

Glass News

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Grotesque (1480s) from the Lady Chapel, Gloucester Cathedral (Photo: Richard Cann © The Chapter of Gloucester Cathedral)

Welcome to Issue 31 of *Glass News*! The recent AGM saw various changes to the Board of Management. We begin with a huge vote of thanks to Caroline Jackson who finished her term of office as President, one which she has held since 2007. We also thank Sandy Davison for her work as Secretary and fount of all AHG knowledge since 2006 as she stands down. Both Caroline and Sandy have worked tirelessly and efficiently behind the scenes organising an interesting and varied programme of AHG events, always ready to solve problems and answer questions, and will be hard to replace. The new President is Justine Bayley, a long-serving Board member who has previously been Secretary. Denise Allen, another familiar Board member, becomes the new Secretary, while Angela Wardle becomes the new Treasurer, having taken over the books when Jim Smedley resigned nearly a year ago. Last but certainly not least, a resounding cheer for Sarah Paynter who has passed on the mantle of co-editorship after an incredible seven years service! Sarah has co-edited *Glass News* with enthusiasm, originally with Juanita Navarro and then Rachel Tyson, and has been a joy to work with. We extend a warm welcome to Andrew Meek, a Scientist at the British Museum, who is now co-editing with Rachel, and to John Shepherd who returns to the Board.

For the first time we are offering to send a colour PDF version of this issue of *Glass News* on request TO

MEMBERS AND SUBSCRIBERS ONLY. The Board has decided that the cost of printing it in colour would require an increase in the subscription, and that offering an emailed version is more satisfactory for the moment. Please email one of the editors (see back page) if you would like a PDF copy. Subscriptions and memberships for 2012-2013 are due in April, and a form is enclosed to send with cheques to John Clark.

The editors would like to thank this issue's contributors for so much material, and please keep it coming for future issues! See back page for contact details.

STOP PRESS!

The newly designed AHG website is shortly to be re-launched at www.historyofglass.org.uk

AHG meetings this year start on March 31st with a study day on stained glass at Gloucester Cathedral (see page 2), kindly organised by member Robin Lunn. If any other members have ideas for study days please contact one of the committee.

Autumn 2012 has a packed programme, with the AIHV congress in Slovenia in September, as well as a meeting in memory of Sarah Jennings being organised jointly with the Medieval Pottery Research Group, to be held in late 2012 at a venue in London. A workshop on British Crystal Glassmaking 1660-1760 is being planned with the Georgian Glassmakers (also known as the Roman Glassmakers) at Quarley near Andover. Please look out for details of these in the next issue and on the website.

THE ASSOCIATION FOR THE HISTORY OF GLASS

Registered charity 275236

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AHG SPRING STUDY DAY

**Gloucester Cathedral
Stained Glass Study Day
Saturday 31st March 2012
11am-3.45pm**

We recommend that you bring a pair of binoculars.

10.45 am Meet in the south porch (the main entrance to the Cathedral) - Coffee will be served in the Chapter House.

11.00 am **How to 'Read' a Stained Glass Window:** illustrated by the Chapter House window; **The Making of a Stained Glass Window**, a short film 'Art of Light', in which a glazier explains and demonstrates the stages in designing, making and installing a stained glass window;

11.30 am **Medieval Glass in the Cathedral.** We move into the Cathedral to study and discuss: The Great East Window (1350s): its historical context and relationship to other glass in the south-west; The Lady Chapel east window (various periods, but primarily late 1400s); other medieval glass in the Lady Chapel (late 1400s); the heraldic glass in the cloisters (1520s and 1540s)

1.00 pm **Lunch** in the Cathedral Function Suite (light lunch incl. sandwiches) *Please Note - There is a flight of stairs to negotiate to the Cathedral Function Suite*

1.45 pm **19th-Century Glass**

Study the glass of the companies most represented in the Cathedral, especially Hardman, Wailes, Clayton & Bell and Kempe (cloisters, nave, transepts, ambulatories)

2.45 pm **20th-Century Glass**

Christopher Whall (Lady Chapel) Contemporary glass (Caroline Swash, Fiona Brown, Alan Younger, Tom Denny)

3.45 pm Finish

N.B. The announcement of this event attracted great interest. There are only 28 places & these will be allocated on a first - paid basis. Tickets £30 non-members, £20 members and students, including lunch. Please send cheques payable to The Association for the History of Glass Ltd to Sandy Davison at 68 East Street, Thame, Oxfordshire OX9 3JS. Cheques will not be banked until just before the meeting.

CONFERENCES AND EXHIBITIONS



The 19th Congress of the Association Internationale pour l'Histoire du Verre will take place in Slovenia in Piran, the historical town on the Northern Adriatic Sea, from Monday 17th September (registration from the evening of Sunday 16th) through to Friday 21st September 2012. It will be organised by the University of Primorska, Science and Research Centre, Institute for Mediterranean Heritage in co-operation with the Association of Museums in Slovenia and ICOM Slovenia. The Organising Committee of the 19th Congress intends to combine a full programme of lectures and poster sessions including opportunities to visit museums and collections in Ljubljana and Aquileia. During museum visits it will be possible to see also the material stored in depots. A two day excursion will be organised after the conference. The excursions and post-congress tour will be organised in co-operation with AIHV Italia and Museums in Croatia. Special attention will be given to the glass from prehistory to the present in SE Europe and the Balkans.

Congress Fee

AIHV members:

220€until 30th June 2012, 260€thereafter

Students:

110€until 30th June 2012, 130€thereafter

Non AIHV members:

280€until 30th June 2012, 320€thereafter

Accompanying person:

110€until 30th June 2012, 130€thereafter

Accommodation

Piran and Portorož are tourist centres on the Slovenian coast with numerous and varied accommodation capabilities. We suggest you secure a hotel room or other accommodation in Piran (Hotel Piran, Hotel Tartini) or in the Bernardin hotel complex (Hotel Histriion, Grand Hotel Bernardin) because these are in the immediate vicinity (by foot or a free city mini-bus) of the Trevisini Palace and Bernardin Congress Centre where the congress will take place.

Participants are responsible for securing their own accommodation, the hotels will provide all participants of the AIHV 19/2012 conference with a discounted price.

We suggest participants book their accommodation as soon as possible, but by May 2012 at the latest!

Post-congress excursion Excursion fee 198€
22nd September: Piran-Novo mesto-Zagreb-Biograd
23rd September: Split-Zadar-Poreč-Piran

For further details and to book see www.zrs.upr.si
or email aihv19@zrs.upr.si

Glass Workers of Roman London

12 May 2012

The Surrey Roman Studies Group's 2012 Conference on 'The Development of Industry in Southern Roman Britain' includes a contribution by John Shepherd on 'Glass Workers of Roman London'. The Conference will take place on Saturday 12th May at Chertsey Hall (Chertsey, Surrey) from 0930 to 1700 ish. For details see Events at www.surreyarchaeology.org.uk.

