

Glass News

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Reconstruction of an Anglo-Saxon Claw Beaker

Welcome to Glass News Issue 44!

The big AHG event this autumn will be a Study Day on glassmaking techniques at The Glassmakers workshop in Hampshire. More details can be found on page 2.

This issue also includes obituaries of two very important people in the study of the history of glass.

We are always on the lookout for information on interesting finds, new research, ideas, queries, new books and reviews, and any other glass-related news or meetings. The editors' details are given on the final page. We look forward to receiving your contributions for issue 45!

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The Association now has a Twitter profile! To keep up-to-date on news and current research on the history of glass follow: [@Ass_Hist_Glass](https://twitter.com/Ass_Hist_Glass)

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The Association has a Facebook page! To keep up-to-date on news and current research on the history of glass visit:

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If you are not computer-connected and would like further information or to be put into contact with anyone concerning any of the items in *Glass News* please write to either of the editors, or the Honorary Secretary.

See the website for updated information:

www.historyofglass.co.uk

AHG MEETING AND AGM

Study Day - Hot from the Furnace Mouth: How practical glassmaking supports glass history

Project Workshops, Quarley, Hampshire, SP11 8PX
10.15 – 17.00, 2nd November 2018



© The Glassmakers

This unusual study day will be held at the workshop of “The Glassmakers” in Hampshire. It is designed to give delegates a rare opportunity to watch hot glassmaking that is thought to be ‘representative’ of historic practice. Also in this environment to consider how the knowledge gained from such work supports the development and communication of glass history. It is hoped the day will appeal equally to those with little experience in the field and those with a lot.

The glass workshop will only accommodate 16 visitors at a time, so book early to avoid disappointment. The programme is planned so that the group can be split if there are sufficient people and for there to be two ‘mirror-image’ programmes. Two (or four) hot glass sessions are planned in order to provide: first a basic grounding in hot glass making in an historic context; and then to demonstrate specific glass working techniques. Mark and David (The Glassmakers) have kindly offered to shape this latter part of the programme around objects bought along, or suggested, by delegates, but would like prior warning of what these are. The accompanying talks will be held in a studio above the workshop. This room is only accessible by stairs. In the first talk session it is planned to cover past successes where practical glassmaking has made a significant contribution to glass history, but also some of the dangers of assuming that a demonstrated technique is **the** way it was done in the past. In the second talk session it is hoped that some delegates will be willing to tell the group about the

objects or examples they suggested and the relevant learning points about these from the hot glass work.

The best railway station for the study day is Andover. The times have been chosen to allow people to arrive at Andover Station 09.37 / 09.59 and leave from there 17.29 / 17.38. Arrangements for transport from and to the station will depend on the numbers of people who wish to travel this way. The date has been chosen so that Mompesson House in near-by Salisbury will still be open the following day in case anyone wants to stay overnight and visit the excellent 18th-century glass collection there. Lunch is not included, but can be ordered in advance, if desired, at a cost of £12 per head, since there are few suitable lunch venues nearby.

Draft Programme

- 10.15 Coffee and registration
- 10.30 Welcome
- 10.35 Examples of how practical work has influenced glass history, Colin Brain.
- 11.40 Coffee and move rooms
- 11.55 Introduction to hot glass and hot glassmaking with Mark and David
- 13.00 Lunch including an opportunity to visit remains of experimental Roman furnaces
- 14.05 AGM for AHG members
- 14.20 Hot glass demonstrations by “The Glassmakers”
- 15.25 Tea and move rooms
- 15.40 Participants discuss pieces they have brought along in the context of the hot glass demonstrations
- 16.45 Washup and close
- 17.00 Depart

Without optional lunch: £35 for AHG members, £50 for non-members (includes a year’s free membership) and £25 for students.

With optional lunch: £47 for AHG members, £62 for non-members (includes a year’s free membership) and £37 for students.

If you would like to attend, please send your full contact details and a cheque payable to the Association for the History of Glass Ltd to: Denise Allen, 8 St Catherine’s Road, Southampton SO18 1LJ, UK.

