

Institute of *Physics* in Scotland

# PHYSICS

# IN SCOTLAND

The newsletter of the Institute of Physics in Scotland

May 2006

## St George's School for Girls wins Paperclip Physics 2006

The Dewar's Centre, Perth, was the venue for this year's Grand Final of Paperclip Physics with teams of school students from across Scotland competing head to head to explain a physics concept to a panel of judges. The schools competing were St Columba's School, Douglas Academy and High School of Glasgow (all located in Glasgow) and George Heriot's School, St George's School for Girls and Stewart's Melville College (all located in Edinburgh).

Paperclip Physics, which is organized by the Institute, is a schools competition that challenges students to use their imagination to demonstrate to a non-scientist a principle or application of physics of their choice. However, they can only use items found in a typical home and have just five minutes to get their message across.

This year's panel of judges were Dr Tony Tooke from the University of Dundee, Rhona



The team from St George's School for Girls celebrate their triumph.

Goss from Monifieth High School, and this year's non-scientist judge Alan Digby, editor of "Oor Wullie" and "The Broons" at D C Thomson & Co Ltd, Dundee.

Ian Cuthbert, organizer of the competition in Scotland, said, "Students really use their imagination and often produce

very amusing demonstrations. We have seen shower curtains, flour, plastic guttering, rolling pins, office chairs and many other apparently disconnected items woven into excellent demonstrations."

Some of the concepts the teams demonstrated included how to survive a car crash and

heat transfer, the latter explaining why you burn your hand when you have a metal spoon in a saucepan when cooking! But it was the team from St George's School for Girls which won the day with their demonstration on resonance.

The girls delighted the audience and judges with their performance, particularly their fictitious character "Wally the Magician" who discovered that it wasn't magic that was making the pendulums swing but resonance! The team from St Columba's School came a close second with their demonstration on the subject of air.

The members of the winning team each received a digital camera and their school received £500 towards scientific equipment. The runners-up also received a prize, as did the other teams who were successful in making it through from the heats.

Ian Cuthbert

## International physicists examine UK research

A group of 14 eminent physicists from a variety of countries came to the UK in autumn 2005. The aim of The Second International Review: International Perceptions of UK Research in Physics and Astronomy was to compare research in the UK with that in other leading scientific nations and to provide the Engineering and Physical Sciences Research Council

(ESPRC) and the Particle Physics and Astronomy Research Council (PPARC) with a better understanding of the strategic position of the subject. The panel was supported by the Institute of Physics in the arrangements for the review.

The panel was impressed by the general improvement in the research environment since the last review in 2000. Those

involved in the research effort here also seemed to have a more positive outlook.

The panel visited 11 universities, including the Scottish Universities Physics Alliance (SUPA) at the University of Glasgow. The report did not mention specific places very often, but Scotland did receive a mention in the section of the report looking at condensed-

matter physics. The panel noted that "research in both polymers and photonic materials has been aggressively and successfully coupled to applications by spawning new industries within the UK, particularly in the south of England and along the Scottish 'photonics corridor' extending from Glasgow to Edinburgh".

Alison McLure

# Christmas lecture on weather goes down a storm

As well as being Einstein Year, 2005 was the centenary of Rotary International. To mark both of these occasions, Ian Briss, assistant district governor of North Ayrshire Rotary and himself a physicist, dreamed up the idea of a Christmas Lecture for schoolchildren. I was lucky enough to be chosen as the speaker, as a meteorologist and physicist who last year won the Institute of Physics Kelvin Medal for my work in presenting physics to children.

On 15 December about 400 pupils from 19 primary schools in North Ayrshire gathered at 11 a.m. in the Vikingar Theatre, Largs, for the first lecture.

I began by explaining that, although forecasting started more than 100 years ago, it was



*Ian Briss, Heather Reid and pupils from Kelburn Primary School.*

rather inaccurate! Then in 1924 meteorology's own Einstein, a British scientist called L F Richardson, produced the

breakthrough mathematical equations in weather prediction. However, they took six days to work out – so the answers were

always a bit late!

The science moved forward after the invention of the computer in the 1940s. Although forecasting has improved greatly, especially in the last 20 years, there is still room for improvement. I reassured the audience that there is plenty of work left to be done.

After a quick lunch, I repeated the talk to an audience of 400 North Ayrshire pupils from classes S1 and S2, including a group from Arran. After the talk, questions came thick and fast on topics ranging from ocean circulation to satellite technology, although one boy was much more interested in how tall I am (5 ft 9 inches!).

