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resource

The Newsletter of Scotland's National Academy

Lucinda Bruce-Gardyne FRSE with pupils from Inverness Royal Academy, taking part in *Food for Thought*, February 2019, part of the RSE@ Inverness programme. Read more inside.

Also featured in this issue:

Progress for Women in STEM?

Training for Displaced Migrants

Preserving the Union Chain Bridge

RSE
The Royal Society of Edinburgh
KNOWLEDGE MADE USEFUL

Food for Thought

Taking place in February 2019 at Inverness Royal Academy, *Food for Thought* comprised a two-day series of thought-provoking and interactive sessions for school pupils from across the city, and an evening event, open to the public, with a panel of experts exploring various aspects of food in a contemporary context.

The public panel discussion session was chaired by Professor Lee Innes MBE FRSE, who currently leads a group at the Moredun Research Institute, near Edinburgh. Professor Lee's team is currently looking at developing solutions to control diseases casued by protozoan parasites.

Panel member, Lucinda Bruce-Gardyne FRSE, (*right*) Founder of Genius Foods, developed a ground-breaking gluten-free bread in her kitchen, in response to her son's gluten allergies and launched it across the UK in 2009. This achievement led to the creation of Britain's leading free-from bakery brand Genius Gluten Free, which has normalised the lives of millions of people following a gluten-free diet in the UK and around the world. In her talk, Lucinda shared the highs and lows; the challenges and lessons that she and the Genius team experienced, as their innovative business grew from a few people in an office in Edinburgh, to a 300-strong manufacturing business based in Midlothian.

With a growing number of vegans across the UK making diet choices for both health and sustainability reasons, Professor Wendy Russell from the Rowett Institute in Aberdeen, considered recent research on plant proteins and how these proteins can contribute more to the human diet in terms of nutritional value. Professor Russell's research focuses on understanding the complexity of the human diet and harvesting for health, working across the food-supply chain with food growers and producers, agriculture and environmental scientists, the food industry, health professionals and policy makers.

The Guild of Food Writers 'Blogger of the Year 2017' Kate Young's recipes are inspired by her reading. She has spent the last five years cooking the food she happens across in her favourite books. Having mastered the treacle tart from Harry Potter she began blogging about her creations, following up with such delights as Paddington's marmalade and afternoon tea at Manderley, Toad's tower of buttered toast, and chicken with tarragon from Anna Karenina. Kate spoke of her *The Little Library Cookbook,* which details the meals enjoyed by some of our favourite fictional characters, and shared her discoveries and inspirations with the panel and audience. *(Kate is pictured right).*

The fourth panel member, Robert Macdonald, is Vice-Chairman of the Less Favoured Area (LFA) Committee. Passionate about livestock farming, he has held various posts within the National Farmers Union. Mr Macdonald spoke of how farms and crofts have a huge role to play in producing high-quality food and wool, as well as preserving fragile economies, supporting biodiversity and looking after the landscapes and environments for the increasing numbers of visitors to the Highlands.

Lively and informative, the event produced a stimulating conversation between the panel and audience.

The two-day school's programme covered a number of workshops and talks on a variety of subjects. Pupils participated from Merkinch and Kirkhill Primary Schools and Fortrose and Milburn Academies as well as from Inverness Royal Academy, which hosted the event.

Three of the panel members from the evening event participated in the programme: Wendy led discussions on the scientific benefits of plant-based food, examining the role of a sustainable diet in the prevention of non-communicable diseases; Lucinda demonstrated what dough with and without gluten looks like and described what it takes to create a gluten-like consistency; and Kate produced bread and butter from scratch.

In addition, Robert Mackenzie of Cullise Cold Press Rape Seed Oil whipped up homemade mayonnaise, at the same time as talking about farming, food production and his own business's product diversification into making oil.

On a different topic, Real News Workshops, part of the BBC Young Reporters Project, gave students the opportunity to develop their understanding of digital journalism and media skills.

Pupils worked through a range of questions on news literacy and how to check facts and sources and filter out fake news and false information. Local journalists, Jackie O'Brien and Sarah Parfitt also contributed to the workshops, giving advice about careers in the media and talking about their own journeys in journalism.

Feedback on the entire programme has been positive and a short video of this event can be found on our website.

The RSE@ outreach programme is dedicated to delivering inspirational and educational events and activities in local communities around Scotland.

The programmes are based in different regions of Scotland for a two-year period. Previous programmes have been delivered in the Scottish Borders, Lochaber, Dumfries and Galloway and Arbroath.

The current RSE@ Inverness programme was launched in September 2017 and, to date, has included school talks, story-telling events, writing competitions, discussion events and public talks.

International Relations

Joint Projects with Ministry of Science and Technology, Taiwan (MOST)

The RSE–MOST Joint Project scheme is designed to facilitate international collaboration between researchers based in Scotland and Taiwan. The RSE currently offers grants of up to £12k for two-year projects between individuals and/or teams based in Scotland and Taiwan.

