NO. 4 1997

SGT NEWS

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IN PRINT

The August 1997 issues of *Physics and Chemistry of Glasses* have papers on: Spectral properties of Pr^{3+} and Nd^{3+} doped lithium borate glasses; the effect of CdO concentration on the electrical conductivity of zinc cadmium phosphate glasses; infrared spectroscopy, X-ray analysis and DTA of some sodium tetraborate glasses containing CuO irradiated with a fast, low level neutron beam; estimation of phase separation rates of $BaO-B_2O_3$ melts under cooling; thermal stability and optical properties of $K_20-Nb_2O_5-TeO_2$ glasses; structural evolution in zinc and lead phosphate glasses by X-ray diffraction and ^{31}P MAS NMR spectroscopy; spectroscopic investigations on Er(III) and Tm(III) in lead acetate glass; physical properties and fragility of $xM_2O.(50-x)SrO.50P_2O_5$ glasses (M=Ag,Na); structure of TeO_2.ZnO glasses by RDF and Te, Zn K EXAFS; electron paramagnetic resonance and optical absorption spectra of Mn(II) ions in silica sol-gel; structure and nonlinear optical properties of $PbO-Bi_2O_3-B_2O_3$ glasses; redox interactions between Cu and Ce, An, As, Sb in a soda lime silica glass; crystallisation kinetics of substituted InF_3 glass by differential scanning calorimetry.

The February issue of *Glass Technology* contains papers on the sintering behaviour of compacts made from television tube glasses; the relationship between density and structure of the chalconitride glasses; and a quasi-stationary model for bubble behaviour in glass melts with refining reactions.

Selected papers from the Spring meeting held in Droitwich in May 1997 are also available.

NEW EDITOR FOR GLASS TECHNOLOGY

Brian Moody

Brian Moody is to step down as the fourth editor of *Glass Technology* after 13 years. His role will be taken over Dr Peter Hart.

Brian took on the editorship following the sudden death of Professor Peter McMillan in 1984. He had taken early retirement from United Glass where he had worked for 33 years and had been manager of the Design and Development Department. Before becoming editor, he had contributed many articles on the technical and historical aspects of glass technology for the Society's own publications and for *New Scientist*, *Nature* and his book *Packaging in Glass*.

During his time as editor, Brian saw an increase in the number of overseas contributions to the journal. This brought with it a number of challenges and he always rose to meet them. He successfully established a wide network of reviewers to ensure that standards of the material submitted to the journal could be maintained.

In recognition of his contributions to glass, the Society of Glass Technology presented Brian with an Honorary Fellowship, its highest reward, at the 1997 Annual Dinner and Dance in Droitwich.

Dr Peter Hart, who will take over as editor of *Glass Technology*, was previously divisional director at GB Glass Lighting and vice-president of the Society of Glass Technology.

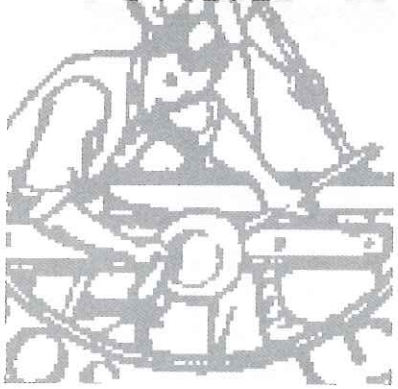
Like Brian Moody, Dr Hart studied natural sciences at Cambridge University, graduating in 1963. He then went on to Imperial College, London, and completed a PhD in metallurgy in 1967.

His first job was at GEC Hirst Research Laboratories, where he carried out research on glass and refractory materials for the lighting industry. He joined the development section at Glass Tubes and Components, Chesterfield in 1970. From 1975 he worked at Glass Bulbs, Harworth. In 1977 he became deputy factory manager at Glass Tubes and Components and later in 1981 at Glass Bulbs in Chesterfield during a period of changes in ownership and the recession.