**Heather Reid, senior broadcast meteorologist**

# Curriculum review of Scottish school education gives a valuable preview of the future of teaching

Late March saw the publication of a document which represented both a progress report and a set of proposals relating to "A Curriculum for Excellence" (ACfE). This initiative was born out of the National Debate on Education and the consensus that the current curriculum is overcrowded, with an unsuitable assessment process and programmes that do not facilitate access to a wide range of the experiences required for life in the 21st century.

As was reported in the January 2006 issue of the newsletter (p3), review groups have been set up in nine subject areas, one of which is science. Each was given the task of reviewing its subject in terms of promoting the four ACfE purposes for the curriculum, that all young people should become Successful Learners, Confident Individuals, Responsible Citizens and Effective Contributors.

The science group had to consider what kind of science fitted with the above purposes and the ACfE's seven principles for curriculum design: challenge and enjoyment; breadth; progression; depth; coherence;

relevance; and personalization and choice. In other words, the group was charged with developing a framework for a science curriculum that could provide an attractive, challenging and relevant experience for the young people of today and tomorrow, focusing on the 3–15 age range initially.

Forming an overview of the 3–15 curriculum and asking what scientific content and skills are essential for a young citizen of the 21st century were issues considered early in the review.

The needs for the curriculum to show clear progression in the development of concepts at appropriate stages and to ensure a better balance between "Science for Citizenship" and "Science for the Specialist" were important aspects to be taken into account, and it was recognized that how science is taught is just as important as what is taught, if pupils are to be actively engaged in the learning process.

The group has developed a framework for science learning with a set of subject components representing the knowledge, understanding, skills and attributes that will be



required by every young person in Scotland by the age of 15 to prepare them for their future lives and careers. The big ideas of contemporary science have been identified and grouped under three main lines of development: "Our living world", "Our material world" and "Our physical world".

"Our physical world" is envisaged as including the harnessing of energy and use of energy resources; motion and travel on land, sea, and through air and space; and the development of communication systems to meet the needs of society. The proposed learning outcomes are also broad, suggesting learning experiences rather than prescribing specific objectives or teaching and learning sequences.

The outline given above will be developed further during the consultation period which now follows, through more detailed

review work to be undertaken by the science group working in association with schools and teachers who are willing to engage in the process.

One of the most important parts of the development work to be undertaken will relate to assessment, particularly with regard to promoting high-quality experimental work and deeper understanding of the big ideas of science and critical thinking skills. Another crucial matter is that of articulation between a more flexible 3–15 curriculum and the more formal post-15 curriculum linked to SQA examinations.

It is difficult to comment very meaningfully on this latest report. There are plenty of laudable words and sentiments that cannot be argued with to any great extent, but the devil is in the detail – and that is not there yet.

The document actually asks more questions than it gives answers at this stage. No doubt the debate following a presentation on the subject at the Stirling Physics Meeting will be lively – but that is for a report in a future issue.

**Catherine Wilson**

# Engineer leaves industry behind to communicate the joy of physics

In 2003 I was in the fortunate position of being able to take a career break from mainstream industry. Since leaving university I had followed a career in the world of semiconductors, optronics and MEMS technology as an engineering manager working for both large corporate companies in the UK and Europe and university start-ups. I had achieved Chartered Physicist and Chartered Engineer status and gained valuable personal and professional experiences working in diverse international and multicultural environments.

However, now I had some time when I could reflect on my career preferences, priorities and new family commitments.

Qualifying as a "Science and Engineering Ambassador" via SETNET I became involved in a number of science communication events with local schools and the National Museums of Scotland. As my interest in science communication grew I realized that for me one of the ultimate challenges in science and engineering is teaching and promoting the subject,



Garrie Vickers pictured teaching school parties about supersonic flight.

particularly within schools.

I applied to study PGDE Physics (Secondary Schools) at Moray House/University of Edinburgh, and following my interview in December 2004 I was offered a place on the

course. However, I deferred my start to September of this year and have continued to work as a freelance science communicator, working with the National Museums of Scotland and the Museum of Flight as well as

supporting the Institute at a careers fair (see article below).

A large part of my work at the Museum of Flight has involved teaching school parties about the science of Concorde and supersonic flight as well as facilitating the many science-based events held throughout the year. I am currently developing a programme for schools aimed at S1/S2 year groups entitled "Sonic Boom Science", as well as looking forward to participating in this year's Science Festival.

