

resource

The Newsletter of Scotland's National Academy

London Olympics Gold Medal
winner, Katherine Grainger, delivers
the RSE Christmas Lecture 2012
(full story on page 11)



Also featured in this issue:

Scottish Astronomy

Science and the Parliament

Computer Science in Schools

THE ROYAL
SOCIETY
OF EDINBURGH

Space, Stars and Mars

The community of the tiny village of Glenelg on the west coast of Scotland recently organised and played host to a remarkable event, more than doubling its population for one day at the end of October 2012.

Glenelg, which can be reached only by one road via a mountain pass – Mam Ratagan (a mostly single-track road that goes from sea level to 1116ft and has several hairpin bends) – came up with the ingenious plan of ‘twinning’ with Glenelg on Mars. In just five weeks, the event was organised, comprising a weekend brimful of educational and enjoyable activities, demonstrating the warm hospitality of the local people and firmly placing this Glenelg on the global map.

To put the tale in context, Glenelg is also the name of a location on the planet Mars, near the landing site of the Mars Science Laboratory, *Curiosity* Rover. NASA scientists have named all features in the immediate vicinity of the landing site with names associated with Yellowknife, a city in northern Canada: Glenelg is a geological feature there. In addition, the name is a palindrome and the *Curiosity* Rover was to visit the location twice (once coming and once going): the trek to Glenelg would send the Rover 400 m east-southeast of its landing site.

The original Glenelg in Scotland is a village dating back to around the 7th Century. All other Glenelgs – the Canadian rock formation and towns in Australia and Maryland – are derivatives, taken to the New World by people from Glenelg, Scotland during the Diaspora.



The twinning was the masterplan of Emma Maclean, Local Development Officer of the Glenelg & Arnisdale Development Trust (pictured left at the opening of the event) who initially approached NASA and received enthusiastic support from there. Professor John Brown FRSE, the Astronomer Royal for Scotland and Regius Professor of Astronomy at the University of Glasgow (right), was soon on board, as was Dr Bonnie Dunbar, CorrFRSE (centre), a former astronaut who flew on five space shuttle missions in the 1980s and 1990s. Doug McCuiston, Director of NASA’s Mars Exploration Program, also hoped to attend, although in the event was unable to do so.

As well as interested members of the public and families from surrounding areas, the event drew astronomy experts and enthusiasts from all over Scotland and the UK. It was ticketed and participants could pay online in advance or queue to pay on the day. The activities organised had wide appeal: there truly was something for everyone, adults and children alike. On offer, for example, a miniature replica of the *Curiosity* Rover, designed and displayed by a group from Shetland (see page 4). There was also an outdoor tent offering bushcraft and natural navigation skills and a planetarium (a large dome providing interactive solar system experiences), supplied and manned by two PhD astronomy researchers from the University of Glasgow.

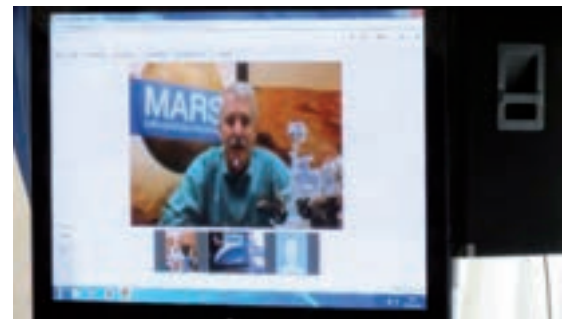
Glenelg links with the US and beyond



Many locals joined in and welcomed visitors from near and far. There were party bags for each child which included a memory stick with a recorded message from Patrick Moore*.



Later in the afternoon, the crowd congregated in a large marquee erected on the village football pitch (top right). At first it was uncertain how many would attend, but in the end there was standing room only. Doug McCuistion had been extremely regretful that he was unable to be there in person, but delighted that it was possible to set up a live link with NASA (pictured right). He spoke in fascinating detail on the Mars project and then answered questions directed from the floor. It was thrilling to hear quite young children (and older people too) being able to address questions directly to such an authority at NASA and to hear his encouraging and helpful replies.



This was followed by a truly inspirational talk by Bonnie Dunbar (left), former Space Shuttle Commander and NASA Astronaut, veteran of five space flights. She has logged more than 1,208 hours (50 days) in space. In 1995, she flew in the first shuttle mission to dock with the Russian Space Station Mir and, three years later, she flew in the last mission to deliver a US astronaut to Mir.

Dr Dunbar's paternal grandparents came from Scotland. Her grandfather left Dundee for America in 1909 and her grandmother a few years later from Gardenstown in Banffshire. The pair met at baseball game in Oregon; and Bonnie remains proud of her Scottish roots.

She was one of the first people to be elected a Corresponding Fellow of the RSE in 2001 and has contributed to several RSE projects, including delivering the Christmas Lecture in 2001.

The meeting culminated in the unveiling, by Professor Brown (below left) and Dr Dunbar, of a specially-commissioned road sign, celebrating the twinning of the two Glenelgs.



