

Glass News

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The Lycurgus cup, during a viewing as part of the recent conference at the British Museum (see page 4)

AHG AUTUMN STUDY DAY 2010

Glass in Art and Literature

Thursday 21 October 2010

The Wallace Collection, Hertford House,
Manchester Square, London W1U 3BN

The day will start at 10 am with registration and coffee and closes at 4.45pm. Lunch is from 12.30pm to 2pm (lunch is not provided). The AHG AGM, for members only, will be during the lunch break, at 1.30pm. Further details will be provided on the AHG website.

Some fascinating subjects are on the agenda for this autumn's study day:

- Marianne Stern - Terminologies for glass, glassmaking and glassworkers in ancient Greek literature
- Denise Allen and Tim Leary - '*Although the winter does not pass through me, nevertheless the sun sparkles within me*': Roman glass and literature
- Anna Contadini - Title to be confirmed: glass in Islamic art and literature
- Martine Newby - Table manners and the use of glass vessels as depicted in pictures ancient to modern
- Christopher Sheppard - *Fantasies in Glass: Depictions of Venetian and Façon de Venise Glass in Dutch still-lives*
- Colin and Sue Brain - 17th-century glass and glassmaking reflected in the writing of Fellows of the Royal Society
- Peter Lole – Title to be confirmed: glass in 18th-century literature

If you would like to attend, please send your full contact details and a cheque for **£30** (non-members), **£20** (AHG members), or **£10** (students – proof required) payable to *The Association for the History of Glass Ltd* to:

Sandra Davison (Hon. Sec.).

68 East Street, Thame, Oxon OX9 3JS

Email: sandbill@gotadsl.co.uk

Receipts may be sent by email or with an SAE. Participants from outside the UK may pay upon arrival at the venue in UK sterling. Refunds will not be given for cancellations within two weeks of the meeting.



A still-life fresco from the House of Julia Felix, Pompeii

CONFERENCES AND EXHIBITIONS

The Bomford Collection of Ancient Glass

Saturday 30th October 2010
10.00am – 3.00pm
Clifton Cathedral

The Friends of Bristol Museums, Galleries and Archives have organised a study day on the Bomford Collection of ancient glass in Bristol Museum and Art Gallery.

The Bomford Collection at Bristol City Museum and Art gallery comprises ancient glass vessels and other glass objects assembled by James Bomford between 1960 and 1978. The collection demonstrates the early history of glass, its evolution and technology. It contains many forms made in the Roman world between about 1500 BC and 500 AD. Some of the early pieces are very rare, whilst others display great technical expertise and beauty. Several items have been added recently under the auspices of The Bomford Trust, which was set up to provide funds for further purchases.

The morning session takes place in the Apostle Room, Clifton Cathedral, when our two guest speakers will provide insight into this important collection, which at present is not on display. In the afternoon there is the opportunity to see some of the rare and beautiful objects, brought out of store for this event, in the City Museum & Art Gallery close by.

The speakers are:

- Nicholas Thomas, former Director of Bristol City Museum and trustee of The Bomford Trust
- Jennifer Price, Emeritus Professor in the Department of Archaeology at Durham University and trustee of The Bomford Trust

Cost: £25 per head *includes refreshments during the morning session*

For further details please contact:

Mary Bailey, 22 Carnarvon Road, Bristol BS6 7DT
Email: bailey.m@btinternet.com Tel: 0117 942 1944

ICON Stained Glass Conference

15th September 2010
Cambridge

The Icon Stained Glass Group is pleased to announce that the 2010 conference sponsored by Chapel Studio; "Colleges, parishes and villas, stained glass conservation in the South of England" will take place at Cripps Auditorium Magdalene College, Cambridge, CB3 0AG.

Confirmed speakers include art historians Carola Hicks (author of *The Kings Glass*) and Martin Harrison (on Victorian stained glass), and conservators Prof. Joost Caen (Belgium), Prof. Sebastian Strobl (Germany) and Elise Learner (France).

Lunch is included in the delegate fee of £78 (Icon members and students) or £88 (non members). Please contact Peter Campling for a booking form on 01603 891505 or email peter@mcleadglaziers.co.uk.

Scotland's Glass: 400 Years of Glassmaking

As mentioned in the previous issue of GN, a series of events are taking place throughout the year to celebrate Scotland's glassmaking history and collections. This includes:

- An exhibition at the Museum of Edinburgh with a special display of glass from Lauriston Castle and a series of glass lectures through the summer months
- *Scottish Glass: A Celebration* at Aberdeen Art Gallery until 31 October 2010
- An exhibition of some of the finest Scottish glass in Kelvingrove Art Gallery and Museum plus guided tours of the glass collections at Kelvingrove and the Resource Centre in Nitshill
- A conference at Edinburgh College of Art 1-4 October 2010 including lectures by eminent speakers, an exhibition by current members of the college, and demonstrations of glassmaking

For further details of these and other events visit the website: www.scotlandsglass400.co.uk.