Members wishing to attend the AGM of the Association only, which will be held on the same day, may do so free of charge.

OTHER MEETINGS



AIHV 21

ISTANBUL TURKEY

21^e CONGRÈS DE L'ASSOCIATION INTERNATIONALE POUR L'HISTOIRE DU VERRE
21st CONGRESS OF THE INTERNATIONAL ASSOCIATION FOR THE HISTORY OF GLASS



21st International Congress of the Association Internationale pour l'Histoire du Verre

3rd-7th September 2018
Istanbul, Turkey

THIRD CIRCULAR AND REGISTRATION FOR THE CONGRESS

The organisers are happy to invite you to attend the 21st Congress of the International Association for the History of Glass in Istanbul, Turkey from Monday 3rd September to Friday 7th September 2018. It will be organised by Istanbul University. The main source of information about the congress will be the website:

aihv21.istanbul.edu.tr/en
aihv21.istanbul.edu.tr/de
aihv21.istanbul.edu.tr/fr

Provisional Programme

- Monday, 3rd September 2018 (Istanbul University; Doctorate Hall) Registration; Opening; Morning and Afternoon Lectures; Evening: Welcome Cocktail
- Tuesday, 4th September 2018 (Istanbul University; Congress Centre) Morning and Afternoon Lectures
- Wednesday, 5th September 2018 (Istanbul University; Congress Center) Morning and Afternoon Lectures and Poster Session

- Thursday, 6th September 2018 (Istanbul University; Congress Center) Morning and Afternoon Lectures
- Friday, 7th September 2018 (Istanbul University; Congress Center) Morning and Afternoon Lectures and Closing Session of the Congress; Evening: Farewell Dinner

Congress Fees

AIHV member	€260.00
Non-member	€320.00
Non-member from low-wage countries	€150.00
Students	€150.00
Accompanying Person	€150.00

Congress fees include: The organisation of the congress, the congress bag (including programme, abstract book and other printed material), welcome cocktail on 3rd September 2018, closing dinner on 7th September 2018 and coffee breaks with refreshments during the sessions of congress.

Please note: The congress fees do not include the Proceedings (Annals).

Payment

Full payment of the congress fee is required in order to process and confirm your registration.

Please make payment to:

HALKBANK

Avcılar /İstanbul

Beyzade Sayın

Üzlifat Özgümüş

IBAN : TR56 0001 2009 8580 0035 0023 03

Swift code TRHBTR2A

Important:

Please do not forget to state the delegate's name and give the reference AIHV21 when making payment. Please send a copy of the receipt by fax + 90 212 440 1911 or scan the receipt and email it to aihv21@istanbul.edu.tr.

Please keep in mind that all bank charges must be borne by the participant and may not be deducted from the amount remitted

Cancellation Policy:

Any cancellation received in writing by the Organizing Committee AIHV 21 before 29th August 2018 will be refunded minus Euro 50 for administrative charges. After the 29th August 2018, no refund can be made.

Post-congress excursions

1. Saturday 8th September 2018: Antonina tourism.
Price includes bus, lunch, guiding, museum entrances

Underground Archaeology of Istanbul

35 € to 48 € dependant on number of attendees

Istanbul Highlights

47 € to 58 € dependant on number of attendees

2. Sunday 9th September 2018: *Visiting Glass Furnace (Beykoz) and Şişecam Ancient Glass Collection*

Free of charge

Accommodation

Hotels and restaurants are available at different prices around the congress centre. Participants should organise their own accommodation. Further information is available on the website: aihv21.istanbul.edu.tr/en

Meeting of Minds centred on the semi-infinite variety of glass studies.

Molecular scientists are welcome to share their insights at the atomistic level – artists will show how glass excites their creative juices. Businessmen and engineers will ponder how modern techniques can help glass bring enlightenment to our everyday world. Glass chemists will explore how glass can bring protection from toxic and radioactive waste. Historians will speak of past triumphs in glassy endeavours, and archaeologists interpret the tangible evidence of our vitreous heritage.