By 1985 Peter was works director for Glass Bulbs covering Harworth, Chesterfield and Lemington in Newcastle. He became divisional director of GB Glass Lighting in 1991, which was bought by the management from Thorn and Osram in 1994. The sudden death of the managing director responsible for the buy out led to an internal restructuring. Lighting and Dema subsequently merged and Dr Hart's position became redundant in March 1995. Since then he has worked in Nigeria for a year as technical executive for CarnaudMetalbox/Toyo Glass Nigeria, responsible for overseeing the operation of two container factories and acting as consultant.

He has been an SGT member since 1969 and received a fellowship in 1983. He served on Council, Furnace and Refractories Committees, was a member of the Board of Fellows and was chairman of the Yorkshire Section in 1980.

New papers submitted for publication in *Glass Technology* should be sent to Dr Hart at the Society. ■



THE NETWORKING OF INFORMATION

At a recent meeting of the SGT's Yorkshire section, Matthew Ellis, process control systems engineer at Rockware Glass, presented a talk on management information systems.

At the event, held at Rockware's Wheatley site, Mr Ellis explained how the company has been able to integrate programmable logic controllers and statistical process control into its own system.

The system installed at Rockware has an architecture based on three communication levels: The information layer; the control and automation layer; and the device layer. Not all layers are required for every application but data can flow between them in either direction. PCs are networked via Ethernet on the information layer. The control and automation layer has PLCs networked via DH+/Profibus and measurement devices on the device layer are networked by DeviceNet/ASI.

Depending on their use the various communication levels have different network sizes, data volumes, response times and costs. No network alone can perform all of these tasks. This means that a network strategy has to get the best performance to meet the needs of each layer, while maintaining good connections with the other layers.

The information layer is used for plant wide data sharing and historical data. It also provides a link between the manufacturing information system and the plant floor. It is a large network connecting different host machines carrying high data volumes such as maintenance management, finance and production planning. Response times must be moderate but not on the same level as controllers. This layer is expensive but it does not require specialist parts and spares can easily be sourced.

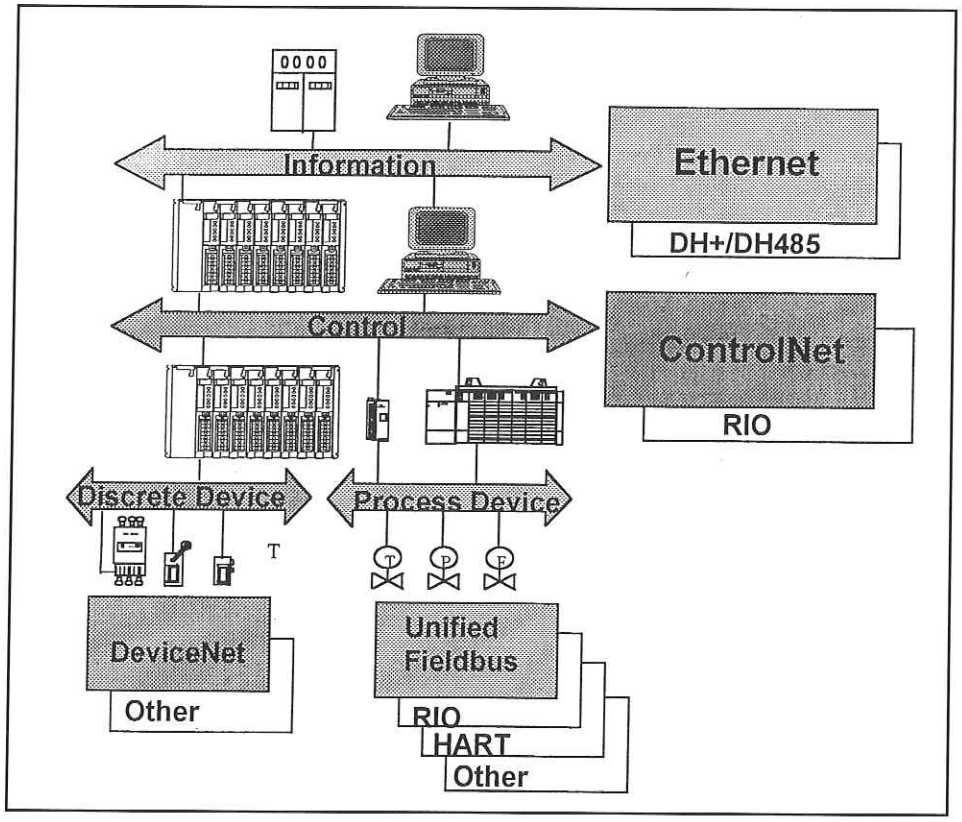
The control and automation layer acts as a bridge between the information and device layers. It needs broad device support for controllers, operator interfaces and third parties. Response times must be fast with reasonable data volumes. The size of the network is moderate and costs are low, being based mainly around coaxial cable with dual redundancy. High speed communications on this layer are handled by ControlNet. This also provides high throughput and guarantees that time critical data is sent and received. It is simple to start up and optimise and has easy to use software tools. It can accommodate both I/O and programming traffic on the same network. ControlNet also provides a clear migration path from existing to future controllers.

