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News from l'Association Internationale pour l'Histoire du Verre

The 15th AIHV Congress will be held in the United States from Tuesday 16th October to Saturday 20th October 2001. The Congress will open in New York at the Metropolitan Museum of Art and then move on to the Corning Museum of Glass. Coinciding with our Congress dates, a major exhibition, "Glass of the Sultans", presenting the art and history of Islamic glass from the 7th through to the 19th century, will be on view at the Metropolitan Museum of Art. The Congress programme will include a full session devoted to the subject. Special attention will also be given to American glass, with a series of lectures from leading experts in the field.

A number of pre-Congress events in the New York area are currently in preparation. Participants arriving at the weekend will be able to enjoy a full programme of excursions to museums and specially organised events, led by local museum and gallery personnel. These will include a view of the Museum of Modern Art's glass collection and of the Newark Museum's extensive collections, together with visits to various commercial galleries specialising in glass. The visits will be organised in small focus groups, so allowing participants to meet informally and without being hurried by the time pressures which inevitably weigh on any Congress event.

A one week post-Congress tour will take participants on to a number of important museum and gallery collections located mainly on the east coast of the United States. The richness of the ancient and antique collections in US museums and private hands, juxtaposed with the vibrant contemporary glass scene, will offer a rare opportunity for specialists in all fields to share their

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John Clark
Association for the History of Glass
c/o Museum of London
London Wall
London EC2Y 5HN

(telephone: 020 7814 5735; fax: 020 7600 1058;
e-mail: jclark@museumoflondon.org.uk).

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Conferences and conference reports
(illustrations by Michael Bayley)

Glass-blowing with the Time Team Live in York

Once again Roman glassworking has featured on the Time Team, archaeology's popular front. On this occasion the criteria and aims had been changed from the first televised experiment in 1995, when John Shepherd, Gilbert Burroughes and Ed Iglehart reproduced a Roman furnace from scratch, and blew some melted Roman glass. In September 1999 the pace was more frenetic to match the rigours of a Time Team Live weekend, but the aims of the experiment more relaxed: using modern materials to build a Roman-style furnace, fire it with wood, and blow a replica Roman vessel from glass made with modern ingredients, based on a Roman recipe. In addition, of course, it had to make good television. In the event, the weather was brilliant, the finished vessel highly photogenic and, to cap it all, some valuable information resulted from the project.

The 1999 team comprised Beryl Hines, a potter who has done a lot of work on experimental pottery kilns of Roman and later types, her regular team of three stokers and kiln-builders, Mark Taylor, who is well-known as a glass-blower making replica Roman vessels, and David Hill his business partner, engraver and glass-blowing assistant. I was introduced to the project at a late stage as a substitute Roman glass expert, and enjoyed the whole experience greatly.

The strict time-scale imposed by the 'Live' weekend was artificial but proved to be informative. It meant that the finished vessel(s) did not have time to anneal properly, and have subsequently cracked, but it showed that such workshops could be up and running in a very short time, produce vessels to satisfy a local market, and be gone again in a matter of days leaving nothing for posterity but a patch of burning and a few dribbles and fragments of glass. In this case the furnace was built between 8am and 9pm on the Friday, and fired at 6am on the Saturday. At midday the temperature had reached 1000 °C and the glass was put in; temperatures above 1100 °C were maintained until late Sunday morning, when Mark started his glass-blowing. Stoking stopped at 2.30pm, the temperature dropped rapidly, and on Monday morning demolition commenced, finally leaving little evidence of our activities.

The Furnace

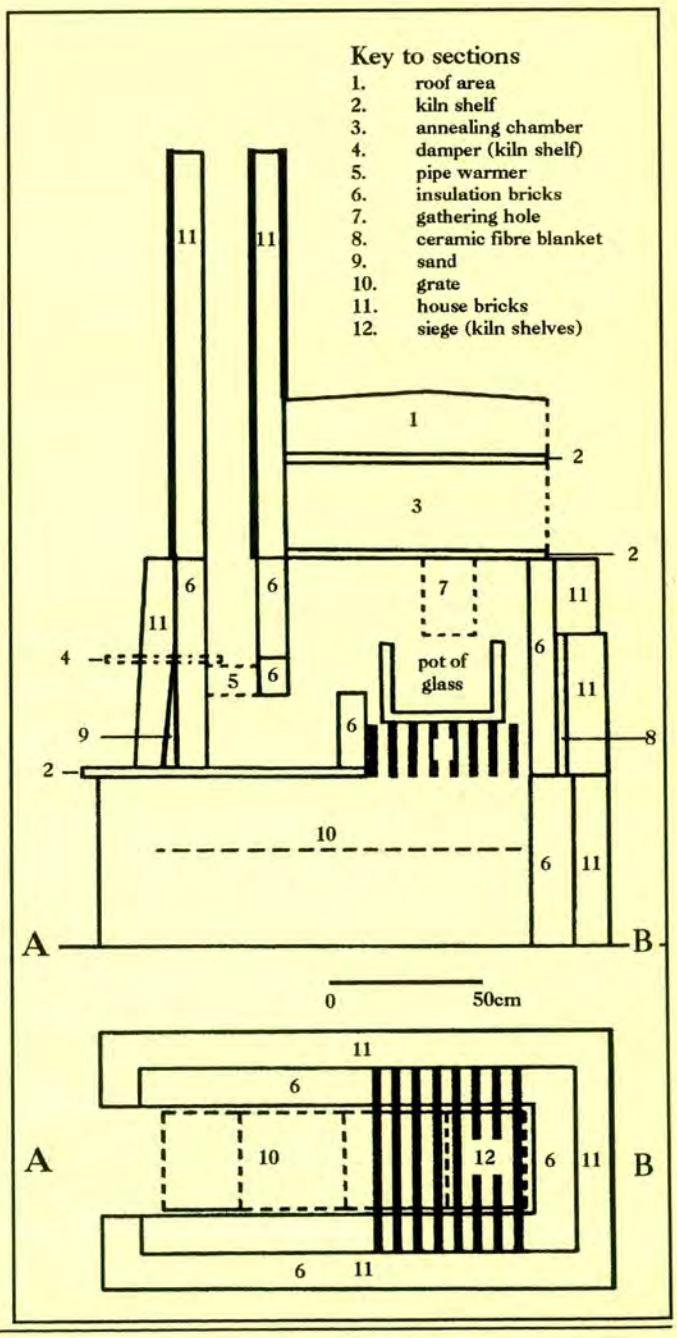
The finished furnace was described by the programme presenter as a 'brick steam-engine', and actually this wasn't a bad parallel. The design and construction were all Beryl's, drew heavily on her experiences as a potter, and worked well. This section and plan (right) were drawn by Mark Taylor, and are largely self-explanatory. Problems and future improvements can be briefly summarised thus:–

•The pot for the glass, built in to the furnace, cracked, resulting in very slow dripping of glass into the fire. This may have been caused by a weakness within the fabric of the vessel.