Professor John C Brown, who helped to organise and coordinate the event.



One of the large telescopes brought to enable the public to view the night sky.

As darkness fell, the plan had been to move down to the nearby shore and spend time stargazing through several large and powerful telescopes that had been brought by astronomers for that purpose. The weather had been unpredictable all day and, disappointingly, by this time it had become obvious that the heavy cloud cover was settled for the night – there was not a star to be seen. Undaunted, the people of Glenelg enjoyed a magnificent hog roast supper, served at the Glenelg Inn, and the evening concluded with a very enjoyable Tartan Martian Ceilidh.

* Sadly, Sir Patrick passed away on 9 December 2012.

Astronomy in Scotland

A tale of cost-effective funding

The Shetland Astronomical Society (SAS) applied to the Royal Society of Edinburgh (RSE) to provide funds for an academic from the mainland to visit Shetland schools and conduct a series of public lectures. The RSE Cormack Small Outreach Grant generously provided £500, which enabled SAS to invite the Head of the UK Centre for Astrobiology at the University of Edinburgh, Professor Charles Cockell, to tour three Shetland schools and lecture at the Shetland Museum and Archive.

During his first talk, Professor Cockell described how he travelled to Devon Island in the High Canadian Arctic, to an impact crater, to search for signs of life in one of the most extreme environments on Earth. Inside a rock within the impact crater, he found bacteria. This prompted a question from one of the students: "Sir, the bacteria in your picture is green; that's chlorophyll – which means it's photosynthesising. How does the sunlight get inside the rock?" Professor Cockell explained that some light penetrates the rock; there are also micro-fissures which reflect light to a shallow depth – the bacteria are just below the rock surface.

At the third school, students were allowed to abandon formal timetables to take advantage of the chance to speak with Professor Cockell after his talk. In conversation, he asked one of the students if he had any idea what might have happened to lakes and seas thought to have existed on Mars, billions of years ago. The student postulated that the molten core of the planet had solidified, collapsing the magnetic field protecting the planet from the sun. With the magnetic field gone, the water boiled away, he thought.

Later, Professor Cockell and his host reflected on these interchanges and concluded that there are talented students in Shetland, being taught flexibly and effectively. Professor Cockell suggested that something should be done to encourage and enhance that talent. He suggested a week-long Summer School based at Edinburgh University – based on the familiar system of lectures, seminars, lab-work, report writing and field study exercises. Students' efforts would be subject to close scrutiny and evaluation to determine current and potential future capabilities.



Professor Cockell with pupils at Anderson High School

Following the initial 'seed corn' of £500, Shetland astronomers, teachers and Edinburgh academics are now seeking to organise and fund the Summer School pilot scheme for 2013. Funding requests are being submitted to The UK Space Agency, the Royal Astronomical Society and Shetland Community Councils.

At a time dominated by the Shetland schools-closure programme and significant budget cuts, here is a good-news story for sponsors looking to enable innovation in science tuition. This Summer School will allow talented students and lecturers to showcase their capabilities under challenging conditions.

For further information contact:

Paul Bendix, Shetland Astronomical Society – paul.bendix@btinternet.com

Visit: www.astrobiology.ac.uk/

Shetland to

Members of the Shetland Astronomical Society were delighted to be invited to join the weekend of celebrations being held in Glenelg (see pages 1 & 2), to coincide with the Mars Rover, *Curiosity* exploring Glenelg on the red planet.

Mike Breimann and Paul Bendix took with them their miniature replica of the Rover (constructed by Mike) and allowed members of the public to drive it around a simulated Martian landscape.



Essentially this Rover (pictured above) is a moving 3D camera with a number of temperature and air sensors. Participants were invited to guide the Rover by remote control, viewed through a monitor. Various objects had been spread around the floor of a school classroom. The Rover was guided to the objects and, on command, would photographically record what it saw. The person who collected the most data in the allotted time was the winner.



Glenelg (Scotland)



The audience, of all ages, watched as the Rover was guided round the course.

Paul Bendix, said: "This is an important astronomical event, and we are pleased to have been asked to come to Glenelg on planet Earth.

"We will be inviting members of the public to drive the Rover (via a computer) and explore our 'Martian' landscape.

"There will be plenty of things for them to discover and the team that finds the most will win a certificate."

This was a particularly effective method of educating the public in all sorts of aspects of space exploration and on what is happening on Mars right now.



Dr Bonnie Dunbar tried her hand at piloting the mini replica, assisted by Angie Breimann from Shetland.

Paul Bendix in background (right) kept time as participants took their turns at controlling the Rover.

Edinburgh event of public talks and discussions on Extraterrestrial Life

Life in the Universe

Saturday 9 March 2013

Edinburgh University Student Union (EUSA)
Debating Hall, Bristow Place

Events and talks during day (10 am–5 pm) ages 8+
Open to all – Free to attend – Booking required

Alien Ceilidh (8 pm–12 am) ages 18+
Ticketed – Prices to be announced

Full details will be available in January.