5th International Festival of Glass Stourbridge Glass Quarter

24-27 August 2012

The dates of the fifth International Festival of Glass are now confirmed. It will be celebrating 400 years of glassmaking in Stourbridge and the 50th anniversary of studio glassmaking worldwide and will include exhibitions, performances, demonstrations, have-a-go sessions and lectures. See www.ifg.org.uk.

It will also incorporate the **British Glass Biennale 2012**, the UK's major exhibition of contemporary glass in association with the Worshipful Company of Glass Sellers and the International Festival of Glass. This is the UK's top contemporary glass showcase and will feature work of over 80 of the country's leading glass artists. The exhibition runs 28 August - 15 September. See www.biennale.org/2012-biennale

Verre et Histoire:

**18-20 October 2012: Flacons, fioles et
fiasques de la création à l'usage**

Venue: Rouen and the Bresle valley

This association in France exists to provide a forum for different disciplines interested in the history of glass to exchange research and ideas, to develop understanding of glass. It organises regular conferences, debates, study days, visits and demonstrations covering all aspects of the history of glass.

For further details see the website: www.verre-histoire.org or email contact@verre-histoire.org.

Society of Glass Technology

Annual Meeting 2012

The Society of Glass Technology's Annual meeting will be held on 5-7 September 2012 at Cambridge University. See www.cambridge2012.sgthome.co.uk for further details.

Association Française pour l'Archéologie du Verre (AFAV) Bordeaux 2012

The 27th annual meeting of the AFAV will be held on 9-10 November 2012 in Bordeaux. See www.afaverre.fr

AWARDS

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 the AHG website for further 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

Society of Glass Technology

Alastair Pilkington Award

The Society of Glass Technology has announced the inauguration of its Early Career award intended to promote creativity and excellence in studies related to glass. In association with the Mushroom Trust, the Society plans to make this award biennially and thereby commemorate the most significant Glass Technologist of the twentieth century, Sir Alastair Pilkington.

At the SGT Conference Opening Ceremony, David Martlew (Chairman of the SGT's Board of Fellows) explained why Sir Alastair was the perfect role model for this award. Within four years of entering the field of glass studies, Sir Alastair made the invention which would transform the windows of the world. His revolutionary concept of forming flat glass by floating on molten metal made perfect window glass feasible - and affordable. The

skylines of today's cities proclaim the huge social impact of this quiet engineer's inventive genius.

Not content with the brainwave, Sir Alastair overcame many obstacles and by determination, hard work and integrity, brought his concept into commercial reality, to the benefit of all. He was honoured by the conferring of the coveted Fellowship of the Royal Society in 1969, and his service to society was recognised in his knighthood in 1970. Success never 'turned his head': he remained an unassuming man always willing to help, encourage and mentor those around him. He led by example, and so earned the respect of the men who worked for him.

President of the SGT, Brian McMillan, said that the whole arena of glass studies needed to promote and develop creative researchers of this calibre. But not only the hard sciences and engineering aspects. Sir Alastair was sensitive to beauty in glass and to its long and stunning history as a material. He encouraged those whose field lay in the archaeology and conservation of glass, its history and its heritage significance. He played a major part in developing the Pilkington Glass Museum, and encouraged it to portray not only the glass artefacts but also the glassmaking techniques used in history.

This award is intended to stimulate creativity and determination in any field of glass studies. It is open to all researchers newly engaging with the study of glass, irrespective of age, nationality, or field of study. Candidates will submit three published papers explaining their work, and the award will be made at an international conference in Europe.

Further details may be found on the Society of Glass Technology website at www.sgt.org

OBITUARIES

Revel Oddy d.2011

Revel Oddy (one of the original 16 members of the AHG) joined what was then the Royal Scottish Museum in 1955 as an assistant keeper, curating British and European Glass, Ceramics, and Dress and Textiles. He went on to become keeper of the department from 1974 until his retirement in 1983. Revel had previously been employed at the V&A and he worked tirelessly to assemble both historic and contemporary glass for the collection in Edinburgh. Well known for his quirky sense of humour he always maintained that he knew nothing about any of the applied arts except for stained and painted glass. In fact he knew a great deal and successfully filled many historical gaps in the collection acquiring a wide range of 18th-century glass including four exceptional Anglo-Dutch wine glasses and a decanter-jug and large bowl attributed to Ravenscroft.

Revel took advantage of his many contacts at home and abroad to found the collection of studio glass. One of the earliest pieces he acquired directly from Sam Herman who had made the work at Edinburgh College of Art. He continued to develop both the studio and contemporary factory made glass by visiting glassmakers and glassworks particularly when he had made contacts within the country he was visiting or was attending one of the international glass conferences he enjoyed so much. Revel was widely respected in the glass community and often bought work for himself, always with a view that it would eventually be given to the museum.

Sadly Revel passed away on March 22, 2011 but the legacy he left in the glass collection ensures he will always be remembered. The museum recently received the wonderful gift of the Dan Klein and Alan J. Poole Private Collection which, in part, I feel sure was a result of Revel's development of the post war collections.

Rose Watban
Senior Curator Applied Art & Design
National Museums Scotland

EXHIBITION AND MEETING REVIEWS

AHG Conference: 'Neighbours and Successors of Rome': Traditions of glass production and use in Europe and the Middle East in the later first millennium AD 19-20 May 2011

The King's Manor, York, was a stunning setting which hosted a very successful two-day inter-disciplinary conference broadly themed on the traditions and use of glass in the East and West during Late Antiquity (4th-8th centuries). The presentations were split geographically over the two days. The majority of the first day was devoted to glass from north-western Europe.

Ian Freestone began by giving us an insight into fluctuations in the supply of raw glass during the first millennium AD, focussing on the analysis of an extraordinary assemblage of Roman glass from Basinghall Street, London. He proposed that glass production in Britain during the early medieval period was likely to have been characterised by sparse punctuated periods of glassmaking using fresh glass imported from the East until the 8th century, after which there was a dependence on cullet.

Caroline Jackson and Harriet Foster followed with a very detailed account of glass production and use in Britain during the 4th century. Interestingly, there appears to have been a change to the use of 'lower quality' glass of a different compositional type and colour in this period, suggesting changes in glass manufacture and vessel production. Linking in with this, Martin Grünwald and Sonngard Hartmann then discussed the possible link between the change in glass composition and vessel forms in the 4th century to the distribution of glass workshops in northern Gaul and the Rhineland.