•The 'chimney'/flue may not have been necessary, and the omission of this from the structure would make the furnace look much more like the few Roman and medieval illustrations to have survived. More gathering/glory holes, which could be opened and shut, instead of a chimney should produce the same effect and ensure good combustion and high temperatures.

•A sunken firebox would achieve greater insulation and would lower the height of the gathering hole – (this again would leave remains more closely akin to those excavated from the Roman period).

The grate, supplied by Beryl, was made of mild steel, and just as the filming finished, it melted and collapsed. It had been necessary because cut slab wood was being used. If coppiced wood was used, i.e. with a rounded rather than rectangular cross-section, the grate would be unnecessary – air would be able to circulate between the rounded trunks and branches.



Fuel and stoking

The whole experiment used one and a half truck-loads of wood off-cuts as fuel. The furnace had to be stoked constantly, and a relay team was organised to get through Saturday night (serenaded at first by the entertainers on the Ouse riverboats moored nearby). When the time came to blow the glass, Mark found that he communicated closely and increasingly skilfully with the stokers (or 'teasers') to correct drops or rises in temperature, so that the glass was in just the right state of fluidity. This close working relationship came as a surprise to someone used to working with a gas-fired furnace.

Annealing

The annealing chamber did not reach the required heat, and should have been bigger, with a removable door (the front was left open). The temperature could be judged by suspending a thin glass rod between two points and watching for sagging to occur. The gradual lowering of the temperature necessary for successful annealing is tricky to achieve, but could perhaps be done by moving the vessel nearer to the door. It would then have to be removed whilst hot (*c* 550 °C) and cooled slowly over about 12 hours in a pit of hot ash or sawdust. A hot ash pit was used here, but sufficient time was not allowed for the annealing to be completed.

There were, of course, several 'Time Team jugs' produced by Mark – he practised several times before the cameras arrived, and the first finished article was perhaps the greatest moment of triumph. Apart from the fun of the filming, and despite the wide brief allowed by this rather eccentric-looking experimental furnace, it is worth recording that all the improvements felt necessary if this should be done again would bring the structure closer to the early illustrations and archaeological evidence. As we moved towards these conclusions, the York weekend allowed us to imagine ourselves taking some of the same tentative first steps as the earliest glass-workers.

Dr Denise Allen
8 Windsor Road
Andover
Hampshire
SP10 3HX

Some unusual late 17th-century vessel glass from Number 1 Poultry, London.

The major redevelopment at Number 1 Poultry, which began in 1994, provided a rare opportunity for the excavation of a substantial section of the Walbrook district of the City of London. Whilst being an area of intense Roman activity and importance, sequences dating up to the 19th century were comprehensively examined. As would be expected for an excavation of this size, a total of over 540 fragments of post-Roman glass was recovered. Perhaps surprising was the lack of any medieval material, but this was more than compensated for by the discovery of two groups of particularly rare glass, both dating to the second half of the 17th century.

The period *c.*1650-1675 is one of the least understood in English glass studies. Despite some notable exceptions (such as at Tunsgate, Guildford; High Pavement, Nottingham and Temple Balsall) (1), the archaeological evidence is slim when compared with the preceding fifty years. This is due to several factors. Firstly, there seems to be a diminishing demand for glass in real terms during this period. This was probably caused by the Civil War disruption of native industry and changing tastes in fashion, rather than a distinct Puritan ethic as has been previously suggested. Secondly, excavation biases and taphonomic processes have prevented the recovery of much of the material belonging to this period. Although the situation has largely changed, it was not uncommon for deposits of the 17th century and later to be routinely stripped from the site before the 'real' archaeology was examined. This combined with the frequent destruction of higher archaeological levels by Victorian cellars has led to a situation where we know more archaeologically about the nature of glass use in Britain in the Roman and medieval periods than we do in the late 17th, or even the 18th, century.

Two groups of glass from cellar fills on the site help redress this imbalance. Both contain significant quantities of high quality soda glass, but only a handful of fragments of later lead crystal, in early Ravenscroft styles, probably placing the final date of deposition of these groups to late 1670s or the 1680s. There is not space here to outline all the forms found, only some of the more unusual or unique items.

Whilst quite a number of earlier 17th-century goblets including lion mask, ladder and serpent stems were recovered, fewer later soda glass varieties were found. A fine exception to this is the illustrated goblet (page 4, top). The ground metal is an opaque white or lattimo glass and it is decorated with blue and dark red combed swirls on the bowl and dots on the knop. Although lattimo glass goblets are known from the 16th century, the bucket-shaped bowl and splashed decoration place it into the second half of the 17th century. Other extremely rare drinking vessels are the remains of three small footed cups. One, similar to an example