While my current work has given me valuable experience for the future, it has also helped me to keep focused on my desire to teach and not drift back into my previous industrial-career comfort zones. The year ahead is going to be tough, and I have a lot to learn. However, I also have a lot to gain, and hope that I can share some of my experiences and the benefits of what a qualification and career in science and engineering has to offer.

I hope to update you on my progress over the next year as I continue with my career change.

**Garrie Vickers**

## Branch makes a stand at careers fair

The Institute of Physics shared a stand with biologists, chemists and engineers at Scotland's Careers and Jobs Fair in Glasgow on 24–26 February 2006.

The fair has been going on for 20 years at the Scottish Exhibition and Conference Centre and attracts around 20 000 visitors to around 100 stands. The stands are made up of employers, professional and industry-leading bodies, providers of products and services to SMEs, universities, colleges and training providers.

Alison McLure was at the stand on Friday and Garrie Vickers and Susan Turnbull of the University of Glasgow kindly volunteered their services over the weekend. Most of the visitors on the Friday were

school pupils. Alison commented, "I was pleasantly surprised by the youngsters' enthusiasm for science in general and physics in particular."

Several people had very clear ideas about what they want to do as a career, from climatology and radiology to theoretical particle physics. Susan reported that "there really was quite a range of people that I spoke to, from S2 pupils trying to choose their Standard Grade subjects, to a dyslexic postman who wanted a change of direction and a chance to prove himself!."

All the materials from the Institute were popular and lots of people were wearing Institute of Physics stickers by the end of the day.

## CERN film gets a strange showing

Art and science are thought not to mix, but if you were driving down the A1 in East Lothian past Torness Nuclear Power Station on 9 February you would have seen an unusual sight. Torness is visible for miles around and could not exactly be described as a work of art. However, the western side of the building was used as a cinema screen for just one night.

The film screened on a continuous loop was *Lumen de Lumine*, directed by Ken McMullen. The film was made at CERN in Switzerland and shows a woman in a red dress swinging a light bulb on a cable, creating circles of light which seem both to follow and to dictate her



Torness, courtesy of The Gazetteer for Scotland, 1995–2005.

motion as a voice reads Hamlet's "To be or not to be" soliloquy in German. Described as "strangely lyrical" and "hypnotic", the film is a meditation on subatomic particles sent crashing into each other at the speed of light as scientists experiment with nuclear fusion. Willie Waddell, the director of the power station, described the film as "a celebration of the fusion between art and science".

## EDUCATION ROUND-UP

● The **Scottish Schools Equipment Research Centre** (SSERC) is moving and it may be worth making a note of the new address and contact numbers as follows: SSERC, 2 Pitreavie Court, South Pitreavie Business Park, Dunfermline, KY11 8UB; tel: 01383 626070; fax: 01383 842793. The Web address and e-mail addresses will of course stay the same.

● **“SPUTNIK – the website”** has now been launched. This is a website dedicated to the sharing of resources among physics teachers in Scotland and for the time being, at least, can only be accessed by subscribers to the SPUTNIK e-mail forum. To join this forum, send your name, the name of your school or college, and your e-mail address to Brian Redman at [bjred10@aol.com](mailto:bjred10@aol.com)

● The **Stirling Physics Meeting 2006** takes place on 31 May at the University of Stirling. Speakers in the morning session will include James More and John Sharkey on the subject of curriculum review 3–15 and 15–18, John Girkin on physics and diagnostic medicine, and Jack Woolsey on famous scientists and their discoveries. The speaker in the afternoon will be Sir Christopher Llewellyn Smith, whose subject will be “Energy, sustainability and development”. This programme will be complemented by an exhibition of the latest materials from a range of companies and organizations – and time to talk.

Mailing leaflets have recently been sent to all schools and colleges in Scotland. Details are also on the SPUTNIK website, as are details of other events likely to be of interest to physics teachers and/or their students, including the Physics Summer School (see below).

● The **Physics Summer School** will be held at the University of Glasgow on 26–30 June. The programme represents the usual good mixture of physics

at the frontiers of research and development, including nanotechnology and astrophysics; educational issues including the new Curriculum for Excellence; workshops relating to physics teaching and learning; visits to industry; a visit and talk by a NASA astronaut; and a social programme. All the teachers who have attended summer schools previously will agree that it shouldn't be missed.

● There was a **ministerial announcement on science** and A Curriculum for Excellence towards the end of March (see p2). The announcement marks the start of a period of consultation on the proposed science framework. Both the Institute of Physics in Scotland and ASE Scotland will be setting up meetings to allow teachers to explore the issues, to share ideas and to provide feedback on the proposals. Dates have not yet been fixed but will be posted on the SPUTNIK website.