To accompany these events, there is a 20 page *Directory Booklet*, available free from the website. It includes details on glass-related buildings, sites and museums and information on virtually every glassmaker working in Scotland. A book *Scotland's Glass: 400 years of Glassmaking* by Shiona Airlie and Brian J R Blench, is also available from www.cortex-design.co.uk for £14.99.

Association Francaise pour l'Archeologie du Verre (AFAV) Metz 2011

18th-19th November
Metz, Lorraine

At the 26th annual meeting of the AFAV, participants from France, Belgium, Germany, Switzerland and Luxemburg, including archaeologists, researchers and conservators, will exchange data and ideas relating to the history of glass. The aim is to compare the results of research on both sides of the borders of Belgium, Luxembourg, Germany, Switzerland and France.

For more information see www.afaverre.fr

Society of Glass Technology Annual Meeting 2010

The Society of Glass Technology's Annual meeting will be held on 8-10 September 2010 at Murray Edwards College, Cambridge University. The meeting incorporates the New Research Forum on Glass, History and Heritage of Glass, Science and Technology Sessions and Workshops.

The History and Heritage day will run from 10am until 6pm, and features:

- Dedo von Kerksenbrock-Krosigk: The Glass Collection at Düsseldorf
- Colin Brain: The Evidence for the Early Development of British Flint Glass
- Anna Marie Roos: A Speculum of Chymical Practice: Isaac Newton, Martin Lister (1639–1712), and the Making of Telescopic Mirrors
- Stephen Pollock Hill: A Possible Solution to The Thousand Year Old Mystery of The Portland Vase
- Márcia Vilarigues: Stained glass from the Convent of Christ in Tomar, Portugal: history and characterization
- Martina Bertini: Chemical analysis of Iron Age Glass Beads
- Robin Murdoch: History of Glassmaking in Scotland
- Ian Hankey: Looking to the past for a sustainable future. The development of small studio glass furnaces
- Ruth Cooke, Jonathan Cooke and David Martlew: The Savile Chapel window at Thornhill: project update

There is also a poster session over lunch. See www.societyofglasstechnology.org.uk for further details.

Verre et Histoire Forthcoming meetings

This association in France provides a forum for different disciplines interested in the history of glass to exchange research and ideas and develop a better 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.

There is also a series of useful bibliographies on the website, themed by period.

Tiffany Treasures: Favrite Glass from Special Collections

Until 31st October 2010
The Corning Museum of Glass, New York

This exhibition showcases nearly 60 hand-wrought pieces designed by Tiffany made at his glasshouse in Corona, NY, between 1895 and 1920.

Neighbours and Heirs of Rome Thursday 19th and Friday 20th May 2011 The Kings Manor, York, UK

AHG are planning an exciting two-day conference for 2011, as well as the usual programme of study days.

Offers of papers are welcome. Please send a title and short abstract to Sandra Davison (Hon Secretary) by email (sandbill@gotadsl.co.uk) by 31st January 2011.

Further details, including the full programme, will be included in the next issue of Glass News and on the website in due course.

AHG Spring Meeting 2011 Thursday 24th March

For this meeting there will be a visit to Nazeing Glassworks, Herts (visit the website at <http://www.nazeing-glass.com>). The day will cost £39.50 and includes a buffet lunch. For more details contact: Sandra Davison (Hon. Sec.), 68 East Street, Thame, Oxon OX9 3JS
Email: sandbill@gotadsl.co.uk

AHG Grants

Grants are available from the Association for the History of Glass, for educational or research activities consistent with the Association's charitable aims. These could include, for example, attendance at a conference to present a lecture or poster, a study visit, fieldwork, or publication of scholarly works.

There are no restrictions on who may apply or on the topics of applications, which will be judged on merit. Multiple applications in different years will be considered with individual awards up to £500. See also the AHG website for details (www.historyofglass.org.uk).

An application form may be downloaded from the website, or obtained from:

Sandy Davison, AHG Hon Secretary,
68 East Street, Thame,
Oxfordshire OX9 3JS.
Email: sandbill@gotadsl.co.uk

OBITUARY

Dr John L Gower 1950-2010

It is with regret that we announce the death in March of Dr. John L. Gower, who was a long standing member of our glass association. John was awarded a Ph.D. in Chemistry from the University of Wales and his main interests were the Romano-British period, as evidenced by his membership of the Roman Finds Group and the Roman Pottery Studies Group.

On behalf of the AHG we extend our sympathies to his widow, Mrs. Marian Gower.