For further information contact:

Professor John C Brown –
john.brown@glasgow.ac.uk

Daytime events will comprise lectures and discussions on the possibilities and science of ET life and the search for it, while the Q & A sessions and lunch and coffee breaks will provide opportunities to promote further informal discussion amongst professionals, amateurs and the public. Weather permitting, daytime telescope stargazing and evening stargazing will demonstrate views of the real cosmic context.

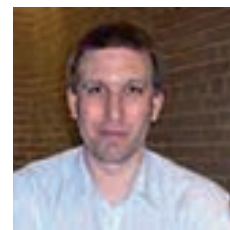
The day will conclude with the Ceilidh, allowing further networking and discussion, as well as supervised stargazing from the bar balcony – and some fun.

Speakers include:

Professor John C Brown (left) – *Overview*

Sir Roger Penrose (centre) – *Big Bang, Entropy & Life*

Chris Lintott (right) – *Cosmic Environments*



Funded by a Royal Society of Edinburgh Cormack Outreach Grant; the Institute of Physics, Scotland; and the Scottish Astronomers Group.



Leafy sea dragon
Image courtesy of NASA



Hubble Space Telescope
image of Mars.

Scottish Crucible

Scottish Crucible – promoting interdisciplinary collaboration and innovation in research

Scottish Crucible is the new leadership and development programme for the most promising early-career researchers in Scotland. It was launched in Spring 2009 and has been primarily funded for the past four years by the Scottish Funding Council and NESTA (National Endowment for Science, Technology and Arts). Every year, Scottish Crucible enables 30 highly promising researchers in all disciplines from across Scotland to come together to explore and expand their innovative potential through a series of intensive, two-day workshops (called 'LABs') held between April and June. The LABs are hosted by the Royal Society of Edinburgh, the Scottish Government, the Scottish Parliament and three different partner universities each year (12 HEIs in total between 2009 and 2012). Each LAB comprises a wealth of guest speakers, seminars, skills sessions, tours and informal discussions, all designed to stimulate interaction between participants, resulting in the creation of new ideas for pan-Scotland collaboration in research and/or enterprise.



Dr Ruth Neiland, Heriot-Watt University, Scottish Crucible Director (far left) and Dr Heather Rea, Programme Lead, Edinburgh Beltane (left) with colleagues from University of Aberdeen, (Dr Lucy Leiper and Dr Kenneth Skeldon) at the Euroscience Open Forum (EUOF) 2012 Conference, Dublin.

Scottish Crucible gives its participants a unique opportunity to broaden their networks, not only by meeting senior representatives of science, policy, government, media and business in Scotland, but also by forming an invaluable, interdisciplinary network with their peers from across the Scottish research base. The 'Scottish Crucible Alumni Network' includes all participants from the Scottish Crucible 2009–2012 cohorts and is a means by which they can continue to engage productively with each other on new projects and initiatives as their careers progress. Such a network – comprising talented individuals who are Scotland's "research leaders of the future" – is expected to have a significant impact on Crucibilists' home institutions and the wider research community. Due to their Scottish Crucible experience, the Alumni are more open to engagement in knowledge exchange and interdisciplinarity and so should contribute to a more innovative and entrepreneurial culture in Scotland's universities, institutes and businesses.

Scottish Crucible aims to:

- i) inspire participants to become more collaborative and interdisciplinary in their approach to research by breaching traditional disciplinary and institutional boundaries;
- ii) help them capitalise on skills and attitudes likely to make their research more innovative; and
- iii) develop their understanding of how research can impact on society through the various processes of knowledge exchange.

Commenting on the benefits of the programme for its participants, Scottish Crucible Director, Dr Ruth Neiland, Heriot-Watt University, said "By meeting and engaging with leaders in research and innovation from academia, government and business in Scotland, participants grow in confidence and become more ambitious in their research and career goals; by the end of the programme they expand their networks and develop a wide range of new and important collaborations".

For further details of Scottish Crucible, visit:
www.hw.ac.uk/scottishcrucible/ or email: researchfutures@hw.ac.uk



Scottish Crucible Alumni attending the Knowledge Exchange (KE) Scotland Conference on 5 October 2012 with Professor Alan Miller, FRSE; Dr Ruth Neiland, Heriot-Watt University and Mr Quentin Cooper, BBC Radio 4.