Glass and the Meeting of Minds – we invite authors and presenters from any and all fields of glass creativity to send us their abstracts. If you are interested and would like to know more, please send an email to:

abstracts@sgt.org

Registration Fees

Full Registration £475.00

SGT Members registration £360.00

SGT members day rates £160.00

Students/Retired Rates £180.00

Day rates £180.00

History & Heritage day rate £60

Accommodation is available at the Univeristy at £76.00 per night en-suite bed and breakfast

Programme

Science Session – Monday 3rd September – Wednesday 5th September

As ever, the theme of glass science is well to the fore and we would warmly welcome the submission of abstracts for the conference stream under the title ‘Today and the Future’. We are looking for a meeting of minds concerning the development of the science of the glassy state and its application to the world of glass manufacture and the application of glass in the very diverse world of today. For such a fascinating field it is almost impossible to be prescriptive about topics. We will consider carefully any aspect of glass science or technology which you wish to communicate.

Industry Session – returning for 2018 – Tuesday 4th September

The Industry Session at the 2018 SGT Conference in Cambridge will focus on Energy and how it will be delivered to and used by glassmakers worldwide.

We are pleased to announce the two keynote speakers who will frame the challenges and provide the platform for our specialist speakers to outline some solutions are:



Glass
and the
Meeting of Minds



Society of Glass Technology, Annual Conference:

Glass and the Meeting of Minds

Murray Edwards College, University of Cambridge
2nd-5th September 2018

For four millennia, glass has occasioned the meeting of minds.

Obsidian and glassy fulgurites excited the imagination of our remote ancestors, who found artistic and practical applications for this most magical of substances. Alchemists gloried in the glass which allowed them to see the transformation of base substances within their alembics.

Without glass, advances in medical science would have been unattainable. The mystical fusion of colour and light stimulated the spirituality of those who knelt in mediaeval cathedrals, impacted by the glorious stained glass windows.

And today?

The meeting of minds goes on.

In Cambridge, this coming September, the Society of Glass Technology hosts its Annual Conference at Murray Edwards College. Beginning on Sunday 2nd September, an opportunity for four days to experience a modern

Dave Dalton CEO at British Glass Manufacturers Confederation will speak on Glass Futures.

Stuart Hakes CEO at FIC (and SGT President Designate) Ltd will speak on The Use of Electricity in Glass making

History and Heritage Session – Wednesday 5th September

As in previous years, we could not neglect the rich and varied history of glass and the heritage of historic glass artefacts which create such insight into the life and work of our forebears. Therefore we would be delighted to receive abstracts for the conference stream under the title ‘Yesterday and the Past’. We hope to create a meeting of minds concerning the heritage we enjoy – its appreciation, conservation, understanding and presentation to today’s audience. As ever, the subject area is so interesting and diverse that it defies verbal delineation; if you are active in any field which intersects with the revealing the human history or the ancient technology which has woven glass into the fabric of human society through the ages, we’d love to see your abstract.

FUNDING OPPORTUNITY

DAVID WHITEHOUSE RESEARCH RESIDENCY FOR SCHOLARS

The David Whitehouse Research Residency for Scholars is open to scholars who want to utilize the Museum’s resources, especially the extensive holdings of the Rakow Research Library, to inform their research about any period of glass. The residency is named for the former executive director of The Corning Museum of Glass, David Whitehouse – a highly-regarded scholar who worked to build the resources of the Rakow Library, and was a major supporter of scholars researching glass today. This residency gives scholars the opportunity to delve into topics and further their knowledge or to provide research for a project.

Residencies will be up to three weeks in length. Scholars will be provided with transportation to and from Corning, as well as room and board. Residents will have access to the Rakow Research Library, The Corning Museum of Glass, and the Museum’s staff experts. The residency manager will facilitate meetings with Museum experts and other resources.

HOW TO APPLY

To be considered for the David Whitehouse Research Residency for Scholars, please submit your application, including: a résumé, a project summary and description of your research residency plans, the best dates for your participation (anytime during the upcoming calendar year), and two references.