Meeting reviews

New Light on Old Glass: Byzantine Glass and Mosaics 27-29 May 2010 British Museum

This very enjoyable and well attended conference was spread over three days although I was only able to attend on the Friday and Saturday. The conference was organised by Chris Entwistle, Curator of the Late Roman and Byzantine Collections at the British

Museum, and Liz James, Director of the Leverhulme International Network for the Composition of Byzantine Glass Mosaic Tesserae (University of Sussex).

There was an international flavour, with about 20 presentations including some excellent overview papers, for example by Cristina Boschetti on *Glass tesserae across the ages* and Ian Freestone on *The composition, production and trade of glass in Late Antiquity*. A number of speakers discussed particular pieces in depth, such as Jaś Elsner on *The Lycurgus Cup* and Irina Andreescu-Treadgold on *The Christ head at the Metropolitan Museum and other mosaic fakes in museums*. Other speakers focussed on finds from particular sites, including Fatma Marii who spoke on *Glass tesserae from the Petra Church*.

During breaks in the proceedings, Chris Entwistle hosted group viewings of the Lycurgus cup (see photos on page 1 and below). The amazing workmanship could be appreciated all the more because of the preceding lively debate about how this object was made and functioned.



An appreciative crowd around the Lycurgus cup

Glass for vessels, glass for windows: medieval glass 1066-1550

23rd March 2010
The Wallace Collection

The AHG spring study day was also a great success. The mixture of scientific, typological and art historical papers ensured good attendance and lively discussions throughout the day. The presentations were entertaining and clear, which was essential given the diverse disciplines represented in the audience. Speakers included Rachel Tyson's overview of *Glass vessels and medieval society*, Caroline Jackson on *How medieval glass was made* and Anna Eavis on *Making stained glass windows in the medieval period*.

The full programme and abstracts can be found on the AHG website www.historyofglass.org.uk

Witch bottles

Sandy Davison

In Glass News 21 (January 2007) page 12, I wrote a short article on *Rituals Connected with Broken Glass*. Since that time I have become aware of other uses of broken glass connected with historic buildings.

During restoration of the marble floor in the chapel at The Vyne in Hampshire, broken glass was found between the timbers supporting the floor. This is thought to have been placed there as a deterrent to rats. At Chastleton House in Gloucester a hoard of several incomplete broken green glass wine bottles and a Bellarmine jar was found buried at the bottom of a basement staircase leading up into the house. I restored these items and on a recent visit to the house was discussing them with the house steward. She informed me that many witch marks had been found throughout the house including those carved into window sills; and that the current thinking about the glass/ceramic hoard was that they were witch bottles. The origins of the witch bottle tradition have been dated at least to the 1500s and it was prevalent in Elizabethan England, especially in Anglia.

A traditional witch bottle was a small blue or green glass flask, about 70 mm high. There were also larger and rounder witch bottles, up to 230mm high, known as Greybeards, Bellarmine jugs, Bellarmines, or Bartmanns. Bellarmines were made of brown or grey salt-glazed stoneware. They were named after a Catholic Inquisitor, Cardinal Roberto Bellarmino (1542-1621), who persecuted Protestants. Bellarmino was involved in the trial of Giordano Bruno (1548-1600), the Italian philosopher, mathematician and astronomer, who was burned at the stake after being found guilty of heresy. Bellarmine bottles were embossed with a representation of Robert Bellarmine's bearded face, thought to ward off ill-will. The witch bottle was meant to protect against evil spirits and counteract spells cast by witches.

The bottle was prepared by placing inside the victim's urine, hair or nail clippings. In recent years, the witch bottle has taken on a lighter tone, filled with rosemary, needles and pins, and red wine. It is believed that, after being buried, the bottle captures evil, which is impaled on the pins and needles, drowned by the wine, and sent away

by the rosemary. Sometimes seawater or earth is used instead. Another variation is within the disposal of the bottle; some witch bottles were thrown into a fire and when they exploded, the spell was broken or the witch supposedly killed.

Historically and currently, the bottle is placed in an inconspicuous spot in the house: at the farthest corner of the property, beneath the house hearth or fireplace, under the floor, plastered inside walls. The witch bottle was believed to be active as long as the bottle remained hidden and unbroken so people went to a lot of trouble to hide their witch bottles.

Other devices to prevent witches from entering buildings were based on the superstition that witches were compelled to count anything in their path, such as broom bristles, piles of stones, broken glass and ceramics etc. In the eighteenth century hollow glass 'walking sticks' filled with tiny beads were sometimes hung above entrances.