● As you may already know the Institute of Physics runs a **School Grant Scheme** jointly with the Particle Physics and Astronomy Research Council. The scheme started in January 2005 and gives awards of up to £400 for small projects or events linked to the teaching or promotion of physics; projects involving astronomy, space and particle physics are particularly encouraged. Full details of the scheme, including examples of successful bids, can be found at [http://teachingphysics.iop.org/teacher\\_support/schoolgrants/index.html](http://teachingphysics.iop.org/teacher_support/schoolgrants/index.html).

Applications must be made electronically but we have tried to make the process as simple as possible.

If you have any questions please do feel free to get in touch with Nicola Hannam MInstP, the educational outreach manager at the Institute of Physics in London, and the editor of [www.physics.org](http://www.physics.org) (tel: 020 747 04835; fax: 020 747 04848; e-mail: [Nicola.Hannam@iop.org](mailto:Nicola.Hannam@iop.org)).

# University teacher Peter blazes a trail at Glasgow

What is a university teacher? Aren't universities already equipped with people who teach, namely lecturers? Well, yes, of course they are. Traditional physics lecturers, though, split their time between teaching and physics research. On the other hand a university teacher, such as myself, can dedicate his or her time entirely to teaching.

I don't just give lectures and demonstrate in laboratories, even though they form a large part of my job. My remit here at Glasgow University's Department of Physics and Astronomy also includes introducing innovations into teaching. By its very nature, there are aspects of physics that do not change over time, but to assume that the best way to teach the subject should also be unchanging would be a mistake.

The Physics and Astronomy Department has always been committed to finding the best ways to teach its subjects. And just as all academic staff members are involved, to a greater or lesser extent, in that teaching, so too do they contribute to this continual evolution. In other words, while I am the only full-time university teacher employed by the department, I do not work alone. The advantage of my position, though, is that I have the time to try to implement these ideas, as well as develop them further. I will now detail two of the innovations I have been involved in since my appointment.

The first was the broadening of the department's use of virtual learning (VL) through the VL environment Moodle. Moodle can be used to disseminate class information and act as a source of additional course material – lecturers can store files which the students can then easily access. I think the strongest aspect of Moodle is its ability to provide a source of formative assessment for students. Tests can be set up which the students can attempt in their own time. This allows them to gauge how well, or



*Physics teacher Peter Sneddon.*

otherwise, they understand their coursework.

Moodle can also act as a forum for student discussion, although this year it appears our students prefer the old-fashioned approach of actually talking to each other in person, rather than via a keyboard. More information on Moodle can be obtained at [moodle.org](http://moodle.org).

The most recent thing I introduced to our teaching is the use of peer tutorials. Here students in their third year acted as tutors to the first-year class. They aided them with a series of preset questions, and also answered any general questions the first-years might have had about physics degrees.

As it turned out, this opportunity to meet other, more experienced students was considered one of the best aspects of the tutorials. The first-years definitely felt they worked better than the more traditional tutorials run by lecturers. And they were of great benefit to the third-years too. They gave them an opportunity to teach their subject, not just learn it. As I discovered for myself this year when I took on new lecture courses, it is only when you have to teach a subject that you can actually be said to truly understand it.

These examples are just two of the many additions and alterations to our teaching that I hope to implement in the future. Close on the horizon are major renovations to our laboratory teaching, and a series of new lecture courses for me to get to grips with – more than enough to keep me out of trouble.

**Peter Sneddon**

# Learn the secrets of the universe

How and when did our universe begin? What made it look like this? How will it end? These are all questions that have preoccupied mankind since the beginning of civilization. The last three years have witnessed considerable progress in our understanding of what makes the universe tick. Recent results from ground and space-based telescopes have revolutionized our view of the cosmos. For the first time in human history we are getting close to answering the question “How did the universe evolve into the beautiful place we see today?”.

In a talk in the Schools Lecture Series entitled “Gravity, gas and stardust”, Dr Pete Edwards of the Department of Physics at Durham University will take the audience on a journey through the cosmos. He



will explore some of the latest results from the world of astronomy and what they reveal regarding the birth, life and death of our universe.

The show will include demonstrations, hands-on activities and 3D movie clips to

uncover the evidence for the birth of the universe in a Big Bang. We will explore its structure and show how cosmologists are using supercomputers to predict the fate of the cosmos.

