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In Scotland

NEWSLETTER

April 2008

SUPA knowledge boosts business

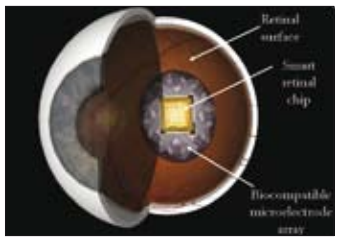
How does physics research impact on the world we live in? A knowledge-transfer exhibition and conference, which took place on Wednesday 27 February in Glasgow, showed how world-class physics research starts in the laboratory and can then become part of our everyday lives.

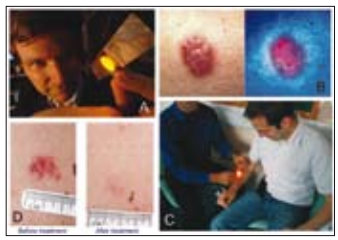
Since the Scottish Universities Physics Alliance (SUPA) was established in 2005, the eight universities have worked together to enhance their knowledge-transfer networks and to ensure that businesses in Scotland, the rest of the UK and around the world are making the very most of the excellent research that is being undertaken.

The showcase, part-sponsored by the Institute of Physics, included 30 exhibitions and a range of speeches from experts in the field of knowledge transfer.

Exhibitions included:

- **An artificial retina** Advances in microelectronics have made it possible for SUPA researchers to begin manufacturing a device a few millimetres in diameter, which can be implanted into the inner surface of the retina to help those suffering from degenerative retinal disease.
- **Flexible and wearable solar panels** Solar panels are usually heavy, rigid and vulnerable to damage. A new company, Power Textiles Limited, is exploiting SUPA research, which has made it possible to weave solar panel thin films into fabrics. Incorporating "solar panels" into fabrics is an exciting development for renewable energy targets and Scotland's large textiles industry.
- **Plasters that can help cure skin cancer** Lumicure Ltd is advancing SUPA research to make photodynamic therapy, a much less intrusive form of treatment that is used to cure skin cancer. The company has developed lightweight, flat light-emitting panels powered by small batteries, which can be worn like a sticking plaster to destroy skin-cancer cells.





SUPA Knowledge Transfer exhibition highlights: a diagram illustrating cutting-edge retinal implant technology (top left); renewable energy in the form of solar panel thin films for the textile industry (left); revolutionary photodynamic skin cancer treatment (above).

Speakers at the event included the chair of the pan-European network of knowledge-transfer offices, a senior director of Scottish Enterprise and the executive director of the Institute of Knowledge Transfer. There were also presentations by senior industry executives and academics giving their views about knowledge transfer.

Ian Halliday, chief executive of SUPA, said: "All of the exhibitions at the SUPA Knowledge Transfer conference show how examples of research being undertaken in Scotland have a tremendous potential for changing the way that we live. Visiting the exhibition gave direct access to front-line academics who manage the facilities and generate results with real value to business."

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A note from the newsletter editor

This issue highlights many of the events that took place in 2007 to celebrate Kelvin Year. It was a remarkable success and seems to have reached out to the public. I have even heard rumours of a taxi driver talking about Lord Kelvin's achievements.

Looking to the future, this newsletter focuses on a couple of events emphasising knowledge transfer and enterprise. Given the results of the Institute publication about physics in the Scottish economy (physics-based industry contributes nearly 10% of the Scottish economy), maybe we should be shouting our successes from the rooftops.

William Thomson, Lord Kelvin.

Science is beginning to command a higher profile in the Scottish Parliament and the Institute is involved with a new cross-party group on science and technology. A motion was put forward to congratulate scientists on their recent achievements. Unfortunately, on not such a positive note, the funding issue around the Science and Technology Funding Council has caught the attention of our parliamentarians.

Scottish teachers stole the show at the Institute Teachers Awards and the two winners are given glowing tributes (p6).

It is important that the Institute works with the greater physics community to maintain the strength of our scientific endeavour and, by celebrating our successes, we show what a vibrant community we are.

Yours aye,
Alison McLure

Key conference assesses enterprise in Scotland

The Enterprising Scotland Conference was billed as the first major conference in Scotland about enterprise and had a star-studded mix of speakers. The talks ranged from high-level policy musings by Jim Mather, Minister for Enterprise, Energy and Tourism, to inspirational tales about success from the likes of Tom Farmer CBE. Jack Perry, chief executive of Scottish Enterprise, talked about the forthcoming framework for the enterprise companies and some of the issues that they will be dealing with. This topic was also covered by Iain McMillan, director of CBI Scotland, and, although he seemed reasonably happy with the proposed structure, CBI Scotland had some concerns.