2012 has seen Scottish Crucible Alumni pursue a wide variety of interdisciplinary research projects enabled through the Scottish Crucible collaborative research fund. For the 2012 Scottish Crucible cohort of researchers, projects funded by Scottish Crucible include topics ranging from 'Gaming for sustainable behavioural change' and 'Adapting technology to empower bystanders in medical emergencies' to 'Developing a viral outbreak early warning system' and 'Dirty stories – what dirt from historic textiles can tell'. Crucibilists have been effective in communicating the success of their Crucible activities and thus raising the profile of their research. In the past year alone, Scottish Crucible Alumni have appeared in the press, spoken on radio, blogged on websites, tweeted on Twitter feeds, exhibited at conferences and engaged the public with their research at both science and art festivals. They have also participated in specific 'Scottish Crucible Alumni Events' aimed at promoting further collaborations on research and knowledge exchange, for example:

- July 2012 European Crucible – 20 Scottish Crucible Alumni travelled to Dublin to participate in the Euroscience Open Forum (ESOF) Conference, where they contributed to the launch of a pilot 'European Crucible' programme – <http://esof2012.org/>
- October 2012 KE Scotland Conference – Ten Scottish Crucible Alumni participated in the 'Knowledge Exchange Scotland Conference' attended by 300 researchers and KE practitioners running a session called: *Engaging a wider public: the Arts–Science interface* – www.hw.ac.uk/KEScotland/
- November 2012 SC Alumni Event hosted by Scottish Government – 45 Scottish Crucible Alumni attended an event at Victoria Quay, *Scottish Crucible: Projects for Scotland*, where Scottish Crucible Alumni were invited to participate in a pilot project competition supported by Scottish Government and ESRC as part of their collaborative 'what works' activity.

In addition to the Scottish Crucible programme and Scottish Crucible Alumni events, an institution-specific programme, 'Heriot-Watt Crucible', has been running for the past two years in Scotland.

In November 2011, it was nominated as a finalist for the UK's Leadership Foundation for Higher Education's 'Impact Award', and in 2012 Heriot-Watt Crucible was shortlisted for 'Outstanding Support for Leadership Development' by Times Higher Education.

Heriot-Watt University Deputy Principal for Research and Knowledge Transfer, Professor Alan Miller, FRSE, said of the dual successes of Scottish Crucible and Heriot-Watt Crucible, "I am always delighted to witness the progress of Crucible participants from the moment they walk in the door of the RSE on the first morning of the first LAB, through the build-up of enthusiasm for engaging with colleagues in other disciplines and institutions, to the creation of innovative projects and participation in the alumni network".



Scottish Crucible Alumni pictured at *Scottish Crucible: Projects for Scotland* on 6 November 2012 at Victoria Quay.

International Collaboration

INTERNATIONAL EXCHANGE PROGRAMME

The next deadline for applications for NSFC Joint Projects is **18 January 2013**. This funding allows Scotland-based and China-based researchers to collaborate on joint projects over a two-year period. The subject area for the 2012/13 Joint Project Scheme is Energy Technology and Management. For nomination forms and full information visit www.royalsoced.org.uk/801_NSFC.html or contact Anne Fraser – afrazer@royalsoced.org.uk or phone 0131 240 5013.

The next deadline for applications for both the Bilateral and Open Programmes is **28 February 2013**. The Bilateral Programme supports short-term visits to and from Scotland with our Sister Academies. For application form and further details visit www.royalsoced.org.uk/802_InternationalExchangeProgrammeBilateral.html. The Open Programme allows further collaborations with research groups in countries (non-UK) or institutes not covered by the Bilateral Programme. Application forms and further information at www.royalsoced.org.uk/832_InternationalExchangesOpenProgramme.html. For more information contact Tracy Rickard – trickard@royalsoced.org.uk or phone 0131 240 5023.

Below are case studies of two recently-funded international projects:

Scottish researcher: Adam J Bock (pictured top)
Lecturer in Entrepreneurship, University of Edinburgh

Visited: Phil Kim (pictured below) Assistant Professor,
University of Wisconsin, Madison, USA

The RSE funded Dr Bock's travel to investigate collaboration options with Professor Kim at The Wisconsin School of Business. Together they conducted a preliminary review of a novel dataset comprising contract research proposals linking Scottish small and medium-sized enterprises (SMEs) to Scottish research universities.



Dr Bock and Professor Kim plan to investigate a model of 'organisational deviance behaviour', in which organisational participants purposefully choose to engage in work unrelated to their core job responsibilities (Mainmelis 2010): in this case, scientific researchers who choose to collaborate with industry for short-term technological development and commercial benefit. Are academic scientists interested in very specific projects targeting incremental innovation, or do they prefer projects with uncertain, potentially significant, research potential? Their research would develop the first in-depth analysis of how industry partners, policymakers and university technology transfer offices can support university–industry research collaboration. The findings could enable market-driven technology innovation and potential long-term, economic development in high-value, science-driven sectors. According to Dr Bock, "the opportunity to meet with Professor Kim at Wisconsin significantly improved my research capacity in this topic, directly increased the impact of my ongoing research via dissemination to a wider academic and practice community and increased my chances of publication in a high-impact journal. I'm very grateful to the RSE for helping me launch this exciting research project."



