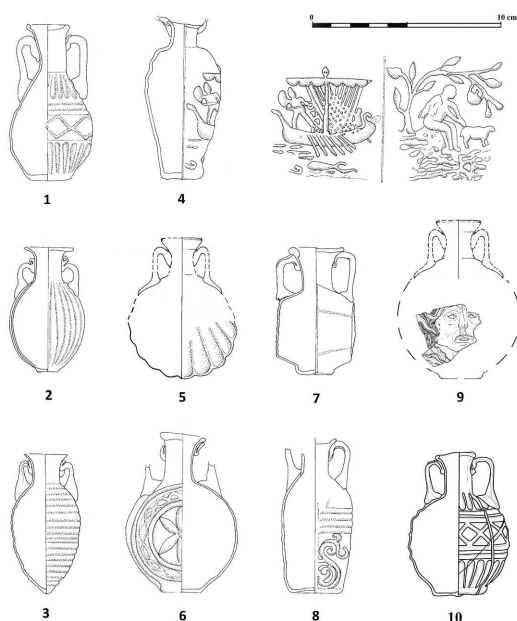


Fig. 4: Amphoriskoi from southern *Liburnia* (1–4, 6–8: LARESE 2004; 9: JADRIĆ-KUČAN 2014; 10: ŠTEFANAC 2013).

15 FADIĆ and ŠTEFANAC 2010, 275–350.

16 RAVAGNAN 1994, 34, no. 28.

17 FADIĆ 2009, 123–135; FADIĆ and ŠTEFANAC 2014, no. 5-6.

18 FADIĆ and ŠTEFANAC 2010, 281–286, no. 1-8.

19 FADIĆ and ŠTEFANAC 2014, no. 9-10.

20 BULJEVIĆ 2010, 86, no. 3 (Roman-era necropolis in Lora, Split); FADIĆ and ŠTEFANAC 2014, no. 7 (Nin near Zadar, Roman necropolis).

21 JADRIĆ-KUČAN 2014, 353.

22 ŠTEFANAC 2013, 161–163, no. 1-2

23 RAVAGNAN 1994, 32, no. 22.

24 FADIĆ and ŠTEFANAC 2010, 294–297, no. 16-17.

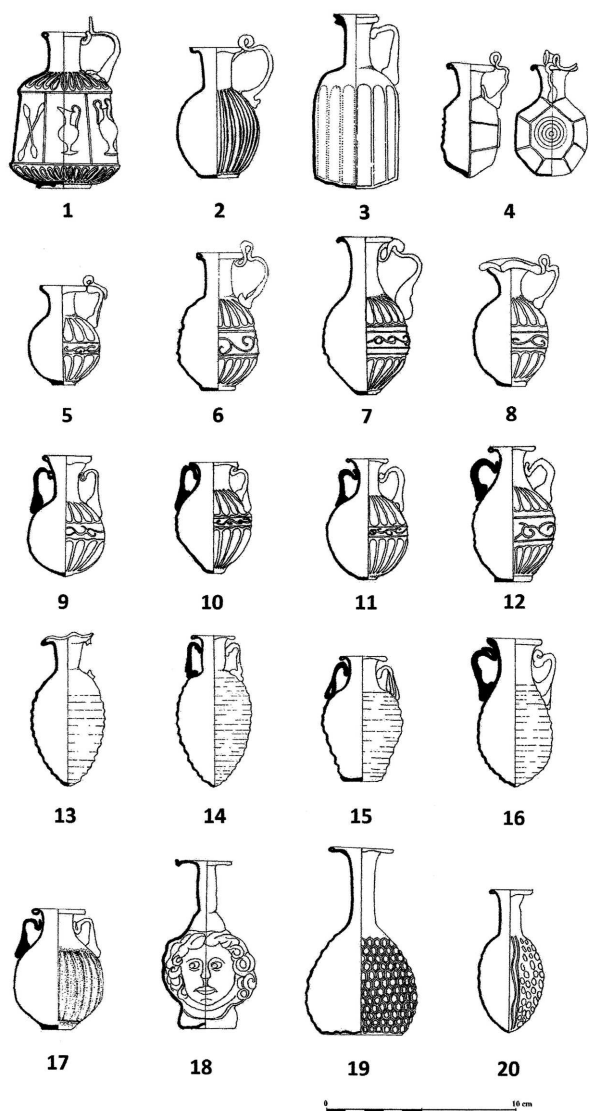


Fig. 5: Mold-blown glass from ancient *Butua* (MARKOVIĆ 2012).

of the skill of the Levantine masters is visible in their individual morphological characteristics.²⁵