Pete is an experienced science

communicator who coordinates the outreach programme of the Ogden Centre for Fundamental Physics at the University of Durham and the UK Dark Matter Collaboration, at the Boulby potash mine near Whitby. The programme’s primary focus is on developing resources and activities to explore the origins of the universe, the properties of fundamental particles and the nature of dark matter (see [www.dur.ac.uk/physics.outreach](http://www.dur.ac.uk/physics.outreach)).

Pete is a former secondary-school teacher whose previous research interests include cosmic-ray physics, gamma-ray astronomy and modelling the thermal signatures of man-made systems.

Details of dates and venues for Pete’s talk are included in the calendar which can be found on p7 of the newsletter.

## Highland course proves a boon to sixth-formers

The Highland Advanced Higher Residential Course was held this year from the evening of Friday 17 to Sunday 19 February at the Fairburn Activity Centre. Organized by Prof. John Roulston and George Gibson of Culloden Academy, the course catered for sixth-form pupils hoping to pursue higher education in the physical or mathematical sciences. The emphasis was on mathematics as a foundation subject for science, technology and engineering-related degrees. The 2006 course was attended by 46 pupils from schools in the Highland region.

The centre is a converted stable dating back to the 1850s and is situated in magnificent woodlands with gigantic conifers, overlooking the beautiful Strathconon Glen. Nearby lies the village of



*Pupils at the Highland Advanced Higher Residential Course.*

Marybank, and just 35 minutes away is Inverness, the capital of the Highlands.

The course, now in its sixth year, gives pupils an experience beyond school, building their

ATTENDEES	
School	Pupils present
Kinlochbervie High	one
Elgin High	one
Lossiemouth High	one
Gairloch High	two
Dornoch Academy	three
Portree High	four
Thurso High	four
Grantown Grammar	four
Forres Academy	four
Kingussie High	four
Elgin Academy	four
Culloden Academy	six
Lochaber High	eight

confidence for the open-ended environment of university and the industrial workplace. By mixing classroom and outdoor challenges, pupils learn to tackle problems in teams, akin

to the laboratory organization they will face in later life.

Speakers included myself (on “Does God play dice with angles?” – I will give this talk again at the AGM), Prof. Adam McBride (mathematical problem-solving), Dr Calum Brown (BAE Systems), and Andy Thompson and Alan Robertson (Donoch/Culloden) on the use of CAS calculators. Outdoor team elements (run by the centre’s trained staff) included raft-building, orienteering and a rope-circuit challenge.

The 2006 course was sponsored by Southern Energy (£1500) and the Institute of Physics in Scotland (£500) while public sponsorship for a further £1500 is being sought. Each pupil was charged £20 to attend the popular course (the course received 60 applicants).

**Miles Padgett**

**Check out our website at**  
**<http://scotland.iop.org>**

# ASE conference provides the best of both worlds

“Increasing Engagement Improving Achievement” was the title of the ASE Scotland Annual Conference 2006, which was organized in association with the Supporting Scottish Science Education through CPD Initiative (SSSEtCPT), an arrangement that benefited both organizations. The conference was held on 3–4 March at the Erskine Bridge Hotel in Glasgow.

The ASE programme was enhanced and the requirements of SSSEtCPT set by the Scottish Executive were met through the joint planning process without adding an additional event to an already overcrowded calendar of conferences.

The conference attracted teachers from the primary and secondary sectors, technicians and others with an interest in science education in schools. The programme of lectures, workshops and discussion sessions was complemented by an extensive exhibition of equipment and resources that support the teaching of science in schools, including a stand promoting the work of the Institute of Physics.

From the outset, participants were engaged in reflecting on the importance of CPD when Prof. Brian Boyd gave his keynote address “CPD: improving professional practice”. Prof. Boyd asserted that we are moving towards an era when accountability, in terms of blunt quantitative measures of success through league tables and the like, is being replaced by an emphasis on teachers as reflective practitioners with ideas about teaching and learning strategies supported by reading and research evidence.

“We are moving towards the ‘CPD generation’,” he added, “with newly qualified teachers aware of their entitlement to a quality and level of continuing professional development in their first year in the profession that many in the past were fortunate if they experienced in their first 10 years.”

He emphasized that CPD has to be a collaborative endeavour. Teachers cannot be expected to cope with every pupil’s needs and have to work together and



*Increasing Engagement Improving Achievement featured a range of exhibitions and demonstrations.*

observe each other’s practice, not just within but across departments. They need to be given more time to think, to reflect on current courses and practice and the future needs of their pupils.