The device layer monitors device configurations and signals from sensors and actuators. It needs to be easy to connect and set up. Diagnostics predict failure warnings and offer troubleshooting facilities. The generic fieldbus connects many different devices and conveys signals to the control network. Both the network size and data volumes are small and response times need to be fast. Components, however, are made from low cost, simple wiring. DeviceNet is emerging as the world wide standard supported by most major suppliers. It provides a mechanism for enhancing and defining device profiles. Simple devices from multiple vendors are interchangeable giving the user flexibility, choice and competitive pricing on one common network.

Information technology in the industrial environment has always played a key part in encouraging competitive operation. A way is emerging of bringing together data in a framework to provide flexible alternatives which can be optimised to meet application requirements. Installed components are still supported, however, reducing hardwiring and start up time and increasing productivity. ■

Society of Glass Technology, 20 Hallam Gate Road, Sheffield S10 5BT. Tel 0114 2663168. Fax 0114 2665252.

The information system at Rockware's Wheatley plant operates on three levels with an Ethernet link between PCs and separate networks for PLCs and measurement devices.



SGT NEWS

ELECTRICALLY HEATED FOREHEARTHS AND REGENERATIVE COMBUSTION SYSTEMS

A half day seminar was held by the Indian Section, centering on two presentations and coinciding with the executive meeting of the All India Glass Manufacturers Federation. Shri Sushil Jhunjhunwala chaired the session and Mr Rajindar Singh, Managing Director, Vitrum Glass, Bombay was present as chief guest.

Rajindar Singh praised the work done by the Indian Section and expressed the hope that large number of people from the Glass Industry and its Institutions would join the Society. He found the topics covered in the seminar of great interest and hoped more seminars would be arranged in future.

The Chairman introduced the speakers: Gutam Lahiri, Director, Duralex Glass who spoke on electrically heated forehearths and Mike Damsell of Combustion Tec who spoke on regenerative combustion systems.

Mr Lahiri in his talk emphasised the need for producing a thermally homogeneous gob and explained that, in spite of recent developments, residual temperature gradients are still experienced in heavily loaded forehearths, a problem that is particularly acute for green and amber glasses. He discussed how Joule effect edge heating in the conditioning section provided a means of reducing the temperature gradient while achieving an efficiency in excess of 90%. The presentation covered the control system, the distribution of electrodes and thermocouples, and showed comparative data on temperature gradients, with and without electric boosting, highlighting the improvement achieved.