CONCLUSION

Except for being very rare, southern Liburnian finds²⁶ and examples from Budva necropolis²⁷ are valuable since most of them were found in controlled archaeological excavations. Most finds were found in closed grave units, in cremation burials from the 1st and the beginning of the 2nd century. Finds originating from urban wholes are very rare and mostly fragmented. Although some of these objects were published in certain professional articles and catalogues, an integral synthesis offers a more accurate image of the import of luxurious goods to the eastern Adriatic coast. From all of the above, it is possible to conclude that the Southern Liburnian territory, for example ancient Iader and its surrounding territory, had a very developed trade relations with Eastern Mediterranean as early as the first century AD. Considering the number of the finds of relief ornamented small jugs and the lack of the same vessels in the other parts of Western Roman Empire, it is evident that such expensive

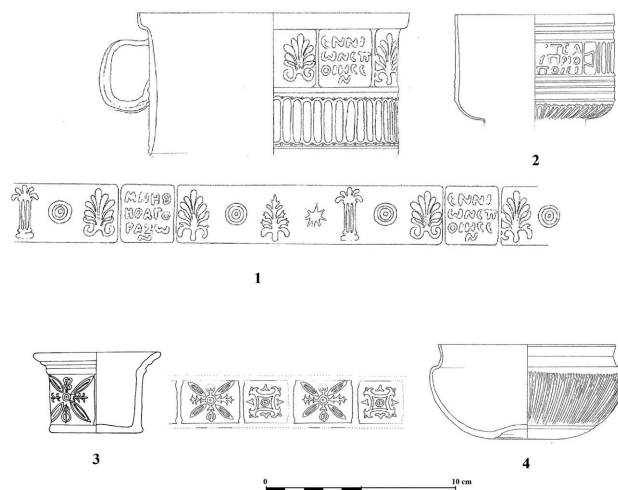


Fig. 6: Mold-blown glass cups and bowls from the province of *Dalmatia* (1, 2, 4: BULJEVIĆ 2004; 3: unpublished pyxis from Zadar – Museum of ancient glass).

products came directly from the East to the Southern Liburnian ports, without Aquileia playing the intermediary role as an important trade centre of the Northern Italy. The import of Syro-Palestinian glassware took place from the early first to the middle of the second century, while most of the vessels still belong to the mid-first century.

According to the present state of research, it is necessary also to conclude that the area of southern *Liburnia* is the western most territory with greater quantities of Syro-Palestinian luxury and refined products, in which, apparently, expensive content was stored. The analytical part of the paper presents specimens that point to the trade connections of Iader with distant regions of the eastern Mediterranean with developed glass craft centres, from which various luxury products were transported.

Nowadays, there are different opinions about the production centres of decorated mold-blown vessels among authors. A number of scholars have contributed to the study of the genesis as well as the typological and chronological valorisation of relief-ornamented vessels.²⁸ Theoretical insights mostly indicate that the workshop centres were located in the Levant region, though the possibility of their production in other parts of the Mediterranean should also be considered. An Italian origin is indicated for small cylindrical pyxides ornamented with a variety of decorative palmettes (figure 6/3). The above-mentioned problems open up a broad and complex theme related to the possible migration

25 The *aryballoi* were made of extraordinarily thin glass with nuances of yellowish and amber-brown. The composition of the ornamentation consists of radially distributed tongues on the shoulder and the lower part of the body, while on the central part there is a continuous series of 'X' motifs, forming a rhomboid decoration. Apart from the relief decoration (lozenge pattern), traces of vertical sections of the mould are also visible on the body (ŠTEFANAC 2013, 161–163, no. 1–2).

26 FADIĆ and ŠTEFANAC 2010, 275–350; FADIĆ and ŠTEFANAC 2014, 377–404.

27 MARKOVIĆ 2012, 103–118.

28 HARDEN 1935, 163–186; HARDEN 1960, 47–62; BERGER 1960, 55; ISRAELI 1964, 34–41; SCATOZZA HÖRICH 1991, 76–85; PRICE 1991, 56–75; STERN 1995, 65–74; BARAG 1996, 77–92; KUNINA 1997, 24–40; STERN 2001, 51–54; WHITEHOUSE 2001, 13–17.

of glassmakers, trade with moulds or the possibility of imitations of artefacts from the Eastern Mediterranean. Nevertheless, the presence of finest decorated mold-blown glass containers indicates that the Dalmatian coast was a region of intensive trade contacts in the Early Principate and that the coastal cities, such as Zadar and Budva, were the meeting point of eastern and western influence.