A more practical approach was taken by John Anderson from the Entrepreneurial Exchange and Brendan Hyland from Wireless Fibre Systems Ltd, who talked about enterprise from the perspective of an entrepreneur. Some academic rigour on enterprise and entrepreneurship was provided at the meeting by Prof. Erkko Autio of Imperial College and Prof. Robert Wright of the University of Strathclyde.

It seems that the general consensus is that enterprise in Scotland is in a healthy state, but we can't afford to rest on our laurels because the developing world, in particular, is hard on our heels. We know that physics can continue to contribute to an "enterprising Scotland".

Alison McLure

Parliament praises Scottish scientific research

The good news
The following motion on Congratulating Scottish Science was lodged in the Scottish Parliament by Bill Wilson on 5 February 2008.

- This motion has been supported by Jamie Hepburn, Brian Adam, Rob Gibson, Robin Harper, Bashir Ahmad, Bill Kidd, Roseanna Cunningham, Christina McKelvie, Stuart McMillan, Joe FitzPatrick, Elaine Smith, Sandra White and Alasdair Allan.

Contents
S3M-1316 Bill Wilson: Congratulating Scottish Science

shutterstock

Scottish-based scientific research is, at last, featuring more prominently in the Scottish Parliament.

That the Scottish Parliament notes the findings of the recently published *Metrics for the Scottish Research Base* report commissioned by the Scottish Government; notes that the outcomes, in terms of research recognition, citations, training and research quality, are excellent at 2% of world highly cited papers, 1% of world citations and 0.8% of publications; notes that Scottish-based scientists perform well in a variety of fields and that they are first in the world in terms of impact, in health and related sciences, and first in the world in terms of citations per GDP; further notes that, for the Scottish research base as a whole, the average impact has increased progressively over the last 10 years, placing Scotland second in the world behind only Switzerland, and congratulates Scottish-based scientists for the quality of their research.

The bad news
New S3M-1327: Scottish Science Funding Crisis – 7 February 2008 – Scottish Parliament – motion lodged

Summary
The following motion on the funding crisis in Scottish science was lodged in the Scottish Parliament by Ian McKee on 7 February 2008.

Contents
S3M-1327 Ian McKee: Scottish Science Funding Crisis

That the Parliament notes with concern the funding crisis at the Science and Technology Facilities Council (STFC), the effects of which, as well as reductions in new physics grants for Scotland's universities, will see reductions in funding for the United Kingdom Astronomy Technology Centre (UKATC) by 50% over the next three years; recognises that this funding has been vital to the continued existence of these organisations, which have been responsible for many world-leading instruments for the world's astronomers, have pioneered the successful Dark Sky Scotland scheme and have provided support to hundreds of science teachers to encourage young people in Scotland into science; deplores the actions of the STFC in disproportionately reducing the funding in Scotland, and calls on MPs at Westminster to reassess the funding for science in Scotland.

Foulkes – Royal Observatory
Monday 4 February 2008 – Scottish Parliament – written answer

Summary
The following question was answered on 4 February 2008.

Contents
George Foulkes (Lothians) (Labour): To ask the Scottish Executive whether it plans to offer financial assistance to the Royal Observatory in Edinburgh.
Jim Mather: "The Royal Observatory has not asked the Scottish Government to provide financial assistance and we have no plans to do so. The UK Government's STFC has the primary responsibility for funding the Royal Observatory through its UKATC. We are aware of the potential difficulties at the Royal Observatory arising out of the STFC's budget cuts, following the UK Government's Spending Review. I have therefore written to John Denham, Secretary of State at the Department of Innovation, Universities and Skills, to express my concerns and I also plan to visit the Royal Observatory soon to discuss this issue further."

- Reproduced from the Scottish Parliament website (www.scottish.parliament.uk).

Lectures celebrate Kelvin's legacy

On November 14 2007 we celebrated the centenary of Lord Kelvin's legacy in the Kelvin Gallery, University of Glasgow. Kelvin was born William Thomson in Belfast in 1824. He studied at Glasgow University, passing his examination in 1840, and returning in 1864 aged 22 to take the chair of natural philosophy. Far beyond the laws of thermodynamics, his scientific achievements spanned many aspects of physics, engineering and, as a man ahead of his time, its commercialisation.

