

Glass News

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A pectoral necklace featuring glass inlays from the 'Tutankhamun: Treasures of the Golden Pharaoh' exhibition at the Saatchi Gallery, London. Photo © Sally Cottam. See pp. 4–5 for a report on the AHG visit

Welcome to *Glass News* 47! We start by thanking Sally Cottam for organising an exciting and memorable AHG day in London in November 2019, looking at Egyptian glass in the Petrie Museum, University College London, followed by a visit to the Tutankhamun exhibition at the Saatchi Gallery. We are grateful to Catriona Wilson at the Petrie Museum for introducing the museum to us and putting on such an interesting study workshop.

There were some small changes to the Board at the November AGM, held at the British Museum. We are delighted to welcome Caroline Jackson, Professor of Archaeological Materials at the University of Sheffield, back to the Board. Caroline is well known to the AHG as a former President and Board member of many years. Denise Allen, Secretary until recently, has now stood down from the Board, and we thank her for her commitment over many years.

The AHG is organising a Study Day on 'Current Research in Glass Studies' jointly with the Early Glass Technology Research Network in central London in May, and a two-day meeting on 'Glass in the North' in September (see p. 2 for more details).

This issue of *Glass News* contains accounts of a number of study days, in addition to the AHG's Egyptian day, including science and glass at the Society for Glass Technology's meeting, glassmaking at the Stourbridge International Festival of Glass, glass history and technology in Slovakia, and a fascinating-looking three-day event on Venetian glass in Venice. There are also articles on experimental approaches to glassmaking and beadmaking, stained glass in Slovakia, and 'What Went On in the Ashhouse'. We finish with notices of new books on glass and a book review.

The editors would like to thank this issue's contributors for their material; please continue to send anything you think would be of interest, particularly new glass finds, however small. We are always very pleased to receive long or short pieces about glass research or discoveries.

Would you like to join the editorial team of *Glass News*? Rachel Tyson would like to step back having been an editor for over ten years, and we are looking to increase the team. We are particularly keen to welcome those not currently on the AHG's Board, and would welcome anyone with an interest in glass, professionally or as a hobby, student, working or retired, who could assist with the gathering of items and production of *Glass News*. Please contact one of the current editors (see back cover) if you are interested, or for further details of what is required.

Subscription and membership payments for the Association's year 2020–21 are due in **April**, and a form is enclosed with details of payment methods. New members who have joined since December and a few other members who have already paid in advance for the year are reminded that their subscription is valid until March 2021 – and they do not need to renew it now.

*While every effort is made to check the content of the articles and reviews, *Glass News* does not accept responsibility for errors.*

AHG STUDY DAYS

Dates for your diary

Our Spring Study Day entitled ‘**Current Research in Glass Studies**’ is being held on **Wednesday May 13th 2020** as a joint event with the Early Glass Technology Research Network. The venue for the Spring meeting will be the British Museum in London. The speakers will include Charlotte Nash on economy, society and culture through glass bangles in the Western Indian Ocean; Eleonora Montanari on use-wear analysis of beads of the first millennium BC from Abruzzo, Italy; Victoria Sainsbury on analytical results of glass of the earliest king halls at Lyminge in Kent; Victoria Lucas on mid-Saxon glass recycling; and others.

We are delighted to confirm that this year’s AHG autumn meeting, on the theme of ‘**Glass in the North**’ will take place on the **18th and 19th of September 2020**. This two-day meeting will be dedicated to the memory of our dear friend and former President of the AHG, Jennifer Price, who published and lectured extensively about glass in northern Britain and who made Durham and Yorkshire her home for many years. The first day of the meeting will be based at Vindolanda Roman Fort and the second day will include visits to some famous glassmaking sites in north-eastern England. More details will appear on the AHG website as they become available, or please contact Victoria Lucas and Eleonora Montanari via email: glassinthenorth@gmail.com

We look forward to welcoming you to both events.

For more information please email the Hon. Secretary of the AHG Sally Cottam on ahgstudydays@gmail.com.

THE ASSOCIATION FOR THE HISTORY OF GLASS

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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. A list of grants that have previously been awarded can be found on the AHG website.

An application form may be downloaded from the website, or can be obtained from the Honorary Secretary, Sally Cottam, at ahgstudydays@gmail.com, or writing to her at:

The Association for the History of Glass Ltd,
c/o The Society of Antiquaries of London, Burlington House, Piccadilly, LONDON W1J 0BE.

CONFERENCES

Society of Glass Technology Annual Conference incorporating GLASSAC

Changes and Challenges

7th–9th September 2020
Murray Edwards College, Cambridge

Once again, the Society of Glass Technology would like to invite you to mull over the many-faceted world of glass studies. There will be Science sessions on all three days, and an Industry session on Tuesday 8th September. As in previous years, we could not neglect the rich and varied history and 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’ on **Wednesday 9th September**.

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. For further information see www.sgt.org.

EXHIBITIONS

The Society of Glass Technology and the Martlew family are pleased to announce the launch of the David Martlew Memorial Prize.

The prize is in the form of a Bursary to enable the successful applicant to attend and present a paper in the History and Heritage Section of the Annual Conference of the Society of Glass Technology.

Students are invited to submit proposals to talk about the following research areas: glass art, glass design and digital technologies, glass materiality and glass-making, glass history, archaeology etc.

The David Martlew Memorial Prize is sponsored by the Martlew Family and the Society of Glass Technology. It takes the form of a bursary to enable a student in the fields of study normally covered by the History and Heritage part of the Annual Conference of the Society of Glass Technology to attend and present a paper at the Conference.

The award is for students, undergraduate, postgraduate or mature, who may, or may not necessarily be in full or part-time education. The successful applicant will be expected to submit a paper, to be delivered in person, at the Conference, and attend the Conference banquet.

The Bursary will cover: the cost of registration for the Conference, including banquet; accommodation; a year's membership subscription to the SGT; an illuminated scroll or other memento of the occasion. The Bursary does not cover: travel expenses; out of pocket expenses when attending the Conference.

To apply please go to the *History and Heritage* pages on the SGT website at www.sgt.org.

Deadline for applications is 01.06.2020, and applicants will be informed of the outcome by email by the 01.08.2020.

Femmes de Verre, Femmes de Verrerie

5th to 6th March 2020

Musée de Verre, Chaleroi, Belgium

For 2 days, 23 speakers from around the world will discuss the path travelled by 'women of glass' and 'women of glassmaking' for several centuries in the glass trades, from Roman to 20th century, including scientists, academics, museum curators, glassmakers, business leaders and enthusiasts.

For further information email mdv@chaleroi.be or see: <https://chaleroi-museum.be/2020/01/15/colloque-international-femmes-de-verre-femmes-de-verrierie-5-6-mars-2020/>.

In Sparkling Company: Glass and Social Life in Britain during the 1700s

9th May 2020 to 3rd January 2021

The Corning Museum of Glass, New York

In the 1700s, Britain was a vibrant and commercial nation. Its growing cities were hubs of sociability, scientific advancement, trade, and finance.

