

# SGT NEWS



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Technology

## OBITUARY: R G (ROY) NEWTON OBE DSc Hon FSGT

by Michael Cable

Roy Newton, the Society's 32nd President (1973-75) died on 9 May, aged 90. He was elected an Honorary

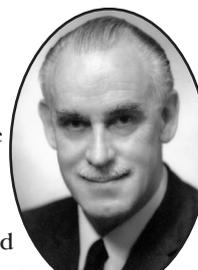
Fellow in 1983. He was the first director of the British Glass Industry Research Association, serving from 1955 to 1974, and subsequently became an authority on the conservation of glass, especially stained glass windows. He had previously had an outstanding career in rubber research associations.

He was born in Middlesex in 1912, the eldest son of an Inland Revenue civil servant whose wife had been born in Indiana; he had two younger brothers. Although christened Ronald Gordon he was always known as Roy. His childhood was not a happy one but gave him the ambition to outshine his contemporaries. He attended Brighton, Hove and Sussex Grammar School where he showed an aptitude for science. This led to him reading for an external London Honours degree in Botany with Chemistry at Brighton Technical College where he did well and,

after graduation in 1933, was able to continue his studies at Imperial College where he received his PhD in plant physiology in 1936. He then accepted a Fellowship sponsored by the Rubber Growers Association which set him on his first successful career path.

He joined the British Rubber Manufacturers Research Association in 1937 and became head of research in 1940. During the second world war he undertook the testing and characterisation of synthetic rubbers imported from the USA which was necessary to ensure their effective use. After the war there was a need to apply similar methods to natural rubbers from several South-East Asian countries and establish international standards, a task to which he applied his knowledge of statistics as well as biology, and he spent a year (1949-50) in Malaya. Following that he was appointed deputy secretary of the International Rubber Research Board but became dissatisfied with the political aspects of that post, feelings which were no doubt exacerbated by the death of his first wife in 1953.

In 1955 the Department of Glass Technology at the University of Sheffield was split in two. One part became a normal academic department, to



▲ R G (Roy)  
Newton  
(1912-2003).

President:  
Prof Adrian Wright.

Honorary  
Secretary:  
Brian McMillan.

Honorary  
Treasurer:  
Mr R T Montgomery,  
CA, FSGT.



### GLASS SCIENCE AND TECHNOLOGY - HYALOS-YAΛOΣ 2004

The Seventh ESG Conference is hosted by the Greek Glass Federation and takes place in Athens from 25-28 April 2004. The Society of Glass Technology is bidding to publish the proceedings in its publications *Glass Technology* and *Physics and Chemistry of Glasses*.

Invited speakers include: Dr H Arribart, CNRS/Saint-Gobain Recherche (France); Prof R G C Beerkens, Eindhoven University of Technology (the Netherlands); Prof M Decleris, Hon Vice President of the Council of State (Greece); Prof D Ehrhart, Otto-Schott Institute, University of Jena (Germany); Prof MD Ingram, Department of Chemistry, University of Aberdeen, Scotland (UK); Prof H Jain, Department of Materials Science & Engineering, Lehigh University (USA); Prof A Makishima, Japan Advanced Institute of Science & Technology (Japan); Dr M Prassas, Advanced Materials for Photonics Group, Corning Europe (France) and Dr N M Vedishcheva, Institute of Silicate Chemistry, Russian Academy of Sciences (Russia).

Topics covered at the conference will include, but are not limited to, the following:

- glass melting / glass forming
- furnaces and refractories
- glass products and quality control
- environmental issues
- novel glass processing
- sol-gel processing
- new glass applications (optics, photonics, medicine, dentistry, biotechnology)
- glass archaeology and art.

The Eighth ESG is scheduled to be held in Romania in 2006 and the Society of Glass Technology is bidding to host the Ninth ESG in the UK in 2008.