Helena Wouters subsequently led us through the glass and glassworking evidence from several Merovingian sites in Huy, Belgium. The sheer volume of analytical data presented was remarkable. Sarah Paynter next described the excavation and analysis of glass and glassworking waste from Whitby Abbey, Yorkshire, which was all recovered during flotation of the spoil thanks to the late Sarah Jennings. Of particular interest were some fragments containing very high levels of potash; this having resulted from potash-rich gases produced by the wood-fuelled furnace.



'At the feet of the master'; Jenny Price in coffee-break discussion at The King's Manor. © Sarah Paynter

The afternoon saw the presentations move to focus on south-western Europe and the Mediterranean, in which Mario da Cruz began with a very informative and well-illustrated presentation concerning Late Antique campanulate bowls from Gallaecia, in which he used stylistic indications to suggest that they were products of regional glassmaking centres. Marie-Dominique Nenna then provided a thorough literature review of the development and recognition of HIMT glass as a distinctive compositional group, drawing our attention to the work that still needs to be done with regard to our understanding of its production, procurement and use.

The presentations concluded when Ian Freestone briefly summarised the work that has been undertaken to date regarding the scientific study and conservation of the great east window of York Minster. Poster presentations then followed; these covering a wide range of subjects from Roman, Byzantine and early Islamic glass from the East, to late antique vessel glass and glassworking waste

from the West. The day finished with a fascinating visit to the York Glaziers Trust Bedern workshop, led by Sarah Brown.

The focus of the first half of the second day was the Aegean, gold-glass and mosaics. Anastasios Antonaras began by discussing a remarkable Early Christian glass workshop at Thessaloniki, leading us through the glass and glassworking evidence. Of particular interest were the stem beakers, some of which had stamped inscriptions on their bases, and the different phases of kiln use.

Sylvia Fünfschilling followed with a detailed account of the glass excavated from the Byzantine palace at Ephesus, where there is evidence for glassblowing and the manufacture of tesserae. The recent acquisition of the Wilshere collection of Late Roman glass by the Ashmolean museum was then discussed by Susan Walker, who described how this is now allowing the opportunity for research into the origins and manufacture of this fascinating collection of objects.

Liz James then gave an account of Byzantine glass mosaics and the transition in the use from stone to glass tesserae following the Roman period, illustrated with images of some wonderful Italian wall and vault mosaics. Following on from this, Nadine Schibille led us through some analyses of glass mosaics, drawing attention to the evidence for the re-use of Roman material, and craft specialisation in the manufacture of various coloured and gold-leaf tesserae.

The afternoon session moved on to focus on the Middle East, which Daniel Keller began with an account of the glass finds and usage phases of the 5th- to 9th-century monastery of St. Aaron on Jabul Hārūn near Petra. Distribution patterns and chemical analysis of this glassware allowed it to be placed into a social and economic context, which provided evidence for a general cultural change between the different phases of use.

Yael Gorin-Rosen followed with a comprehensively illustrated presentation examining the typo-chronological changes in glass vessels characteristic of the Byzantine and Early Islamic periods. St John Simpson then provided an in-depth account of our current understanding of Sasanian glassware, its archaeological sequence and its production, again supported with some excellent images. The final presentation, by Mark Wypyski, discussed the results of the re-examination of the Early Islamic collection of glass from Nishapur and Samarra, and the potential to provenance this glass using trace-element analysis.

Mike Tite concluded by summarising some of the more notable outcomes of the conference. In particular, how coherent patterns of trade, production and use of glass will only really begin to come if we all work together,

and persist with our research and analysis. Overall, the event was a great success, providing an excellent mix of science and art history, which was thoroughly enjoyed by all. Thanks in particular to Justine Bayley, Caroline Jackson, Daniel Keller, Jennifer Price and St John Simpson for organising the event, and all of those who chaired the presentations.

James R Peake

(Ed. – Thank you also to those who presented a good selection of posters: Rose Broadley, Hanna Hamel, Daniel Keller, Mia Leljak, Katerina Mavromichali, Martine Newby, James Peake and Daniela Rosenow)

AFAV at Metz November 2011

The 26th meeting of AFAV (l'association française pour l'archéologie du verre) was held in late November at the Musée de la Cour d'Or in Metz. It's a wonderful 15th-century building, originally a granary, but with parts of the underground aqueduct that fed the Roman baths visible in the basement!



Musée de la Cour d'Or, Metz. © Justine Bayley

The lectures were held in one of the ground floor galleries with medieval sculptures all around. The meeting was well-attended with around 100 participants from all over western Europe. There were a total of 23 lectures as well as posters and a couple of films. The subjects ranged from Bronze Age beads to early 20th-century glass containers from First World War trenches, though with the majority of papers focussing on excavated Roman and early medieval glass assemblages, many of them from cemeteries. A few presentations dealt with glassmaking, but most of these were only interim reports. An exception was the description of a community project in the glassmaking region along the Franco-Belgian border where surveys of ruined buildings were complimented by photos and artefacts still in the hands of the last glassworkers' families. As usual, the papers will be published in the *Bulletin de l'AFAV*.



Glass Exhibits at Metz © Justine Bayley

A special exhibition 'Archéologie et usages du verre' had been put on to coincide with the meeting, so all those attending had the benefit of seeing items from the Museum's collections together with recent archaeological finds from the surrounding area. The catalogue concentrates on Roman and early medieval glass, but the galleries also contained some wonderful post-medieval and modern pieces.

Justine Bayley

'L'en-verre du décor: archéologie et usages du verre', Musée de La Cour d'Or, Metz Métropole, 2 rue du Haut Poirier, France, 18 November 2011–27 February 2012

The 26th international meeting of the association française pour l'archéologie du verre (AFAV), held at the Musée de La Cour d'Or in Metz on 18 and 19 November 2011, provided the occasion for our host museum to mount a fascinating exhibition surveying glass excavated and used in Lorraine over 3,000 years. The exhibition was conceived in conjunction with AFAV. The wide-ranging objects are drawn from the museum's own holdings, the Institut national de recherches archéologiques préventives (Inrap), the Service régional de l'archéologie (DRAC Lorraine) and the Service archéologique of Metz Métropole, but also include a few items from other French museums. The enthusiasm and expertise of local archaeologist Hubert Cabart was the driving force behind both the exhibition and the meeting. Several specialists who had worked on excavations represented in the exhibition spoke about the finds at the meeting, providing a superb opportunity for participants to hear papers about, discuss and see the excavated material within a single building.

Whilst the diversity of material excavated in recent years will fascinate the specialist, the exhibition is also designed to appeal to a much broader audience.

Displayed through two well-lit and inviting galleries, it opens with a film showing a studio glassmaker at work, a display explaining the basic materials and techniques of glass and a range of items illustrative of the diversity of objects represented in the exhibition.