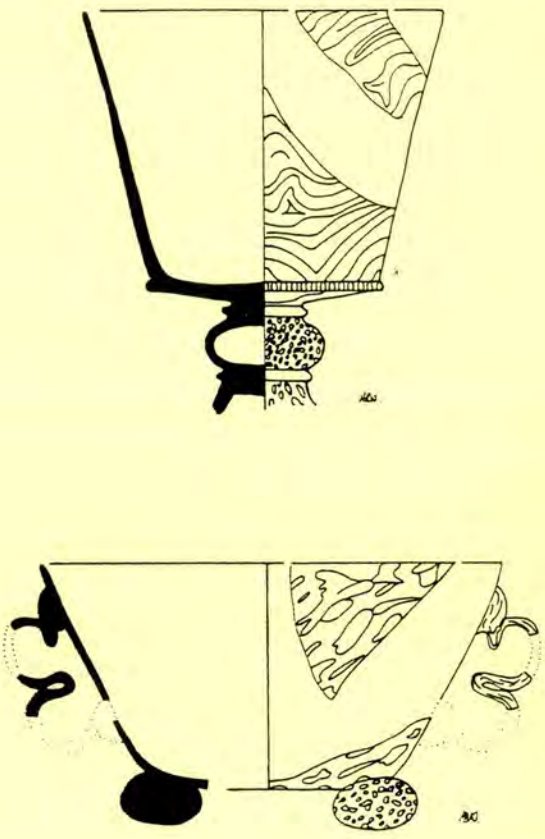
from Tunsgate Guildford (2), is entirely opaque white, whilst the other two have opaque white feet and manganese-purple bodies. At least one of the latter vessels has an applied clear glass decorative loop handle. Other drinking vessels include a minimum of four posset pots, three of which are in a good clear soda glass. These are plain and identical to an early Ravenscroft example in the Fitzwilliam Museum, Cambridge (3).

It is perhaps the collection of soda glass bowls that are the most unusual components of this group. A complete base, supported on three thin tooled feet, from a bowl in a green and brown Chalcedony glass was found. Chalcedony glass, with the exception of tazza bowl from Acton Court,(4) is virtually unknown archaeologically in England and this vessel is without parallel. A further unusual bowl is the illustrated example (right, bottom). It has a small everted body that originally rested on three solid bun feet and has the fragmentary remains of one, from a pair, of decorative loop handles. The ground colour of the vessel is opaque white and it is decorated with marvered splashed blue blobs and streaks. The further fragmentary remains of between two and six plain opaque white bowls also were recovered. These have larger deep bucket-shaped bodies that rest on solid bun feet. All appear to have had two large decorative looped handles and at least one has an opaque white lid with an elaborate finial.

These are only some of the more unusual vessels found during the excavations at Number 1 Poultry. There were also fragments from numerous potash flasks, bowls, case bottles and distilling equipment as well as earlier soda glass goblets and beakers. However, the vessels in this note have been highlighted for several reasons. So far many have no archaeological parallels in England and other forms of evidence have to be considered.

Most readers of *Glass News* will be aware of the illustrated letters written by London merchant John Greene to the Venetian Allesio Morelli between October 1667 and November 1672.(5) Although still not published in the detail that they deserve, they give descriptions and illustrations of the vessels Greene was ordering from Morelli. Many of these match quite closely the Poultry vessels. On 28th August 1668 Greene ordered *'1 doz. clouded calsedonia covered beer glasses'* and 1670 vases *'Speckd enamel/ 1doz. all milk whit'*. Likewise the letters contain illustrations of possets, footed cups and lidded bowls very similar to those from Poultry Lane. Although directly attributing the Poultry glasses to the imports of Greene is potentially contentious, there remains one final intriguing reference in his letters.

At the end of his fourth letter to Morelli, dated 10th February 1670, Greene states *"when you wright to mee, Direct yor Letter : ffor Mr. John Greene at ye Kings Armes in the Poultrij London"*.(6) Far from being just a postal address it is accepted that this was the centre of his retail business.(7) Unfortunately it is not possible tell whether the Greene's Kings Armes shop was located within the area of the present excavation. Nevertheless,



it does offer one explanation as to the presence of many forms that are either unique or extremely rare archaeologically.

A full description of all the post-medieval glass from Number 1 Poultry, along with the other finds which include Roman glass, will appear in two Museum of London Archaeology Service reports due to be published next year.

Hugh Willmott
Department of Archaeology
University of Durham
Durham, DH1 3LE

1 Fryer & Shelley 1997. Excavation of a pit at 16 Tunsgate, Guildford Surrey, 1991. *Post-Medieval Archaeology* **31**, 139-230; Alvey 1973. A Cesspit Excavation at 26-28 High Pavement Nottingham. *Transactions of the Thoroton Society* **77**, 53-72; Gooder 1984. Finds from the Cellar of the Old Hall, Temple Balsall, Warwickshire. *Post-Medieval Archaeology* 18, 149-250.

2 Fryer & Shelley (as note 1) 205 no. 71.

3 Charleston 1984. *English Glass London*, plate 25b.

4 Courtney forthcoming. Vessel Glass. Acton Court, the Evolution of an Early Tudor Courtier House. Bell & Rodwell. English Heritage, no. 53.

5 Discussed in Charleston (as note 3) 104-06.

6 Hartshorne 1968 *Antique Drinking Glasses*. 2nd Ed. New York, 445.

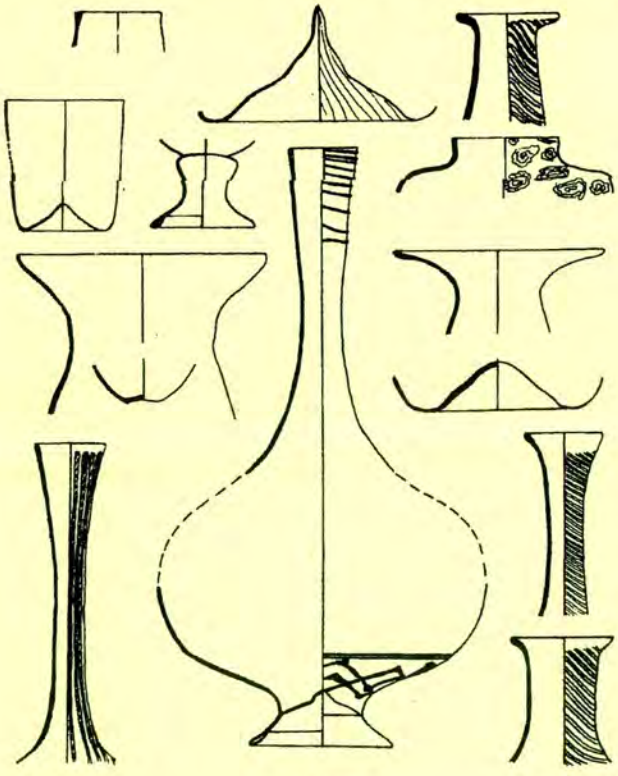
7 Thorpe 1961 *English Glass* 3rd Ed. London, 14.