- Maple, Eric. *The Dark World of Witches*. New York: A.S. Barnes & Co., 1962
- Pennick, Nigel. *Secrets of East Anglican Magic*. London: Robert Hale, 199
- Semmens, Jason. "The Usage of Witch-Bottles and Apotropaic Charms in Cornwall" *Old Cornwall* 12, No. 6 (2000) pp. 25–30

Some of this information comes from wikipedia at: http://en.wikipedia.org/wiki/Witch_bottle

See also the features on an 18th century glass witch bottle in:

- *Current Archaeology* "How to kill a witch", no 169, 2000, pp34-6, and at <http://www.archaeology.co.uk/british-features/how-to-kill-a-witch-the-reigate-witch-bottle.htm>
- *British Archaeology* "Urine to navel fluff: the first complete witch bottle", no 107, July / August 2009 and at <http://www.britarch.ac.uk/ba/ba107/news.shtml>

Swords into Plough Shears...

Colin Brain

This short exploration of how 17th C glassmakers may have made use of military technology sprung from a discussion with Mark Taylor during our first glass-blowing lessons. Finding that gathering glass on the end of a blowing-iron is not as easy as it looks, even with the iron close to horizontal, prompted a question about how 17th C glassmakers managed. We know from excavations what sized pots they used. With these pots they would have needed to gather with irons inclined at greater than 45 degrees to the horizontal if they wanted to use the glass from near the base of the pot.

This led to the subsidiary question – what were their blowing irons like? From the Latin edition of Neri / Merret and from Jung's notebook we have some illustrations from the 1670s, supported by those from Diderot a century or so later. Some of these show the irons to be bell-mouthed or with flanges on the end. However, it is clear that some of these irons were unsuitable for using with a 'chair' because their external 'pipe handles' would make them very difficult to use on the arms of a 'chair'. There was clearly a range of different types of iron in use, depending on whether windows, bottles, or vessel glasses were being made. So without knowing which irons matched which uses the documentary evidence was not a great deal of help.

Archaeological evidence was however rather more helpful, and analysis of some moils (remains of the glass from the end of the blowing irons, also called 'rod-end cullet') excavated from a late 17th C glasshouse in Dublin confirmed that these vessel-glass pipes were made of iron (from the iron-scale remaining on the glass) with an external diameter of about 22mm. They were not flared or flanged and indications are that the wall thickness was around 2.5mm.



Moils excavated from a Dublin glasshouse (left) compared with some produced using 'musket barrel' blowing irons (right). The tube outside diameter is approximately 22mm

How were these things made? Robert Charleston in his "Vessel Glass" chapter for "English Medieval Industries" suggested that they were made by forging helical strips of iron around a mandrel ... isn't that the same way that they made musket barrels?¹ What size was a civil war musket barrel? Some quick research on the internet suggested that a common bore for a civil-war musket was about 17mm, with a wall thickness of about 2.5mm giving an outside diameter of about 22mm! So it then seemed plausible that late 17th C blowing irons could have been made by the same blacksmiths who made musket barrels, or even that the glass makers used actual musket barrels as blowing irons, as there may have been times when these were cheaper than getting special ones made².

The obvious next step was to try this out. Having ruled-out dismembering a civil-war musket, the obvious approach was to make up irons from suitable mild-steel tube. 7/8 inch diameter, 12 SWG seamless drawn tubing comes very close to the required sizes and had the advantage of being available locally. This tube was cut to a typical musket barrel length (1170mm), mouthpieces were turned from commercial wooden dowel rod and two blowing-irons were made up for practical trials during the second glass-blowing lessons with Mark.

Even for a beginner, these blowing irons proved easy to use. If anything, marvering the paraison was easier than with Mark's normal smaller-diameter irons, with a tendency to form a more cylindrical than tear-drop shape with less glass left (wasted) on the end of the iron. It also had a tendency to give a more uniform upper bubble wall thickness during initial blowing. One concern had been

¹ Dr Dave Starley, a metallurgy and weaponry specialist, comments that this was a particularly common way to form later, better quality barrels: they could also be formed by welding along the length of a tube, formed by hammering the skelp lengthways around a mandrel. A barrel capable of surviving an explosive charge within it would have been overdesigned compared to what was required for glass blowing, but gun-smiths (or perhaps specialist barrel makers) could have produced iron tubes, without putting in the care and attention needed on gun barrels, but using their normal tools. They could presumably have made them lighter too.

² At certain times (e.g. post civil war) musket barrels may have been cheaper or faulty ones more readily available. There were also cheaply made guns for the North American Indian trade.

that the reduced thermal mass at the end of the iron, due to the reduced tube wall thickness, would lead to more rapid cooling of the glass. However this did not appear to be an issue. Moil remains were collected and figure 1 shows some of these compared with three excavated from Dublin, either side of a section of the steel tube used. The moil thicknesses, evidence of bubble formation and scale formation all appear comparable with the excavated pieces.

Thus it appears plausible that late 17th century glassmakers used musket barrels for blowing irons. In fact, where else would they get 4-foot long straight thick-walled circular iron tubes from? We have not yet been able to check the relative ease of gathering at a steep angle, but it was notable that glass adhered to both the inside and outside of the tube thus giving a much larger gathering surface area. Certainly there is no indication that gathering would have been made more difficult with this type of blowing iron. The initial trials have shown that the wooden mouth pieces need to be improved and that more care needs to be taken with applying linseed oil to 'russet' the tubes to protect them from corrosion, but these are the kind of practical lessons one expects.