To emphasize the need for continual reflection on, and updating of, classroom practice, he pointed out that 20% of children in P1 today will take up jobs that do not currently exist. Prof. Boyd wants a “brave new world” in which teachers engage in CPD from probation to retirement, with a quality of provision which engenders a sense of “ownership”, and helps teachers to bridge the gap between theory and research outcomes and their own practice. “No school or authority should organize in-service events without prior consultation with staff,” he argued.

He also stressed the need to re-embrace paedagogic issues in CPD – to focus on how children learn as much as on what they learn. Finally, he indicated that there has to be a reduction in the plethora of standards for CPD, but that new standards do have to be met.

It is difficult to capture in such an article the essence and spirit of the presentation – it certainly inspired most of the audience.

Prof. Boyd’s was one of four plenary presentations during the two-day period. Later on the same day, Willie Whitelaw, from the Curriculum for Excellence Science team, presented a progress report on the development exercise (3–15) as a whole and its science aspects.

He explained what had shaped the thinking of the science team, what their key messages were, what would remain the same and what would be different about new curricula, emphasizing the reduction in learning outcomes; greater flexibility; the development of a wider range of skills; and a greater emphasis on internal and formative assessment.

In the interstices of the programme on both days, participants engaged in more interactive activities as they attended workshops which focused on a wide variety of topics and issues. Many of these explored the latest developments from projects such as SAPS (biology and biotechnology), DUSC (chemistry) and the Physics Teacher Network, and from the various consortia formed to support the “Improving Science Education 5–14” initiative.

Other workshops looked at recent developments in ICT resources to support science teaching, at good practice in the use of interactive whiteboards and at issues such as creativity and enterprise in science education and science in the Early Years.

The support for science education offered by the Scottish Science Centres was also explored. For every session there was a broad choice of activity allowing participants to focus on their particular interests whether they were subject-specific, paedagogic, age-related or assessment-oriented. Technicians and



teachers were catered for by parallel programmes, although there was no strong demarcation, with teachers and technicians from the same schools attending some sessions together. The only problem was having to choose from such a rich menu.

Plenary presentations on the second day were given by the acclaimed science educationist, Prof. Paul Black, and Prof. Murray Campbell. Prof. Black focused on the interplay between assessment and pedagogy within any curriculum framework and the need to reform all three, both in themselves and in their mutual interactions, to secure the future and the quality of science education in our schools. This was particularly pertinent given the Curriculum for Excellence, which he suggested might have been better named “A Pedagogy for Excellence”.

After further interactive sessions, Prof. Campbell’s lecture on “The physics of music” ensured that the formal conference programme finished on both a metaphorical high note and a series of very melodious notes.

The joint planning was not without its problems along the way, but the feedback indicated that the result was very much appreciated by participants and the two organizations look forward to a second collaborative venture in Crieff in March 2007, when both the ASE Scotland president and the chair will be active Institute members!

**Catherine Wilson**

## CALENDAR OF EVENTS MAY – SEPTEMBER 2006

An up-to-date listing of Institute of Physics in Scotland meetings can be obtained by searching on Scotland at <http://whatson.iop.org>.

**Wednesday 31 May 2006**  
**Stirling Physics Meeting**  
University of Stirling.  
<http://scotland.iop.org/events.html>.  
Booking is required.

**Friday 9 June 2006**  
**Institute of Physics in Scotland**  
5.30 p.m., Mountbatten Building, Room 2.33, Heriot-Watt University, Edinburgh. Annual general meeting and dinner 2006, including a talk from Miles Padgett entitled “Does God play dice with angles?”.

**Sunday June 11 – Sunday 18 June 2006**

**James Clerk Maxwell Exhibition at Parton**  
Parton Village Hall. Parton, in Dumfries and Galloway, is close to Glenlair, the family home of James Clerk Maxwell (he is buried at Parton Kirk). The exhibition is presented by Sam Callandar.

**Tuesday 20 June 2006**  
**Happy birthday, James Clerk Maxwell!**  
Royal Museum Lecture Theatre, Chambers Street, Edinburgh. What is light? How can it travel through empty space? Why does it never slow down? How can you connect a phone without wires? What are Saturn’s rings made of? And how did a 19th century Scotsman answer these questions just by thinking about them? At the Royal Museum’s Summer Science Show, Prof. Graeme Ackland of Edinburgh

University will give an exciting lecture-demonstration, with audience participation, to celebrate the achievements of Scotland’s greatest scientist – from his schoolboy paper read to the Royal Society through his masterwork on electromagnetism to his early death on the threshold of discovering relativity. The event is free, but tickets are required: 11.00 a.m. – Schools, call Fiona Ferguson on 0131 247 4041; 6.30 p.m. – Public, call Museum Ticket Desk on 0131 247 4422.