Apply here:

<https://www.cmog.org/research/opportunities-for-scholars/whitehouse-scholar-residency>

Applications and supporting materials must be submitted electronically to The Studio by 31 August 2018 for residencies for the following year. Late submissions will not be considered. Applicants will be notified of their residency by the end of the year.

Questions? Contact residency@cmog.org

SUBMISSION DEADLINE: 31 August 2018

EXHIBITON

Glass of the Architects: Vienna, 1900–1937

Corning Museum of Glass, Corning, USA
23rd June 2018 – 7th January 2019

Today, we think of architects as people who design buildings, construct skylines, and help create the visual identities of our cities and towns. But to a progressive group of European and American architects in the 20th century, the term “architect” applied not just to people who designed buildings, but to people who designed all aspects of interior decoration. They believed their role was to seamlessly integrate a modern aesthetic into all aspects of daily life. For these architects, furniture, ceramics, textiles, and glass, played an essential role in completing their new artistic vision.

Glass of the Architects: Vienna, 1900–1937 explores the notion of architect as designer and presents a captivating period of glass design and production in Austria. Emerging from a confluence of individuals, ideas, and cultures, the design of Austrian glass from 1900 to 1937 embodied a newfound spirit of modernity. More than 150 objects, including the re-installation of Josef Hoffmann’s Dressing Room for a Star (first displayed at the 1937 International Exposition in Paris), bring to life this invigorating period for glass.

AHG GRANTS

Grants are available from the Association for the History of Glass, for educational or research activities consistent with the Association's charitable aims. These could include, for example, attendance at a conference to present a lecture or poster, a study visit, fieldwork, or publication of scholarly works. There are no restrictions on who may apply or on the topics of applications, which will be judged on merit. Multiple applications in different years will be considered with individual awards up to £500. See also the AHG website for details (www.historyofglass.org.uk).

An application form may be downloaded from the website, or can be obtained from the Honorary Secretary, Denise Allen. Email: denise_allen52@hotmail.com

OBITUARIES

Vera Evison



Professor Vera Evison, an eminent early medieval archaeologist, died on 19th March 2018 at the age of 100. Her early life in archaeology included working as secretary to Kathleen Kenyon at the University of London Institute of Archaeology and fieldwork on Kenyon's excavations at Sabratha in Libya. In 1947 she went to Stockholm to study, which stimulated her interest in the European Migration period (4th-7th centuries AD) and developed her knowledge of Scandinavian languages. At this time, she also worked as a volunteer assistant in the British Museum, helping to unpack Anglo-Saxon objects, including the finds from Sutton Hoo, when they came back to London after the Second World War. Her

whole academic career was spent at Birkbeck College, University of London, where she was first appointed as a part-time tutor in archaeology in 1947, became a professor in 1979, and retired in 1983.

Her research interests were focussed on the period of the transition from Roman Britain to Anglo-Saxon England (5th-7th centuries AD). She excavated and published many Anglo-Saxon cemeteries, studying the finds in the burials with great attention, and travelled widely in continental Europe, building up an unrivalled knowledge of comparable material from burials across the Channel. This enabled her to recognise the links between societies in Britain and in northern France, Belgium and Holland as well as in Scandinavia and Germany and establish a wider context for her own material. She published a series of excellent papers on various classes of finds, including studies of glass vessels such as drinking horns (*Archaeologia* 96, 1955; *Journal of Glass Studies* 17, 1975), Kempston-type cone beakers (*Journal of Glass Studies* 16, 1972), and Anglo-Saxon claw beakers (*Archaeologia* 107, 1982) which have been consulted very widely. In order to understand how details of vessels, such as the claws on claw-beakers, could have been formed, she sometimes turned to experimental glass working. The illustration (Figure 1) shows three products of this work, either made by her or, more probably, by someone working under her direction.