Fragment of an enamelled drinking vessel. French 16th century. Excavated in the 'Espace Serpenoise', Metz, in 1984. Musée de La Cour d'Or, Metz Métropole, inv. 94.7.109; 'Archéologie & usages du verre', cat. 128. ©Suzanne Higgott

Around 250 items illustrate a wide range of object types and decorative techniques. They are broadly arranged by function. There are sections on glass jewellery from Bronze Age beads to Gallo-Roman bracelets; the inclusion of glassware in Gallo-Roman and Merovingian burials; the *Kuttrolf* from the Gallo-Roman period to the 17th century; and a great variety of medieval and Renaissance drinking vessels from excavations, the latter

incorporating some fine examples in Venetian style, including a few fragments with enamelled figurative decoration and French inscriptions. A small final section looks at window glass from Roman times to the early 20th century, glass in scientific and photographic equipment and the importance of glassmaking in Lorraine in the 19th and 20th centuries.

A lavishly illustrated book, 'Archéologie & usages du verre', accompanies the exhibition (Editions Serpenoise, 2011, 128 pp, 18€, ISBN: 978-2-87692-904-3). A number of the exhibits are also published in a new book by Hubert Cabart, 'La verrerie archéologique: Dieulouard et l'Est de la France aux XVIe et XVIIe siècles' (Presses Universitaires de Nancy, 2011, 20€, ISBN: 978-2-8143-0102-3). Scheduled events during the run of the exhibition (until the end of February 2012) include musical performances on glass instruments, glassmaking demonstrations and children's workshops.

Suzanne Higgott

ERRATUM

We apologise profusely for an editorial error in **Glass News 30**, in which Hazel Gardiner's article was incorrectly entitled 'The Effect of Historic Environmental Conditions on the Stained Glass of New College Chapel'. The article should have had the title '**The Investigation and Conservation of the Glass from Lacock Abbey**'.

An Unusual 17th-Century Glass Fragment from eBay

Colin and Sue Brain

cbrain@interalpha.co.uk

With the advent of the Portable Antiquities Scheme it is becoming more widely recognised that isolated finds can provide useful historical information. This seems to be particularly true for the interesting fragment pictured overleaf. It was purchased on eBay in March 2011, as part of a group of items, including an early clay pipe bowl, found 'in the lower reaches of the Thames Estuary over a period of years'. The fragment was described as 'The stem of a large roamer? style drinking vessel / glass (heavy)'; under the circumstances a good description. Subsequently the seller kindly clarified that it was found on the estuary coast between Faversham and Whitstable in an area where 'pottery and glass shard' finds are fairly common.

The fragment is 61mm high and made of a thick light yellow-green coloured glass. It appears to be part of a stem with a hollow 'roamer' section, decorated with

three prunts and a wavy vermicular collar below a merese and an unfinished hollow moulded knop. The knop fracture is consistent with excess glass being 'knocked off' whilst the stem was being gripped with round shears. My thanks go to Bill Gudenrath of Corning Glass Museum and Mark Taylor of Roman Glassmakers for their expert opinions on this point. It does not have a discernible pontil mark, which would be consistent with the glass having been discarded before transfer from the blowing iron. It is distorted as though discarded when still hot. On the flattened side there appears to be a set of shallow indentations which could be the impression of a prunt on another similar stem. The metal is uneven with many cords and small seed and gives every appearance of having been too viscous to be properly worked. Vestiges of a surface covering can be

seen in the picture; presumably a lime scale from prolonged immersion in 'hard' muddy water.



© Colin Brain

We are not aware of any parallel for this form of composite stem, but there are many separate parallels for the lower (roemer) section and the upper knop. Comparison with such finds suggests that the most likely date of manufacture, based on style, is the decade 1667-1677. The stem's thickness may reflect a desire by British glass sellers for thicker glasses as articulated in a 1672 letter to Venice from the glass seller John Greene.

A quick semi-quantitative X-ray fluorescence analysis was kindly carried out on the stem by English Heritage. The result suggests that the raw materials are similar to those of other glasses from the period 1660-77 but, as with the style, the combination appears not to have been documented before. Significant features are:

A low-level of alkali from purified plant ash (this form of alkali was more common for British crystal glass before 1675 when saltpetre became commercially viable);

A medium quantity of lime, similar to that in glass-production waste excavated near Aldgate (probably dating from the 1660s) and similar to that used later in Bohemian crystal, but about half the level of that in high-lime-low-alkali glasses (lime appears not to have been used for high-quality 17th-century British glassware after about 1677);

A low, but significant, level of lead oxide, similar to that used in glasses from The Netherlands, Stockholm and Poland from around 1670s onwards, but significantly lower than that previously found in British lead glasses;

A small amount of arsenic used as a refining agent (this use of arsenic is suggested by British documentary sources as early as 1668);

A medium-level of manganese, apparently used as a refining agent rather than for colouring / decolouring,

paralleling manganese use in the earliest lead glasses found on the site of Odaccio's glasshouse in Dublin thought to date from 1675/6 (given the amount of manganese in these glasses one would expect them to be purple - we are still trying to understand this so further discussion must wait until another time).

The colour of the glass is due to iron and a small amount of copper in the mix. Based on this analysis, temperature vs viscosity characteristics were estimated using a spreadsheet developed and verified by Mark Taylor. The estimated melting temperature of 1300°C is the highest documented for a glass of this period and is thought to be right on the limits of the glass furnace technology available before the 19th century. This supports the observation about the glass being too viscous to refine or work properly and may explain the use of fining agents. Normal practice seems to have been to add alkali to the batch until the viscosity was right, so there must have been a reason why this was not done in this case. It could be cost, but that does not appear very likely – using insufficient ingredients to make a viable product can never have been a good cost-cutting strategy! A more-likely possibility is that it was a deliberate attempt to reduce alkali in order to seek a more stable glass. That would be consistent with Robert Plot's [erroneous] analysis of the causes of glass crizzling in his 1677 'Natural History of Oxfordshire'.

The find site at the mouth of the Thames, coupled with the apparent 'hard water' surface deposit, suggest this stem was washed, or dredged, down the Thames. Had the glass been completed and subsequently broken it might have been thrown overboard from a ship, but it seems unlikely that a waster would have been transported in this way. The glass is not buoyant, so it is not likely to have been brought by sea currents from the Dutch coast. Since the Thames valley was home to the majority of glasshouses producing table glass in the 17th century, it seems likely it was made there. The closest glasshouse was probably at either Greenwich or Woolwich. The stem's survival means that it was not recycled into the pot; the fate of most glassmaking mistakes. This may imply that the glassmakers did not wish to continue this particular line of experiment.