From glittering costume and elaborately presented confectionery, to polished mirrors and dazzling chandeliers, glass helped define the social rituals and cultural values of the period. While innovations in glass delighted the wealthy, the material also bore witness to the ambitions of colonisation and the horrors of the African slave trade. Glass beads were traded for human lives and elegant glass dishes, baskets and bowls held sweet delicacies made with sugar produced by enslaved labour. Underpinning Britain's prosperity were aggressive foreign trade policies, colonisation and a far-reaching economy of enslavement, the profits of which funded the pleasures and innovations of the fashionable world.

Beginning in the intimate setting of a private dressing room, with a magnificent silver gilt dressing service made for the Duchess of Portland in about 1700, learn about how the elite prepared themselves for a night of revelry and entertainment. See the dazzling clothes and accessories worn by the 'polished' individual and understand the rules that governed how they behaved. Enter a specially commissioned virtual reality reconstruction of the remarkable and innovative glass-panelled drawing room designed for the Duke and Duchess of Northumberland in 1775, an interior that hasn't been seen for nearly 200 years. Become immersed in the glittering nightlife of British elite and feel the tension between the exuberance of the fashionable world and the human cost of such sparkling company. Through a lens of glass, see what it meant to be 'modern' in the 1700s, and what it cost.

Curated by Christopher L. Maxwell, Curator of European Glass at the Corning Museum of Glass. Accompanied by an exhibition catalogue *In Sparkling Company: Reflections on Glass in the 18th-Century British World* (The Corning Museum of Glass, 2020).

See cmog.org/collection/exhibitions for further details.

Glass and Design: The Creative Process in the Historic Murano Glass Factories of the 20th Century

2nd February to 10th May 2020

InGalleria, Punta Conterie, Murano (Venice)

This exhibition project is curated by Caterina Toso, glass historian and inheritor of the Fratelli Toso Archive, which is dedicated to retracing Murano decade by decade as it was in the last century: a source of ideas, art, innovation but also an extraordinary and hardworking productive and commercial hub on an international scale.

For more information: info@puntaconterie.com; puntaconterie.com

MEETING REVIEWS

Jewels of the Nile: An Egyptian-Themed Study Day

12th November 2019

The Autumn Study Day, timed to coincide with the annual AGM of the Association, saw a small group of AHG members gather at the Petrie Museum of Egyptian Archaeology, just off Malet Street in Central London, where we were able to browse the extraordinary collection of Egyptian artefacts and get a close-up look at some of the glass treasures on display and in the museum archive store. We were warmly greeted by Catriona Wilson who has recently joined the team at the Petrie as curator. She explained the history of the museum which was formed to house Egyptian objects acquired by Amelia Edwards, one of the founders of the Egypt Exploration Fund and the archaeologist Sir Flinders Petrie. Most of the 80,000 items in the collection arrived just before the First World War, when Petrie sold objects from his own excavations in Egypt, establishing a museum for University College London where he was Professor of Egyptology.

The objects are displayed in traditional wooden museum cases, closely positioned in a manner perhaps little changed from the early days of the museum. The density of artefacts within the cases reflects a desire to bring as much as possible of the rich and varied collection into public view. Whilst members of our group steered their way to the glass on display, there were many other delightful items to distract us including mummy portraits, clothing, jewellery, hieroglyphic inscriptions and children's toys.

The glass ranged in date from the Bronze Age through to the Islamic period and included a selection of complete vessels, fragments and glass beads as well as glassworking waste from the famous glass 'factory' at Tell el-Amarna, the 18th-dynasty city built by pharaoh Akhenaten and excavated by Petrie in the 1890s (see Figure 1).



Figure 1: Glassworking waste, Tell el-Amarna. Photo © The Petrie Museum of Egyptian Archaeology, UCL

For our group of glass enthusiasts, the most exciting aspect of the visit was the opportunity to examine and handle some of the glass ourselves. Huddled together in a small research room, we were shown a selection of pieces spanning 2,000 years. We were able to take a close look at Late Period core-formed vessels, mosaic inlays (Figure 2) polychrome beads, and decorated Roman and Islamic vessels. This close scrutiny allowed us to identify and discuss features of manufacture and decoration which would not otherwise have been evident.



Figure 2: Core-formed vessels and mosaic inlay from the Petrie Museum. Photos © Sally Cottam

By the time you read this issue of *Glass News* the entrance to the Museum should have been given a facelift – thanks to a grant from the Department for Digital, Culture, Media and Sport and the Wolfson Foundation. A more visible entrance with new displays and access for all is a welcome addition to the Petrie – although perhaps rather selfishly its sometimes nice to have ‘hidden gems’ remain hidden! With just a morning spent in the museum, we only scratched the surface of this astonishing collection.

An in-depth virtual visit is possible via the museum’s excellent website (www.ucl.ac.uk/culture/petrie-museum). As well as artefact biographies and resources for research, there is a link to the full illustrated online catalogue where glass items are easy to find.

After our morning in the museum we headed over to the British Museum for the Association’s AGM. In the afternoon a few of us continued our exploration of Egyptian archaeology with a visit to the Tutankhamun: Treasures of the Golden Pharaoh exhibition at the Saatchi Gallery in Chelsea. This was billed as a last chance to see outside of Egypt the artefacts from the tomb discovered by Howard Carter and his team in 1922. Just 150 items had been chosen to make the journey and the famous



Figure 3: Small canopic coffin, Tutankhamun exhibition. Photo © Sally Cottam



Figure 4: Pale blue glass headrest, Tutankhamun exhibition. Photo © Sally Cottam

golden death-mask was not amongst them (the advertising posters showed a close-up of a similar, but in reality, pint-sized, canopic coffin, see Figure 3). The entrance fee was steep – eye-wateringly expensive if taking a family – with profits going towards the building of a permanent Grand Egyptian Museum in Giza, scheduled to open this year.

Nevertheless, our group felt the exhibition merited the rave reviews it had received and we were enthralled by the items on display. The golden shoes, silver trumpets, and jewel-encrusted necklaces were just some of the ‘treasures’ – a word avoided by archaeologists but perfectly apt for these dazzling objects. Naturally word soon got around our little group whenever one of us identified an item of glass. We were stunned by the opaque blue glass headrest (see Figure 4), one of two found in the tomb¹, and the extensive use of dark blue glass used for example in the handles of the king’s crook and flail, the only known set of these items which are so often depicted in images of pharaonic power.

The autumn study day saw a change from the customary format of AHG meetings, replacing the usual series of themed presentations with a more relaxed event. We are keen to repeat the idea and would be very happy to hear of any suggestions for future visits to glass-related museums or exhibitions.

Sally Cottam

¹ For more on these items see Katja Broschat and Thilo Rehren’s ‘The Glass Headrests of Tutankhamen’, *Journal of Glass Studies* 59 (2017), 377–380.

Report on the International Festival of Glass, Stourbridge

23rd–26th August 2019

The Stourbridge International Festival of Glass always has a carnival atmosphere, but this year on the Saturday the weather was even better than normal and ideal for strolling along canal banks that link between some of the six festival venues. In a day there is no prospect of taking-in all the activities of what is very much a community effort, so this report just picks out a couple of highlights. As advised in the last *Glass News*, Mark Taylor, David Hill and Jason Klein were working a purpose-built prefabricated Roman-style wood-fired glass furnace (pictured right). This is a third-generation furnace for Mark and David, with two gathering holes and two pots to each. These furnaces appear deceptively simple, but to prefabricate one, transport it and successfully operate it takes a great deal of careful design, especially as it was intended to allow it to cool every night. Given the inevitable shrinkage on firing the clay-daub mix I was surprised to see very little evidence of cracks. When this photograph was taken, the furnace was still warming up before blowing could begin for the day, with the thermocouple display showing 1038 °C. According to Mark the main drawbacks of operating a furnace in this way is the wait for it to come up to temperature and the bubbly nature of the glass that has had insufficient time to properly fire. Mark and David successfully dismantled the furnace and have stored it for re-use, so hopefully we will see more of it in the future.