Whilst going some way to answer the initial questions, this short series of experiments has raised other questions. Were any other musket parts used for glass making? It seems possible that they were. Both the French version of Neri / Merret and Jung's notebook illustrate tools (presumably for carrying finished items to the lehr) which look remarkably like the classic musket-barrel rest – an ornate 'U' shaped fitting. A pontil moil from Dublin indicates that pontils were of a much smaller diameter than blowing irons. Iron ram-rods perhaps?

What did glassmakers do before muskets were invented? A visit to see Angela Wardle at MOLAS to discuss plans for the autumn meeting provided an opportunity to enquire what evidence had been found for the sizes of Roman glass blowing irons from London excavations. Angela explained that these apparently came in three sizes, the middle size being about 22 mm outside diameter! Some quick measurements on finds suggested that these irons had about 2.5 mm wall thickness... So perhaps it is not a case of "swords into plough-shears" at all, perhaps it is just the opposite – musket-barrel makers adopting glass-blowing iron technology.

This short piece has suggested that the current evidence available on 17th century blowing irons is compatible with them being made from musket barrels. Any comments or further information on blowing irons or other glass makers' tools would be most welcome. Colin Brain, cbrain@interalpha.co.uk

AHG Grant Report:

Making Late Antique Gold Glass

Dan Howells

Doctorial Research Project, British Museum

The medium known commonly as 'Late Antique gold glass' dates to the fourth century AD and is found predominantly in the form of vessels in the catacombs of Rome. In each instance, images depicting subjects such as secular people, saints and biblical episodes, as well as pagan and Jewish images, appear executed in gold leaf and effectively sandwiched between two layers of glass. The images appear on the base of the vessel and, most often, it is only the decorated base-disc that has survived. The walls have usually, and often deliberately, been carefully trimmed away.



Gold glass inventory number 1863.7-27.1 in the British Museum collection, highlighting (in black) five areas of excess gold leaf which have not been removed; and (in white), the accidentally scored surface of the gold leaf (Photograph: D. T. Howells, © Trustees of the British Museum).

An AHG research grant was last year generously awarded to cover the costs of an extensive program of experimental gold glass reproduction. The full results of the work will form an article in the forthcoming edited volume on Byzantine glass to be published by the British Museum. It will be further incorporated into a monograph focused exclusively on gold glass based on my DPhil thesis undertaken at the University of Sussex in collaboration with the British Museum, due to be submitted in July 2010. The glass-working itself was carried out with the 'Roman glassmakers' Mark Taylor and David Hill.

Thanks to the scientific analysis of the British Museum gold glasses carried out at the British Museum as part of my DPhil, it was possible to use modern raw materials to replicate the chemical composition of the fourth-century originals. The working properties of the glass used in fourth-century gold glass production were thus accurately reproduced for use in the experiment. The methodology used in the experimental reproduction process was predominantly based on the close examination of the gold glasses, as well as the examination of the various nineteenth-century and earlier fakes, forgeries and other reproductions of gold glass in the British Museum collection. It also drew upon the writings of well known medieval scholars such as Theophilus, Cennino Cennini, and most specifically Eraclius, who discuss the working of glass and gold leaf in their respective treatises.

Late Antique gold glass has often been viewed by scholars as a luxury and thus a very expensive medium. Indeed, when secular people are depicted on gold glass the emphasis is often placed on the wealth and status of the subject through elements of costume and jewellery. This project and the successful experimental reproduction of the glasses themselves, however, demonstrated that

from a material perspective this is certainly in error. Glass in the Roman world was not an expensive medium. Gold glass vessel components such as 'pad base-discs' could have effectively been mass-produced, and the fusing of the gold leaf between the glass layers, once learned, does not require any great skill. In fact, little glass working ability besides the blowing of two simple bubbles is required. The amount of gold leaf needed to produce the image on a single gold glass vessel base is extremely small, and, furthermore, the amount of skill needed to produce the designs themselves was shown to be far from outstanding. Indeed, many of the designs on separate gold glasses are closely akin and it seems probable that the imagery was mechanically transcribed using a simple overlaying grid from pre-prepared pattern books.

In addition to the actual production processes being relatively simple, gold glass vessel bases frequently incorporate a variety of telltale signs of carelessness, sloppy workmanship and perhaps even elementary glassblowing mistakes. These most often manifest themselves in the incision of the gold leaf iconography. Large areas of excess gold leaf and accidental scores which distort the service of the image are often visible in individual gold glasses, and are highlighted in the British Museum piece illustrated in this report. Although gold glass vessels may well have been valued, principally for the often Christian images they depicted, by those that owned them, the material value of the objects themselves leaves little doubt that they could be owned by men of rather more modest means. This important factor, until now largely overlooked, has important ramifications for future discussions of gold glass function.