REFERENCES

- BARAG, Dan P., 1996. 'Phoenicia and Mould-Blowing in the Early Roman Period'. In: ASSOCIATION INTERNATIONALE POUR L'HISTOIRE DU VERRE (ed.), *Annales du 13^e Congrès de l'AIHV*. Pays-Bas, août 1995. Lochem, 77-92.
- BERGER, Ludwig, 1960. *Römische Gläser aus Vindonissa*. Veröffentlichungen der Gesellschaft Pro Vindonissa, 4. Basel.
- BORZIĆ, Igor, 2008. 'Ennion čaše iz Burnuma', *Archaeologia Adriatica* 11, 91-101.
- BORZIĆ, Igor, 2011. 'Čaša Aristeja Cipranina iz Burna (The Cup of Aristeas the Cyprian from Burnum)', *Vjesnik za povijest i arheologiju dalmatinsku* 104, 79-91.
- BULJEVIĆ, Zrinka, 2004. 'The Glass'. In: MARIN, Emilio (ed.), *The Rise and Fall of an Imperial shrine*. Split, 186-209.
- BULJEVIĆ, Zrinka, 2010. 'Rimskodobna nekropola u splitskoj Lori (The Roman-era necropolis in Lora)', *Vjesnik za povijest i arheologiju dalmatinsku* 103, 81-190.
- BULJEVIĆ, Zrinka, 2013. 'Project Tilurium - glass findings'. In: SANADER, Mirjana, RENDIĆ-MIOČEVIĆ, Ante, TONČINIĆ, Domagoj and RADMAN-LIVAJA, Ivan (eds.), *XVII Roman military equipment Conference Zagreb 2010*. XVII ROMEC, Proceedings of the XVIIth Roman military equipment Conference - Weapons and Military Equipment in a Funerary Context. Zagreb, 24th - 27th May 2010. Zagreb, 463-469.
- BULJEVIĆ, Zrinka, 2014. 'Ennion and Aristeas Glassware Found in the Roman Province of Dalmatia'. In: LIGHTFOOT, Christopher (ed.), *Ennion Master of Roman Glass*. New York, 61-67.
- ETEROVIĆ, Anamarija, 2011. 'Καταιχαιρε και Ευφραυνου'. In: LIPOVAC VRKLJAN, Goranka, RADIĆ ROSSI, Irena and ŠILJEG, Bartul (eds.), *Rimske keramičarske i staklarske radionice. Zbornik I. Međunarodnog arheološkog kolokvija*. Crikvenica 2008, 321-333.
- ETEROVIĆ BORZIĆ, Anamarija, 2014. 'Reljefne staklene čaše s grčkim natpisom s užeg zadarskog područja'. In: LIPOVAC VRKLJAN, Goranka, ŠILJEG, Bartul, OŽANIĆ ROGULJIĆ, Ivana and KONESTRA, Ana (eds.), *Rimske keramičarske i staklarske radionice. Zbornik II. Međunarodnog arheološkog kolokvija*. Crikvenica 2011, 367-376.
- FACCHINI, M. Giuliana, 1999. *Vetri antichi del Museo archeologico al Teatro Romano di Verona e di altre collezioni veronesi*. Corpus delle Collezioni Archeologiche del Vetro nel Veneto 5, Fiesse d'Artico - VE.
- FADIĆ, Ivo, 1982. 'Tipologija i kronologija rimskog stakla iz arheološke zbirke u Osoru', *Arheološka istraživanja na otocima Cresu i Lošinju, Izdanja Hrvatskog arheološkog društva* 7, 111-135.
- FADIĆ, Ivo, 2005. 'Čaša s lotosovim pupoljcima iz Aserije', *Asseria* 3, 75-98.
- FADIĆ, Ivo, 2009. 'Novi nalaz reljefne staklene boce oblika ribe', *Archaeologia Adriatica* III, 123-135.
- FADIĆ, Ivo and ŠTEFANAC, Berislav, 2010. 'Reljefno ornamentirani vrčići sirijske staklarske produkcije s područja južne Liburnije', *Asseria* 8, 275-350.
- FADIĆ, Ivo and ŠTEFANAC, Berislav, 2012. *Rimsko staklo Hrvatske - Radionički reljefni žigovi. Roman glass in Croatia - Workshop Relief Stamps*. Zadar.
- FADIĆ, Ivo and ŠTEFANAC, Berislav, 2014. 'Reljefno dekorirane staklene boce i bočice iz antičke Liburnije (Mold-blown glass bottles from ancient Liburnia)'. In: LIPOVAC VRKLJAN, Goranka, ŠILJEG, Bartul, OŽANIĆ ROGULJIĆ, Ivana and KONESTRA, Ana (eds.), *Rimske keramičarske i staklarske radionice. Zbornik II. Međunarodnog arheološkog kolokvija*. Crikvenica 2011, 377-404.
- FONTAINE, Souen and ROUSSEL-ODE, Janick 2010. 'Vases soufflés-moulés du Haut-Empire trouvés en Narbonnaise'. In: FONTAINE-HODIAMONT, Chantal (dir.) and SERCK-DEWAIDE, Myriam (ed.), *D'Ennion au Val Saint-Lambert, Le verre soufflé-moulé. Actes des 23^e Rencontres de l'Association française pour l'Archéologie du Verre*. Colloque international, Bruxelles - Namur, 17-19 Octobre 2008. Scientia Artis, vol. 5. Bruxelles 2010, 177-203.
- FOY, Danièle 2010. *Les Verres antiques D'Arles. La collection du Musée départemental Arles antique*. Paris.
- GLUŠČEVIĆ, Smiljan, 1986. 'Neki oblici staklenog materijala iz antičke luke u Zatonu kraj Zadra', *Arheološki vestnik* 37, 255-277.
- HARDEN, Donald B., 1935. 'Romano-Syrian glasses with mould-blown inscriptions', *Journal of Glass Studies* 25, 163-186.
- HARDEN, Donald B., 1960. 'Glass-making centres and the spread of glass-making from the first to the fourth century AD'. In: ASSOCIATION INTERNATIONALE POUR L'HISTOIRE DU VERRE (ed.), *Annales du 1^{er} Congrès des Journées Internationales du Verre, Liège, 20-24 août 1958*. Liège, 47-62.
- ISRAELI, Yael, 1964. 'Sidonian Mould-Blown Glass Vessels in the Haaretz Museum', *Journal of glass studies* 6, 34-41.
- JADRIĆ-KUČAN, Ivana, 2014. 'Ulomak staklene bočice s reljefnim prikazom glave Meduze'. In: LIPOVAC VRKLJAN, Goranka, ŠILJEG, Bartul, OŽANIĆ ROGULJIĆ, Ivana and KONESTRA, Ana (eds.), *Rimske keramičarske i staklarske radionice. Zbornik II. Međunarodnog arheološkog kolokvija*. Crikvenica 2011, 351-356.
- KUNINA, Nina, 1997. *Ancient Glass in The Hermitage Collection*. Sankt Peterburg.
- LARESE, Annamaria, 2004. *Vetri antichi del Veneto*. Corpus delle collezioni archeologiche del vetro nel Veneto 8. Venezia.
- MARKOVIĆ, Čedomir, 2012. *Antička Budva - Nekropole, istraživanja 1980 - 1981*. Podgorica.
- PASSI PITCHER, Lynn, 1987. *Sub ascia. Una necropoli romana a Nave*. Modena.
- PEROVIĆ, Šime, 2008. *Antičko staklo. Restauracija*. Zadar.