Mike Damsell discussed the design of the sealed-in burner which prevents several types of cold air entering the furnace. Inspirated air varies between 5% and 15% of the stoichiometric combustion air. With a regenerative combustion air temperature of 1093°C about 1% fuel can be saved for each reduction of 2.5% in inspirated air. He discussed, with drawings, the various elements which effect burner performance including firing position, burner block and port design and gas velocity.

The seminar ended with a vote of thanks proposed by the Hon Secretary, Dr J. Mukerji. ■

TECHNICAL COMMITTEES

Technical Committees are a key element of the Society's operations. They add to the Society's prominence and, through their activities, encourage new members.

ANALYSIS AND PROPERTIES COMMITTEE

Standard sands analysis completed in 1995 is now under revision. The technical committee is preparing a listing of analytical service providers for publication, this will be revised every two years.

Ms H M West, Materials Research Institute, Sheffield Hallam, University, City Campus, Pond Street, Sheffield S1 1WB.
Tel: 2533401.
Fax: 2533501.

BASIC SCIENCE AND TECHNOLOGY COMMITTEE

Involved in the Sol-Gel 97, Glasses in Electronics, Durability of Coatings and Non-Oxide Glasses conferences. Two members of the Committee are preparing a monograph on stress measurement in glasses.

Mr H W McKenzie, Pilkington Technology Centre, Hall Lane, Lathom, Ormskirk, Lancs L40 5UF.
Tel: 01695 54270.
Fax: 01695 54506.

ENGINEERING COMMITTEE

The Engineering Committee meets on a regular basis with the aim of organising clinic meetings and one day symposia.

Mr M Hickman, PLM Redfearn Glass, Monk Bretton Glassworks, Barnsley S71 2QG.
Tel: 01226 710211.
Fax: 01226 716808.

FURNACE AND REFRACTORIES COMMITTEES

These two technical committees are holding joint committee meetings with the long term aim of amalgamating. A clinic was held recently on control in the furnace and forehearth, more clinics are planned for 1998. The committee meets at different venues and include factory visits or presentations from the host. The Refractories in the Glass Industry publication is also being revised and updated.

Mr J Osborne, Beatson Clark plc, Hoyle Mill Road, Stairfoot, Barnsley S70 3EU.
Tel: 01226 731414.
Fax:01226 731214.

HAND-MADE GLASSWARE COMMITTEE

Recently organised the well attended clinic on pollution in October 1996. Plans in hand for another clinic in 1997.

Mr J Henderson, 44 Woodside Avenue, Throckley, Newcastle-upon-Tyne NE15 9BE.
Tel: 0191 264 4775.
Fax: 0191 264 6998.

LOCAL SECTION CONTACTS
For details of forthcoming local section events in your area, contact the following.
All SGT members and non-members welcome.

London
– Mr P West, United Glass Ltd, Porters Wood, St Albans, Herts AL3 6NY. Tel 01727 59261.

Midlands
– Mr C Baldwin, Stein Atkinson Stordy Ltd, Midland House, Ounsdale Road, Wombourne, Near Wolverhampton WV5 8BY. Tel 01902 324000.

North East
– Mr J Henderson, 44 Woodside Ave, Throckley, Newcastle upon Tyne NE15 9BE. Tel 0191 264 4775.

North West
– Dr D Martlew, Pilkington Technology Centre, Hall Lane, Lathom, Ormskirk, Lancs. Tel 01695 54210.

Scottish
– Mr D A Rennie, United Glass Ltd, Glasshouse Loan, Alloa FK20 1PD. Tel 01259 218822.

Yorkshire
– Miss R M Sales, 20 Blackbrook Drive, Sheffield S10 4LS. Tel 0114 2306179.

North America
– Dr A G Clare, School of Ceramic Engineering and Sciences, New York State College of Ceramics at Alfred University, 2 Pine Street, Alfred, NY 4802-1296, USA. Tel 607 871 2392.

India
– Dr J Mukerji, Central Glass and Ceramic Research Institute, PO Jadavpur University, Calcutta 777 032, India. Tel 473 3496.