Rather than focusing on his historical achievements, the day's lectures explored the current legacy of some of the scientific fields that occupied Kelvin, presenting modern-day insights into work that he can be said to have started.

Like many scientists of his time, Kelvin believed that light travelled through ether that filled the vacuum. He proposed that atoms and molecules were formed from vortex loops and knots within this ether, a theory somewhat undermined by the subsequent discovery that light needed no ether at all. Although flawed as a theory for atoms and molecules, vortex lines within wave fields are prevalent in many branches of physics, ranging from superfluids and cosmic strings to light itself. Prof. Michael Berry explained how, even since the time of Newton, light was known to exhibit vortex-like properties. Optical vortices are an inescapable feature that arise whenever three or more light beams overlap. Prof. Berry revealed how, for special superpositions of beams, the resulting vortex structure can form both links and knots – a topic of current research at the University of Glasgow.

Kelvin gave his name to the temperature scale that sets absolute zero as zero degrees Kelvin. Not foreseen by Kelvin is that when gas atoms are cooled to a fraction of a degree above absolute zero, their effective wavelength extends beyond the separation between individual atoms. Rather than considering the gas as individual atoms it is now considered as a whole. These Bose–Einstein condensates are one of the hot topics of modern physics. Prof. Ed Hinds produced one of the first condensates and has established new techniques for their transport and control. A related area of excitement is that it's possible to hold a single atom in a tiny cavity formed between the end of an optical fibre and a neighbouring mirror. The enhancement provided by the cavity means that it's possible to interact with the atom using a single light photon. These quantised interactions will form the basis of a new type of information processing, capable of performing tasks that are impossible for any classical computer.

Beyond thermodynamics, for which Kelvin is most famous, his contributions to the commercial exploitation of modern science were truly outstanding. Nowhere was this more impressive than with his contribution to worldwide communication. Prof. Wilson Sibbett outlined Kelvin's input, both the unsuccessful and subsequently the successful laying of the first transatlantic telegraph cable, an undertaking that required the building of the world's largest steamship. Kelvin's key contributions to the project included the design of the highly sensitive receiver capable of measuring the small currents emerging at the far end of the cable. Prof. Sibbett explained how electronic communication has been largely superceded by optical communication and how UK science has developed the essential optical amplifiers required to boost the light levels throughout the thousands of kilometres of fibre-optic cable. Prof. Sibbett's own work has centred on making the ultrashort laser pulses that form the basis of high-speed optical communications.

Returning again to the subject of ether, Kelvin pondered its structure, which had to be light yet, to account for light's high velocity, also very stiff. He speculated that the ether had the same structure as foam, famously only taking a few weeks to establish the lowest-energy unit cell. His foam structure was considered the optimum foam until the mid-1990s when Prof. Denis Weaire and Robert Phelan established an alternative structure slightly more efficient than Kelvin's proposal. Interestingly this structure rarely occurs in nature. Prof. Weaire showed us how his foam structure has been adopted as the design for the steel framework of the Beijing Olympic swimming venue.

This event was chaired by the present holder of the Kelvin chair, Prof. David Saxon, and attracted more than 150 active Scottish researchers.

Miles Padgett, University of Glasgow

Institute backs Scottish Parliament science forum initiative for MSPs

A cross-party group on science and technology has been set up recently in the Scottish Parliament. The purpose of the group is to bring together Members of the Scottish Parliament (MSPs) and others with an interest in science and technology in Scotland. It aims to raise awareness among MSPs about important developments in science and technology.

The group will hold focused meetings with debate opened by guest speakers active in fields of scientific and technological developments of interest to the Scottish Parliament. The Institute is a key partner in the group and I would welcome your views about the issues that you think should be discussed.

Suggested topics for future meetings are:

- carbon capture and sequestration;
- science's economic input;
- new fuels for transport;
- research and development activity in Scotland;
- science education and careers.

What are cross-party groups?

Cross-party groups provide an excellent opportunity for members of all parties, outside organisations and members of the public to meet and discuss a shared interest in a particular cause or subject.