One talk of particular interest was on ‘The Archaeology of the Stourbridge and Dudley Glass Industry’ by Jayne Pilkington, Senior Conservation Officer from Dudley Council’s Historic Environment Service. Jayne explained the local planning authority perspective on preserving the local glass heritage and the limited range of options that they have at their disposal, since most of the sites are not designated. They have clearly invested significant effort in producing an online data base: ‘The Dudley Historic Environment Record (HER)’ (see www.dudley.gov.uk/resident/planning/historic-environment/historic-environment-record/). This provides an expanding repository for corporate knowledge of the local historic environment, of which the glass industry is a key component. Non-commercial researchers can request by email a free search of this. Jayne stressed the longevity of the glass industry locally that is first recorded in 1566 when leave was granted to dig glasshouse pot clay. It was very good to hear that the local authority is taking such a proactive role in safeguarding the local historic environment for this important segment of the glass industry, but I was left with a mild concern that the emphasis was on recording

the remains of building structures without corresponding effort going in to collecting, analysing and reporting historically-important glass-making residues.

Colin Brain



Mark Taylor, David Hill and Jason Klein’s purpose-built prefabricated Roman-style wood-fired glass furnace. Photo © Colin Brain

Report on the Annual Conference of the Society of Glass Technology: From Sand to Splendour

Murray Edwards College, University of Cambridge

1st–4th September 2019

As in previous years the SGT’s annual conference included a day on the History and Heritage (H&H) of glass. This year the event was somewhat overshadowed by the sad death of David Martlew last June. David had championed the H&H thread since its inception and many speakers made reference to his outstanding contribution. Sixteen papers were presented during the day, as usual quite an eclectic mix ranging from art to archaeometry. Also as usual there was a surprising

amount of historical synergy between the papers. The dominant themes this year were probably colour and decoration. In previous years the H&H thread has run in parallel with the other conference sessions. This year the organisers were concerned to improve the integration between the sessions, so part of the programme featured a joint 'H&H and Science of Glass' session. For one paper the third theme, raw materials, was also included. In marginal discussions it was clear that glass history is becoming increasingly important in understanding many of the current challenges facing the industry. This is both in understanding how we got where we are now and also learning how our predecessors dealt with similar problems in the past. In this respect the SGT conference differs from most other glass history conferences where one mainly talks to fellow glass-history researchers. As such it tends to generate a greater number of lasting collaborations and this year looks to be continuing this trend.

Colin Brain

Report on the 2nd Interdisciplinary Conference and Round table: History of Glass – East Slovakia

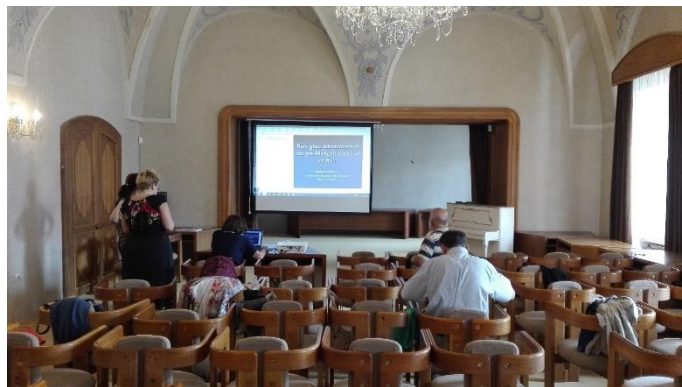
Hanušovce nad Topľou, Slovakia

21st–22nd June 2019

This conference, which included workshops, and experiments, took place in Hanušovce nad Topľou (Prešov Region) in the manor house and so-called 'archaeopark', a living open-air archaeological museum and part of the local museum. Events were organised by Slovak Archaeological Society's Commission for Support of Historical Glass Interdisciplinary Research in Slovakia, Slovak Glass Society, Regional Museum Prešov (Manor house and Archaeopark in Hanušovce nad Topľou), FunGlass (Centre for Functional and Surface Functionalized Glass, Alexander Dubček University of Trenčín) and the High School of Glassmaking (Stredná odborná škola sklárska in Lednické Rovné).

On the 20th of June, the fire in the glass furnace was ignited. The conference, which started in the morning on the 21st of June, began with the presentation of participants and opening speech by the manor house's employee and publicist Samuel Bruss. Participants and experts were from four countries: Slovakia, Poland, Czechia and Russia. Elżbieta Wilczak-Dąbrowska talked about 'Window Glass of the Middle Ages' and Olga Krukowska about 'The earliest Glass Artefacts from Gdańsk (Poland)'. Sylwia Siemianowska lectured on the topic 'On technology and production techniques of early

medieval glass jewellery from Silesia' and Ekaterina Stolyarova's talk was about 'Rare glass adornments of the Pre-Mongolian Period of the Old Rus'. Anna Krupičková's topic of the lecture was 'Painting and stained glass from the perspective of practical experience'. Hedvika Sedláčková introduced her books: *Glass in Brno and Moravia ca. 1200–1550* and *Renaissance and Baroque Glass from the Central Danube Region*.



*Lecture room in manor house before the conference.
Photo © Ondrej Šály*

During the round-table discussions, gemological and historiographic topics connected to the history of glass and history of glassmaking were also introduced. Discussions were led by Ľudmila Illášová, Ivan Turnovec, Ondrej Šály and others.



*Historical glass furnace in the Archaeopark. Photo
© Ondrej Šály*

On the 22nd of June, glassmakers conducted glassmaking experiments and produced glass thanks to and by the local historical glass furnace. Professional commentating of these activities, with public participation, was by Slovak archaeologist Danica Staššiková-Štukovská.

Ondrej Šály
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Study Days on Venetian Glass

Palazzo Franchetti, Venice

November 2019

In early September I attended the eighth iteration of Study Days on Venetian Glass, an annual three-day gathering in Venice of specialists and students with an interest in Venetian glass. The Study Days are organised by the Istituto Veneto di Scienze, Lettere ed Arti (IVSLA), and held in Palazzo Franchetti, which is located alongside the Accademia bridge in the S. Marco quarter (Figure 1).



Figure 1: Palazzo Franchetti, Venice. Photo © Suzanne Higgott

Described as a higher education course, the Study Days was first held in 2012. The course is attended by about 30 participants, ranging from international experts to students with an interest in the subject. All the presentations are given in English. The doyen of Venetian glass studies, Rosa Barovier Mentasti, was one of its founders. Her enthusiasm, warmth and peerless knowledge set the tone for the informal and egalitarian ambiance that is one of the hallmarks of the event. Rosa is one of the teaching staff each year, as are Cristina Tonini, a Venetian glass specialist who has catalogued

museum collections and co-curated numerous exhibitions; Marco Verità, a scientist specialising in glass who works at the Laboratory for the Assessment of Ancient Materials (LAMA) at the Luav University of Venice; and William Gudenrath, resident advisor for the Studio at the Corning Museum of Glass, who is renowned for researching, reviving and teaching historic Venetian glassmaking techniques. The presentations comprise those given by the teaching staff and those contributed by other attendees.