Scottish-based host:
Dr Derek Wann (right)
EPSRC Career Acceleration
Fellow, School of Chemistry,
University of Edinburgh

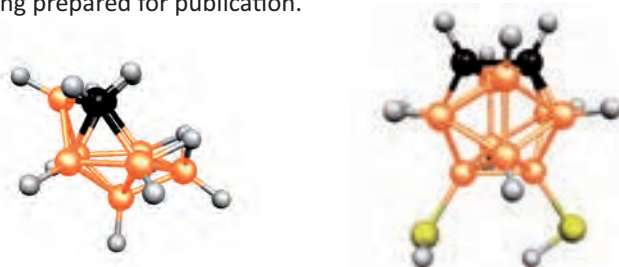
Overseas visitor:
Dr Drahomír Hnyk, Senior
Researcher, Institute of Inorganic
Chemistry of the Academy of
Sciences of the Czech Republic

Dr Hnyk visited Edinburgh for ten days in August 2012, during which time he and Dr Wann built upon their many years of collaboration.

The group from the Czech Republic are experts in the synthesis of boranes – molecules that contain boron and hydrogen, and often other elements.

Boranes can form very elegant and symmetric three-dimensional geometries, as shown below, where orange atoms are boron, black ones are carbon, white ones hydrogen, and yellow atoms sulfur.

Dr Wann is the UK's foremost electron diffractist, using the wave properties of electrons to determine the structures of molecules. Understanding structures, such as those of the boranes, allows questions to be answered about the way molecules behave, and gives insight into how they might be used in, for example, drug design or catalysis. During the visit, the structures of three novel borane cages were determined, and these will form the basis of two papers that are currently being prepared for publication.



Scientific Research

Managing Uncertainty in Complex Earth Systems



Dr Mark Naylor, based within the School of Geosciences, University of Edinburgh, was awarded an RSE Scottish Government Personal Research Fellowship Co-funded by Marie Curie Actions in 2009.



Our ability to forecast the evolution of the earth beneath our feet, from inherently sparse direct evidence, is a limiting constraint on many economic, industrial and social aspects of our everyday lives. Earth systems provide both physical and energy resources, provide places where we can live and generate natural disasters which irreversibly change people's lives. Addressing all of these opportunities and risks requires a sound understanding of the physical processes behind them, as well as a quantification of inherent uncertainty that the Earth will always throw at us.

Mark has three main research focuses, which all relate to the physics related to rocks and how the Earth's crust behaves.

These are:

- **Earthquake Physics: incremental deformation of rocks**
- **Carbon Capture and Storage: processes that go on inside rocks**
- **Collisional Mountain Building: evolution and formation of rocks**

The RSE administers funding that supports researchers based in Scotland in many and varied fields. Funding is provided by the Scottish Government, BP, Lloyds TSB Foundation for Scotland and the Caledonian Research Fund, as well as from several bequests and legacies. The programmes through which this funding is made available aim to support Scotland's cultural, economic and social wellbeing and more specifically to:

- attract and retain those with outstanding potential to establish their Science, Technology, Engineering & Mathematics (STEM), as well as Arts & Humanities careers in Scotland, and to make long-term contributions in these areas and in their application in Scotland;
- encourage enterprise and innovation and the commercialisation of technology-based ideas coming from academic research; and
- develop international collaborative links and enable participation in international research programmes.

Full details of all funding administered by the RSE are available on the website at: www.rse.org.uk/180_FundingAwards.html

The case study from Dr Mark Naylor (above), based at the University of Edinburgh, is just one example of research supported by the RSE.

RSE@ Lochaber 2012–2013

The RSE@ Lochaber programme was launched at Nevis Range, Aonach Mor, on 17 September 2012, when attendees travelled by mountain gondola to hear Professor Tom Devine FRSE answer questions from the audience on a variety of aspects of Scottish history relating to key and controversial issues of the nation's past and their relationship to the present and future. The event was expertly chaired by the Rt Hon Charles Kennedy, MP for Ross, Skye and Lochaber, and an evening of good humour, knowledge-based argument and diverse views was experienced by all.

The evening also incorporated the presentation of the 2012 RSE Beltane Prizes for Public Engagement to Professor Devine and Dr Nicola Stanley Wall.

Following the launch event, the RSE @ Lochaber project continued with an ambitious programme of activities planned to take place from September 2012 to June 2013. In the first few months of the programme, RSE Fellows and other experts have delivered school and public talks on a wide variety of subjects in all parts of the region.



At the end of September, Kinlochleven High School pupils and local residents enjoyed an informative and entertaining talk by Dr Jonathan Murray, Edinburgh College of Art, discussing Scotland's regular starring role in cinematic feature films, ranging from Harry Potter to Trainspotting.

On 20 September, Professor Peter Clarke, University of Edinburgh, spoke to the pupils of Ardnamurchan High School about recent developments at CERN, the Large Hadron Collider and the recent discoveries about the Higgs boson. He also gave a public talk on the same subject to the residents of Kilchoan, a crofting village on the Ardnamurchan peninsula (pictured above) – which attracted nearly 40% of the peninsula's population! He is pictured below with Anna Wright, who works at the West Highland College in Kilchoan.



Professor Owen Dudley Edwards FRSE (above) exhibited a masterclass of knowledge at school and public talks in Mallaig on 30 October, discussing the author Patrick McGill and how the navvies helped modernise Scotland.