Alison McLure

Work starts on James Clerk Maxwell statue

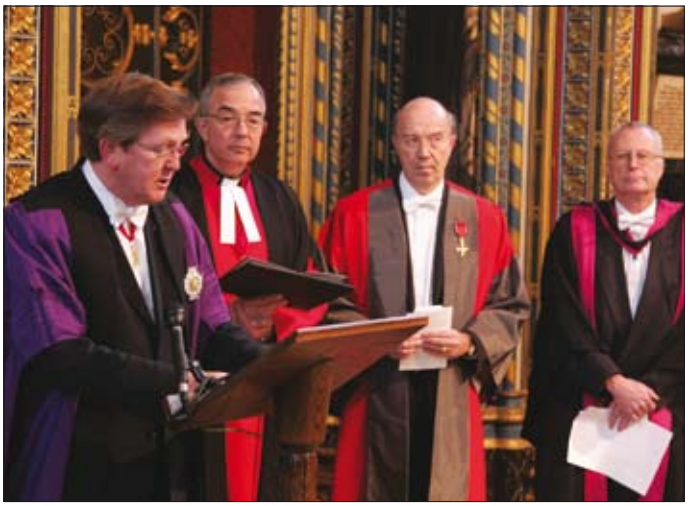
Alexander Stoddart, University of Paisley sculptor in residence, has now started work on the James Clerk Maxwell statue, which, on completion in 2008, will be located in George Street, Edinburgh. The work has been commissioned by the Royal Society of Edinburgh (RSE).

Sir Michael Atiyah, President of the RSE, has been a welcome visitor to Stoddart's studio workshop during the past year. 2006 marked the 175th anniversary of the birth of James Clerk Maxwell.

Alexander Stoddart at work on the newly commissioned statue.

Glasgow pays a glowing tribute

The University of Glasgow pays tribute to Lord Kelvin with a wreath.


Principal Sir Muir Russell acknowledges Thomson's achievements.

It's 100 years since the death of William Thomson – known to the world as Lord Kelvin. His contributions to the world of science and engineering are hugely celebrated, and the legacy he left the university is beyond measure.

At a wreath-laying ceremony in Westminster Abbey on 17 December 2007, principal Sir Muir Russell paid tribute to Thomson's genius, saying: "We acknowledge anew the contribution he made to the field of human knowledge and to its practical application. The scale and scope of Lord Kelvin's achievements and their lasting legacy bear full testament to an outstanding scientist, ingenious inventor and successful businessman."

At the ceremony, the principal paid further tribute to Lord Kelvin's long and distinguished service to the university, and for the ways in which he enhanced, and continues to enhance, our fame and reputation. "He was a student, an inspirational teacher and an indefatigable researcher. His commitment to Glasgow was immense: we owe him a great debt of gratitude. Through this act of remembrance and celebration, we mark once more our appreciation for all that he did for, and continues to mean to, our university," he said.

- For a full account of the event at Westminster Abbey, visit www.glasgow.ac.uk/myglasgow

History of Physics

The History of Physics Group held its latest meeting in Glasgow, last November, to coincide with the Kelvin 2007 event. After a brief formal AGM, the 25 or so members (including several from the

Pupils have a real ball at Christmas Lectures

The University of Glasgow, in conjunction with the Institute of Physics in Scotland and the Royal Society of Edinburgh, invited Johnny Ball to close Kelvin Year by giving a series of Christmas Lectures. Kelvin Year was established in recognition of the fact that 2007 marked the centenary of the death of Scotland's greatest scientist and engineer (Kelvin died on December 17 1907).

The Christmas Lectures were given in the Charles Wilson Lecture Theatre. Ball entitled the lectures "On the shoulders of giants". He reviewed the achievements of not only Lord Kelvin but other great 19th-century scientists and he put on a number of thought-provoking demonstrations. He stressed that a common theme for all of these scientists was observation. He encouraged each member of the young audiences (more than 1000 schoolchildren over the two days) to question each piece of "evidence" rather than accept the words of others. He concluded each lecture by examining the evidence behind current views on global warming. Ball was unconvinced that the phenomenon can be explained purely on the basis of recent rises in carbon dioxide emissions, citing, for example, the fact that water levels in the Thames are rising at a rate of 3 mm per year but have been doing so since the days of the Roman occupation 2000 years ago, rather than as a result of recent melting of the ice cap.