Given the sparse evidence for glass produced in London before 1676 it is not possible to prove the origin of this piece. However, one can conjecture that this piece is a waster from an experimental glass batch produced around say 1670-5. The discussion here has hopefully showed that this conjecture is not obviously inconsistent with the find, or the little we know about glass technology and styles of the period. Of course this does not mean that this conjecture is correct, but it still helps to build a picture of the formative years of British flint glass.

The St Algar's Project

Ceri Lambdin

The St Algar's Project started in late 2009 when I met with the owner of St Algar's Farm, West Woodlands, south of Frome in Somerset, to look at the Roman pottery and other items that he had picked up since the 1960s from a nearby field, after ploughing. Due to his interest the site was briefly excavated in 1971 with a large, shallow trench, and although the site was subsequently scheduled it was not clear what the nature or period of Roman occupation at St Algar's consisted of, and no fieldwork had taken place since.

An assessment of the fieldwalking finds indicated occupation spanning the Roman period; the pottery included over 50 sherds of Samian ware and over 70 sherds of New Forest ware, along with 2nd- and 4th-century coins, a Polden Hill type brooch dating from AD75-120, and a stud from a 3rd- or 4th- century plate brooch. No report was produced for the 1971 excavation but brief updates published at the time confirm that similar material was recovered.

A platform was faintly visible in the field, but as the site was under permanent pasture the next logical step was geophysics. The results indicated the footprint of a winged corridor villa within the scheduled area, surrounded by three sections of 100m long boundary ditches. To the west of the villa complex the geophysics showed a 40m square boundary ditch, on the same alignment as that surrounding the villa, with a building within it.

In late August 2010, having produced a comprehensive geophysics report and having acquired a further licence, Robin Holley and I ran a small evaluation excavation, with assistance from members of Bath and Camerton Archaeological Society. The finds were typical of a villa site, with pottery and coins spanning the 1st to 4th centuries. It soon became clear, however, that there was something unusual about this site. The large number of glass finds (400+) along with 22 crucible sherds from 5 small evaluation trenches located within and outside the villa building, indicated potential Romano-British glass working at the site. Approximately 90% of the glass and crucible finds were excavated from one 3m x 3m trench located in front of the villa between the two wings.

Excavations in the summer of 2011, outside of the scheduled area also produced large quantities of glass fragments and 55 further crucible sherds. The vast majority of glass and crucible was recovered from a trench sited over the boundary ditch, along with vast quantities of other Roman material.

It is hoped that in 2012, excavations can take place within the scheduled area where geophysical hotspots indicate a glass working furnace could be located.

Thanks to a grant from the AHG the glass from the 2010 excavation was examined by Dr Rachel Tyson (see report below).

AHG Grant Report:

St Algar's Farm, Somerset: late Roman glass and evidence for glass working

Written by Rachel Tyson for Ceri Lambdin and Robin Holley

Four hundred and thirty-four fragments of glass were excavated from the 2010 evaluation trenches at St Algar's (see above for the background to the project). The assemblage included evidence for glass working and glass blowing, as well as a considerable number of small vessel fragments. Twenty-two ceramic fragments were confirmed by Wessex Archaeology to come from glass crucibles, in coarse fabrics that could not be closely dated. The Project Group is grateful to the AHG who provided a grant for specialist examination of the glass.

Glass waste

At least 87 fragments were identifiable as glass waste, in pale shades of green, yellow-green and blue-green (Fig. 1). These included eight layers of glass detached from crucibles. Molten waste included both amorphous lumps

and angular broken chunks. Misshapen lumps with rounded, rough or pitted surfaces were probably waste glass that had fallen into the furnace area. Broken chunks of glass may have come from layers inside the crucibles. None were particularly large, unlike those found at Basinghall Street in London where it is possible that some of the more sizeable chunks were from larger imported blocks of glass, or from the tank furnace excavated at the site (Shepherd and Wardle 2009, 34-6).

The most significant evidence that glass was blown as well as melted was provided by 5-6 moil ends, the cylinder of glass remaining after the vessel was detached from the blowpipe. All examples from St Algar's were short and quite fragmentary, none with the complete circumference present; some had iron staining from the blowpipe around the top. There was also at least one lid

moil fragment, from the wider discarded section of glass directly next to the cracked-off vessel rim. Its rim diameter was estimated at c.70mm, which would accord with the diameters of the many fragments of conical beakers from the site.



Figure 1: Examples of glass working waste from St Algar's ©Rachel Tyson

Glass blowing characteristically produces long drawn threads, formed when decoration or handles were added to vessels, often showing tool marks. Typical examples were found at St Algar's in pale green shades. Other threads were formed when bits of dirt were hooked out of the melting pot. Thin threads of glass would have been formed to test the viscosity of the glass; and one such example survived. A small number of fragments may have been wasters (imperfect products that have been discarded) or possibly cullet that was partially melted.

This evidence demonstrates that glass was being melted and blown at St Algar's; however, there is nothing to suggest that the glass was being made from its raw ingredients on site. The pale colours suggest a late Roman date.

Glass products

Up to 342 fragments of vessel glass were excavated from the same contexts (Fig. 2). Most of the vessel glass was thin-walled and pale blue-green, pale yellow-green or other pale greenish shades in colour, with a few colourless, one yellow-brown and one olive green fragment. The vessel forms that can be identified point to a late Roman, 4th-century date.

The most common vessel fragments were from conical beakers with curved rims with cracked-off edges, gently tapering body walls and small slightly pushed-in bases. Some rim edges appear to have been smoothed, but others remained rough. Many had abraded horizontal bands or lines, often very light and faint, just below the curved rim, and/or further down the body. They included base fragments of at least four beakers in pale blue-green, four in pale yellow-green, and one in greenish-

colourless glass. Similar but more widely everted cracked-off rim fragments with horizontal abraded lines below may come from related cups or bowls. These were the most common vessel types in Britain in the 4th century (Price and Cottam 1998, 117-19, 121-3; Price 2000, 5).



Figure 2: Selection of glass vessel fragments from St Algar's ©Rachel Tyson

At least 12 fragments of indented vessels, a variation of these 4th-century conical beakers, were identified. The majority were S-curved body fragments of greenish-colourless or pale blue-green glass, with one fragment in colourless glass. It is likely that the rims would have been similar to other conical beakers. Two such examples, one covered by trailing, were found in 4th-century contexts at Lankhills, Winchester (Price 2000, 8-10, fig. 4.4).

Other 4th-century fragments included a funnel mouth of bubbly greenish-colourless glass with a thick trail applied around it below the rim, three fragments with optic-blown ribbing, and three with thin applied trails; others had wider trails that merge with the body wall. On one of these the trail curves round, similar to the looped trails seen in late Roman conical beakers from Lankhills, Winchester and Leicester (Price 2000, 9, fig. 4.6 & 9). A small greenish-colourless fragment shows free-hand incised decoration. This type of decoration can be dated to the 4th century, with similarly incised lines outlining the hunter and animals on an almost complete shallow bowl with a hunting scene from Banwell, Wint Hill, Somerset (Price and Cottam 1998, 124-5, fig. 51a).