Figure 1: Results of experimental glass working

Vera was not directly associated with the Association for the History of Glass (AHG), but she presented a paper at a conference on Anglo-Saxon Glass for the Archaeologist and Historian organised by AHG and the Department of Medieval and Later Antiquities, British Museum in 1986. She later contributed two very important papers, 'Glass Vessels in England, AD 400-1100', and 'The glass fragments from Glastonbury' to the volume which grew out of that conference (*Glass in Britain and Ireland AD 350-1100*, ed Price J, 2000, British Museum Occasional Paper 127). Her final publication, *Catalogue of Anglo-Saxon Glass in the British Museum*, was published in 2008 and AHG provided a grant to allow colour plates to be included in this magisterial work.

A recent festschrift, *The evidence of material culture: studies in honour of Professor Vera Evison* (eds Riddler I et al, 2016, editions Monique Mergoil) includes a full list

of her publications. It marked her major contribution to the study of Anglo-Saxon archaeology over a period of more than sixty years. In all this time she worked on her own, driving herself to produce an impressive volume of admirable work.

Justine Bayley and Jenny Price

David Crossley



Working with David Crossley in the Association for the History of Glass Ltd.

Since his death on 3rd December 2017, tributes to David Crossley (both in SALON – Society of Antiquaries On-Line No 398 – and at the day event held in his memory at Kelham Island Museum in Sheffield on 30th May) have highlighted his achievements as a quietly competent archaeologist and economic historian in the University of Sheffield who had a very strong commitment to the investigation and publication of post-medieval industrial processes in Britain as well as to the recording and preservation of surviving industrial complexes. Professor Caroline Jackson has written a note in this issue of *Glass News* about the standing of his work relating to the post-medieval glass industry and I would like to add a footnote about his contributions to the work of the

Association for the History of Glass Ltd (AHG), one of the many voluntary organisations he gave his time to, as they had significant consequences, both for AHG and for l'Association Internationale pour l'Histoire du Verre (AIHV).

David joined the Board of Trustees of AHG in 1983 and served for more than 30 years, resigning in 2017. In particular, at the time he was the Honorary Treasurer (1996 to 2005), I worked closely with him and quickly came to appreciate the wealth of experience he brought to the duties of an Hon. Treasurer. This knowledge was invaluable to AHG which was planning to host the AIHV Congress in London in 2003. David was extremely effective at steering the way through various hazards on the way and finding simple, cost-effective and intelligent ways to apply for suitable grants and potential sources of sponsorship. He helped to make the planning and organisation of the London Congress a smooth and satisfactory process, and did everything efficiently and without fuss.

At this time, the AIHV was in crisis. Having lost a major sponsor, the Secretary General and the manager who looked after the day-to-day running of the Association (housing the archive, editing the publications, distributing the published volumes, paying bills, communicating with members, etc.) within a year or so, it was not organisationally or financially viable. Between 2001 and 2003, AHG took over these tasks: Hilary Cool became the Secretary General and David Crossley undertook to manage most of the financial affairs of AIHV as well as AHG until their finances were reorganised on a more sustainable basis. We therefore owe him a great debt of thanks for his support for AIHV until it was able to start up again as a self-sufficient organisation, as well as for his work with AHG.

He was an excellent colleague and a dependable friend, and it was a pleasure to know him.

Jenny Price

David Crossley and the Post-Medieval Glass Industry in Britain.

Caroline Jackson

University of Sheffield
c.m.jackson@sheffield.ac.uk

This is a brief appreciation of the invaluable contribution made by David Crossley to post-medieval glass studies. It is based on a presentation I gave at the day in honour of

him, at Kelham Island Museum, Sheffield on 30th May 2018. I was asked by Justine Bayley to present a ten minute paper on David's contribution to glasshouse

excavations and their longer term influence, and to litter it with anecdotes. It was only when I came to write the presentation that I realised I didn't have any anecdotes about David, even though I had known him nearly 20 years, and been at numerous conferences, study days and AHG meetings with him. Moreover, I did not have a photograph of him, despite owning many group photographs from glass events where David *must* have been present. It appears I was not alone. Many contributors to the meeting noted that David always seemed to be in the background; very few had a photograph of him. David had quietly got on with things: archaeology, historical research, influencing local and national policy and educating both professionals and the public. He had just not made a song and dance about it. This approach seemed to epitomise all his work.