The MOST provides a similar level of funding to the Taiwan-based project team.

For full details and to apply, visit the website: **www.rse.org.uk/awards/revision-joint-projects-ministry-science-technology-taiwan/**

CASE STUDY

Dr Filippo Menolascina

Dr Filippo Menolascina, a Chancellor's Fellow from the University of Edinburgh, received an RSE–MOST Joint Projects Grant in March 2016, to carry out a joint project with Professor Torbjön Nordling and his research group from the National Cheng Kung University.

The purpose of this collaborative project was to combine videomicroscopy, microfluidics and real-time control, to achieve automatic modelling of gene networks *in-vivo*. The research focused on developing a fully automatic experimental platform to infer reliable mathematical models of biological systems, with minimal experimental efforts.

The award enabled the project leaders to take advantage of the highest levels of expertise in the fields, not available at their home institutions (e.g., process automation for Filippo, and experimental synthetic biology for Torbjön). For Filippo, the closely developed contact with Torbjön was central to making fundamental breakthroughs for the *in-vivo* implementation of the Optimal Experimental Design scheme. Filippo and Torbjön have both disseminated the project's findings since, at various conferences and seminars and produced a joint publication in Summer 2018 in the *Proceeding of the AdChem* conference.

The results of the Award were key to obtaining four more major grants (two EPSRC and two H2020). Fillippo's research group has also expanded significantly (to ten members) and he was appointed Co-Director at the Edinburgh Genome Foundry in January 2018.

When asked about the favourite part of the Joint Project and international collaboration, Filippo said:

"The periodic calls we had: it was really empowering to see things progressing from week to week."

MacCormick European Lecture 2018

The annual MacCormick European Lecture is named in honour of the late Professor Sir Neil MacCormick FBA FRSE (right), in recognition of his contribution to Scottish and European politics and his international work for the RSE. The first lecture was held at the RSE on 26 May 2009.

Addressing climate change and pursuing economic development: reflections from the IPCC

The annual MacCormick European Lecture 2018, was delivered by Dr Hoesung Lee, Chair of the Intergovernmental Panel on Climate Change (IPCC) on 15 October 2018.

Dr Lee highlighted the existence of dangerous climate change and its human causes, which are no longer in question.

Attention is now turning to possible response measures. IPCC assessments have shown that governments and other non-state actors address climate change in the context of other national priorities, such as poverty alleviation. Therefore, to be effective, climate action must be relevant to national priorities and societal concerns.

We need to improve our understanding of how climate policies interact with the sustainable development goals. This work implies a greater engagement with the social sciences, and in turn requires an enhanced understanding of social values, consumption and behaviour – the drivers of decision making.

The findings of the IPCC Special Report on Global Warming of 1.5°C, offered some insights, as does emerging thinking on the next comprehensive assessment.

As part of this annual event, the RSE invited a group of experts and other stakeholders to hold a roundtable discussion around the central theme of 'Moving Towards a Low Carbon Economy'. The output from this discussion was submitted to the Talanoa Dialogue – a process mandated by the Parties to the United Nations Framework Convention for Climate Change, designed to help countries implement and enhance their Nationally Determined Contributions by 2020.

To find out more about all of the RSE's global activities, visit:

www.rse.org.uk/international

Visit the RSE website to watch a full video recording of Dr Lee's lecture or read the summary report:

www.rse.org.uk/event/addressing-climate-change-and-pursuing-economic-development-reflections-from-the-ipcc/

Enterprise Fellowships

The RSE Enterprise Fellowship is a premier business development and training programme for the Higher Education sector. It nurtures and supports promising science and technology researchers, enabling them to develop into successful, world-class entrepreneurs.

Established in 1997, the programme has supported over 240 researchers across 36 UK academic institutions to develop and launch new businesses. Companies have been formed and include: drug-free malaria treatment; heritage-barley cultivation; and virtual reality audio technology.

Successful applicants secure a fully-funded year to concentrate on developing their business idea while they access mentorship and expert training in entrepreneurship. Through the programme, Enterprise Fellows are supported and equipped with the skills necessary to succeed in today's fast-paced global business environment. It's a once-in-a-lifetime opportunity with the potential to truly be life changing!

Murray Collins
CEO *Space Intelligence*
NERC–RSE Enterprise Fellow 2017–18

"The RSE Enterprise Fellowship was the most significant turning point in my career following my PhD. Living the experience of company formation, winning business and establishing corporate processes was invaluable".

Recognising that deforestation is one of the world's largest environmental problems – driving climate change, depriving the poorest people of essential raw materials and causing huge biodiversity loss – Murray saw that there was a huge demand for forest monitoring services in the market. In response, he formed Space Intelligence during his RSE Enterprise Fellowship; a company that uses satellite data analysis to provide maps of forests, deforestation and forest degradation to organisations in the private and public sectors.