Figure 2: Glass from S.A.L.I.R.'s collection: a modern pastiche of Renaissance glass. Photo © Suzanne Higgott

Each year a specific aspect of Venetian glass history is selected for study. This year's theme was 'Enamelled and Gilded Glass of the Renaissance'. As in previous years, the course began with a presentation setting the chosen theme within its wider cultural context in Venetian society of the time, given this year by Dr Alessandro Martoni of the Giorgio Cini Foundation and the Università Internazionale dell'Arte in Venice. This year's theme was enriched by contributions from several presenters who have been involved in recent years in Project Cristallo, a scientific and art historical study of enamelled Venetian glass, the aim of which is to differentiate Venetian Renaissance examples from *façon de Venise* and 19th-century production.

The research will inform an exhibition of Venetian and French enamelled Renaissance glass that will be held at the Musée de la Renaissance at Ecoen in conjunction with the Louvre in 2021–22. Presentations resulting from research for this project were given by Marco Verità, Isabelle Biron, Françoise Barbe, Aurélie Gerbier and myself. Among subjects addressed by other papers were enamelled glass production in other Italian centres,

conservation case studies, enamelled *vetro a filigrana* glass, Venetian Renaissance enamelled archaeological glass in museums in the Czech and Slovak Republics, enamelled Mamluk glass in the Calouste Gulbenkian Museum, the foundational collections of Venetian glass at the Metropolitan Museum of Art, New York, enamelled Renaissance glass in the State Hermitage Museum, St Petersburg, and the Museum of Applied Arts, Vienna, and later 19th-century imitations in the Murano Glass Museum.

The Study Days always concludes with a visit to Murano to visit the Murano Glass Museum, and often to see a demonstration of the technique studied that year. This year participants visited the museum as well as the glass collection formed by S.A.L.I.R. (Studio Ars Labor Industrie Riunite) (Figure 2). The course concluded with a delicious lunch in a Murano restaurant. Glassmaker Marc Barreda's presentation had been about his research into and recreation of 16th- and 17th-century *façon de Venise* glass drinking horns. He brought an example he had made in emulation of them to the restaurant, where our attempts to drink wine from it caused much merriment (Figure 3). It was a happy, glass-focused finale to a fascinating few days.



Figure 3: Hedvika Sediáčková drinking from Marc Barreda's glass drinking horn. Photo © Suzanne Higgott



Figure 4: Suzanne Higgott being guided through the beadmaking process at Esse2, Murano, during Venice Glass Week. Photo © Suzanne Higgott

Since 2014, the presentations have been published annually in the *Atti classe di scienze fisiche, matematiche e naturali*, published by the IVSLA. This has resulted in a valuable series dedicated to in-depth studies of new research on Venetian glass, ranging from its production to its presence in both private and public collections.

The Study Days are now an integral part of Venice Glass Week. The Glass Week was inaugurated three years ago as a major initiative to promote contemporary Venetian glass and its rich heritage. It was the brainchild of art historian and glass collector David Landau, who launched Le Stanze del Vetro, a museum in Venice dedicated to modern glass, in 2012. Venice Glass Week is the result of a collaboration between the Fondazione Musei Civici di Venezia, IVSLA, the Giorgio Cini Foundation, and the Murano Promovetro Consortium, which promotes Venetian glass. During this year's festival more than 180 events took place across Venice, Murano and Mestre. They included exhibitions, displays, demonstrations, tours, screenings, opportunities for visitors to try their hand at bead making (Figure 4), and a garden party on Murano hosted by glass artist Judi Harvest in the glass studio garden where she keeps productive beehives (Figure 5). Study Day participants



Figure 5: Musicians at Judi Harvest's Murano garden party. Photo © Suzanne Higgott

are invited to attend the annual Glass in Venice prize-giving ceremony. The Glass in Venice Prize is intended to promote glass art at an international level by celebrating the work of outstanding glass artists from Venice or abroad. This year the event saw the inauguration of the Bonhams Prize for Venice Glass Week, which is intended to encourage the production of original, high-quality artistic glass projects.

A free events map makes it very easy to locate the array of venues where Venice Glass Week events are held. Next year's festival is scheduled for 5th–13th September 2020. If you are a glass enthusiast, it is an experience not to be missed!

Suzanne Higgott

FACEBOOK AND TWITTER

To keep up-to-date on news and current research on the history of glass visit:
[facebook.com/TheAssociationForTheHistoryOfGlass](https://www.facebook.com/TheAssociationForTheHistoryOfGlass)
 Click 'Like' and please share.

Follow us on Twitter: @Ass_Hist_Glass

REMINDER

Would you like to see the photos in this issue in colour?

We can send a colour PDF version of this issue of *Glass News* on request TO MEMBERS AND SUBSCRIBERS (in addition to your paper copy – we know you like something to read in the bath!). Please email one of the editors (see back cover) if you would like a PDF copy.

Experimental Approaches to the Archaeology of Glass: Recycling and Bead-making

Victoria Lucas and Eleonora Montanari

PhD students at Newcastle University, supervised by Dr Chloë N. Duckworth.

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Our research projects both focus on glass and experimental archaeology. In the Summer of 2019 we carried out a series of experiments based at Jarrow Hall Anglo-Saxon Farm, Village and Bede Museum (Jarrow, Tyne and Wear, UK) aimed at exploring different aspects of secondary glass production in antiquity. Victoria's research looks at the effects of repeated recycling upon the composition and working properties of glass, whilst one experimental component of Eleonora's work focuses on the production technology and possible furnace designs for Iron Age glass beads in Italy and the Mediterranean (9th–3rd century BC).

Glass Recycling in a Wood-Fired Glassworking Furnace (Victoria Lucas)

This project experimentally tests the effect of recycling (with the use of a wood-fired glassworking furnace) on both the chemical composition and working properties of glass and builds on work by Paynter (2008) who demonstrated the potential for contamination of glass by potash through prolonged exposure to the furnace environment. Figure 1 shows some of the possible sources of contamination that could lead to changes in chemical composition.

In order to measure changes in chemical composition with increased recycling, a 'raw' glass, of known composition (based upon the Levantine 1 compositional group) was produced as a compositional baseline. Pure laboratory reagents and an electric furnace were used in order to ensure that no unknown contamination was introduced into the glass.