**Monday 26 June – Friday 30 June 2006**  
**Summer School for Physics Teachers**  
University of Glasgow.  
Booking is required.

**Monday 25 September – Thursday 28 September 2006**

**Institute of Physics Schools Lecture Series**  
**25 September:** 10.00 a.m. and 2.00 p.m., Heriot-Watt University, Edinburgh. Contact Derryck Reid; e-mail [d.t.reid@hw.ac.uk](mailto:d.t.reid@hw.ac.uk); tel: 0131 451 3652.  
**26 September:** 2.00 p.m., University of Dundee. Contact Mrs Patricia Cunningham; e-mail: [p.cunningham@dundee.ac.uk](mailto:p.cunningham@dundee.ac.uk); tel: 01382 344912.  
**27 September:** 12.00 p.m., University of Aberdeen. Contact Alistair Flett; e-mail: [amflett@hotmail.com](mailto:amflett@hotmail.com); tel: 01651 891620.  
**28 September:** 10.30 a.m., 1.30 p.m., University of Paisley. Contact Maureen McLachlan; e-mail: [mcla-ph0@paisley.ac.uk](mailto:mcla-ph0@paisley.ac.uk); tel: 0141 8483121.

**Wednesday 11 October 2006**  
**Careers Fair**  
**Our Dynamic Earth**  
Edinburgh.

## The quest for the greatest ever Scot

Last year *Scotland on Sunday* set up a panel of 14 academics and historians to decide who was the greatest ever Scot. They published the results in January and Robert Burns narrowly edged out the scientist Alexander Fleming, the discoverer of penicillin, as having the greatest significance in his homeland.

Fleming was the only scientist in the top 10, but the physicist James Clerk Maxwell just missed out. Prof. Tom Devine, holder of the Sir William Fraser Chair of Scottish History at the University of Edinburgh, was disappointed that Clerk Maxwell did not make the final cut. He said, “Einstein himself admitted that Clerk Maxwell’s theories were a major factor in his thinking. Alexander Fleming was really an experimental scientist when compared to Clerk Maxwell.”

The 10 historic figures were dominated by “men of the mind”: philosophers, writers and warriors. Hopefully the 175th anniversary of Clerk Maxwell’s birth will see a resurgence in the Scottish public’s knowledge of this great man, who is known as the father of modern physics.

On a similar theme, the National Library of Scotland is putting together “The Scottish Science Hall of Fame”: [www.nls.uk/scientists/index.cfm](http://www.nls.uk/scientists/index.cfm). This website features 10 historical figures whose scientific discoveries or inventions have affected the way we live today.

The Hall of Fame has two stages. Part one is a public vote to select 10 scientists from the past whose achievements stand out from the rest. The top three in early April were John Logie Baird, Clerk Maxwell and Alexander Graham Bell. The top

10 will later feature in a National Library of Scotland website that will relate in more detail the great contributions they made to science and to daily life.

Looking at the history of science over the last 300 or so years, it is fascinating how many Scottish scientists provided the world with important ideas and inventions that shape our lives today. From everyday objects like the telephone and television, to life-saving advances in medicine such as penicillin and anaesthetics, it is hard to imagine what life would be like without these pioneers.

Scots feature highly in every scientific discipline – chemistry, physics, engineering, mathematics and more. A list of all the prominent Scottish scientists would contain literally hundreds of names.

**Alison McLure**

awarded in the Queen’s Birthday Honours 2005 for services to science. Also Prof. Laurence David Barron CPhys FInstP, Gardiner Professor of Chemistry at the University of Glasgow, has been elected as a Fellow of the Royal Society.

Tom Balanowski, principal teacher of physics at Linlithgow

Academy and a coordinator of the Institute of Physics’ Physics Teachers Network, has received the Institute’s Teacher of Physics Award.

The Institute’s judges were looking for nominations for teachers who are “cosmically inspiring, astronomically exciting and challengingly cool”.

## Local physicists celebrate awards

A belated congratulations to Prof. David Saxon CPhys FInstP, Kelvin Professor of Physics at the University of Glasgow, and former chair of the Institute of Physics in Scotland for the OBE

## GRANTS FROM THE IOPIIS

Every year the Institute of Physics in Scotland funds a number of events. Individuals or organizations may apply to the branch for small grants to organize, promote or support outreach activities.