The RSE@Lochaber Programme will run until June 2013. For details of events visit: www.rse.org.uk/1007_RSELochaber.html Summary reports of all the talks are available at: www.rse.org.uk/506_PastEventsReports.html



Finally for now, Professor Martin Hendry FRSE, University of Glasgow, (pictured above at Kilchoan with (l-r) Pat Glenday and Anna Wright, who work for the West Highland College and RSE Project Officer, Kate Kennedy), visited Kilchoan and Ardnamurchan High at the beginning of November, and shared his expert knowledge of our Solar System and the physics that helps us understand its workings. Professor Hendry's talk was followed by a practical stargazing activity – we were very thankful for the unusually clear skies!

So far, the RSE@ Lochaber programme has visited the RSE's highest-ever location for an event, 650m up on the slopes of Aonach Mor, and Great Britain's most westerly mainland point, at Ardnamurchan.

RSE@ Lochaber will continue in 2013, with a range of talks already planned for January to March, including topics as diverse as: *Pioneering Weathermen of Nevis*; *Digital Participation*; *The History of Caledonian MacBrayne*; *Gaelic History and Culture*; *The Aluminium Industry*; *CTR Wilson*; and *Lochaber's connections with Sitting Bull*.



The RSE Christmas Lecture 2012

The Journey to Gold – twelve years of trials, trails and trailblazing

Katherine Grainger
MBE, Olympian

Lochaber High School
Tuesday 11 December 2012

Following her golden summer, Katherine Grainger MBE returned to Scotland to deliver the RSE's most prestigious winter event, the RSE Christmas Lecture 2012.

Glasgow-born Katherine first took up rowing during her student days at the University of Edinburgh. Since then, she has gone on to win six rowing World Championships, three silver Olympic medals and, most recently, a gold medal at the 2012 London Olympic Games. These remarkable achievements make her an inspiration to all, and the RSE was delighted to have Katherine deliver this year's Lecture.

Katherine followed in the footsteps of some truly exceptional speakers, including BBC World Affairs Correspondent, Allan Little; NASA Astronaut, Dr Bonnie Dunbar CorrFRSE; Forensic Anthropologist, Professor Sue Black FRSE (star of BBC's *History Cold Case Series 1 & 2*); "Dolly" Scientist, Professor Sir Ian Wilmut OBE FRSE and Scottish historian, Professor Tom Devine OBE FRSE.

The calibre of Christmas Lecture speakers remains consistently high and the profile of the event continues to grow each year.

BBC Scotland has webcast the event since 2010, and the web audience has grown from UK-wide to include viewers from many countries around the world.



The Christmas Lecture comprises two lectures – a day-time event for students, and an evening lecture for the public. At the heart of the event is the schools' lecture and while the majority participate as audience members, the RSE also gives as many students as possible a chance to engage further and develop their skills in other ways, giving them experience as webcast interns, event reporters, and even some on-camera experience. The lecture welcomes a further audience through the live webcast and is then available to download from the RSE website early in the New Year.

The webcast, along with those from previous years, will be available to view from the RSE website, or from the dedicated BBC page www.bbc.co.uk/christmaslecture. A report of the event will also be available on the website from early in the New Year at www.rse.org.uk/1014_2012Events.html

Events@ RSE

Thursday 21 February 2013 at 6 pm
SCRR PETER WILSON LECTURE

The Evidential Basis for Food and Environmental Policy

Professor Ian Boyd FRSE (pictured right), Chief Scientific Adviser, Department for Environment, Food & Rural Affairs

Societal demands on the environment are increasing. Food, water and environmental policies encompass the basic commodities for life and are important for Government. Sustained innovation at rates matching rising demand without degrading natural capital is challenging. Evidence-based policies should have a pivotal role in the policy cycle. There are many successes, important failures and lessons for the future. Scientific discovery is inherently uncertain. It is important that models and processes account for uncertainties, support progress and reduce over-precaution.

This is a joint annual lecture with the Scottish Consortium for Rural Research (SCRR) and the Society of Biology, Scotland, in memory of the distinguished agriculturalist and former RSE General Secretary, Professor Peter Wilson CBE.



Wednesday & Thursday 27–28 February 2013
TWO-DAY CONFERENCE

Women's Reproductive Health across the Lifecourse: Implications for Public Policy

This two-day interdisciplinary conference will bring together clinicians, policy makers, scientists, social scientists and other stakeholders to consider and debate the range of evidence relating to women's reproductive health, its promotion and treatment of ill-health, and to discuss the wider implications for health and social policy generally and the medical and clinical academic workforce in the UK specifically.

Attendance fee: £40. A limited number of free places will be available for postgraduate students – please contact the RSE.