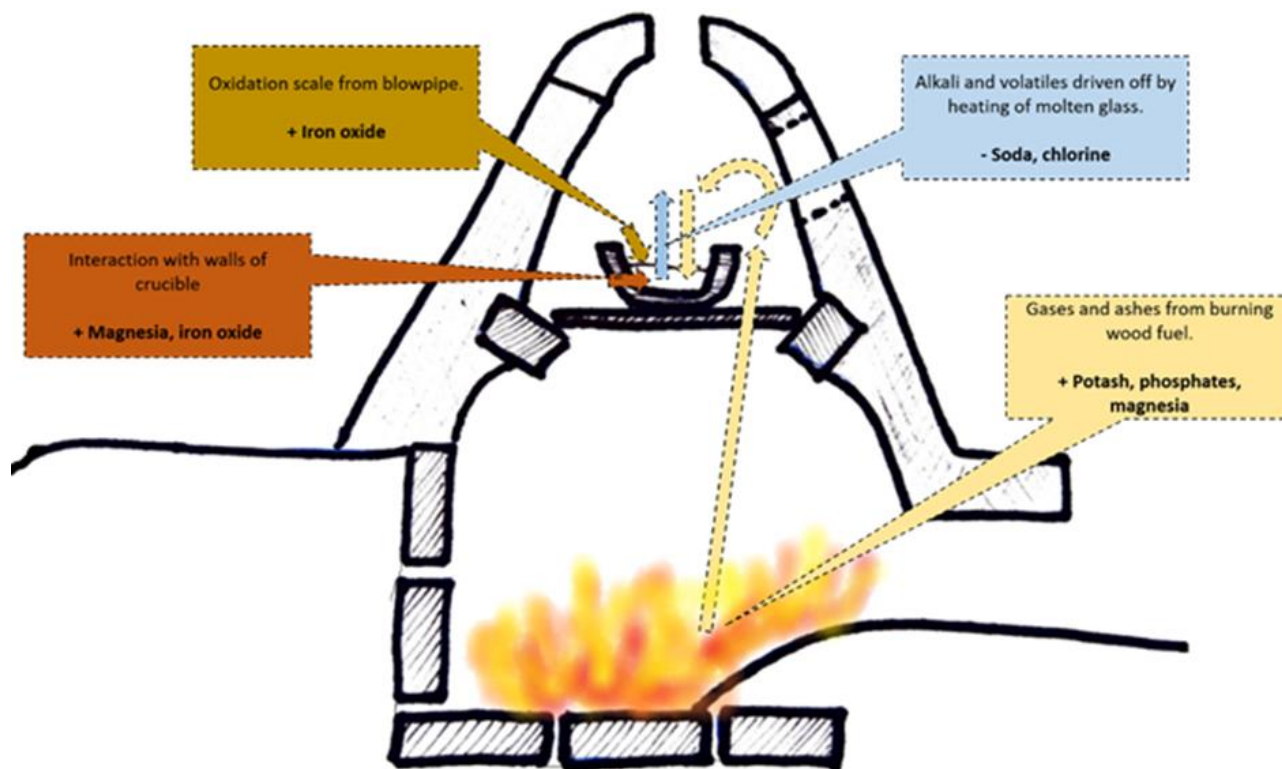


Figure 1: Possible sources of contamination/loss leading to changes in the chemical composition of glass in a wood-fired Roman/Early Medieval glassworking furnace. Furnace drawings author's own after Taylor and Hill (2008), additional text and annotations. © Victoria Lucas

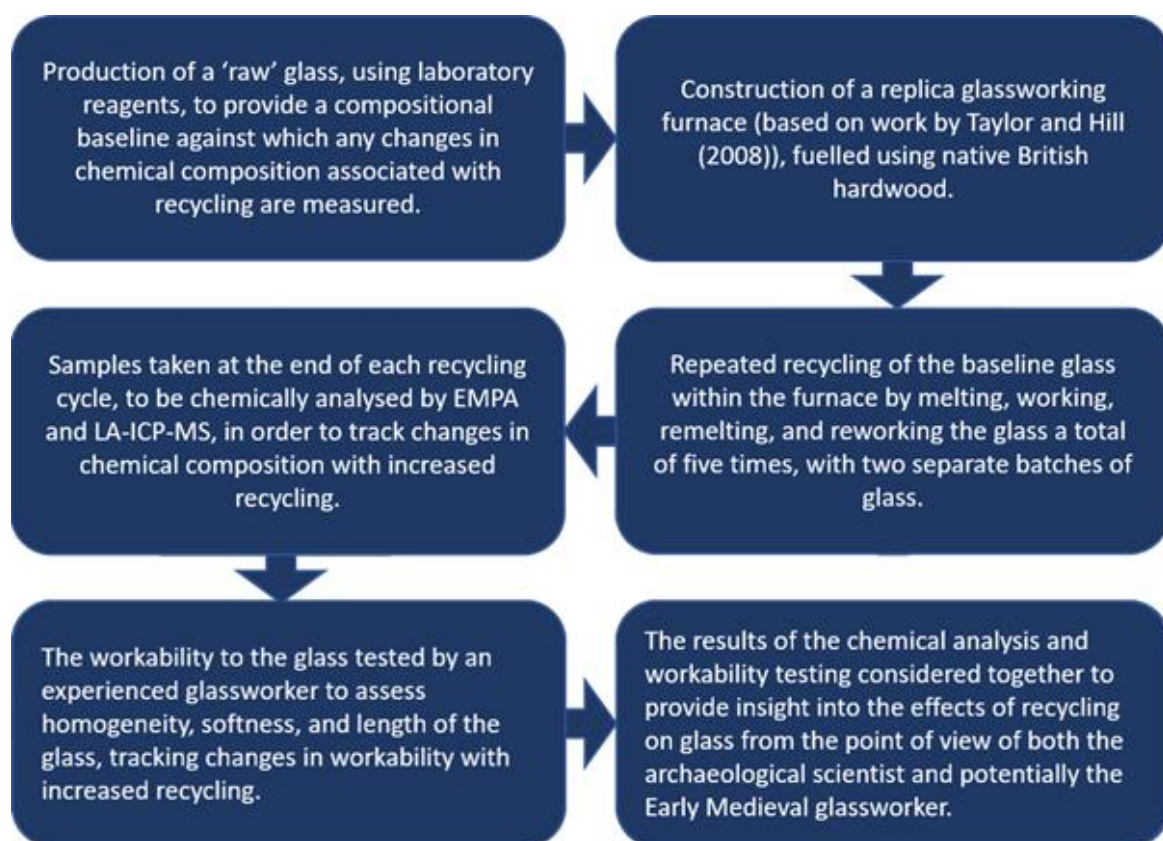


Figure 2: The experimental design of the project. Diagram © Victoria Lucas

Building the furnace

The furnace was based upon the work by Taylor and Hill (2008) reconstructing Roman wood-fired glassworking furnaces, in particular closely following the design of Taylor and Hill's 'small furnace'. The furnace walls were constructed using a daub mixture comprising a heavily grogged stoneware clay mixed with approximately 30% by volume of straw.

Recycling the glass

Each phase of the experiment ran for a total of five days (24 hours per day), during which five recycling cycles were carried out. A total of two cycles of five days were completed, hereafter referred to as week 1 and week 2 respectively. A fresh batch of raw glass, and a new crucible were utilised for each repeat in order to ensure that there was no cross contamination between the glass from week 1 to week 2. The wood used to fuel the furnace were seasoned logs from a mixture of native British hardwood species.

The furnace was brought up to temperature (c.900 °C) and the furnace was charged with glass cullet, it was then maintained at temperatures between c.900–1000 °C for a total of 10 hours. Two hours prior to the beginning of glassworking the temperature was increased and held at between 1060–1100 °C. In total the glass remained in the furnace for 12 hours during each recycling cycle; this was kept consistent across all 10 days over the two

weeks. Temperatures were logged at two thermocouples (directly above and below the position of the crucible) every 15 minutes during each 12-hour cycle.