The good old days – or the way it was...

A predecessor of *Current Archaeology*, *The Archaeological News Letter* first appeared in April 1948 and continued publication until the mid 1960s. The issue for January 1949 (Vol 1, no 9, pp 1-3) included an article by Adrian Oswald, then at the Guildhall Museum (London), on 'Recent London excavations – a survey of the finds'. Oswald – now best remembered perhaps for his work on the dating and typology of clay pipes – had been on the staff of the Guildhall Museum from 1939 until 1940, when he left for the army; in December 1945 he returned to take charge of the museum, and with one assistant he was responsible for all its work and its first post-war displays. At the end of 1949 he left to take up the post of Keeper of Archaeology at Birmingham Museum.

In his article in *The Archaeological News Letter* Oswald refers to the excavations then being carried out in the City of London under the direction of W F Grimes for the Roman and Mediaeval London Excavation Council (RMLEC). He notes that although these sites had been widely reported in the press, the actual finds had 'received no notice in any detail'. He continues: 'They are the responsibility of the writer and are housed at the Guildhall Museum'. Between the lines one may sense his concern at the amount of archaeological material coming into a museum ill-equipped to deal with it, as well as at the growing number of building developments taking place in the City with no archaeological staff to investigate the sites or record discoveries.

Much of his article is taken up with a brief survey of the sort of finds made during the post-war RMLEC excavations, but he gives space to two investigations he had carried out himself on behalf of the Guildhall Museum in 1939/1940 (funded in part by the Society of Antiquaries). The relevant paragraphs read as follows:



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'An earlier find, made in 1940 at Post Office Court, was a group of pottery and glass assignable to the end of the 15th century. These vessels were only a small portion of a large deposit in a chalk-walled cellar, and I rescued them with great difficulty. The remainder, including much glass, being destroyed by pneumatic drills. The group included plain Siegburg ware drinking mugs, small green glaze platters and pitchers, and of much greater importance, long-necked white glass flasks, some plain, some wrythen. One plain, of very fine glass, has applied blue decoration on lip and base. These together with the top of a millefiore folded vase are certainly imports, but there were in addition some rather squatter flasks of wrythen green glass which are probably English.

'It is clear that these discoveries of glass together with the very considerable hoard, of the period *c.* 1600-1670, found in a cellar at All Hallows, Lombard Street, will, when fully published, provide much new detail on the development of the English glass industry. The All Hallows hoard in particular with its blend of fantastic Venetian style wine glasses and the more solid and plainer English shapes shows clearly the growth of craftsmanship which led to the later splendours of English lead glass.'

Fifty-one years after Oswald wrote, and sixty years after their discovery, one has to admit that neither group is yet 'fully published' as he expected. The existence of the All Hallows glass is quite well known, following an article that Oswald himself, together with Howard Phillips, wrote for *The Connoisseur* (Vol 124, no 513 (Sept 1949) pp 30-6) and references in Robert Charleston's *English Glass* (1984). However, it has never yet received the detailed cataloguing it deserves (let alone publication) - although Hazel Forsyth of the Museum of London and Hugh Wilmott of Durham University (see *Glass News* no 4, p5) have been working on it. As for Post Office Court: Oswald drew some of the pottery and glass – and in 1994 we used some of his drawings on the cover of the AHG *Bibliography of Medieval Glass Vessels from British Sites AD 1200-1500* (Rachel Tyson and John Clark) (left). Much of the Post Office Court glass is included in Rachel Tyson's forthcoming volume for the CBA on *Medieval Glass Vessels Found in England AD 1200-1500*. It is an important group – and one can only shudder at the idea of 'the remainder, including much glass, being destroyed by pneumatic drills'!

John Clark
Museum of London
London Wall
London EC2Y 5HN

A Seventeenth Century Glasshouse at Calne?

We were first alerted to the possible existence of this Wiltshire glasshouse by the news that there are farthing 1669 trade tokens inscribed "at the Glass House in Calne" with the picture shown below and the initials A.I.S. The tokens appear credible, since the illustration is matched by those from later maps of other towns and in addition it shows a central arch; a feature not shown on the other illustrations, but found on surviving remains of slightly later glass houses.

Clues to why the glassmakers would have chosen Calne are given in books published by the famous local author John Aubry; ***Topographical Collections*** and ***Natural History of Wiltshire.*** The material for these books was almost certainly collected in the late 1660s, before he left Wiltshire for London. All references to glass making are in the Calne area:

'Mem. The deep lane from Bowdon to Ray-bridge is very full of nitre, as a warm day will evidence;...'
'In this parish is a quarry of soft white stone, betwixt chalke and freestone, which they use much for ovens, it endures the fire rarely well, and I doubt not but it would be good for a glass furnace, or iron forge or chymists.'
'The first ascent from Chippenham, sc. above the Derry hill is sandy: e.g. Bowdon-parke, Spy-parke, Sandy-lane, of which I believe good glasse might be made; but it a little too far from a navigable river. They are ye biggest graines of sand that ever I saw, and very transparent: some where thereabout is sand quite white.'

This sand is from the lower greensand geological formation. Calne marks almost its furthest westerly extent. Aubrey did not mention that there was also Kimmeridge clay, which was recommended for making glass pots by Christopher Merret in 1662. Aubrey would have known Merret through the Royal Society, but Aubrey was not a scientist. His books record what he had been told. It seems unlikely that the glasshouse was working at Calne before about 1668, else he would have mentioned it. However, as he only mentions glass-making materials in the context of the Calne area, it suggests that moves to establish a furnace had started by then. He mentions transport difficulties, but, significantly, does not address fuel. A glass house might consume four hundred and fifty tons of coal a year or twice this weight of wood. Other ingredients would have been valueless unless there was also good access to fuel. There are no local coal deposits, implying that the glass house burnt wood. At least one contemporary London drinking glass house used wood and two or three more may also have used this fuel. However, it would not have burnt wood for a long period without giving rise to vocal public complaint about the loss of local timber. It is possible that its establishment was linked to a major landowner clearing his estate in order to improve its agricultural yield.