While the majority of the glass pointed to a late 4th-century date for the assemblage, a few fragments were identified from earlier vessel types. A pale yellow-green body spout probably from a small jug dating to the later 2nd or 3rd century may have been used as a baby's feeding bottle, or possibly for pouring oil. Two fragments of a greenish-colourless glass with thin applied horizontal trails and an angular body turn suggest a discoid jug, which may be earlier in date,

although trails are used sparingly on the earlier quoted examples (Price and Cottam 1998, 159-61).



Figure 3: Three of the glass gaming counters from St Algar's ©Rachel Tyson

Four gaming counters were excavated (Fig. 3), including two pale green and one unusually coloured opaque blue-green example. A decorated opaque white counter with a central red dot and four green dots surrounding it embedded in the upper surface, is similar to a counter in the British Museum originally from Colchester (BM 1870,0402.349). A single small globular double-segmented bead of blue/green glass is a type most common in the late 3rd and 4th centuries. Only 16 flat fragments of flat window or bottle glass were found.

Conclusions

The glass crucible fragments and the glass waste all provide irrefutable evidence that glass was being melted and blown at St Algar's. No evidence has yet been found for a furnace structure *in situ*. It was the usual practice in Roman Britain to either reheat blocks of glass imported from the Mediterranean, or to recycle broken fragments of window and vessel glass (Shepherd and Wardle 2009, 9-10; Price 2002). This was the case in Britain, possibly with the exception of Coppergate in York (Price 2002, 85-9). Small chunks of melted glass were amongst the glassworking waste at St Algar's, but it cannot be confirmed whether these are from broken layers from inside crucibles used at the site, or from larger imported blocks. It is equally uncertain which of the glass fragments represent glass products that were being made at St Algar's, and which may be broken vessels collected from elsewhere for remelting. The conical beakers are perhaps the most likely to have been made on site given that they are the most numerous; it cannot be assumed that the glass was made using broken vessels anyway.

The glass products suggest that the glass working must date to the 4th century or later, and the molten fragments indicate that pale shades of blue-green, green or yellow-green glass were being worked, also typical of late Roman glass. Late Roman HIMT (high iron, manganese and titanium oxide) glass is characteristically yellow-green in colour, and chemical analysis of samples of molten waste from St Algar's could suggest whether the glass found here is of that type, and whether it is more likely to have come from imported blocks or remelted cullet.

The extent of glass blowing evidence identified so far in Britain is concentrated around military and urban sites, with none in the south-west; the nearest published sites are Caerleon in south Wales, and Silchester in Berkshire (Price 1998; Price 2002, 86, fig. 5). Closer to St Algar's, Roman glass working waste was discovered within a hearth area at the Lower Common Allotments, Bath in 1985 (Davenport and Lewcun n.d., period 3.4). The finds included strongly coloured glass in cobalt blue, rich green, opaque red and turquoise, suggesting an earlier Roman date. However, there was no conclusive evidence that the glass was being blown.

As well as beginning to fill the lack of Roman glass blowing sites in the south-west, St Algar's is the first identifiable glass working site in Roman Britain that is rural, contributing much to the understanding of the organisation of the Roman glass industry. Price has suggested that the previous distribution pattern was unrepresentative and that it 'is possible that much of the late Roman glass production was rurally based' (Price 2000, 22), and the St Algar's evidence supports this assertion. The change in location may also be accompanied by a change in the compositional type of glass used, which chemical analysis of the St Algar's glass might reveal.

A full version of the 2010 glass report is available from Rachel Tyson (rachel@glass-vessels.co.uk) or Ceri Lambdin (cerilambdin@hotmail.co.uk). Further publication of the glass is planned as the project progresses.

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AHG Grant Report: Glasswares for Drinking and the Construction of Social Identity in the 17th-century Dutch Republic

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During the 17th century, the Netherlands underwent a 'Golden Age'. The newly formed Dutch Republic, free from the oppression of Catholic Spain, flourished as trade, exploration and industry led to rapid developments in artistic, philosophical and scientific endeavours. The subsequent explosion in wealth and the increase in fortunes are visible particularly in the increased production and consumption of material goods. Moreover, the establishment of relative tolerance for religious and ethnic diversity, the development of the middle-classes, and the dawning of a nascent 'Dutch' identity, all led to a breakdown of conventional social structures and the signalling of new identities through this material culture.

In relation to glass, and particularly vessel glass, the material culture of the century underwent a series of very rapid material and stylistic changes. While the long established 'forest' glasshouses were still producing classic green-tinted utilitarian drinking wares, their products, vessels like *roemers*, became more complex in their design. Soda glass too began to be used for every day beer beakers, and these also grew larger in size and more elaborate in decoration. The century also saw the establishment of *façon de Venise* glasshouses across Europe, producing high quality wine goblets in delicate forms, as well as the large scale manufacture of English lead glasses that eventually put the former out of business.

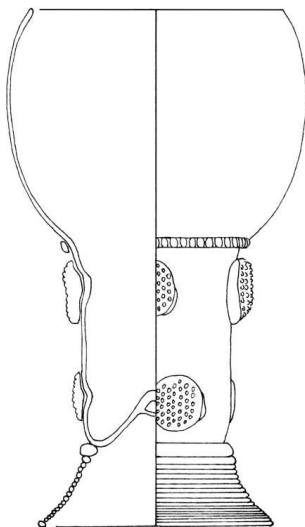


Fig. 1. Roemer from Bruintje (Hoorn) © Claire Finn

For the people of the newly formed 17th-century Dutch Republic, there was a flood of drinking products now available on the market, and choices had to be made by those buying them. My research, as part of a PhD, is investigating how social and personal identity during this effervescent time was displayed and communicated through the drinking glasses related to the consumption of alcohol. As well as charting change in the use of different types of drinking glass over the century, this study is also attempting to identify different patterns of use across the country, and if trends within or between cities and provinces can be seen.

As part of an ongoing PhD research project, a grant from the AHG funded a data-gathering trip to the four Dutch cities of Groningen, Maastricht, Hoorn and Arnhem, to examine excavated but unpublished glassware discarded in domestic household cesspits from the 17th century. These cities were chosen to give a geographic spread across the country, and cesspit assemblages chosen to represent a cross-section of wealth.