The furnace was charged with 1kg of the 'raw' glass on the first day of both weeks. On each day, after having undergone the 12-hour cycle, the glass was removed from the furnace then broken up, weighed, and a small fragment taken for chemical analysis. The furnace was then charged again with the recycled glass.

The glass was removed from the furnace in one of two ways. On days 1, 3 and 5 of each week the glass was worked by Colin Rennie[1]; a senior lecturer, artist, and researcher based at The National Glass Centre and Sunderland University, specialising in glassblowing and hot glassworking, in order to assess the workability of the glass with reference to how many times it had been recycled.

On days 2 and 4, I removed the glass from the furnace myself by simply gathering the glass on the end of an iron and pulling it into rough canes that could be easily broken up into cullet for recycling. On these days, no formal assessment of workability was made.

Two standardised tests were used in order to assess the working properties of the glass. These were: 1) Blowing a small vessel; 2) Pulling a cane.



Figure 3: (top left) constructing the furnace, (top right) Colin Rennie working at the furnace during week 1 of the experiment (bottom left) the gathering hole during glassblowing being used to reheat the vessel, (bottom right) pulling a cane: the ease with, and length to which a cane could be pulled using one smooth, continuous pulling motion was used to help assess the workability of the glass. Photos © Victoria Lucas

Workability was assessed using the following criteria: softness, homogeneity, and length. These criteria were scored on a relative scale of 1–10, where 10 would be a modern studio glass, familiar to the glassworker, with ‘ideal’ (ideal as judged by a modern studio glassworker) homogeneity, clarity, working length, and softness. Using this glass as a baseline, scores were derived for each of the above criteria for each day of the experiment at which Colin was present (days 1, 3 and 5).

Preliminary results

Preliminary assessment of the workability scores suggests that only very minor changes in workability occurred over each of the five-day cycles, with the glass scored very similarly on days 1, 3 and 5. This contrasts with accounts by modern glassworkers of glass recycled in a modern gas or electric furnace, which becomes unworkable very quickly. This suggests that



Figure 4: glass cullet and moils remaining after the fifth recycling cycle at the end of week 2. Photo © Victoria Lucas

glassworkers in antiquity may have been able to recycle glass much more before it became unworkable than would be predicted based on laboratory-based experiments alone. Understanding the precise reasons for this, however, will need to wait until the compositional data has been analysed.

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[1] <https://www.sunderland.ac.uk/about/staff/creative-arts/colinrennie/>

Experimental Bead-Making in a Natural Draft Furnace (Eleonora Montanari)

The archaeological evidence for bead-making furnaces is ephemeral, not only for the first millennium BC, but in general throughout antiquity (Davidson-Weinberg 1969; Triantafyllidis 2003; Bietti-Sestieri 1984; Bencard *et al.* 1990). As virtually no structures have survived, we are not able to infer either the size or the design of furnaces, which may have been affected by the scale of production, the building materials, the type of fuel and the raw glass material available. Ethnography demonstrates, however, that these factors appear to influence furnace design in contemporary traditional bead-making industries in Turkey, India, South-East Asia and West Africa (Küçükerman 1995; Kanungo 2004; Sode and Kock 2001; Francis 1991; Haigh 2003).

As there is no exact way to reconstruct an Iron Age furnace, we modelled our experiment on the small bead-making furnaces at Roman Villa Borg, Germany, as they have proven to be successful (Wiesenberg 2018).

The aim of the experimental bead-making project was to assess: 1) How successfully beads can be made from glass canes by using a furnace which relies on natural draft power only; 2) The limitations and the challenges that such furnaces may pose; 3) The set of skills and knowledge required to fire a furnace and make beads.

The furnace was built from the ground up in just under a day, using heavily grogged clay. Provided with a stoke-hole and a chimney, the furnace measured 0.7m long, 0.51m high and 0.06m thick. The fuel employed was kiln-dried birch wood.

This furnace, as the ones of Villa Borg, had no internal shelf to accommodate a crucible, relying instead on the

use of ready-made glass canes for bead manufacture. During our experiment, the beads were crafted by winding or twirling the end of a heated glass cane around the tip of a thin metal mandrel. This had previously been dipped in a clay-based separator, to prevent the glass from sticking to the metal.

Although winding was the major technique employed in the Iron Age, it is still unclear if solid glass canes were used as ‘raw material’, and it has been argued that a gather of glass contained in a crucible was more likely to have been employed (Spaer 2001, 305). This method, loosely known as furnace-winding, might have been a more direct way to craft beads, but we cannot rule out the idea that cane-winding occurred. The archaeological record suggests that this technique was known since the Late Bronze Age, as fragments of glass canes were retrieved on secondary production sites in Egypt (Hodgkinson 2015; Smirniou *et al.* 2018). Canes could have been used either on the site where they were manufactured, or acquired to be employed in a furnace located elsewhere. If the making of the beads from canes occurred in a specific type of structure, it is likely that this would have been quite small, in order to minimise waste of materials and resources.

We used Effetre Murano glass canes, as their chemical composition broadly reflects that of Iron Age glass. In the course of a week, the prime temperature for bead-making (960–1000 °C), was reached every day within two hours from the initial firing. We managed to craft intricate but imperfect beads, with a few breaking once removed from the mandrel. This is because the longer they were kept in the fire, the higher the likelihood of fluctuations in temperature.



Figure 5: Building of the furnace to the left and stoking to reach the bead-making temperature to the right. Photos © Eleonora Montanari



Figure 6: The making of a bead. The red-hot glass cane is wound on a mandrel. Photo © Eleonora Montanari

We observed that different variables, such as furnace design and experience of the bead-maker, or even the dryness of the wood, the presence or absence of wind or a shelter, and the way the furnace is managed can influence the final outcome. The observations recorded during this project constitute a platform for further sets of experiments, which will aim to obtain a more concentrated flame. The experiential and reflexive aspects of glass bead-making will also be investigated, for a better understanding of the craft practice.

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Figure 7: A selection of the beads produced. Photo © Eleonora Montanari

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What Went On in the Ashhouse?

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A description of the Chelsea glasshouse in the 1670s mentions that one building was an Ash House. That ashes for glassmaking needed processing and that this was a separate activity seem to have been largely overlooked by many involved in glass history and archaeometry. If ash processing is mentioned at all it is usually assumed to have been just a matter of washing. In reality it was much more complex than this and the way in which the ashes were processed has left its mark on many of the glasses that have survived.

This short piece looks briefly at how glass making ashes were obtained and processed before adding to the batch for calcining or melting. It does not discuss mineral soda obtained from dry lake beds or saltpetre used for flint glass. The first critical point is how the ashes were obtained. Many were simply ashes from domestic fires collected from door to door. However, preference was usually given to ashes of plants or wood that had been deliberately gathered, dried and burnt for the purpose of producing ashes. For plant ashes this extended to the choosing the best time to gather them. For wood it was important to burn the wood slowly with the minimum of draught. Period texts talk about smothering the fire with leaves so that it burnt for weeks. There were probably two reasons for this, one is that potash and soda ash are volatile and too much alkali goes up with the smoke if you burn it too quickly. The other reason may have been that a low-temperature fire probably produced alkali carbonates, whilst a higher-temperature fire would have produced caustic alkali oxides or hydroxides. The glassmakers then would not have known the chemistry, but apparently checked the state of the ashes by taste. I certainly would not fancy tasting a mixture of caustic soda, caustic potash and slaked lime!