Bagot's Park. Glass-melting furnace (Furnace 1) from Crossley 1967 © John Wood Group PLC

David Crossley is perhaps best known within the archaeological community for his work in the heritage sector, in local archaeology and his role in 'industrial' or post-medieval archaeology, especially relating to later metal production. However, those of us who work in archaeological and historic glass also knew him for his valuable contribution to the study of post-medieval glass, especially his published excavations on glasshouses. These included Bagot's Park, Staffordshire, Hutton and Rosedale, North Yorkshire with Alan Aberg, and the later furnace at Kimmeridge, Dorset. His reviews of the post-medieval glass industry published in various journals and books also mark his substantial contribution to our understanding of the later glass industry, a field which was not immediately fashionable in the 1960s when he started (or even much later), but which informs an important part of British glass history.

His approach to the glasshouse excavations and his excavated material led the way to our understanding of the technology of the time and the people who made and used the glass. Not only are his excavations meticulously executed, recorded and published, but also he persuaded

leading specialists to conduct further analysis so the manufacturing process could be fully understood. Using Bagot's Park as an example, David Crossley, 'Lecturer in Economic Archaeology at Sheffield', published in 1967, extensive plans and photographs of the excavation and the finds. He interrogated local archives to find associated documentary history on land use, maps, rents, sale of goods, purchases by the glasshouse and letters between glassmakers and owners to set this in context. He dated the site using ceramic and documentary data and he also persuaded Martin Aitken from RLAHA in Oxford to provide archaeomagnetic dating of the site. R J Charleston studied the vessel glass. Experts from the British Glass Industry Research Association and Glass Technology, University of Sheffield, led by Roy Newton, conducted compositional analysis of the glass. The crucibles were test fired to assess the heating temperature by the Department of Ceramics, Sheffield and the British Ceramic Research Association at Stoke on Trent analysed them by thin section to identify the clay and clay mix. The pottery was studied (possibly by David), and the iron objects by Ron Tylecote. The charcoal and burnt wood was identified in the Department of Botany at Sheffield and the Forest Products Research Laboratory at Princes Risborough. It is because of his standing in the archaeological community that he could recruit these specialists, all at the top of their field, to contribute. Pulling all this together David then looked at the site at Bagot's Park in the wider social and economic context. This comprehensive and thorough publication was the result of a rapid 'rescue excavation'.

David's research into glasshouses, especially those in Staffordshire, informed further excavations in the area at Little Birches, Wolseley, by Christopher Welch in the 1990s. The findings from these excavations in Staffordshire and those in North Yorkshire prompted experimental work in Sheffield first by Professor Michael Cable and Jim Smedley of Glass Technology at the University of Sheffield who investigated liquidus temperatures, assessing the likely temperatures required to melt these glasses, but also by Jim Smedley and myself. These latter experiments looked to link raw materials to glass production, and at glass technology of the period.

David Crossley's influence on our understanding of later glasses, especially those produced in Britain, continues to feed into the historic, archaeological and conservation academic and educational fields. His profound impact on our understanding of post-medieval glass production still forms the basis of many published contributions on the history of glass, despite some of his early work being published as long as 50 years ago. His contribution to the field features strongly in recent English Heritage guidelines on *The Archaeological Evidence for*

Glassworking (2011) and *Medieval and Early-Post Medieval Glassworks* (2012) and in 1993 he researched and wrote key policy documents for the *English Heritage Monuments Protection Programme on the Glass Industry (Step 1)*. He has taught, informed, trained and supervised students at all levels of tertiary education from certificate courses to PhD, and of all ages and stages of their careers, and he has contributed to the research of other scholars who have extensively used his work to kick-start their careers. David might not have been at the front when the photographs were taken, but he is very often at the fore when we are studying the post-medieval glass industry.