The date of the token is significant. Interest in improving English glass-making had been fuelled by Christopher Merret's translation of a Neri's text book on glass in 1662. There was increasing demand for glass, driven by the growing importance of 'fashion' after the restoration and the need to replace glass destroyed during the fire of London. The fire had also destroyed at least one major glass house. Finally there was a significant demand for glass to support the new colonies overseas, particularly through the growing port of Bristol, which did not yet have its own glass houses. Calne is on the London – Bristol road. Since it would have taken a couple of years to establish a new glass house and set-up a store of dry timber, one would not expect one to be working in response to the fire of London until about 1668. Calne may have been the first of many aiming to cash in on the glass shortage, but the ten or so new glass houses opened in the early 1670s would have soon overtaken it. Many of these were large coal-burning houses, well situated for water-borne transport and with ready access to urban markets.

The initials on the token are likely to refer to a person's name, with the central 'I' being interpreted as a modern 'J'. They are more likely to belong to a financier, than a craftsman. The high quality ingredients and wood fuel suggest that vessel glass was made. Some fragmentary drinking glass finds from west of England excavations (Exeter, Oxford & Wells) appear to date from the late 1660s / early 1670s and to differ from those found in London and the east of England. These may be, or may include, products from Calne. Stourbridge was the next nearest area known to be producing drinking glass then.

This location appears to have considerable further potential for research. It may shed new light on this pivotal period in the history of English glass. We welcome any information that might help this research, or relate to the use of wood fuel in English glass houses after 1650. We hope to feedback progress through these pages and our web site.

Colin & Sue Brain
http://www.interalpha.net/customer/cbrain/

Excavations at Hopton Street in Southwark – an update

Excavations at Hopton Street in Southwark, *c.*100m from the present south bank of the Thames, and 150m east of Blackfriars Road, revealed the remains of two successive brick built glasshouses. The excavations were carried out in various phases between 1994 and 1997 by Pre-Construct Archaeology Ltd. (PCA), under the supervision of Victoria Ridgeway and managed by Gary Brown. The Manhattan Loft Corporation funded the work, which was carried out prior to redevelopment of the site for residential housing. An interim article on the excavations has been published in *London Archaeologist* (Vol 9, No 4) and further details can be obtained from PCA. (see address below)

The well-documented glasshouse of Pellatt and Green was known to have been on the site from the early 19th century, but more surprising was the discovery of a much earlier glass-working complex, the remains of which included a furnace, sieges, underground flues, working surfaces and ancillary workrooms. The surviving brickwork was largely mid-18th century in date and showed evidence of having been frequently repaired and rebuilt. The very high temperatures and long firings used in the glass manufacturing process usually resulted in disintegration and collapse of brickwork, with a subsequent need for frequent repairs, often carried out whilst the furnace was still alight in order to avoid loss of revenue. Associated discarded pottery suggests the structure was in use from *c.*1720 until at least the late 18th century. The building, which housed the furnace, was probably rectangular in plan. Drinking glass manufactories of this period were generally rectangular structures, the more common cone-type kilns being used for the manufacture of bottle glass.

From its inception the glasshouse at Hopton Street appear to have been used for the manufacture of fine vessels. The analysis of waste glass from a production site is problematic; material was often imported for use as cullett and glass vessels may have been brought in for use by the workforce. Nevertheless the earliest waste glass retrieved from the site consists primarily of fine drinking vessels dating from the late 17th century with a preponderance of pharmaceutical phials from the mid-18th century onwards and continued production of fine wares.

Glasshouses were known to be located on the west side of Hopton Street and to the north-east in the vicinity of the present Bankside Power Station. Rocque's map of 1746 shows a "Glasshouse Yard" in both these locations. Pellatt & Green are documented as having taken over the business of A T & J Cox of the Falcon glasshouse on the site in 1803. This is probably the Falcon Glasshouse owned by Francis Jackson and his partner John Straw and established before 1693. Rocque's map shows a rectangular building in the area of the excavated furnace remains with "Jackson's Court" to the south.

The second phase of building, dated to the early C19th, represents the well-documented glasshouse of Pellatt and Green, known to have been built by at least 1814. It seems likely that after moving to the site, some time before 1803, Pellatt and Green at first made use of the existing structures and some of the later modifications to the early glasshouse structure may have been carried out by their partnership. Only the substantial foundations of this second structure were seen and these represent complete redesigning and rebuilding of the glassworks.

The company are known to have manufactured high quality flint glass tablewares and pharmaceutical vessels and this range of wares was well represented in the associated glass waste. Raw materials used in the manufacturing process were represented by dumps of cullett and what appeared to be frit (a salmon coloured compound comprising a combination of sand, lead oxide, red lead, carbonate of potash and saltpetre, used for the manufacture of flint glass). Associated glass waste recovered from the excavations included a fine stem fragment comparable to one illustrated in a trade catalogue produced by Apsley Pellatt in 1840.

Victoria Ridgeway
1 Unit 54
Brockley Cross Business Centre,
96 Endwell Road
Brockley
London SE4 2PD
Tel: 020 7732 5004
Email: pca@vossnet.co.uk

Chemical Analyses of Early Glasses

by Robert H. Brill

This major reference work brings together the results of some 3.600 chemical analyses of early glasses and related materials. The analyses were performed for The Corning Museum of Glass over a period of nearly four decades. the samples, donated by hundreds of institutions, spans 3,500 years of glass history. Many of the analyses have been reported before in now out-of-print sources, but most are published here for the first time.

Volume 1 is a catalogue of sample descriptions, while Volume 2 consists mainly of tables of analytical data. Volume 3, presenting the interpretations of the data, is expected to appear about two years from now, although four typical reports are included in Volume 1

For information on ordering, contact:-
Ernestine Kyles
The Corning Museum of Glass
One Corning Glass Centre
Corning, NY 14830-2253
USA

A Brief History of Glassmaking in Scotland

Unlike the situation in England, there is, as yet, no documentary or archaeological evidence to suggest that there was an indigenous glass manufacturing (from raw materials) industry in Scotland during the medieval or early post-medieval periods. The earliest authenticated reference, at the moment, dates to the early 17th century but, current research for a PhD at Edinburgh (by Jill Turnbull – see her letter in the last *Glass News*) may well change this.