There was concern from some quarters that these views might be interpreted as an indication that global warming is not a problem. However, the feedback from both children and staff was that the presentations had stimulated them to question further the validity of evidence but had not reduced their concerns about the possible effects of global warming. The overall response to the lectures was extremely positive.

The University of Glasgow is most grateful to the Institute for generously supporting this event as part of an ongoing relationship between university staff and physics teachers in schools across the west of Scotland (led by Prof. Miles Padgett) to ensure that more schoolchildren consider physics to be their chosen subject when they enter higher education.

Robin Leake

Do you have any ideas for branch events or suggestions for articles?

If so, e-mail them to alan.walker@ed.ac.uk

to its most illustrious scientist

University of Glasgow representatives celebrate Kelvin's legacy.

The centenary wreath takes pride of place in Westminster Abbey.

European Physical Society's History Group, led by their chair Dr Peter Schuster) settled down to the main course of lectures celebrating the life and work of Lord Kelvin, under the general title of "Kelvin in context".

The first speaker was Prof. Bruce Hunt of the University of Texas, Austin, US, whose lecture "Kelvin the telegrapher" dealt with Kelvin's innovative and astute commercial ideas about transatlantic communication by cable – supporting the suggestion that his title should have been "Lord Cable". "Kelvin at Glasgow" by Ken Sheldon of the University of Glasgow was a fascinating pictorial tour of Kelvin's life at the university, while Prof. Andrew Whittaker of Queen's University, Belfast, focused on Kelvin's social background and influential scientific colleagues in his lecture "Kelvin the Irishman". Prof. Crosbie Smith of the University of Kent at Canterbury gave an unexpected view in "Kelvin and the River Clyde", emphasising the importance of the maritime context of his scientific and engineering life.

It was a most enjoyable day topped off with the opportunity to view the newly opened gallery devoted to Kelvin, which is located in the university museum. Our thanks go to Prof. David Saxon and Prof. Miles Padgett of the University of Glasgow's Department of Physics, as well as other university staff members, for their assistance.

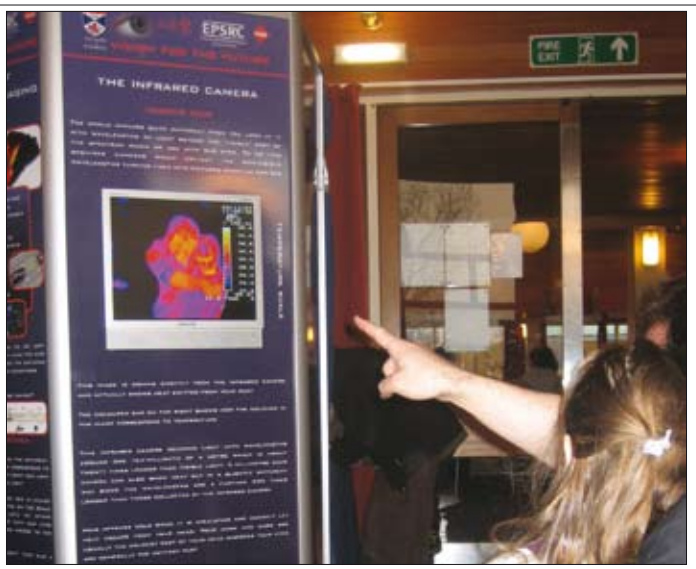
- Copies of our newsletter containing lecture transcripts are available from the editor (e-mail mjcooper@physics.org).

Malcolm Cooper

Science hots up in the Highlands

It is not often that the residents of the Highlands are given the opportunity to go to a science festival right on their doorsteps, but in November 2007 that is exactly what the Moray Winter Festival provided. Half-a-dozen hands-on exhibits in Elgin Town Hall were supplied by Moray's astronomy club, SIGMA, and the University of St Andrews.

SIGMA offered a range of exhibits, including a display of astronomy photos taken locally, a spaceflight simulator, tiny remote-controlled helicopters and a moon-landing demonstration. The University of St Andrews brought its face-morphing technology for the public to try out and a large exhibit from the university's Millimetre-Wave Group, which included an infrared camera and demonstrations of the Doppler effect. This exhibit was enjoyed by visiting members of the public in particular.



A young member of the public is captivated by her infrared image.

The festival included a variety of interesting talks, ranging from "How to make a comet" to "The physics of the Book of Job". The organisers were pleased by the popularity and success of this year's event and they hope to expand it next year.