Wednesday 27 February 2013 at 6 pm
LECTURE

Sexual and Reproductive Health Issues for Women in Combat

Dr Ngozi Dufty, Consultant in GU Medicine, Birmingham Heartlands Hospital





Monday 4 March 2013 at 6 pm RSE/RAE LECTURE

Growing Healthcare Technology Businesses – Bringing Engineering Inventions to Market with Limited Resources

Ian Stevens, CEO, Touch Bionics

Ian Stevens has been fortunate to have been associated with the development of three disruptive and leading healthcare technologies over the last 14 years; firstly the *Optomap* retinal scan from Optos, then *Smartmesh* for pelvic floor restoration from Mpathy Medical and, most recently, the *I-limb* multi-articulating prosthetic hand from Touch Bionics. In this year's lecture, he will explore how these inventions were brought to market, describing some of the challenges overcome and discussing how the products evolved to meet the needs of their users.

This is a joint annual lecture with the Royal Academy of Engineering to promote research in engineering.



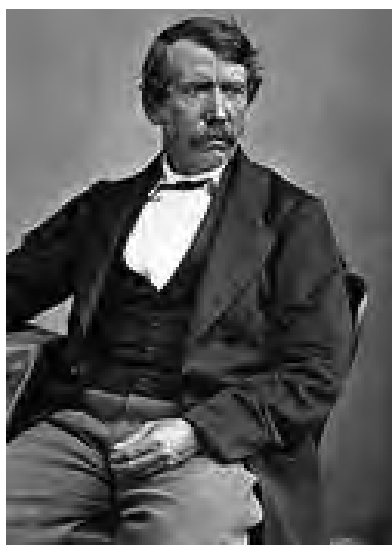
Tuesday 19 March 2013 at 6 pm LECTURE

The Scientific Life of Dr Livingstone

Professor Michael Barrett,
Professor of Biochemical Parasitology
(Infection Immunity and Inflammation
Life Sciences) University of Glasgow

David Livingstone was born into poverty at Blantyre, near Glasgow, in 1813. Largely self-taught as a boy, Scotland's enlightened higher education system allowed him to secure a medical training at Anderson's College in Glasgow in 1836. In 1841 he left for Africa, and spent the next 32 years opening up the 'Dark Continent'. In this lecture, Professor Barrett will outline key scientific and geographical discoveries made by Livingstone and, in particular, discuss the impact of tropical diseases on Livingstone's travels in Africa.

The lecture forms part of an RSE Ordinary Meeting and so will be preceded by Society business, such as Fellows signing the Roll.



Monday 15 April 2013 FULL-DAY CONFERENCE

The International Launch of HCR:V3

This is a one-day conference jointly organised by The Royal Society of Edinburgh and Violence Risk Assessment Training. It marks the international launch of Version 3 of the HCR-20.

The HCR-20 is the premier approach to the evaluation of violence risk. This procedure is evidence-based. It has been evaluated in 32 different countries and there are currently 18 translations. The last edition was published in 1997.

Following a comprehensive international research endeavour, the new edition, HCR:V3, is about to be launched. The authors have chosen to launch the new version in Edinburgh prior to the annual Violence Risk Training Workshops. Scotland is recognised as a centre of excellence for evidence-based approaches to these problems. The MacLean Committee on Serious Violent and Sexual Offenders established a new approach to the assessment of violence which has been recognised internationally.

The authors of the new HCR:V3, Professor Christopher Webster, Professor Stephen Hart and Dr Kevin Douglas, will all describe the research base of the new instrument and its utility in the practice of violence risk assessment.

Full rate: £150
Fellows/Academics: £75*
Student/Concession: £50*
*limited places available

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Computing Science in Schools

RSE/BCS Computing Science Exemplification Materials

In partnership with The Chartered Institute for IT (the BCS), the RSE has undertaken a project to exemplify computing science-related aspects of Curriculum for Excellence, which is being implemented in Scottish schools. This has provided an excellent opportunity to re-energise the teaching of computing in schools and highlight its importance to a digitally-enabled society. The project has received widespread support from universities and industry partners and the Societies secured funding to second Jeremy Scott, Head of Computing at George Heriot's School in Edinburgh, to lead the development work. He has been seconded on a part-time basis since August 2011.

Three extensive resources comprising tutor and learner materials were launched at the RSE on 4 December. The materials introduce learners to computer science and basic computing concepts, as well as providing grounding in computer programming. Pack three, *I Love My Smartphone*, uses a mobile app development platform to provide a course in programming for mobile devices. The materials have been trialled in schools across Scotland and have received very positive responses from teachers.



Pupils from Castlebrae demonstrate the software in operation.

Jeremy Scott is pictured at the event with Professor Muffy Calder OBE FRSE (top) and Dr Alasdair Allan MSP (immediately above).

The launch event was attended by more than 50 people, including computing teachers, local authority representatives, education officials, representatives of university and college computing departments and industry representatives. Pupils from Castlebrae Community High School, George Heriot's School and Kelso High School were on hand to demonstrate the computing materials.

Professor Muffy Calder, Chief Scientific Adviser for Scotland, spoke at the launch, as did Dr Alasdair Allan MSP, the Minister for Learning. In relation to the materials he said, "They are a valuable resource which will help teachers develop pupils' understanding of core computing concepts and associated skills as part of Curriculum for Excellence, from early secondary into the new qualifications."