Key publications mentioned in the text

Crossley, D.W. 1967. Glassmaking in Bagot's Park, Staffordshire in the 16th century, *Post-Medieval Archaeology* 1, 44-83.

Crossley, D.W. and Aberg, A. 1972. Sixteenth-century glass-making in Yorkshire: excavations at furnaces at Hutton and Rosedale, North Riding, 1968-71. *Post-Medieval Archaeology* 6, 107-59.

Crossley, D.W. 1987. Sir William Clavell's glasshouse at Kimmeridge, Dorset: the excavations of 1980-81. *Archaeological Journal* 144, 340-82.

AHG Grant Report Glass of the Roman Colony of Epidaurum Archaeological Excavations in Cavtat near Dubrovnik, Croatia

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Introduction

This report presents the results of glass finds processed from excavations carried out from 2014 to 2016 at the Rat archaeological site in Cavtat near Dubrovnik – the Roman colony of Epidaurum (Figure 1). Recent excavations revealed architectural remains that represent public buildings of ancient Epidaurum, with many minor objects (Puhara and Vuković 2015-2016). The position of the colony along the southern part of the eastern Adriatic coast contributed to the development of glass trade with Italy and the Mediterranean in the early Empire, while in the later centuries they provided glassware from the Rhenish and Pannonian glass centres as well.



Figure 1: View of the Rat Archaeological Site in Cavtat
© photo: L. Đurović

Finds

Recent excavations of the site uncovered finds of various Roman vessels that can be dated from the 1st century BC to the 4th century AD. Due to the fragile nature of glass, the finds are primarily preserved as fragments since they were found in layers of rubble. The finds have recognizable typological characteristics (beakers, bowls, jugs, bottles, dishes) and ornaments (ribs, applied spots, wheel-cutting, engraving), which include various production techniques (glass blowing, glass bending with use of mould, glass casting).



Figure 2: Ribbed bowl fragments and graphical reconstruction; H. 2.8-3.6 cm © photo: L. Piplica, reconstruction: N. Topić.

Several ribbed bowl (*Rippenschale*) fragments (Figure 2) made of bluish green and green glass were found in the excavations. They were produced throughout the Empire during the 1st century AD, likely inspired by metal vessels. Analogous examples of ribbed bowl fragments of greenish colour were found in excavations of many Dalmatian sites (Tilurium and Burnum military encampments, Aequum, Salona) (V. Damevski 1974; Z. Buljević 2016).

A few bowl fragments made of cobalt blue and white glass (Figure 3.1) in the millefiori technique likely originated from Alexandrian workshops of the 1st century BC / AD. However, they could have been made in Italy as well, since Italian craftsmen developed this type of production. These products were imported throughout the Empire, and similar finds are present from sites in Dalmatia and Pannonia (Salona, Siscia, Aque Iasae) (Damevski 1974; Balen et al. 2013).

A comb-shaped handle made of light green glass (Figure 3.2) could have been part of a prismatic jug or a bottle. This type of a handle was typical for Gallic and Mediterranean workshops, and it is also characteristic for the 1st-2nd century glass workshops of Aquileia (Calvi 1968; Damevski 1974). Similar finds have been excavated across the Roman Empire.



Figure 3: Various glass fragments; H. 2.27 cm; 4 cm; 9.4 cm; 3 cm © photos: L. Piplica

There are several rare fragments of wheel-cut and scratched glass from the Rhenish workshops of the 3rd and 4th century. A very unique find is a jug or a bottle wall fragment ornamented by wheel-cutting and engraving, with oval motifs in the middle and horizontal lines above and below (Figure 3.3). Similar finds have been uncovered from excavations in Croatia previously (Damevski 1974; Balen et al. 2013). A rim fragment of a conical beaker is ornamented with floreal-spiral motifs with horizontal lines above and below (Figure 3.4).