Fife

Sir George Hay set up a works at Wemyss (between Kirkcaldy and Leven) having been granted a patent in 1610. hay produced braid (broad) window glass of good quality but a commission, set up by the Privy Council of Scotland in 1621, were less impressed with his drinking glasses. they recommended that English patterns should be lodged in Edinburgh Castle "*For trying the sufficiency of Scots glass in all time coming*".

East Lothian

An entry in the Privy Council of Scotland records, dated 1625, refers to Jesuit priests preaching to glassworkers at Morison's Haven (Prestonpans, East Lothian, 15km east of Edinburgh). This area appears to have produced glass, albeit spasmodically, at least until the middle of the 18th century. An excavation, on the site of William Littlers mid-18th-century pottery at West Pans, just west of Morison's Haven, yielded fragments of crucibles with pot metal adhering.

Edinburgh and Leith

In his History of Edinburgh, published in 1753, William Maitland wrote of "*...a glasshouse, and hard by a saltwork, both set up by Englishmen...*" adjacent to the east end of Newhaven and the implication is of a date of 1595, but the text is ambiguous and Maitland is not particularly reliable. The first authenticated glassworks in this area was set up by English settlers in 1663, in the Cromwellian citadel of Leith. The Citadel was situated at least 1.2km east of Newhaven and could hardly be described as "adjacent". Maitland also refers to the "links" implying clear ground between Newhaven and North Leith, therefore, it would seem unlikely that he was talking about the venture in the Citadel.

Robert Pape, who set up the Citadel works, advertised his venture in the *Kingdom's Intelligencer* newspaper in late 1663. He appears to have made everything except window glass but his particular business appears to have failed, despite the Privy Council forbidding importation of glass from outside Scotland in February 1664.

James Marshall, in his *Life and Times of Leith* (1986), describes the history, from 1678 until at least 1728, as still being that of the Citadel works, however, there is strong evidence that the glassworks moved to a new site, on the west bank of the Water of Leith, either in 1678 or 1681-82.

Several partnerships were set up to run the works between 1678 and 1689, at which time Alexander Ainslie was appointed manager, a post he was to occupy for the next forty years. Despite the fact that the Leith works was granted a monopoly in 1689, attempts were still made, by London and Newcastle in particular, to disrupt and infiltrate the Scottish market. In 1700 a representation was made to the Privy Council stating that the proprietor of the glass works at Newcastle had sent 2600 dozen bottles to Montrose. This, according to the Leith company, was enough to overstock the whole of Scotland. the English bottles were seized and declared forfeit to the crown. During Ainslie's incumbency the Leith works seems to have had variable success with erratic production and he finally sold out to James Balfour of Pilrig in 1728. The glasshouse was sold on, in turn, to James Nimmo and then Robert Wightman. In 1750 John Syme, a carpenter and shipbuilder, bought the site but the glasshouse had burned down in a fire in 1746 and what Syme purchased was simply the ruins thereof.

Following the fire of 1746 a new brick cone was built on the sands at Leith, about 500m to the east of the old site, in 1747. The first cone on the new site produced green glass bottles, mainly for wine. The company operating it was known as the Edinburgh Glasshouse Company.

The second half of the 18th century saw a rapid expansion in the use of glass and a second cone was built in 1763 for other types of bottles, followed by a third in 1783 for flint (lead crystal) and yet another in 1790 for crown window glass.Window glass was, however, being made at Leith at least 12 years earlier, as demonstrated by a list of exports for the year ending 5th January 1778 (Hugo Arnot, *History of Edinburgh*, 1786). The list records window glass being exported to North America and glass bottles to the same destination plus Norway, Russia, Germany, Spain, Portugal, Gibraltar, Guernsey and Ireland. In 1790, another firm, the Leith Glasshouse Company, set up on a site immediately east of that of the Edinburgh Compnay and built another three cones, two by 1794, the third a little later.

Early 19th-century maps show the seven cones of the two companies, and a crystal works, ranged along the north side of Salamander Street.

Punitive taxation and a recession, generated by the Napoleonic wars, triggered a downturn in the industry and by the early 19th century the Edinburgh Glasshouse Company was in debt. This already difficult commercial situation was further compunded by premature death within the controlling Geddes family, who had become involved in 1771 and had become majority shareholders by 1809.

A committee of creditors was appointed to oversee the running of the business and to try to clear the debts. Repeated attempts were made to try to sell the

works at Leith, and at Alloa (founded 1705), which were also owned by the company. An acceptable offer for Alloa was received in 1814, but it was not until 1824 that the Leith works were finally sold. The debts took even longer to clear, not being fully discharged until 1834. Little information has so far been unearthed on the activities of the adjacent Leith Glasshouse Company around this time but the organisation which eventually bought the Edinburgh company was called, The Edinburgh and Leith Glass company, which would seem to suggest amalgamation.

Glassmaking continued on the Slamander Street site, probably on a gradually reducing basis, until the mid-1870s. Post Office directories give the address of the Edinburgh and Leith Glass Company as Salamnder Street in 1874-75 and Norton Park, Maryfield in 1876-77. What was probably the last operational cone at the Slamander Street site was advertised for sale in the Leith newspaper, 'The Burgh Pilot', in 1877, but the site was never again used for the manufacture of glass and the cone is believed to have been demolished c.1912. However, the site of the seven cones of the Edinburgh and Leith companies has not been subject to particularly invasive development and there is every chance that a considerable amount of the substructure survives. Other notable glass works in the Edinburgh area, established before the end of the 18th century were James Ranken's crystal works and John Ford's Holyrood works.

Glasgow

Glasgow ultimately had several glassworks but the earliest seems to have been that of James Montgomerie, who set up at the junction of what is now Jamaica Street and the Broomielaw quay around 1701-2. Montgomerie cited the hazards of transporting glass from Leith or Morisons haven as part of his argument to be allowed to set up.