Unless the alkalis were going to make black bottles, the next problem was to get rid of unwanted salts from the ashes, particularly iron. This involved a process of lixiviation, or leaching, where the soluble parts of the ashes were dissolved in water. The solubility of different salts depends on how alkali the water becomes and this was used to advantage by the glassmakers. By deliberate increasing the alkalinity of the solution they aimed to get a pH (measure of how alkaline the liquid is: '1' is a strong acid and '14' is a strong alkali) of about 11. This is the point at which the liquid holds the least amount of iron so the rest precipitates out of the solution, similarly for nickel and cadmium salts. There were three different ways that the glassmakers could make the solution more

alkaline. The earliest approach seems to have been to boil the solution containing the ashes until the solution became clear (i.e. the iron, etc., had precipitated out to form a sludge at the bottom). The clear liquid was then skimmed-off and evaporated. The snag with this approach is that the lime present in the cold liquid is not soluble in hot water and so precipitates out to join the sludge (hence the scale on the inside of kettles in 'hard' water areas). This is a bit of a drawback, since lime is a very desirable constituent of ashes that helps improve the stability of the resultant glass. Another way is to have containers full of ashes on a straw base and to pass the liquid through these, several times if necessary (see figure below). The liquid thus becomes more alkaline and the straw catches the unwanted salts that precipitate out as a result. The third way is simply to add quicklime to the solution. In practice a combination of the last two methods is probably what would have been used in the ashhouse in Chelsea mentioned earlier.

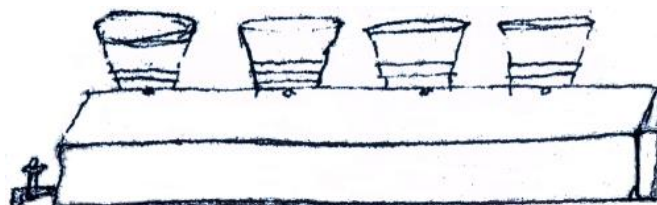


Illustration from Gustav Jung's workbook, probably of the alkali processing equipment at the Minorities Glasshouse in 1667. Uppsala University Library

Another important variable was the metal used to make the pans to hold and evaporate the alkaline solution. Merrett (1: p. 257) writing in 1662 echoes Antonio Neri's earlier caution about not using copper pans for the processing alkali unless blue or green glass is being made. Instead lead was used and it is noticeable that similar glasses can often be differentiated by whether their analyses show traces of copper or traces of lead in otherwise colourless glass.

There are three interesting mid 18th-century publications that describe in some detail the processing of potashes and barilla (2), (3), (4). One feature of these is that they mention the use of sea water to dissolve the ashes. Dossie (5) writing in 1758 listed salt as an important vitrifying agent for glass, so it appears that the use of salt water in processing the ashes was by design rather than expediency.

This short article has briefly outlined some of the things that probably went on in the Ashhouse. Most of these activities were designed to selectively change the nature of the plant ashes used for glassmaking, so it is important to bear this in mind when interpreting post-medieval glass analysis results.

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Stained Glass in Slovakia

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Despite the fact that historical research about Slovak stained glass and the history of stained glass production in Slovakia is not common, there is much valuable information that can illustrate a short history of stained glass in Slovakia.

In AD 1307 a deal was made to deliver stained glass for three sacred buildings in the town of Košice. Some of

this stained glass was probably dedicated to the church of the Assumption of the Virgin Mary led by the Order of Preachers (Dominican Order), which was built in the 13th century and now represents the oldest church in the city of Košice. An archival document from AD 1364 informs us about the production of four stained glass windows for the Premonstratensian monastery in Leles (Košice Region).



Stained glass dated 1907 in St Catherine's Church in Banská Štiavnica. Saint Joseph, Infant Jesus and Saint John the Baptist. Photo © Jana Mináriková

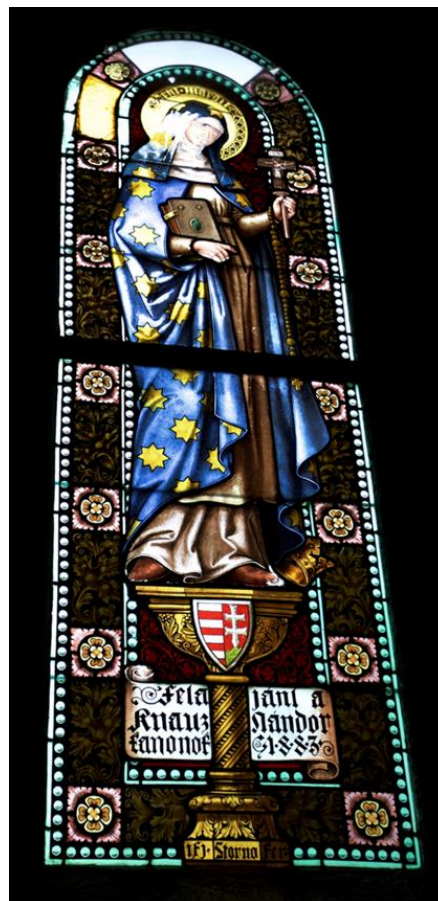
Thanks to written documents there is also information that in AD 1375 a glass decorator ('pictor') Thomas lived in Cluj-Napoca (Transylvania) in Hronský Beňadik (Banská Bystrica Region); the Hungarian king Géza I had founded a Benedictine monastery in Hronský Beňadik in AD 1075. Surviving from the Late Middle Ages are fragments of stained glass in the church of Saint Anthony the Abbot in Red Monastery (situated close to Poland) where at that time monks of the Carthusian Order lived. There is also some precious stained glass from the church of Saint Sigismund in Pezinok-Grinava (Bratislava Region) made perhaps at the end of the 14th century.

During the reconstruction of the church of Saint Giles in Bardejov in AD 1448–1519 stained glass windows were produced, and part of the church's stained glass from the mid 15th century remains. In AD 1507 stained glass was installed into windows of the church of Saint Nicholas in Prešov and, some time in the 15th or 16th century, in Saint George's church in Svätý Jur (Bratislava Region).

In the 15th century use of the glass in the sacred buildings in Slovakia was probably quite common. From the end of the 14th century to the first half of the 16th century the town of Košice was an important centre of stained glass production. In the 19th century, there was a boom in stained glass production in Slovakia, and many beautiful stained glass windows were constructed in that period.

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Stained glass dated 1883 in basilica in Hronský Beňadik. Saint Margaret of Hungary. Photo © Jana Mináriková

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QUERIES

Flat glass of the 1st to 5th century AD

Géraldine Frère, a PhD researcher and teaching assistant at the University of Namur is studying flat glass of the 1st to 5th centuries over a wide geographical area of the Roman Empire (Britannia, Gaul, Hispania, Germania, Italia etc.). She is interested in glass from different types of buildings (bath houses, residences etc.), in order to understand links between the characteristics of the glass (shape, colour etc.), the function of the building and the geographical area, as well as looking at aspects of production, use and post-depositional processes.