Robin Leake

Institute offers grants for public engagement

Are you a great communicator? Do you have a fantastic idea for making physics accessible to the general public? Can you inspire other people with your enthusiasm and passion for the subject? Do you need some support to make your outreach activity happen?

If you answered "yes" to all of these questions, then why not apply for a Public Engagement Grant from the Institute of Physics? The grants are worth up to £1000 and aim to support physics-based outreach activities throughout 2008.

Application forms and guidelines for the grant scheme are available online at www.iop.org/activity/outreach/index.html (or e-mail physics.society@institute.org).

Scottish teachers steal the show at Institute Awards

In the Institute's guidelines about its Teachers Awards are the words "Remember that all the teachers nominated for awards are very good teachers. The selection panel is looking for those who are outstanding." When the panel read the papers supporting the nomination of Ronna Montgomery for an award, they probably did not have to deliberate for long. All of the criteria were well and truly met: evidence of outstanding teacher of physics; evidence of how they have inspired pupils and colleagues; evidence of how they have made physics exciting and relevant; evidence of effort beyond the call of duty; and evidence of coping with frequently revised curricula.

Montgomery started teaching physics 33 years ago and is currently a senior teacher of physics at Bearsden Academy. Those simple statements give little clue as to the extent of the expertise and experience that she has to offer, or the range and scale of activities in which she is engaged at the school and beyond. Current and former colleagues talk of her dedication, her inspirational qualities, her willingness to go the extra mile to ensure that pupils achieve to the very best of their abilities, her ability to put across difficult concepts in varieties of ways, her skill in producing her own quality resources and her willingness to incorporate into her teaching new and innovative resources devised elsewhere. Her classroom is described as "an industrious hive of activity where she delivers the curriculum in an exciting, relevant and industrious manner …its walls covered in pupils' project materials or spectacular physics images". Her students' examination results are said to be second to none.

Beyond the physics laboratory, Montgomery serves on the whole school Learning and Teaching Committee where, in its deliberations and her feedback to colleagues, her ability to cut through educational jargon and to explain in clear and concise terms the purpose of various activities is much appreciated. With a colleague she has been deeply involved in school theatre productions for many years. "Enthusiastic, passionate and forceful in everything that she believes in, she was determined to deliver the best shows in Scotland," someone said. She is also a marker of Advanced Higher investigations and has frequently written for the *Times Educational Supplement* and other educational journals.

In addition to this, Montgomery is the Institute's Teacher Network coordinator for the Greater Glasgow area. Network coordinators devote the equivalent of half a day per week of their own time to supporting other physics teachers in their areas. For any coordinator this is a major commitment but, when you consider what proportion of Scottish physics teachers work in the Greater Glasgow area, you realise that Montgomery must be outstanding to achieve all that she does. She seems to know at least half of those in her catchment area – and few have not heard of her.

She is an excellent coordinator but her heart is in her teaching and with those who are in her charge and who work alongside her. When it was known that she was to be nominated for an award, there was no shortage of people wishing to add supportive statements – colleagues within and outwith the science faculty, student teachers, technicians and students past and present (to whom she is affectionately known as "Mrs M"), not to mention grateful parents.

Let the final words be those of one of her sixth-year students: "Mrs M is one cool teacher!"

Catherine Wilson

Ronna Montgomery receives her award from IOP president Peter Saraga at the Teachers Awards.

McVey busy welcoming physics teachers to the Stirling meeting.

Members of the Scottish physics teaching community were delighted to hear that the Institute had chosen to give Michael McVey a Teachers Award. These are given in recognition of teachers' outstanding contribution to the teaching of the subject. In this respect, McVey has given a great deal over a large number of years. He has only recently retired from a long service as principal teacher of physics at Lourdes Secondary School, where tributes from pupils showed particular appreciation for his lively lessons, his wit and humour, and his approachability.

McVey not only stood out in the classroom but was also a moving spirit in the work of the West of Scotland Physics Education Group (WoSPEG). During his tenure as chairman of WoSPEG he had innovatory ideas for broadening links between physics teachers and commerce as well as running the physics quiz for schools.

He is currently the driving force, as chairman, behind the group responsible for organising the much appreciated annual Stirling Teachers Meeting. It is Mike's steady work behind the scenes and his good-humoured management of the individuals making up the team that has ensured its continuing success.

This is a well earned tribute for McVey to take with him into what looks like being a very active and involved retirement, and the physics community congratulates him on it.