Dumbarton

It would be negligent to leave out the impact of Dumbarton, on the Scottish, and indeed the British glass industry, even although the works were established fairly late, 1777, and had met their demise by 1850. Established as a humble concern, they rapidly expanded with the increasing use of crown window glass, until, between the years 1814 and 1826 they supplied 92.5% of all Scottish crown output and the equivalent of 35.5% of all English production (J Logan 1972).

This short paper is not intended to give more than a snapshot of the Scottish glass industry and only the earliest and major players are included.

K. Robin Murdoch
Balerno
Midlothian

Conference reports

The 32nd Archaeometry symposium was held during May in Mexico City. The venue was the truly spectacular Museo Nacional de Antropologia, a beautiful modern building housing fascinating collections. When not exploring the museums, climbing the pyramids of the sun and moon, or sampling tequila and tacos, the attendees made time for daily morning presentations and afternoon poster sessions. Three hundred and twenty abstracts were received by the organising committee which were divided into six groups, one of which encompassed glasses and ceramics.

The majority of the presentations in this group were on the subject of ceramics this year, with several excellent papers discussing the use of petrography for provenancing. Not surprisingly, for a Mexican venue, there were also many papers on the subject of the geological glass obsidian, particularly concerning techniques and progress in provenancing and databasing compositional information. This left time for only one presentation on the subject of glass (Halmetschlager *et al*). XRF had been used to examine very interesting material comprising some two hundred and twenty objects originating from Celtic Austria. Although the data obtained had not been fully interpreted at the time of presentation, it appeared that the material included glass that had been opacified using lead stannate compounds, providing an early example of this technology.

Amongst the posters were several excellent studies of glass. Freestone *et al* had examined a range of Byzantine and early medieval enamels of the 9th to 12th centuries using EDX and XRF analysis. The Byzantine enamels were contrasted with Byzantine tesserae and this highlighted some interesting differences in the technology employed. A mixture of technical and social influences prompted the artisans to re-use Roman glass for the enamels. A second poster (Bowman) discussed Hellenistic 'dipped' enamels examined using XRF and radiography. An unusual, green enamel was found to contain vanadium, but the purpose served by its addition, if any, are unknown as it is thought to be without precedent in ancient glass.

The poster by Welham *et al*, on factors affecting the compositional homogeneity of medieval potash glasses, greatly impressed the committee as it won not one, but two poster prizes. This study employed SEM and microprobe analysis to compare English medieval glasses with replicates made in the laboratory using a variety of batch preparation, fritting and melting conditions. Cool et al presented further ICP analyses of Roman glasses from across Britain. This data supplements the information obtained from material at Colchester and revealed compositional differences within each typological group as well as previously noted differences between typological groups.

Two pieces of portable analytical equipment were also described that could be applied to the investigation of glasses. A poster by Bronk *et al* described ART-TAX,

a portable XRF with capillary optics for focusing on a specific sample area and the ability to measure light elements such as sodium. A presentation by Perez-Arantegui described a technique known as Voltammetry of Immobilised Microparticles (VIM). A rod electrode is rubbed gently on the surface of the object, transferring a trace of the material on to the rod. A current-voltage plot is then obtained for the sample which is characteristic of the elements in the alloy, glass, glaze or pigment being examined. These techniques have great potential as they allow non-destructive analysis of objects in the field.

It is intended that the proceedings of the conference be collated on CD-ROM. However, if this is not forthcoming, all attendees were provided with a book of abstracts and a list of participants and contact details. The book of abstracts was published by the Instituto de Investigaciones Antropolgicas of the Universidad Nacional Autonoma de Mexico.

Sarah Paynter, Centre for Archaeology
English Heritage (previously RLAHA, Oxford.)

The one day course, **How Do They Do That?**, held at Himley Hall near Dudley on Saturday 25th March contained all the necessary elements of an extremely good day – it was informative, delightful and fun. During the day the two course leaders Charles Hajdamach and Dil Hier explained by means of talks, slides and video clips, a wide series of techniques used in the manufacture of 18th-and 19th-century glass. Surface finishes, colours, and all the different ways of incorporating air and coloured canes were explained. Curiously shaped pieces of equipment where produced, and vessels showing examples of the different effects they created were passed around the audience who were encouraged to participate, and ask questions during the short talks. Two tables were full of glass vessels from the nearby Broadfield House Glass Museum. These incorporated all of the different techniques talked about, participants were encouraged to handle them and by the end of the day we were slightly more confidently doing this. Two sessions were held in the Hot Marks studio where Mark Locock gave practical demonstrations of some of the techniques, made a complex leaf vase, ably showing how fast glass blowers have to work.

Himley Hall provided a beautiful venue and an excellent lunch, and at £28 the day was extremely good value. I sincerely hope that this course can be held again, and can highly recommend it to anyone who could not make this one. Although the glass interests and backgrounds of the audience of 24 were varied, we all got a huge amount out of the day. Himley might not be the easiest or most central place to get to, but it was well worth the effort, and we all asked if further days on different topics could be arranged. I hope they can.

Sarah Jennings, Centre for Archaeology
English Heritage

AFAV (Association Francaise pour l'archeologie du verre) held its annual autumn meeting on 5th and 6th November at the Louvre in Paris. The meeting room was in the complex beneath the western courtyard of the Louvre, approached through the largest of the glass and steel pyramids designed by the architect I.M.Pei. Exterior views of the pyramids give no impression of the spectacular structures below: asymmetric stairs lead upwards into the pyramid, whose network of steel creates the patterns against the light which characterise Pei's work here and elsewhere.

The sessions of lectures were made up of regional topics. These ranged from the Roman to the modern, including Gallo-Roman glass furnace evidence from Aoste (Isère), Byzantine glass from Syria, furnace-construction in medieval central France, 15th and 16th-century glass making sites in Paris, a 16th-century assemblage of drinking-glasses from Quimper (Brittany), 17th-century latimo glass from Orléans, and domestic window-glass in Paris from the 16th to the 19th centuries.