For further information contact Dr P Tsaousoglou, Secretary General of the GGF (Greek Glass Federation), 5 Oryzomylon St., 122 44 Egaleo, Athens, Greece. Tel: +30 210 5403400 427. Fax: +30 210 5691741. Email: merrikou@yioula.gr

which Prof R W Douglas was appointed, and the other became the British Glass Industry Research Association. Roy Newton was the only applicant for the post of director who had experience of industrial research associations and to his surprise (by his own account having told the interviewing committee what he thought of their amateurish questioning at his interview) was offered the appointment. He threw himself into building up the Association with characteristic single-minded energy and saw two periods of growth during his stewardship. However there were many difficulties to be overcome, some of which he described with surprising frankness in his memoirs *More by Luck than Judgement*, published in 2002. He realised that communication with the Association's members was very important if their support was to be continued and he ensured that reports and bulletins were regularly produced to achieve that.

He soon began to collect and analyse comprehensive data on furnace performance and fuel consumption, to which he applied some novel statistical methods of his

own. His energy and drive were such that he was able to obtain extensive data internationally, not just from the British industry. That work was recognised by the award of his DSc by London University in 1969. He was also awarded an OBE in the same year.

Roy was always confident of his own judgement and everything that he did was scrupulously recorded, indexed, filed away and readily recovered. In 1972 he embarked on a series of researches into the conservation of medieval stained glass, a subject where he saw a serious lack of reliable factual data. One result was that he instituted the Newsletter of the Corpus Vitrearum Medii Aevi and was solely responsible for it up to 1978. On retiring from BGIRA in 1974 he continued that work as an honorary professor in the Physics Department at the University of York. Some of his pioneering work included making measurements of three windows of York Minster with some sophisticated equipment, the main objective being to discover how to avoid condensation on the glass. That work allowed the York Glaziers' Trust to develop a suitable system of



external protective glazing. He also supervised for a considerable number of years the Ballidon experiments on the corrosion of buried glass. When his appointment at York ended in 1979 he was appointed to a similar post in the Department of Glass Technology at Sheffield in 1980. The University of Sheffield awarded him an Honorary DScTech in 1990.

Throughout his life Roy was also active in other fields; projects requiring the collection and analysis of large bodies of data especially appealed to him. At different times these were in ornithology and archaeology, later he undertook an exhaustive study of the genealogy of the Bagshaw family.

He remained active until very recently, sending out queries and always replying to those made of him with impressive detail and

punctuality. He expected the same of others.

Roy was married three times. His first wife was a physician who had qualified at a relatively late age because she had first had to earn enough to finance her own training. She accompanied him to Malaya where she set up clinics in areas where medical services were lacking. Her activities there made them both acceptable to the local people and able to travel freely at a time of considerable civil unrest. She died in 1953. He met his second wife Elsie in connection with his international rubber activities. She became a professional collaborator in some of his statistical work at BGIRA but unfortunately succumbed to cancer in 1970. Roy and Elsie had two sons, Robert and William. Roy is survived by his third wife Joy (née Bagshaw) whom he had met at the Hunter Archeological Society in Sheffield; they shared thirty happy years together. He was fond of saying with a hint of a twinkle in his eye: "I have been very fortunate with all my wives". ■



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## ALFRED UNIVERSITY STUDENT CHAPTER

*An update from J E Shelby*

The glass science and engineering students at Alfred University in the USA have joined together to form the first student chapter of the Society of Glass Technology. This Society is the world's leading organisation for scientists and engineers interested in inorganic glasses. The formation of the first student chapter of the SGT at Alfred is in recognition of the unique programme offered there.

The student chapter organised a field trip to the Guardian float glass plant in Geneva, NY on 21 February; over 20 students attended. Future plans include a trip to the Corning Glass Museum and a tour of the HOGSE for freshmen students who are potentially interested in the glass major.

A recent survey of students in this organisation has led to significant changes in the glass science and engineering programme at Alfred. These changes, which are in direct response to suggestions by the students, include the addition of more electives and the creation of new laboratory courses dealing with the melting and properties of glasses.