To find out more information e-mail Alison McLure ([alison.mclure@iop.org](mailto:alison.mclure@iop.org)). Bids for the next round of funding should be submitted to Alison by Monday 5 June 2006.

The branch newsletters are published by Institute of Physics Publishing, Dirac House, Temple Back, Bristol BS1 6BE, UK.

©2006 Institute of Physics

Printed by Warners (Midlands) plc, Bourne, Lincolnshire, UK.

The contents of this newsletter do not necessarily represent the views or policies of the Institute of Physics, except where explicitly stated.

The Institute of Physics, 76 Portland Place, London W1B 1NT, UK.  
Tel: 020 7470 4800.  
Fax: 020 7470 4848.

## PROPOSED IOPIS COMMITTEE 2006/2007

Role on committee	Name	Affiliation	First elected or appointed into current position	E-mail
<b>office bearers</b>				
chairman (and Glasgow local area coordinator)	Prof. Bob Chapman	University of Paisley	2005	chap-ph0@wpmail.paisley.ac.uk
vice-chair	Prof. Julian Jones	Heriot-Watt University	2005	J.Jones@hw.ac.uk
honorary secretary	Iain Ross	–	2006	iain.ross@btconnect.com
honorary treasurer (and Grampian local area coordinator)	Dr Alistair Flett	–	2002	amflett@hotmail.com
<b>ordinary members</b>				
	Prof. Willie Firth	University of Strathclyde	2004	willie@phys.strath.ac.uk
	Iain Glennie	Uddingston Grammar School	2004	IGLENNIE@uddingston.s-lanark.sch.uk
	Prof. Duncan Hand	Heriot-Watt University	2006	D.P.Hand@hw.ac.uk
Industry group coordinator	Eur Ing Alan Harper	–	2003	alan.harper@physics.org
Seniors group coordinator	Dr John Higinbotham	–	2004	john.higinbotham@physics.org
Tayside local area coordinator	Dr David Keeble	University of Dundee	2005	d.j.keeble@dundee.ac.uk
	Julie Macdonald	Stewart's Melville	2003	SMacdonaldJM@esmgc.com
	Michael McVey	Lourdes Secondary School	2005	mpjmcvey@ntlworld.com
	Heather Reid	BBC Scotland	2003	heather.reid.01@bbc.co.uk
past chairman	Prof. David Saxon	University of Glasgow	2005	d.saxon@physics.gla.ac.uk
St Andrews local area coordinator	Dr Bruce Sinclair	University of St Andrews	2004	b.d.sinclair@st-andrews.ac.uk
Education group coordinator	Catherine Wilson	–	2006	catherine.wilson@iop.org
<b>co-opted members</b>				
	Dr Paul Campbell	Institute for Medical Science and Technology, Ninewells Hospital	2004	p.a.campbell@dundee.ac.uk
student representative	Ann Griggs	–	2005	alg25@st-andrews.ac.uk
	Dr Gillian Lang	Glasgow Science Centre	2004	gillian.lang@glasgowsciencecentre.org
	Dorothy McMurrich	University of Edinburgh	2004	d.mcmurrich@ed.ac.uk
	Gemmell Millar	–	2006	gemmell@2millar.freeserve.co.uk
Edinburgh local area coordinator	Prof. Derryck Reid	Heriot-Watt University	2006	d.t.reid@hw.ac.uk
	Garrie Vickers	–	2004	garrie.v@virgin.net
<b>in attendance</b>				
Institute of Physics national officer – Scotland	Alison McLure	–	–	alison.mclure@iop.org
Nexus representative	Stuart Lynn	University of Edinburgh	2005	S.Lynn@sms.ed.ac.uk

## Dundee gets scientific

The Institute of Physics took part in the launch of Discovery Science Days in Dundee. The event was organized by the City of Discovery Campaign and Sensation, Dundee's Science Centre. The event took place on 15–19 March, coinciding with National Science Week, with the highlight being an amazing inflatable planetarium – the Cosmic Dome.

Alison McLure, national officer

for the Institute in Scotland, talked to around 100 primary-school pupils about climate change: what it is, what causes it and what can be done about it. Tay Radio interviewed Alison who said that “science is a fantastically interesting career and can take you to all sorts of places. Even if you don't want a career in science, learning about it can give some fascinating insights into everyday life”.

**Please take the time to check your e-mail address in your Institute details to ensure that you receive the e-mails that we send you:**  
**www.iop.org**