There were tours of the displays of glass in the Louvre, without, unfortunately, access to material in store. Important though the displayed glass is, your correspondent was rather more impressed by the superbly-displayed remains of the medieval castle, the predecessor of the Louvre, beneath the western courtyard. From the Louvre we went to the museum of Baccarat, makers of crystal, in the rue de Paradis. In this 19th-century former workshop building, now part-museum and part-shop, there is set out, in chronological sequence, representative material from 17th-century origins to the present, with emphasis on 19th- and 20th-century wares. It is of interest to compare some of the 19th-century decorative themes with those of other French makers such as Lalique, to be seen in the decorative arts galleries in the Musée d'Orsay.

On the Saturday afternoon the conference visited the Musée National de la Renaissance, which is sited in a chateau at Ecouen, an hour's coach-ride north from Paris. This is a museum which is absent from most Paris tourist guides, difficult of access, and consequently little visited. There is a wide range of material, particularly metalwork, ceramics and glass, and although we were only shown items on public display, the visit was worthwhile, and the museum can be strongly recommended, for the glass as well as for other materials.

AFAV meetings are held annually, recent venues being Lyon, Albi and Montpellier, and the 2000 conference will be held in le Parc Naturel Régional des Vosges du Nord from the 2-4 November. Tickets and accommodation are being arranged now so contact Jean-Claude Brumm, 15a, rue du Chateau d'Eau - 67290 Wingen-sur-Moder (tel 00 33 (0)3-88-89-72-32/fax 00 33 (0)3-88-89-87-33)

David Crossley
University of Sheffield
196 West Street
Sheffield S1 4ET

Association for the History of Glass

Lead Crystal glass in the 17th and 18th centuries

We are planning an all-day seminar, to be held at:

The Wallace Collection
Manchester Square
London W1

on
November 16th 2000 from 1000 until 1700

It is intended to present a programme relevant to a wide range of interests in glass, provisionally including contributions on

The technology of lead-crystal production (Michael Cable)
English drinking glasses after 1670 (Colin Brain)
Dublin flint glass in the late 17th century (Peter Francis)
The Scottish glass industry 1660-1750 (Jill Turnbull)
The Market for lead glass in the 18th century (Julia Poole)
Glasshouse excavation in London (Hugh Willmott)
The 18th-century glass industry and the Monuments Protection Programme (David Crossley)
Research on the crizzling of lead glass (TBA)

These topics are provisional.

We intend to have a final programme, with exact topics and speakers, and the cost for the day , ion July/August. If you wish to receive this programme, please send s.a.e to:
David Crossley
University of Sheffield
196 West Street
Sheffield S1 4ET

Conferences

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Hyalos – Vitrum – Glass: The History, Technology and Conservation of Glass and Vitreous Materials in the Hellenic World

Rhodes, Greece, 2-4 April 2001

This is the first international conference to be organised by the *National Centre for Scientific Research "Demokritos"* in cooperation with the *Helenikos Yalourgikos Syndesmos (Greek Glass Federation)* and the *22nd Ephorate of Prehistoric and Classical Antiques (Rhodes)*. The conference is expected to be a fruitful meeting of researchers, scientists, archaeologists, conservation scientists and executives involved with the history, technology and conservation of glass and vitreous materials of the Hellenic World. It will give emphasis to topics related to the technology of fabrication and conservation of ancient Greek glass and will also emphasise topics related to understanding and predicting the chemistry and technology of the fabrication, behaviour and properties of ancient Greek glasses.

The full paper proceedings will be ready for distribution to the Conference attendees and will be published for further circulation. The conference will be transmitted via the internet and will be video-recorded for wider distribution to interested parties. Fifty papers will be presented to 100 attendees.

For further information about this landmark conference, contact:

A. Nicolaou
Institute of Materials Science
National Centre for Scientific Research
15310 Ag. paraskevi Attikis
Greece
Tel: 00301-6503302
Fax: 00301-6547690
email: gkordas@ims.demokritos.gr

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(continued from page 1)
knowledge and enthusiasm. Details will be available nearer the time.

During the Congress, evening receptions will be held at the different venues and at Steuben in New York City and all participants will be cordially invited. These events are conceived and coordinated by the US Congress Organising Committee, under the joint responsibility of our members David Whitehouse, Executive Director of the Corning Museum, Stefano Carboni, Associate Curator in the Department of Islamic Art and Lisa Pilosi, Associate Conservator in the Sherman Fairchild Center for Objects Conservation, of the Metropolitan Museum of Art.

The Congress lecture programme is to be organised in chronological order, with two days at the Metropolitan Museum of Art covering pre-Roman, Roman and Islamic glass, and two days at the Corning Museum of Glass devoted to medieval, post-medieval, American and modern glass (contact Keith King at the address below). The intention is to give speakers the platform for 30 minutes, with 20 minutes for delivery of the paper and the remaining time for questions and debate. Simultaneous poster sessions will take place at both venues. Participants who choose to use these sessions for presentation of their work will be assured of greater recognition and attention than perhaps has been the case in previous years, with better display arrangements and more time available.

We began calling for papers for the Congress in May 2000 and look forward in particular to receiving proposals for communications relating to Islamic and to American glass. Robert Brill, whose professional interest in the archaeometry of glass spans over 40 years, has kindly accepted to give the Distinguished Speaker paper at the Congress on the subject of the chemical analyses of early glasses.

For further information contact:-

Keith M King
4, rue du Fief
Cély
F-77930 Perthes

Take note...

The February 2000 edition of Apollo contains an article by Peter Francis on "The development of lead glass - The European Connections" (p.47-53). This introduces considerable new documentary material on the subject of an Irish Flint Glass Patent, contemporary with Ravenscroft's English Patent, and links these both back to developments at the Nijmegen St Jacobsgasthuis glasshouse in Holland. We hope to hear more about this important work in the Associations all-day seminar to be held at The Wallace Collection, Manchester Square, London W1 on November 16th. See page 11 for more details

REMEMBER

Glass News exists for you to inform as well as be informed.
Tell us all about your news, ideas and discoveries

New finds • New research • New publications • New ideas

Send your contributions before 1 October to:
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