Several fragments of colourless semi-globular cups with dark blue or turquoise blue blobs (*Nuppenläser*) (Figure 4) were discovered in recent excavation as well. They represent typical 3rd and 4th century products of the Rhenish workshops (Cologne) (Isings 1957), but they could have also been produced in north Italy (Aquileia), in the Danube and Eastern workshops as well (Laresse 2004). Similar semi-globular cups of olive green glass were excavated at the Sokol fortress, in the vicinity of the colony of Epidaurum. These cups were also recorded in Tilverium military encampment in middle Dalmatia (Buljević 2016).

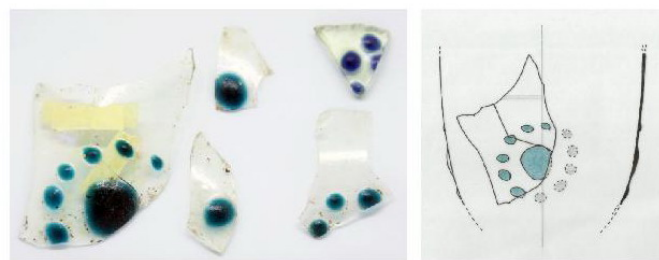


Figure 4: Semi-globular cup fragments with blue blobs and graphical reconstruction; H. 2.5-7.4 cm © photo: L. Piplica, reconstruction: N. Topić

Final remarks

Since Epidaurum is positioned along the Adriatic coast, it was expected that Mediterranean glassware be found in greater amounts than glass of Rhenish and Gallic origin. The transport of this fragile material was much easier by sea than by land, although the rivers (Rhine, Danube, Sava) and high quality Roman roads enabled inland trade as well. The glassware was first transported to Pannonian territory and later dispersed to the South.

Apart from typical everyday glassware, rare engraved fragments were also recorded. They indicate the use of luxury glassware and a higher cultural standard of living in ancient Epidaurum. These interesting fragments also testify to the diverse trade contacts between the colony and the important glass centres of that time: Italian (Aquileia), Eastern Mediterranean, north African (Alexandria), and Rhenish (Cologne, Trier) workshops.

The excavations and glass processing will be continued. The material should be archaeometrically investigated to prove the origin of glass vessels by chemical analysis.

This report is based on a poster presented at the *Glass of the Caesars* congress held in London in the British Museum in November 2017, with Helena Puhara and Lucija Vuković as co-authors.

Acknowledgements

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Things that Travelled: Mediterranean Glass in the First Millennium AD

Edited by Daniela Rosenow,
Matt Phelps, Andrew Meek
and Ian Freestone

UCL Press

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Archaeological discoveries and scientific analysis have combined to bring about a revolution in our ability to understand ancient glass over the past twenty years, and arguably this new understanding has been most profoundly felt in investigation of the natron glass industry of the first millennium AD. The recognition that the majority of glass was made from sand and soda in the eastern Mediterranean, then shipped as unworked chunks to be shaped in glass workshops across the known world, has led to renewed interest in glass as an item of trade, and the ebb and flow of its manufacture and movement.

This volume grew out of a symposium held to address issues around the movement of glass. In November 2014, 125 delegates from across the world attended a two-day

conference held in the British Museum, the Wallace Collection and the Institute of Archaeology, UCL. It was organised by the UCL Early Glass Technology Research Network (EGTRN), the Association for the History of Glass (AHG) and the British Museum. The success of the meeting and the high level of discussion prompted us to explore the possibility of a volume on the topic and number of participants agreed to prepare papers related to their contributions.

The title, *Things that Travelled – Mediterranean Glass in the First Millennium AD*, references an article by the late David Whitehouse ('Things that travelled': the surprising case of raw glass, in: *Early Medieval Europe* 12 (3), 2004, 301-305). Whitehouse's article was intended to be 'an interim report on work in progress on glass' and was inspired by Michael McCormick's *Origins of the European Economy: Communications and Commerce, A.D. 300–900* (Cambridge, 2001) who had expressed the hope that, in the near future, archaeologists would contribute fresh information on the movement of ceramics and glass. Ten years later, it seemed to be a fitting time for archaeologists and scientists to give an update on their progress.

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