She would be grateful for advice about flat glass assemblages from recent excavations in Britain that she could include in her research. Please email her at: geraldine.frere@unamur.be.

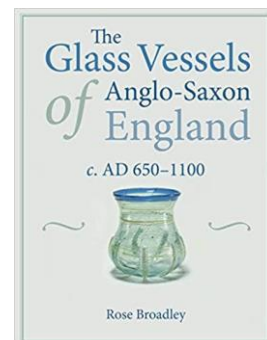
NEW BOOKS

The Glass Vessels of Anglo-Saxon England c. AD 650–1100

Rose Broadley

Oxbow Books, Oxford, 2019
ISBN: 9781789253726
Paperback, 192 pages, £35

This volume combines a comprehensive exploration of all vessel glass from middle and late Anglo-Saxon England and a review of the early glass with detailed interpretation of its meaning and place in Anglo-Saxon society. Analysis of a comprehensive dataset of all known Anglo-Saxon vessel glass of middle Anglo-



Saxon date as a group has enabled the first quantification of form, colour, and decoration, and provided the structure for a new typological, chronological and geographical framework. The quantification and comparison of the vessel glass fragments and their attributes, and the mapping of the national distribution of these characteristics (forms, colours and decoration types), both represent significant developments and create rich opportunities for the future. The geographical scope is dictated by the glass fragments, which are from settlements located along the coast from Northumbria to Kent and along the south coast to Southampton. Seven case studies of intra-site glass distribution reveal that the anticipated pattern of peripheral disposal alongside dining waste is widespread, although exceptions exist at the monastic sites at Lyminge, Kent, and Jarrow, Tyne and Wear. Overall, the research themes addressed are the glass corpus and its typology; glass vessels in Anglo-Saxon society; and glass vessels as an economic indicator of trade and exchange. Analysis reveals new understandings of both the glass itself and the role of glass vessels in the social and economic mechanisms of early medieval England.

There is currently no comprehensive work examining early medieval vessel glass, particularly the post 6th–7th-century fragmentary material from settlements, and my monograph will fill that gap. The space is particularly noticeable when considering books on archaeological glass from England: the early medieval period is the only one with no reference volume; no recent, through and accessible source of information. The British Museum published a monograph entitled ‘Catalogue of Anglo-Saxon Glass in the British Museum’ in 2008, but as the title suggests it is a catalogue at heart, and of a collection of 5th and 6th-century grave goods in a single museum. Chronologically, a volume on the subject would fill the space between various books on Roman glass from Britain and ‘Medieval glass vessels found in England c. AD 1200–1500’ by Rachel Tyson. This book on early medieval vessel glass and the contexts from which it came will also make a significant contribution to early medieval settlement studies and the archaeology of trade in this period: both are growth areas of scholarship and interest and vessel glass provides a new tool to address key debates in the field.

An AHG Grant contributed to the cost of the colour photos.

A review will follow in the next edition of *Glass News*.

Lucid Transformations: The Byzantine–Islamic transition as reflected in glass assemblages from Jerusalem and its environs, 450–800 CE

Tamar Winter

British Archaeological Reports, Oxford, S2946, 2019

ISBN: 9781407316987

Paperback, English, 236 pages, 47 figures (6 in colour), 4 maps, 3 plans, £54

The book investigates the contribution of glass finds to understanding the nature of the transition from Byzantine to Islamic rule in Syria-Palestine, by analysing numerous glass assemblages from Jerusalem and its environs. This original synthesis explores the nature of numerous types of glass objects, and their distinct distribution in various types of sites. Furthermore, the identification of trends of continuity and change in the fabrics, technologies, typologies and styles of the glass finds throughout this turbulent period, illuminates the nature of the processes undergone by the various communities in the Jerusalem area.

The monograph comprises a newly established, comprehensive, up-to-date typo-chronology, based on hundreds of glass wares of the Byzantine and Early Islamic periods from scores of excavations, in and around Jerusalem and in neighbouring regions. Additionally, a holistic study of lighting devices, glass lamps and windowpanes, includes a novel assessment of Christian, Muslim and Jewish written sources regarding lighting in religious buildings in Jerusalem in the relevant periods.

BOOK REVIEWS

Glassworking in England from the 14th to the 20th century

David Dungworth

Historic England, 2019

ISBN 978-1-84802-285-0

Hardback, 240 pages, £70

This book is a ‘must have’ for anyone who is serious about understanding the technological development of English medieval and post-medieval glass. It seeks to cover a very wide scope, not only in its six-century date range but also in its coverage of the three-and-a-half main branches of historical glassmaking: tableware, bottles, window glass and plate. This chosen extended period covers the effective birth of the English glass industry as a distinct entity and the radical changes each of its

branches went through during their ‘industrial revolutions’. It is aimed particularly at archaeologists, conservation architects and archaeological scientists, but should attract a much wider readership.

The author David Dungworth has extensive experience of materials analysis for English Heritage (later Historic England) and this depth of practical experience shows in his treatment of some of the difficult issues involved in trying to interpret the sometimes sparse evidence that is all that remains to us today. Particularly there is a very useful discussion on the challenges of using portable x-ray fluorescence analysis equipment for non-destructive glass analysis. There is also a very welcome emphasis on the importance of glassmaking residues, even if these are not directly-related to a furnace structure. Based on his width of experience David has brought to the work insights into the development of other industries over the same period.

The book starts with three important introductory chapters on: the nature of glass; an introduction to glass manufacture over the periods covered; and on the archaeological and scientific investigation of glass manufacture. This is followed by a single chapter on early medieval glassmaking and then three chapters each dedicated to one branch of the industry (windows and plate are treated together). The final chapter brings together all these threads for a discussion and conclusions on all these branches of the industry spanning the six-centuries.

Inevitably in attempting to cover so much material in a single volume there are a number of broad generalisations made which could be misleading for archaeologists. For example, the book relates how the glass industry moved from using firewood to using coal at the beginning of the 17th century, but fails to point out that high-end tableware manufacture largely reverted to the use of wood fuel after the end of Sir Robert Mansell’s monopoly in 1642. It was not until well after another technological development – the closed pot – in 1681, that all branches of glassmaking moved to the use of coal. Thus finding pieces of a glass pot that has been wood fired does not necessarily imply that it dates before 1615. Similarly, the book contains good coverage of the problems of glass stability, but does not mention that the process used by the glassmaker to purify the alkali has a significant influence on the all-important stabiliser content (usually lime) present in the melt. To purify alkali salts the pH of the lye needs to be raised to the level where unwanted salts are no longer retained in solution and so precipitate out. This can be done hot or cold, but since lime is less soluble in hot water the cold process makes for a more stable glass.

Any work of history is necessarily a snap-shot of the topic within the bounds of the information available at the time of writing and is always at the mercy of later discoveries. The recent discovery of some early coloured lead-glass production residuals is a case in point, since this casts further doubt on the suggestion that English glasshouses did not produce coloured glass. However, that is the nature of the topic and I can definitely commend this excellent book to readers of *Glass News*.

Colin Brain

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for *Glass News* **48**

by 1st June 2020

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