- PEROVIĆ, Šime, 2009. 'Tazza di vetro a forma di pigna da Zara', *Quaderni Friulani di Archeologia* XIX, 185–192.
- PRICE, Jennifer, 1991. 'Decorated mould-blown glass tablewares in the first century AD'. In: NEWBY, Martine, PAINTER, Kenneth (eds.), *Roman Glass: Two Centuries of Art and Invention*. The Society of Antiquaries of London Occasional Papers 13. London, 56–75.
- RAVAGNAN, Giovanna Luisa, 1994. *Vetri antichi del Museo Vetrario di Murano*. Corpus delle collezioni archeologiche del vetro nel Veneto 1. Venezia.
- REISCH, Emil (ed.), 1913. *Guida del Museo S. Donato in Zara*. Vienna.
- SCATOZZA HÖRICHT, Lucia, A., 1991. 'Syrian Elements among the Glass from Pompeii and Herculaneum'. In: NEWBY, Martine, PAINTER, Kenneth (eds.), *Roman Glass: Two Centuries of Art and Invention*. The Society of Antiquaries of London Occasional Papers 13. London, 76–85.
- STARAC, Ranko and NOVAK, Nino, 2005. *Staklo antičkog Fulfinuma. Pogled na nekropolu nakon dvije tisuće godina*. Omišalj.
- ŠTEFANAC, Berislav, 2013. 'Stakleni aribali iz Jadera (Glass aryballoids from Jader)', *Archeologia Adriatica* VII, 131–171.
- STERN, E. Marianne, 1995. *Roman Mold-blown Glass. The first through sixth centuries*. The Toledo Museum of Art. Rome.
- STERN, E. Marianne, 2001. *Roman, Byzantine, and Early Medieval glass, 10 BCE–700 CE. Ernesto Wolf Collection*. Ostfildern.
- WHITEHOUSE, David, 2001. *Roman Glass in the Corning Museum of Glass 2*. Corning, New York.

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