



TOURING GLASS SHOW

North East Section committee member and artist Charles Bray will open the Craft Council's touring studio glass exhibition when it comes to the Shipley Art Gallery, Gateshead. The Glass Show features over 40 of Britain's glassmakers in two sections. The first displays new work, while the second provides a perspective on the growth in studio glass since the setting up of the innovative department at the Royal College of Art in 1967.

The tour began in London at the start of the year, before moving on to Norwich, Cardiff, Bradford and Carlisle. After closing in Gateshead on 14 November, the show moves to Wolverhampton Art Gallery between 20 November and 9 January 1994, then finally to Leicester Museum from 15 January to 27 February.

A second tour featuring architectural and sculptural glass will be staged in 1995.

PRECISION REFRACTORIES

New manufacturing processes applied to traditional refractory materials are being used to realise engineered products with high precision. Trevor Turner of Glassworks Equipment explained to the North East Section how these processes are increasing their share of niche positions.

Modern manufacturing techniques are all about reducing the number of components, optimising design to eliminate areas of greatest stress and extending service life. To get closer to the final product dimensions, shrinkage has to be minimised and clay binders replaced by binders such as ethyl silicate.

Organic binders for refractories reduce manufacturing time, involve less shrinkage and therefore the required precision. Processing time takes around four hours and optimal firing around seven days. Large complex shapes can be made from many materials including synthetic sillimanite, mullite, alumina, silicon carbide and zircons.

Thixotropic liquids are used in the Vibrocast process. They need vibration to make them flow and are cheaper than ethyl silicate. Items can be produced with a dimensional accuracy as good as or better than slip casting, without the long drying out. Firing takes place at around 600°C, thus saving processing costs but without the contraction. A latex envelope can be used to provide a good quality surface finish.

The thixotropic process allows the introduction of fibres, beads and hollow spheres so that graded property levels can be attained over the cross-section of the precision refractory. Hollow mullite spheres incorporated during production enable a porosity gradient to be engineered, from a hard face to an insulating back.

Isostatic pressing can also be used to produce tubes or plungers with high precision. The capital outlay for the press and sleeves for mandrels may be costly but the precision of the end product means that secondary processes are unnecessary.

Precision refractories are replacing expendables in applications such as feeder bowls, gathering rings for pot furnaces, spout holes, orifice rings and moulds. Much simpler forehearth constructions are feasible; five monoblocks can be replaced by one precision-made component, cutting the number of components and joints, plus improving stability. Dimensional accuracy even allows the production of screw threads.

The improved performance of precision refractories has overcome the price differential in several niche markets. As more work is done to tailor properties to applications, wider acceptance will be earned by this functionally gradient material.



LOCAL SECTION CONTACTS

For details of forthcoming local section events in your area, contact the appropriate Honorary Secretary. All SGT members and non-members welcome.

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IN SEARCH OF CLYNE FARQUHARSON

Very few glass pieces from the crystal houses of the West Midlands have featured the signature of their designer. An exception was Clyne Farquharson, who worked for John Walsh of Birmingham. Roger Dodsworth of Broadfield House Glass Museum has investigated the background of this anomaly and presented his findings to the Midlands Section.

John Walsh began production of a range of crystal products in Birmingham in 1851. Walsh's curious name came about at his christening, when the vicar

asked his father the name of the child, father replied John Walsh, so the vicar named him John Walsh Walsh!

The company made a typical range of products at the time, with lots of reproductions or 'in-the-style' pieces. Colour catalogues at the time also showed amber wine services, cased and engraved hock glasses and also a range of iridescent products.

Clyne Farquharson was born in Birmingham in 1906. His parents were

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GLASS ENAMEL DECORATION

Fusible glass enamels are used in many diverse applications, including precision markings on laboratory glassware, decoration for cosmetics containers, specialised and returnable containers and automotive windscreens. Andrew Mountford of Johnson Matthey's Colour and Print Division described the various effects available and the latest products emerging from the legislative pressure associated with heavy metals to a North East Section meeting at Hartley Wood Glassworks, Sunderland.

Enamel coatings are a permanent and durable way of decorating a variety of glass products. They are made by incorporating an inorganic colour into a flux or frit. The properties of the matrix that holds the colour are balanced to provide gloss, match thermal expansion with the substrate and be durable enough to prevent metal release and attack by acids, alkalis and detergents.