A video link allowed attendees to hear from eminent computer scientist, Professor Hal Abelson, co-director of the MIT's Center for Mobile Learning and the creator of the "App Inventor" software, which is used in pack three of the RSE/BCS materials.



George Heriot's



Kelso



George Heriot's



Castlebrae

The project is being extended until June 2013, when Jeremy's secondment will end. The project is working with Education Scotland so that the materials may be used to support aspects of the new national qualifications in Computing Science. This will build upon the work that has been done to date.

The RSE/BCS Computing Science exemplification materials are available from the RSE's website at: www.royalsoced.org.uk/1034_ComputingScience.html

RSE Fellows in Action



Professor Kevin J Edwards, University of Aberdeen (left), and **Professor Ronald T Hay FRS** (right), have been elected Members of the Academia Europaea.

The Academia Europaea is a European, non-governmental association acting as an Academy. Its members are scientists and scholars who collectively aim to promote learning, education and research. Founded in 1988, it has over 2000 members who include leading experts from the physical sciences and technology, biological sciences and medicine, mathematics, the letters and humanities, social and cognitive sciences, economics and the law.



On Saturday 17 November 2012, at Free France House on Regent Terrace in Edinburgh, the French Ambassador to the UK, H E Bernard Emié, awarded the insignia of Officer of the Légion d'Honneur and that of Chevalier des Arts et des Lettres to the **Rt Hon Professor Sir David Edward**.



Professor Nigel Rapport, University of St Andrews, has been awarded the Rivers Memorial Medal by the Royal Anthropological Institute. The Medal was founded in 1923 by the Council of the Institute in memory of its late President, William Halse Rivers. The Medal is awarded for a recent body of work published over

a period of five years which makes, as a whole, a significant contribution to social, physical or cultural anthropology or archaeology.

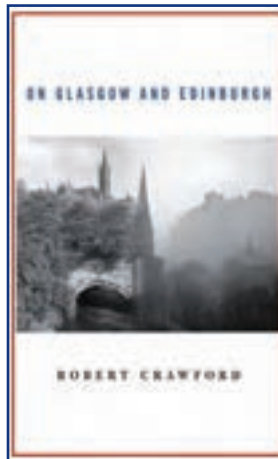


Professor Robert Crawford, Professor of Modern Scottish Literature at the University of St Andrews, has produced a book, to be published in February 2013. *On Glasgow and Edinburgh* is 'a comparative intellectual and cultural history of Scotland's two biggest cities'.

Edinburgh and Glasgow enjoy a famously scratchy relationship. Their size belies their world-historical importance as cultural and commercial capitals of the British Empire, and the mere forty miles between their city centres does not diminish their stubbornly individual natures.

Robert Crawford dares to bring both cities to life between the covers of one book. Though there are many books about Glasgow and even more about Edinburgh, this is the only book devoted to the cultural history of both these great Scottish cities and the rivalry between them.

Published by Harvard University Press
www.hup.harvard.edu



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Science and the Parliament

Science and the Parliament is the biggest annual gathering of the scientific and policy-making communities in Scotland. Organised by the Royal Society of Chemistry (RSC), the event attracts the support of learned organisations, further and higher education and industry across the full spectrum of science and engineering disciplines. The event is also supported by MSPs and senior members of the civil service.

This year's event had a double theme: science and the constitution; and growing the SME sector in Scotland.

Introducing the event, Professor Lesley Yellowlees MBE FRSE, President of the Royal Society of Chemistry, said: "The Scottish track record of producing leading inventors, scientists and engineers is second to none. Dozens of world-changing innovations hail from Scotland – from antiseptics and dialysis to the telephone and the television – so how can the country continue this legacy?". The event explored how to increase the rate of new business start-up and support the growth of existing enterprises in science and engineering.

The answer Scotland gives to the vote on Independence in 2014 will have an important role to play in the country's future science and technology capability. In the afternoon, the floor was opened for an honest and pragmatic discussion on the topics around this subject and the impact that Independence could make to the future of science in Scotland.



Iain Gray MSP (pictured left) with Sir John Arbutnott PRSE and Professor Lesley Yellowlees



Educational awards were presented to pupils from schools throughout Scotland



'Question Time' on Innovation Scotland panel: (l-r) Willie Rennie MSP; Patrick Harvie MSP; Joanna Mowat (Edinburgh City Centre Councillor); Leslie Yellowlees, Chair; John Park MSP; Chic Brodie MSP.



RSE Policy Officer, William Hardie, with Sir John Arbutnott at the RSE stand



Ian Ritchie, RSE Vice-President for Business, spoke on growing the Scottish SME sector



The 'Science and the Constitution' Panel was chaired by Ken MacDonald, Science Correspondent, BBC Scotland (left). The panel comprised: (l-r) Stewart Sutherland MSP & Professor Stephen Salter FRSE (Yes); Professor Hugh Pennington FRSE & Dr Richard Simpson MSP (Better Together). Sir John Arbutnott PRSE introduced the session.

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Any opinions expressed in this newsletter are not necessarily those of all RSE Fellows

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