Gemmell Millar and **Ian Taylor**

Bursary scheme helps young adults

The Nuffield regional coordinator for Scotland is always looking for new partners. Hosts provide one or more projects lasting four to six weeks in July and/or August.

Join an initiative that helps young people contribute to your organisation through real science, technology, engineering and mathematics (STEM) project work and fresh thinking. Demonstrate your commitment to STEM education, develop skills through mentoring a young student and spread knowledge of your organisation's activities.

By agreeing to host a project for the scheme, you can:

- broaden the profile of your organisation's activities;
- inject new ideas into your existing projects;
- provide continuing professional development through the mentoring of bursary students;
- strengthen education and industry links;
- show your commitment to physics teaching and education;
- further the work of your organisation.

Application forms and guidance for students, teachers and supervisors can be obtained from the Nuffield regional coordinator. Contact Frances Chapman (TechFest-SetPoint, University of Aberdeen, St Mary's, Elphinstone Road, Aberdeen AB24 3UF; tel 01224 274 191; e-mail f.c.chapman@abdn.ac.uk).

Workshops teach physicists how to reach the public

The Institute's Physics in Society programme aims to inspire people of all ages about physics and to engage them in meaningful debate about scientific topics through a variety of activities that capture their imagination, highlight the relevance of physics in their everyday lives and portray physics as an accessible, aspirational and curiosity-driven subject.

To reach as wide an audience as possible, we are committed to encouraging scientists who take physics to their communities through outreach and engagement activities, such as hands-on workshops, interactive talks, debates, discussions, websites and performances.

Physicists learn how to share their knowledge with the public.

The Physics in Society team ran a series of outreach workshops throughout the UK in 2007. They are designed to train and support physicists who are interested in communicating their passion for and knowledge of the subject.

One of the workshops was also held at the Glagow Science Centre in January this year. It was run by staff from Ecsite UK (the European Network of Science Centres and Museums). It included some theory on how "learning" differs from "education" and many practical demonstrations showing how to engage the public in physics. There were useful tips about the types of venue that would be appropriate and examples of how to engage with the media.

The "Engaging the public" section of the Insititute's website includes information and resources to support anyone who wishes to share their passion for physics with public audiences and is available at www.iop.org/activity/outreach/index.html. The Institute of Physics in Scotland runs a grant scheme for outreach projects.

For further information about the outreach workshops and application details, contact me (e-mail alison.mclure@institute.org).

Alison McLure

Why not surprise yourself and inspire someone else?

8 May, 6.30 p.m.
Mentoring Workshop
The Glasshouse, 2 Greenside Place, Edinburgh EH1 3AA

More dates will be added throughout the year. Booking forms are available online at www.members.iop.org/careersforms/mentoringform.html.

The Institute recognises the benefits of mentoring and would like to share them with you. The Institute's Professional Development and Careers team will be touring the UK to offer you the chance to attend our mentoring workshop and to get involved in mentoring.

The programme covers:

- Welcome and introductions
- What is mentoring?
- Learning styles: an introduction
- Mentoring styles
- Mentoring skills
- Mentoring relationship
- The benefits of mentoring and much more

All workshops will be held in the evening at 6.30–8.30 p.m. There is a maximum number of 20 spaces per session, so don't miss out – book early to secure a place.

Please note that this workshop is specifically about mentoring. In all contexts it does not cover the requirements or processes for chartered status. If you are interested in mentoring to support your own or someone else's chartered application, we still recommend that you attend the workshop but advise you to contact us separately for more information about the processes, competencies and requirements.

Events calendar

April–June
BA/West of Scotland Programme
Event details are available at www.the-ba.net/the-BA/InYourArea/Scotland/WestScotland/UpcomingEvents/index.html.

12 May
Exploring the Mysteries of the Universe with the Large Hadron Collider
Royal Society of Edinburgh
Talk by Prof. Fabiola Gianotti, research physicist, deputy spokesperson of the Atlas Experiment.

4 June
Annual Stirling Teachers' Meeting
University of Stirling

7 June, 11.00 a.m. – 11.00 p.m
IOP Scotland AGM, conference and dinner: Physics and the Energy Gap
University of Glasgow, Senate and Carnegie Rooms
The conference will include a visit to the Hunterian Museum.