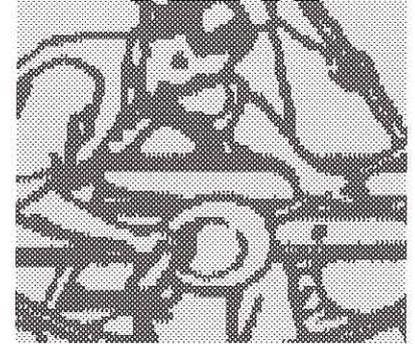
The frit and colours are initially

available as powders, they are then blended together, calcined to produce the final colour and ground to a powder. The enamel is combined with a transport media such as water, oil or wax, which is most suitable for the final coating process. Domestic appliance panels use an oil-based transport medium. Thermoplastic wax is used because of the rapid production schedules. Ultraviolet oil-based technology is in its infancy and the colour range is limited to automotive panels.

Screenprinting dominates the application techniques, although waterfall or curtain coating and roller coating can be used on flat glass. Machine bonding is used for continuous lines and hand painting for very short runs.

Typical firing consists of a drying or dewaxing step at around 400°C, soaking at around 600°C when the colour finally forms and mesh marks disappear, then cooling. During heating there is a two-way exchange of enamel and substrate, locking the coating on the surface.

The choice of colour components has



been affected by several factors, all of which have to be addressed by Johnson Matthey's research and development section. Heavy metal content and their release rate are subject to stringent legislation, especially when in contact with food and drink.

Colour ranges are subject to fashion and marketing demands. Some processors like to mix their own colours so the enamels have to be intermixable. There is also demand for short notice delivery to satisfy just-in-time practices operated by the automotive industry in particular.

Resistance to chemical attack for applications in most areas is a constant force for change in formulations. Quality and consistency must always be maintained while altering compositions. The colour being sold throughout the world must be the same in three months or three years.

The replacement of heavy metal compounds such as lead and cadmium has already been set in motion. Stringent legislation in the USA is being matched by the EC. The decorative enamel is moving towards a very high technology product.

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from Scotland and he was the second of five children. He went to art school between 1920 and 1924 and on leaving, was appointed chief draughtsman at John Walsh Walsh, a very senior position for someone aged 18. He was christened William but adopted Clyne, the maiden name of his grandmother, to provide him with a distinctive name for his designs at Walsh Walsh.

Two pattern books from the 1920s held by Birmingham Art Gallery were the first evidence of Clyne Farquharson's work. He produced four principal designs: Leaf, Kendal, Barry and Albany. Examples from these ranges are held at Broadfield House, all featuring deep cutting but also mechanical rather than acid polishing. Other designs from the books have not been seen elsewhere.

The four lines were launched with extensive coverage in *Potteries Gazette* and *Glass Trade Review* and the Clyne Farquharson name was closely linked with this promotion. Limited editions were available in issues of 250, just like fine art prints. Royal patronage had been earned by 1939.

The intervention of World War II saw the discontinuation of the Clyne Farquharson name, as the company converted to War Office work. Government policy after the war forced Walsh Walsh to seek export markets for most products. This led to a decline of the company and its final demise in 1951, a year after its centenary. Clyne Farquharson left the company when it closed and managed the London showroom of Stevens & Williams for a short time before disappearing.

Roger Dodsworth had managed to trace Clyne Farquharson's widow through an antique dealer in 1987 but his attempts to meet her were thwarted because of her advanced senility. In 1988 one of Farquharson's sisters and a niece contacted him and provided most of the information he has discovered so far. He learnt that Farquharson had married in 1939 and lost touch with his family when John Walsh Walsh closed in 1951. He died in 1972. In 1989, the Museum bought 20 pieces from an auction of glass consigned by Farquharson's widow to clear her debts.



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NEW RESEARCHERS FORUM

The Society of Glass Technology is following on the success of its clinic meetings for industry by organising a one day meeting for the glass research community on 14 December at Warwick University. The New Researchers Forum on Glass provides people who have been working on glass and related materials for a short time with the opportunity to meet workers from other institutions (academic and industrial) and to present and discuss their present research.

The event will take the form of posters and talks, with the objective of increasing awareness of the range and variety of research taking place in the UK and encouraging greater interaction in the glass community.

Costs will be kept to a minimum (below £20) and Warwick University is accessible by road and rail from most parts of the UK. Further details are available from Jill Costello at the Society.