Fig. 2. Winged snake-stem goblet from Weverstraat (Arnhem) © Claire Finn

The most immediately noticeable factor is that all the contexts, even those belonging to the poorest households, contained at least some form of glassware for drinking, even if ceramics were also present. Some types of locally produced glazed ceramic would certainly have been cheaper to purchase than glass, and clearly the use of glass for drinking vessels went beyond

the practical. Secondly, very few glasses were plain. The majority, even of the more simple glass forms such as beer beakers were either mould-blown decorative forms such as the *knobbelbeker*, *ribbelbeker* or *wafelbeker* or contained other decorative elements such as colouration, enamel painting, etching, 'icing', gilding or applied prunts. *Façon de venise* goblets were rarer but surprisingly, were still found in the cesspit refuse of otherwise rather poorly furnished households. It seems that owning at least one, more expensive, goblet style glass was an important aspect of material identity during the 17th century. This might be due to the decorative appearance of such items for display, or even the implication that the owners might be able to afford the prohibitively expensive wine that was consumed from such vessels.

Although similar glass forms are being identified across most of the assemblages, wealth and status are fairly

easily recognised though significant variations in the quality and quantity of those forms. The location of the household seems to make a difference in their use of material; the coastal city of Hoorn which lies in the richest province of Holland seemed to have the greatest variety and quality of vessel types, whereas the eastern city of Arnhem displayed a much lower ratio of glass to ceramics. Other more overt displays of personal identity can be seen through a small but significant number of glasses engraved with text and heraldic symbols.

This research is ongoing, and it is hoped that the collection of a greater dataset over the next two years, through the investigation of more assemblages and cities, will confirm these patterns and help shed light on further aspects of alcohol consumption in the Golden Age.

AHG Grant Report: Opaque yellow glass production in Late Antiquity

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The recent AHG conference, 'Neighbours and Successors of Rome', held in York in May 2011, provided me with the opportunity to present the analyses of a small assemblage of 8th-century glassworking waste from the Tarbat monastery excavations (Portmahomack, Scotland). Within this assemblage, two opaque yellow glass driblets and the residue of opaque yellow glass from a 'heating tray' were analysed using an energy-dispersive X-ray analyser in a scanning electron microscope (SEM-EDXA). This has provided further insights into the production of opaque yellow glass in Scotland during the early medieval period.

Prior to the fourth century, opaque yellow glass production was largely based upon the use of antimony oxides, and the lead-tin yellow pigment identified in the Tarbat glass is characteristically early medieval. It appears to have been made using a technique which is closely paralleled in Merovingian Schleithem, Switzerland (Heck *et al.* 2003). Here, lead-tin yellow pigment was prepared by heating a mixture of the oxides of lead and tin, which reacted with the crucible fabric to form crystals of lead-tin oxide in a lead-silica glass. This was then crushed and mixed with a pre-existing soda-lime-silica glass to form the yellow glass used to make beads.

Our interpretation of the results differs considerably from that previously put forward for glass industrial debris from Dunmisk, Ireland, where it has been suggested that yellow glass was being made directly from its raw materials, including soda, and that the craft activity is a continuation of a specifically Celtic technological tradition (Henderson and Ivens 1992). This difference may relate simply to the character and positions of the sites, but the notable similarities of the opaque yellows from Dunmisk and Tarbat, and that from Schleithem in Switzerland (Heck *et al.* 2003), strongly suggest a common technology.

I am most grateful to the AHG for providing a grant with which to attend the conference. Thanks are also due to Ian Freestone who assisted with the interpretation of the results, and Ewan Campbell who made the glass available for analysis.

References

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Henderson, J and Ivens, R, 1992 Dunmisk and Glass-Making in Early Christian Ireland, *Antiquity* **66**, 52-6

QUERIES

Mark Quinlan writes: I am researching a beautiful cut glass pitcher engraved by my great great grandfather, Hieronimus Keller, which was displayed at the Edinburgh Exhibition of 1886 and later at the Glasgow Exhibition, possibly in 1888. The engraving is titled 'St. George and the Dragon'. The pitcher is still in our family's possession here in Pittsburgh, PA, USA. I was referred to you by the National Library of Scotland, and would be very grateful for any assistance or guidance you can provide in verifying the history of the display of the pitcher. The dimensions are 7.75 inches in height, with a base diameter of 4.75 inches and a top diameter of 3.50 inches.

If anyone has any information please email mdquinlan@verizon.net



Evan Fishman from the USA is researching a possible ancestor, surname MANDELSTEIN, who was successfully involved in the glassmaking industry in the late 19th, early 20th centuries. If anyone can help his research please contact him at ebf2001@comcast.net

Karl-Heinz Cegla from Norway is trying to find out more about the glassmaker family Brun (also called Brunn, Bronne, Braun). They travelled around in Europe. In 1740 **Nicolaus Brun** (Brunn/Bronne) and his family worked at a glassfactory in Ilmenau (Germany). Brun (Norwegian, French) = Brown (English) = Braun (German). Please respond with any information to: <mailto:karl-heinz.cegla@ntebb.no>

WEBSITE UPDATE

www.yorkglazierstrust.org

The York Glaziers Trust, who gave AHG members a wonderful tour of their workshop at the May 2011 meeting, has a new website. Not only does this provide information about the work of the Trust, details of past projects and a range of information resources, but visitors will be able to follow the progress of the HLF-funded conservation of York Minster's Great East Window, John Thornton's stained glass 'Apocalypse' of 1405-8. The 'Panel of the Month' feature will reveal the extraordinary quality of this exceptional window.

www.georgianglassmakers.co.uk

Mark Taylor and David Hill, well-known as 'the Roman Glassmakers', have a new website as 'the Georgian Glassmakers', featuring 17th- and 18th-century drinking vessels and bottles, and including a discussion on Lead Oxide as an Ingredient in Glass. The AHG will be organising a study day at their workshop near Andover later in the year.

Byzantine mosaic database

www.sussex.ac.uk/byzantine/mosaic/

The International Network of The Composition of Byzantine Glass Mosaic Tesserae sponsored by the Leverhulme Trust 2007-2010 and directed by Professor Liz James at University of Sussex, has now published online databases of sites and sources of Byzantine mosaic glass tesserae.

There are three databases in total, that can be searched or browsed for information:

'**Structures**' records buildings (4th-15th century) where there is archaeological evidence (finds) of glass wall mosaics.

'**Texts**' contains records of primary Byzantine sources which mention mosaics.

'**References**' is a bibliographical database of modern scientific publications about glass mosaics.