23–27 June
Physics Teachers Summer School
University of Glasgow

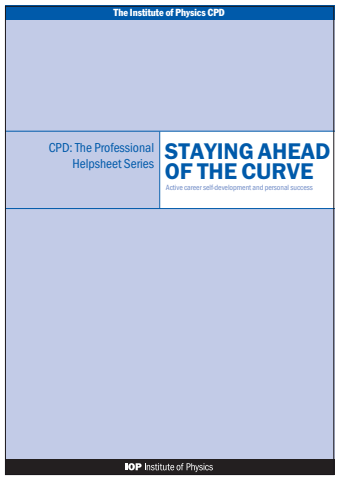
2–5 September
Schools Lecture Series 2008 – Rock in 11 Dimensions: Where Physics and Guitars Collide
Heriot-Watt University, contact Deryck Reid (tel 0131 451 3652); University of St Andrews, contact Lesley Aitken (tel 01334 463 100); University of Dundee, contact Linda Rannie (e-mail l.c.rannie@dundee.ac.uk); University of Glasgow, contact Lucy Murray (tel 0141 330 4707).
Talk by Dr Mark Lewney.

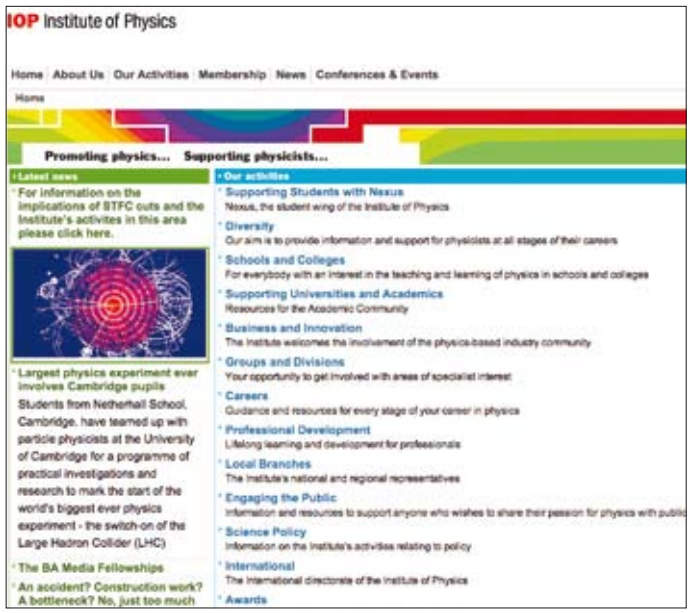
An up-to-date listing of IOP Scotland meetings can be found at whatson.iop.org by typing the keyword "Scotland" into the search box.

Correction

The caption on p6 of the last Institute of Physics in Scotland newsletter should have read: "Sam Zawadzki worked with Prof. Martin McCoustra at Heriot-Watt University."

Institute membership offers you many benefits





(Left to right) Physics World, *the membership magazine of the Institute; one of a series of members' helpsheets about continuing professional development; www.iop.org, the Institute's website.*

The Institute is constantly looking for new ways to support its members, but I think we sometimes forget to remind members of the benefits that are already available to them. I have outlined many of these below. For further details, the Institute's website is a good place to look.

Available to you as a member:

- *Physics World*, the highly respected monthly magazine, reporting the latest news and developments in physics;
- *Interactions*, the member newspaper of the Institute;
- dedicated websites for members, students, graduates, teachers and children;
- conferences in all areas of physics, from half-day briefings to large international events;
- specialist technical and professional subject groups, providing a forum for discussion (e.g. on progress in research and development) as well as working together to promote an interdisciplinary approach;
- a range of more than 50 journals covering most areas of physics – members can subscribe to up to three journals per year at discounted rates;
- an opportunity to express your views through periodic surveys for aggregation in Institute policy representation;
- dedicated careers information, including one-to-one support and online and printed resources;
- access to a range of general short courses for physics graduates;
- Chartered status, which represents the highest standards of professionalism;
- regional branch events and activities in your local area;
- discounted registration fees for conferences, journals and software and travel bursaries for young members;
- PhysMail, a full web-based e-mail facility for members, including a forwarding service;
- 76 Portland Place, with access to the Institute's members' room, as well as the opportunity to hire the professional meeting and conference facilities;
- Member Diary, a 16 month diary and address book containing useful scientific data;
- online services, including convenient renewals and amendment of your records.

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