Student officers of the student chapter include:

- President - Krista Carlson
- Vice-President - Jake Amoroso
- Secretary - Jeff Miller
- Treasurer - Mark Dey

### ALFRED STUDENTS IN SHEFFIELD

Three students from Alfred University, New York, joined the second semester at the Department of Engineering Materials at the University of Sheffield as part of an exchange programme between the two institutions; the Society of Glass Technology has provided travel bursaries to students from both universities to promote the exchange. In a welcoming reception the Alfred students Logan Quist-Chafee, Jake Amoroso and Michael Nicholas met members of staff from the Department and two Sheffield students, Adam Taylor and Robert Deffley, who had recently travelled to Alfred.



▲ Sheffield students Adam Taylor and Robert Deffley join Logan Quist-Chafee, Jake Amoroso and Michael Nicholas from Alfred University in front of the Turner Museum of Glass.

# SGT NEWS



## TV is dead long live the web

The Nobel Prize winning scientist Sir Harry Kroto presented the 15th Turner Memorial Lecture on the need to promote science education and the alternatives to television that the world wide web now provides programme makers.

Young people are the generators of breakthroughs in science, it is not the stereotypical Einstein with the wild hair and moustache that developed the Theory of Relativity but the fresh faced youngster working in the Patent Office. For science to prosper it needs to put itself forwards as a viable career option to law and accounting for young people looking at further education. It is hard to compete against these professions; many of the people in government have started out in law, they are prominent and act as role models.

The Turner Memorial Lecture follows a choice of themes reflecting the interests of Professor W E S Turner, founder of the Department of Glass Technology at the University of Sheffield and co-founder of the Society of Glass Technology, which are glass history, glass science and public policy. Sir Harry followed the public policy theme in his look at science and education.

Professor Kroto studied chemistry at Sheffield, graduating in 1961 and gaining a PhD in 1964. His areas of research took him to Sussex University and led to an interest in carbon in space, which is plentiful. Simulating the formation of interstellar carbon in the laboratory led to the discovery of a new carbon structure  $C_{60}$ , a football shaped molecule of carbon. The structure was identical to the geodesic domes designed by the architect Richard Buckminster Fuller and the molecules became known as buckminsterfullerenes or 'buckyballs'.

This led to the subsequent opening up of a new field of research devoted to the manipulation of this structure to create bucky tubes and place ions or elements inside the carbon cages.

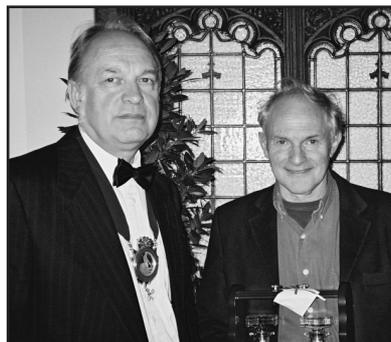
The potential is for superconductors using bucky tube wire or super strong structures using bucky tubes; there have been interesting optical effects in glass created by bucky ball dopants. This led to a knighthood for Harry Kroto and the 1996 Nobel Prize for Chemistry.

Attitudes to science need to change. A video clip of Trent Lott, the former US senate majority leader, was shown. In it he questioned the validity of science to an audience of high school students; he said he knew he was going to be a lawyer and didn't want to do the science and the maths, why should anyone? This was very sobering: a leader presenting the mandate to just not bother about science. But youngsters do good science - there is a language to science and science needs to use language to communicate.

In much the same way as the printing press democratised education, so the internet is providing the second democratic revolution. Vega Science Trust was formed in 1999 to advance public education in the field of science by producing films featuring prominent scientists including Nobel prize winners, to hold Royal Institution Discourses and to arrange for the publication of these and of important archival scientific material on various forms of media, including television.

The Vega website ([www.vega.org.uk](http://www.vega.org.uk)) has a selection of programmes available to download. These are:

- Face 2 Face: interviews with scientists who have changed the world we live in. Come face to face with some of the most eminent scientists of our time - Perutz, Sanger, Kohn, Rotblat, Dresselhaus, Cornforth and more;
- The Next Big Thing: a series of round table discussions. Experts explore "The Next Big Thing" in nanotechnology, ageing, GM Foods and others;
- The Buckyball Workshops: a collection of young children's



▲ Professor Adrian Wright presents Turner Memorial Lecturer Sir Harry Kroto with his gift.

workshops. Something for everyone, from the young to the young at heart!