AHG Grant Report: Anglo-Saxon glass-working in Canterbury

Rose Broadley

In 1983 rare evidence of Anglo-Saxon glass-working in England was excavated from Church Lane, Canterbury by Canterbury Archaeological Trust. The assemblage came to my attention in 2008 when it was returned to the Trust from storage in London. The location of the site on Church Lane is potentially significant – the site was just inside the city wall and next door to the church of St Mary Northgate, a Saxo-Norman foundation that was certainly in existence by the late-11th century AD. The site is also very close to Canterbury Cathedral.

The glass-working evidence consists of 15 fragments of pottery vessels that had been used as glass-melting

crucibles and a range of glass waste – globules, fragments and 'slag', which may be either scum scraped from the top of a molten batch, or more probably glass that fell into the furnace fire. There are two distinct pottery fabrics – one tempered with fine sand or quartz and the other with large lumps shell or fossilised shell. The latter fabric is a surprise as one would not expect pottery tempered in this way to be used in a high-temperature operation like glass-working.

The ten shelly-ware sherds came from a coarse dark grey pot that was coated with dark green glass (c.2-8mm thick). Sherds from this crucible appear to have been found in one small area, suggesting that it may represent

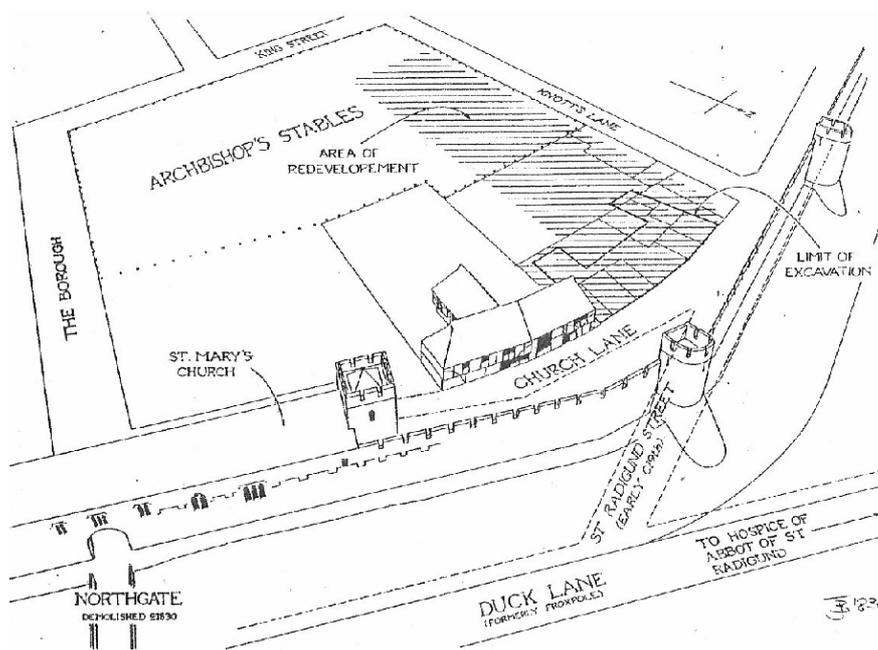
a unique depositional event. The remaining five sandy-ware sherds were made using a red clay, and were of much higher quality than the shelly-ware sherds. The glass coating on them appears colourless, but was probably pale green due to the presence of minor amounts of iron, which was revealed during the compositional analysis. The sherds from this crucible also had a compact distribution, and it is thus possible that the combined assemblage represents only two or three vessels (there is both dark green and lighter green glass on the shelly-ware crucibles, which suggests a minimum of three vessels overall), though no sherd links were found.

As glass was eminently recyclable, the glass surviving here was probably missed during sweeping up and dumping of waste, or categorised as not reusable (e.g. the 'slag', or the glass adhering to the crucible or furnace fragments), or discarded due to solid impurities that would not break down and fuse with a batch of glass if used as cullet. However, it is interesting to note that no pontil knock-offs or any other evidence of glass-blowing were recovered. The distribution of the glass waste was confined to only three contexts (796, 797 and 825), which combined with the restricted distribution of the crucible sherds may indicate that the glass-working was a brief phase of localised activity.

archaeological context, will be forthcoming in the conference proceedings.