All three are in a state of continuous updating and we therefore invite contributions, corrections and suggestions for improvement to keep developing the databases further. Please contact Liz James (e.james@sussex.ac.uk) or Bente Bjornholt (b.k.bjornholt@sussex.ac.uk)

NEW PUBLICATIONS

Late Byzantine Mineral Soda High Alumina Glasses from Asia Minor: A New Primary Glass Production Group

Nadine Schibille, Research Laboratory for Archaeology and the History of Art, University of Oxford

Open access article published online April 19 2011; PLoS One.2011;6(4):e18970

www.ncbi.nlm.nih.gov/pmc/articles/PMC3079742/

Thirty-one glass samples from excavations at Pergamon (Turkey) dating from the 4th to 14th centuries were analysed by electron microprobe analysis and laser ablation-inductively coupled plasma-mass spectrometry. The data revealed three different glass production technologies, one of which had not previously been recognised in the glass making traditions of the Mediterranean. The late antique and early medieval fragments confirmed current models of glass production and distribution in the eastern Mediterranean. However the majority of the 8th- to 14th-century glasses indicated the existence of a late Byzantine glass type characterised by high alumina levels. The trace element patterns and elevated boron and lithium concentrations also suggest these glasses were produced with a mineral soda different to the Egyptian natron from the Wadi Natrun (found in the earlier glasses), suggesting a possible regional Byzantine primary glass production in Asia Minor.

Glass recipes of the Renaissance. Transcription of an anonymous Venetian manuscript

Cesare Moretti and Tullio Toninato
English translation with additional notes by David C Watts and Cesare Moretti

2011 London: Watts publishing

ISBN 978-0-9562116-1-3

£15 plus £3.50 P&P from David Watts, 27 Raydean Road, Barnet EN5 1AN; dcw@daroben.co.uk

A review of this mid 16th-century Venetian glassmaking recipe book will appear in the next issue of *Glass News*

Corpus des Signatures et Marques sur Verres Antiques, Volume 3

Edited by D. Foy and M-D. Nenna

Association Francaise pour l'Archeologie du Verre 2011
ISBN 2-9505942-5-5

45€ plus shipping

The third volume in the series has information on mould-blown and impressed designs on bottle and flask bases in Britain by Jenny Price, as well as updates on the examples in the Netherlands, France, Germany, Switzerland, Croatia, Spain, Portugal, Greece, Turkey and the Black Sea and Near East regions.

Volumes 1 and 2 were published in 2006. See the AFAV website www.afaverre.fr for further details, and how to order.

Catalogue of Glass and Limoges Painted Enamels

Suzanne Higgott

with contributions from Isabelle Biron, Susan La Niece, Juanita Navarro and Stefan Röhrs

The Wallace Collection 2011 (see inserted flyer)

400 pages, 305 x 245 mm

Illustrations: 440 colour illus.

Jacketed Hardback

ISBN: 9780900785856

Price £150 The Wallace Collection is offering a £25 discount to AHG members until the end of February 2012. Contact matthew.goody@thewallacecollection.org to purchase this essential reference work for £125

These important holdings are published in full for the first time. The catalogue discusses some sixty exquisite pieces of mostly Venetian or *façon de venise* glassware, including vessels in mould-blown, enamelled and gilt and *vetro a filigrana* glass. Highlights include a *calcedonio* goblet, a trick-glass *tazza* and a chalice-shaped goblet enamelled with the Crucifixion. The Islamic glass mosque lamp, an early 17th-century Bohemian beaker (*humpen*), evocatively enamelled with scenes of merrymaking and intended for welcoming guests, and an exquisite goblet from a magnificent dressing-table service made in Augsburg in the later 18th century provide fascinating glimpses into very different cultures. Thirty painted enamels are also discussed in full.

BOOK REVIEW

Les Verres Antiques d'Arles: la collection du musée départemental d'Arles antique

Danièle Foy, preface Alain Charron

2010 Editions Errance

French

528 pages

ISBN 978-287772-417-3

65€

Situated near the mouth of the Rhône and at the most southerly crossing of the river, Arles was an important hub for the transfer and trading of goods during the Roman period. Selecting 1084 items from the thousands in the museum's collection Danièle Foy tells the story of glass use in the city from the early Empire to the 6th century AD. Nearly all the pieces are illustrated and photographed and the catalogue entries are clear and succinct. The catalogue is organised by vessel type, with a further two chapters dedicated to late antique glass. There are shorter sections on architectural glass, glass objects and production waste. Short introductions to each chapter provide a useful narrative with direct references to individual items.

But this volume is more than simply a well-illustrated work of reference. Danièle Foy is one of the most knowledgeable and energetic contributors to the study of ancient glass in France, and this volume fits well with the substantial body of published material concerning the glass of south-eastern France that she and other scholars have produced over the last 20 years. The author takes the opportunity to include in the introduction a summary of many aspects of current Roman glass studies, and provides a useful update on topics such as glass composition, the location of primary production sites and the distribution and chronology of secondary furnaces in France.

The introductory chapters also describe how the current collection came together, with particular emphasis on the activities of the 18th- and 19th-century antiquarians of Arles – a familiar cast of aristocrats, colonels and clergymen. A considerable number of important vessels from Arles have found their way into collections elsewhere (such as the well known purple and opaque white jar in the British Museum) and these are noted, though not catalogued.

Despite these absences, there are many interesting items in the current museum collection presented here. These include the first core formed vessels to be published from the city, some of which appear to come from closely dated contexts. Foy shows a particular interest in the origins of the Arlesian glass and comments frequently on possible sources of manufacture, though always with prudent caution. Most of the vessels from the mid 1st century AD onwards are attributed to workshops in Italy and the western Mediterranean but there is a small but significant number of vessels that appear to have links with regions further north, such as a group of fragments with snake-thread decoration. Although three or four production areas have been identified in Arles itself, all from the 4th century AD or later, the author rarely and only tentatively makes any direct links between workshop and product.

Even after Danièle Foy's impressive detective work in the archives, much of the museum's glass cannot be linked

back to particular contexts within the city. Nevertheless there are clearly several sites that have produced individually interesting assemblages, whether burials, urban excavations or under water investigations. Unfortunately in a catalogue organised by vessel type, the chapter divisions dictate that glass from these groups is dispersed. But where assemblages can be brought together by both form and site, this is done – most successfully where specific burial groups contain similar flasks and unguent bottles. Foy has scrupulously cross referenced vessels that come from the same contexts, and there is a useful concordance of site codes and excavation locations in the opening chapter, though a little more information about findspots would be useful. This is particularly applicable in the case of the assemblage of 54 3rd-century vessels from a drain deposit in the cryptoporticus beneath the forum.

Although individual sites are not discussed in detail, one of the advantages of this collection for glass specialists lies in the unity of provenance of its contents. Significantly, every item in the volume comes from Arles itself or its immediate hinterland. The author states early on her wish to illustrate all the forms in the collection, and to represent the relative popularity of these types by the numbers in which they are included in the catalogue. The end result is a volume that gives a very clear impression of over a thousand years of glass consumption in the city. At 65 euros this is not a cheap investment, but for any scholar of Roman glass in France it is essential and stimulating reading.

Sally Cottam

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for *Glass News* 32

by
1st June 2012

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