- Snapshots: this series takes a 15 minute snapshot of the lives of young scientists. What is it really like designing the next F1 racing car, or building the ultimate eco-friendly house?
- Vega Science Masterclasses: via lecture and discussion, scientists explore a variety of topics from the mechanics of flight to science political history. Includes Helen Sharman, the UK's first astronaut;
- Reflections on Science: scientists present the science that they themselves find exciting to a small group including children, graduates and other scientists. Features everything from liquified gases to creativity and computers.

There are also lectures by renowned scientists such as Richard Feynman and Harry Kroto, and Royal Institution and Royal Society public lectures and discourses. These can all be viewed from the website and video and DVD recordings can be bought. There are support pages for teachers and downloads of various science projects and in particular the bucky ball experiments.

At the conclusion of the lecture, the Society President Professor Adrian Wright presented Sir Harry Kroto with a commemorative gift as a mark of thanks. ■



### LOCAL SECTION CONTACTS

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

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# Fourth Borates Conference Proceedings

The April issue of *Glass Technology* and the April and June issues of *Physics and Chemistry of Glasses* have the refereed papers from the Fourth International Conference on Borate Glasses Crystals and Melts. Papers and posters relevant to glass technology appear together in one issue, the papers relevant to physics and chemistry of glasses appear in April and the posters and a small number of papers in the June issue.

There is also a collected proceedings volume available; this will feature all the material published in the journals plus a review of the Third International Conference held in Sofia in 1999, a biography of David L. Griscom and an account of the life of Professor Alfred R Cooper. The North American Section of the Society of Glass Technology were the hosts and organisers of the conference held at Coe College, Cedar Rapids, Iowa. The hosts presented the Alfred R Cooper Student Project Prize at the conference for the very first time.

Featured papers include:

- One bad day 65 million years ago...
- Hydrothermally grown borate single crystals for deep ultraviolet and nonlinear optical applications
- Radiation defects in borosilicate glasses
- Chemical composition analysis of alkali borate and alkali germanate glasses
- Density and surface tension of borate containing silicate glass melts
- Studies of crystalline nonmetal borates
- Structure change on the surface of leached sodium borosilicate glasses
- Transformation of borate glasses into biologically useful materials
- Decorative B<sub>2</sub>O<sub>3</sub> containing coloured frits for traditional ceramics
- Boron and silicon speciation in waste simulant doped borosilicate glasses using multinuclear MAS-NMR
- Photostimulated luminescence of halogen molecular ions in alkali borate glasses
- Borate based glass ceramic materials for high temperature coatings and seals
- Rafaelites - new kinds of glass ceramics with low thermal expansion and low melting temperatures on the basis of alkaline earth aluminium borates
- Processes of borate formation taking place in batches of alkaline earth aluminium borate glasses