A piece of glass waste from Canterbury



A programme of technical analysis (XRF and SEM-EDS) was completed by Carlotta Gardner and Justine Bayley at the English Heritage laboratories at Fort Cumberland, Portsmouth, with the XRD analysis by the School of Geography and Geo-sciences at St Andrew's University. I presented a paper on this project at the 18th International Congress of the AIHV in Thessaloniki in September 2009 and a more detailed article, including the results of the analysis and more discussion of the

Ultimately, the discovery that the composition of the Church Lane glass was soda-based means that the latest likely date for it is probably within the 10th century, and this is very exciting as evidence of glass-working from Anglo-Saxon England is rare. Coupled with the archaeological context, which shows early medieval activity on the site beginning in the 9th century, we can consider an approximate date range of 9th or 10th century for the assemblage. The chance survival of this glass-working waste provides us with a tantalising view of a moment in time in late Anglo-Saxon Canterbury when glass-working was taking place near what is now Church Lane. The evidence we have suggests that this glass-working operation was relatively small-scale and probably short-lived.

My grateful thanks go to Canterbury Archaeological Trust for allowing access to, and sampling of, the material; to Justine Bayley and Carlotta Gardner for their involvement in the project, and to the Association for the History of Glass for a generous grant that enabled me to attend the 18th International Congress of the AIHV to present my paper on this topic.

Output of a crown glassblower in 1802

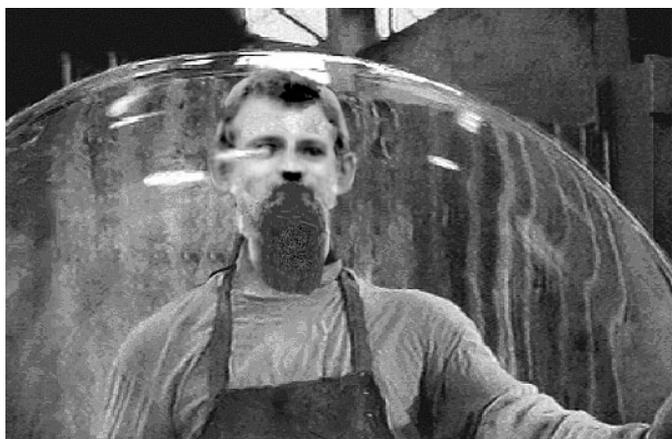
Don Tyzack

Recently I was kindly sent a copy of a work agreement about an ancestor of mine who was a Crown Glassblower. I thought some of the details might interest other members.

The document indicates that Joseph Tyzack of Monkwearmouth was indentured for eight years to gather and blow his Crowns at a glassworks owned by Thomas Burns and partners in Southwick. There is a mass of detail on how disciplined and circumspect he was required to be, on pain of a substantial fine if he defaulted. For his work he was to be paid eighteen shillings per week, and be found accommodation and heating. But my astonishment arises because of the output for which he contracted: he signed an agreement to produce 1200 Crowns per week *minimum*.

I set out to assess what seems to me to be a prodigious output. If he worked ten hours a day, with an hour's break, six days a week, that would total 54hrs per week. He would have to blow a Crown every 2.7mins, for every hour in every day! I am no glassblower but surely that's a remarkable feat?

(The full work agreement can be found at <http://www.dontyzack.care4free.net/joseph.html>)



A demonstration of the crown glass technique

An update from the Roman Glassmakers

(vitrearii@romanglassmakers.co.uk)

Roman Glassmakers, Mark Taylor and David Hill have now completed their move to new premises at Project Workshops, near Quarley in Hampshire. The modern unit has a light and airy furnace room, twice the size of the previous studio. The new purpose-built setup includes a main furnace as before, two glory holes, two glassblowing chairs, a new lehr (annealing oven), and proper siting for the glass lathe.



The new premises of the Roman Glassmakers (Mark Taylor and David Hill)

Mark and David offer:

1. A wide range of glassblowing tuition, both one-on-one courses and day-long sessions for small groups.
2. Group visits for up to thirty people in the form of a 2-hour lecture-demonstration covering 2000 years of glassblowing. Mark and David entertain and inform the audience with a 'cabaret' of ancient glassmaking techniques. There is a live demonstration of the tools of the glassmaking trade and the properties of glass itself, as well as Roman, Medieval and later glassmaking techniques. Mark makes reproductions of several historical vessels, demonstrating the fruits of continuing research and experimentation.
3. A designated small furnace for preparing experimental glass melts, as a service to researchers.

New address: Unit 16, Project Workshops, Lains Farm, Quarley, Andover, Hampshire SP11 8PX

Other contact details as before: 01264 889688

www.romanglassmakers.co.uk

Archaeological Glass and Glazes

8 to 12 November 2010

UCL Institute of Archaeology

This one-week course covers the principles and archaeological evidence for glass production and trade world-wide, from the Late Bronze Age / Egypt through the Hellenistic, Roman, Byzantine and Islamic Empires up to the medieval and early modern period in Europe.