ANTIQUE GLASS ROADSHOW

Roger Dodsworth identifies one of the many glass pieces at the Midlands Section's Antique Glass Roadshow with Tim Bradford (Midlands Section Chairman, left)

Old glass is notoriously difficult to identify. Marks were seldom used before the First World War and much archive material, in the way of factory production books and catalogues, has been destroyed. After almost 20 years at Broadfield House Glass Museum, Roger Dodsworth has had considerable experience in handling and identifying antique glass, he brought along some of his own collection as well as offering to identify and estimate the value of pieces brought by the audience to the Midland Section's meeting at Pedmore House, Stourbridge.

A wide range of glass pieces were brought to the meeting, many from the Stourbridge area but also other items from France, America and Eastern Europe. The ages of the glass ranged from the late 18th century to some pieces which were probably still in production. Roger Dodsworth's experienced eye could identify many of the items by the characteristic style of the engraving or cutting and how they matched established designs seen in the collections at Broadfield House and further afield. For any collector the name of the maker or designer is essential and the value of a piece increases as more background information becomes known.

Local manufacturers in the Stourbridge area were the source of many of the pieces brought along, including some lighting glass from around the turn of the century, cider flutes made for a proposed commission by Bulmers' Cider which fell through, uranium coloured pieces from Thomas Webb, Royal Doulton pieces and wine glasses by Webb Corbett.

Valuable glass can be found in the most unlikely places, one late 18th century English bottle valued at around £150 was bought from a junk shop with a lampshade and light fitting for a few pounds! ■

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FELLOWS LUNCHEON

The SGT President, Dr Peter Sewell, will be hosting the Fellows Luncheon at Ashfield House, Standish near Wigan, on Tuesday 30 September. The meal is preceded by a guided tour of the Technology Exhibition at Pilkington's Lathom Research Centre. All Fellows and their partners are welcome to attend.

Further details can be obtained from Jill Costello.

IS(NOG)^2

The first notice for the International Symposium on Non-Oxide Glasses and New Optical Glasses, IS(NOG)^2, has been sent out to potential participants. The scope of the meeting, to be held on 6 to 10 September 1998 at Tapton Hall, Sheffield, has been expanded to take in the development of new optical glasses which have some oxide content.

The symposium will look at new glasses, their synthesis, structure, optical and electrical properties, rare earth doping, applications and photonic devices. Professor David Payne of Southampton University's Optical Research Centre has been invited to give the Keynote Lecture. In an effort to raise the overall profile of the meeting and the standard of the papers, all submissions will be ranked according to their importance and technical impact.

Further details on the meeting can be obtained from Jill Costello.

ICG 2001

The Society of Glass Technology has been successful in its bid to host the 19th International Congress on Glass in 2001. The triennial international meeting for glass scientists, engineers and historians is held in close collaboration with the International Commission on Glass. The technical programme has around 40 oral sessions running in parallel, along with poster sessions, plenary opening and closing sessions and a number of cultural and commercial events running alongside.

The 18th ICG meeting is to be held in San Francisco, USA from 5 to 10 July 1998 and is hosted by the Glass and Optical Materials Division of the American Ceramic Society, which will be celebrating its centenary in 1998.

The Society was one of the founding members of the ICG and has hosted the Congress on two previous occasions: The second conference in 1936 and the eighth in 1968. The meeting provides a global showcase for the whole of the UK's glass industry and provides a positive stage for the uses of glasses of all types.

SOL-GEL 97

The programme for the five day workshop on the science and technology of sol-gels has been finalised with 80 invited and oral papers and over 180 posters. The papers will be presented in single sessions on each of the days with ample time given for delegates to circulate and inspect the many poster presentations. Over 300 people are expected to attend the conference at Ranmoor House, Sheffield between 1 and 5 September 1997.

The proceedings of the meeting will be published in special issue of Sol-Gel Science and Technology published by Kluwer.