- Local and medium range order in alkali borate glasses: an overview of recent solid state NMR results
- Multiple four coordinated boron sites in caesium borate glasses and their relation to medium range order
- Influence of the borate anomaly on the Sn(II) environment in tin borate glasses
- Effect of boron oxide on surface hydroxyl coverage of aluminoborosilicate glass fibres: a 19F solid state NMR study
- Novel structural aspects of Sb<sub>2</sub>O<sub>3</sub>-B<sub>2</sub>O<sub>3</sub> glasses
- Studies of the temperature dependence of the short-range structure and local dynamics in silver borate glasses
- Infrared studies of borate glasses
- Brillouin and Raman spectroscopic studies of caesium lithium borate glasses
- Growth and characterisation of nonlinear optical borate crystals
- Formation of a fluorite phase in SrBi<sub>2</sub>Nb<sub>2</sub>O<sub>9</sub>-Li<sub>2</sub>B<sub>4</sub>O<sub>7</sub> glasses
- High silver borosilicates
- Second harmonic generation and Raman study of second-order nonlinearity in PbO/B<sub>2</sub>O<sub>3</sub> glass
- Diffusion and solubility of water in alkali borate melts
- Influence of melting and annealing conditions on the structure of borosilicate glasses
- Intermediate range order of borate glasses related to elastic properties
- Glass transition temperature, instantaneous and structural thermal expansion in the systems R<sub>2</sub>O-Al<sub>2</sub>O<sub>3</sub>-B<sub>2</sub>O<sub>3</sub> (R=Li, Na) and RO-Al<sub>2</sub>O<sub>3</sub>-B<sub>2</sub>O<sub>3</sub> (R=Ca, Ba)
- Intermediate range order in barium aluminoborate glasses from heteronuclear correlation NMR experiments
- Thio- and selenoborates: from rings to clusters and networks
- Structure and ionic conduction in lithium thioborate glasses and crystals
- New anhydrous proton conducting materials based on thioborates
- 'Computer synthesis' of B<sub>2</sub>O<sub>3</sub> polymorphs
- Pulsed neutron diffraction studies of RO<sub>x</sub>B<sub>2</sub>O<sub>3</sub> glasses: R=Ca, Sr and Ba; x=2, 3 and 4
- Glass formation and microheterogeneous structure in the system B<sub>2</sub>O<sub>3</sub>-V<sub>2</sub>O<sub>5</sub>-MoO<sub>3</sub>
- NMR studies of ion conducting borate glasses
- Crystallisation processes and



dielectric properties of Li<sub>2</sub>O·x(B<sub>2</sub>O<sub>3</sub>) glasses

- Ionic conductivity of crystalline and glassy Li<sub>2</sub>B<sub>4</sub>O<sub>7</sub>
- Soft x-ray XAFS experiments for sol-gel materials made under atmospheric pressure
- Energy dependence of vitreous B<sub>2</sub>O<sub>3</sub> on boroxol ring concentration
- Characterisation of glasses in the Ag<sub>2</sub>S-B<sub>2</sub>S<sub>3</sub>-GeS<sub>2</sub> system
- Trapping model of the non-Arrhenius ionic conductivity in fast ion conducting glasses
- Model of high frequency vibrational dynamics in glasses: strong hybridisation of acoustic and soft mode excitations in Ioffe-Regel crossover
- Thermodynamic modelling of the structure of sodium borosilicate glasses
- Structure of crystalline caesium enneaborate
- Influence of heat treatment on the structure of soda lime borosilicate glass
- Physical properties of barium borosilicate glasses related to atomic structure
- Linear electro-optic properties of bismuth triborate BiB<sub>3</sub>O<sub>6</sub> (BIBO)
- Dependence of N<sub>4</sub> upon alkali modifier in binary borate glasses
- Li<sub>6-2x</sub>Ba<sub>1+x</sub>B<sub>10</sub>Se<sub>19</sub> and Li<sub>3+x</sub>Na<sub>5-x</sub>B<sub>10</sub>Se<sub>19</sub>: excellent candidates for ionic conductivity measurements
- Effects of bromine additions on the formation of copper colloids by hydrogen reduction in sodium borate glasses
- Manifestation of the mixed alkali effect on some properties of water containing alkali borate glasses
- A study of packing in alkali borate glass systems
- Structural and electrical relaxations in Li<sub>2</sub>B<sub>2</sub>O<sub>4</sub> glass
- A solution approach to high potassium content borate glasses
- Isostructural phase transition in Li<sub>2</sub>B<sub>4</sub>O<sub>7</sub>
- Alkali distribution in borosilicate glasses
- Structural changes in vitreous boron oxide
- Local structure around Ag cations in silver borate glasses studied by XANES
- A neutron diffraction investigation of the structure of caesium borate glasses.

The conference proceedings are available to buy for £60 (£40 to SGT members); orders can be made from the SGT website: [www.sgt.org](http://www.sgt.org)



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