The course is designed for students taking the MSc at UCL in Technology and Analysis of Archaeological Materials, but caters also for students interested in artefacts and conservation. We will NOT be

discussing typological aspects of glass artefacts, or details of glass working. Participation is limited to 20 students, on a first-come first-serve basis. The course is taught predominantly by Thilo Rehren, and consists of ten two-hour slots (Monday to Friday 10-12 and 2-4 pm). The course fee for participants not registered as students at UCL is GBP 450 for the week, and includes a handbook and other teaching material, but no accommodation or meals.

Please contact Professor Thilo Rehren at th.rehren@ucl.ac.uk for further information, or to book a place.

NEW PUBLICATIONS

Studies in Archaeological Sciences

'Lapis lazuli from the kiln':

Late Bronze Age Glass and Glassmaking

Andrew Shortland

Leuven University Press, 2010

ISBN 978 90 5867 691 7

€59.50 (appr)

160 page, Colour illustrations

This book examines the history of the first glass, from its early sporadic occurrence, through the height of its production in the late second millennium BC, to its disappearance at the end of that millennium. It draws on an exceptionally wide range of sources including ancient texts detailing recipes and trade in glass, iconographic depictions in tombs and temples, archaeological excavation of the most important sites including Amarna and Qantir, and the description of the glass objects themselves. The area covered includes the heart of glassmaking and use in Egypt and the Near East, as well as those areas where glass might have been traded, for example the Levant and the Mycenaean Aegean. It also considers the life of the glassmaker, their place in society and relationship to other industries.

Particular emphasis is given to the use of scientific analysis to provide information for the reconstruction of the history of this glass. It is written from a non-technical viewpoint and includes systematic glossaries detailing the technical terminology used as well as the most important sites, object types, periods and so on. The book is designed for the student of archaeology demonstrating how scientific analysis can assist in the reconstruction of ancient material culture and the society in which it used.

Medieval Glass for Popes, Princes and Peasants

David Whitehouse

With contributions by William Gudenrath and Karls Hans Wedepohl

The Corning Museum of Glass, Corning, New York, 2010

\$34.95

ISBN 978 0 87290 177 3

274 pages, softcover

The Middle Ages lasted from the fall of the Roman Empire in the fifth century AD to the rise of the Renaissance in the 15th century. During this period, Europe was transformed, and so were glassmaking practices. After the fall of Rome, all but the simplest techniques were forgotten. But over the centuries the quality, quantity, and repertoire of glassware increased. In the later Middle Ages, local products were joined by luxurious glasses imported from the Islamic world and, by the 15th century, the stage was set for the golden age of Venetian glassmaking.

This exhibition catalogue is a selective introduction to medieval glass vessels, made in the course of more than 1000 years. They were intended for use and display: for eating and drinking, lighting, worship, science and medicine. The book examines the history of medieval glass vessels, explores how some of them were made and explains how, by determining the composition of glass, the chemist makes a valuable contribution to our understanding of developments in glassmaking in the Middle Ages.



A review will follow in the next issue.

Islamic Glass in the Corning Museum of Glass, Volume One

David Whitehouse

This beautifully illustrated book presents 595 objects and fragments that were made in the Islamic world from the sixth to the 11th centuries. Each entry consists of a colour photograph and detailed description, usually accompanied by a comment on the history and significance of the object and a list of similar pieces in other collections. Most of the pieces presented here were in the collection of Ray Winfield Smith.

The Corning Museum of Glass / Hudson Hill Press, 2010
\$75
ISBN 978 15 5595 355 3
Hardback, 430 pages

A review will follow in the next issue.

The Production of Stained Glass in the County of Flanders and the Duchy of Brabant

From the XVth to the XVIIIth Centuries: Materials and Techniques
Joost Caen

Brepols Publishers, Turnhout (Belgium), 2009
85 Euros
ISBN 978-1-905375-64-6
Hardback, English, 450 pp. 450 colour ill., 240 x 320 mm

This book focuses on the materials and techniques used in the art of stained glass in the Low Countries, and more especially in the County of Flanders and Duchy of Brabant, during the Renaissance and Baroque eras. This was without doubt the golden age of stained glass in this region and stained-glass artists at the time were sometimes highly respected draughtsmen and painters.

The period under consideration starts with a prologue (from the early fifteenth century) and ends with an epilogue (into the first decades of the eighteenth century). Stained glass windows from the Low Countries were highly desirable luxury products that were exported all over Europe and so this research includes stained glass from the Low Countries found in Spain (Miraflores, Leon and Seville), Portugal (Batalha) and England (Oxford).

A modern conservation-restoration approach was adopted for this work, considering our cultural heritage in a broad and integrated way with a view to correct diagnosis and suitable treatment. For example, the results of chemical analyses of glass are linked to the art historical interpretation and dating. This research, although only an initial exploration, has already resulted in some highly relevant new insights.

Please send your contributions:

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Publications • Conferences • News

for *Glass News* **29**

by

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