The National Environment Research Council (NERC) supports researchers working within their remit of terrestrial, marine, freshwater, science-based archaeology, atmospheric and polar sciences, and Earth observation.

Since completing the Enterprise Fellowship, Murray has been developing the company's core technology and data analysis offering, through new mapping contracts in West Africa which aim to support sustainable development in the region. His company has also produced a major report on 'Space Solutions for Forestry in Developing Countries' for the UK Space Agency, which has raised the profile of Space Intelligence within this community. These developments, combined with the business skills acquired on the Enterprise Fellowship, have resulted in Murray being offered a new role at the University of Edinburgh as a Chancellor's Fellow in Space and Satellite Analysis. This is a new post; established as a hybrid position working between enterprise and academia. In this role he will work under the remit of the Accelerating Growth City Region Deal and is mandated to deliver economic growth through data-driven innovation, supporting existing SMEs including Space Intelligence, and also driving the developments of new technology-based start-ups across SE Scotland. He will carry out this work alongside his CEO role at Space Intelligence.

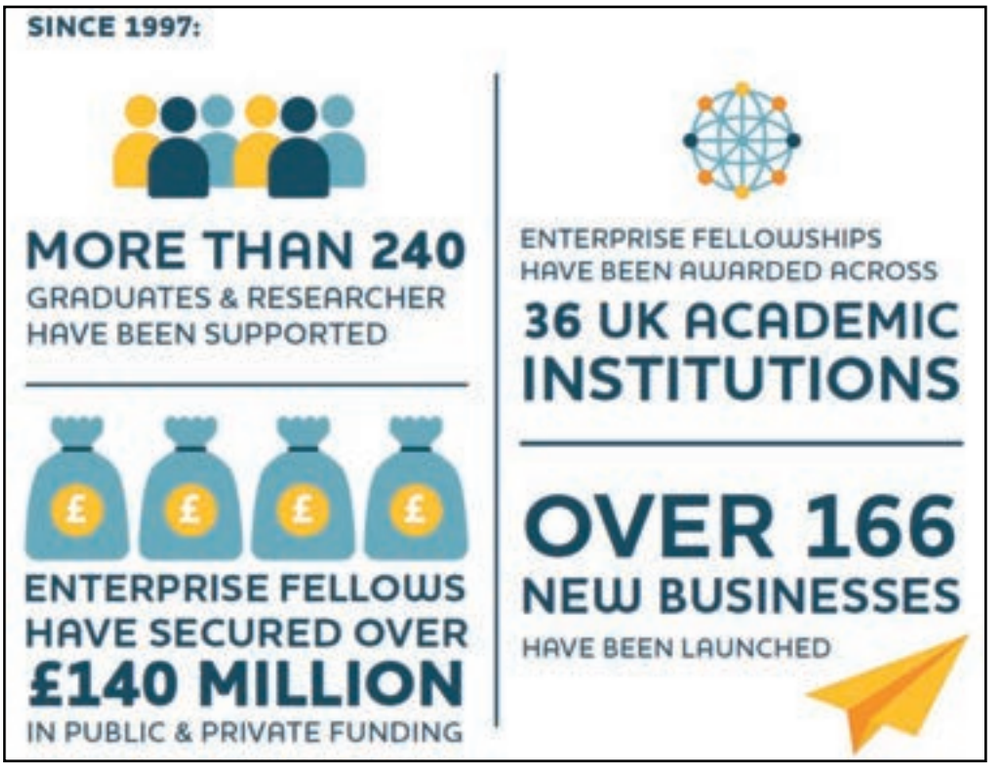
Murray is a current member of the RSE Young Academy of Scotland.

Rotimi Alabi
Founder/CEO *RAB Microfluidics*
NERC–RSE Enterprise Fellow 2017–18

Based at the University of Aberdeen, Rotimi Alabi developed a microfluidic technology to measure contaminants in fluids. During his NERC-funded Enterprise Fellowship, he started up his company, RAB Microfluidics, which offers a 'Lab-on-a-chip' technology to deliver on-site oil analysis. RAB Microfluidics aims to transform the current maintenance strategies in the heavy machinery condition-monitoring market from preventative to predictive. Their technology offers customers real-time, on-site continuous monitoring which is 1000 x faster and 10 x cheaper than the current lab-based testing approach; enhancing machine efficiency and reducing downtime. The company currently offers two products: a glass chip that fits into the working machinery and a 30 x 20 cm portable laboratory.

Since completing the Enterprise Fellowship, Alabi gained a space on the TechX accelerator programme based at the Oil and Gas Innovation Centre and was awarded the BP TechX Technology Award to support the development of their technology. He has also secured seed funding from a high net worth angel investor, alongside accessing several significant grant awards – a SMART award, an Innovate UK award and various others – which have allowed him to employ a Director of Business Development and some Developers to work full time on the technology.

RAB Microfluidics Ltd is now moving towards field trials with heavy machinery and shipping operators and the next market they hope to tap into is the offshore renewables sector of the market.



Applications are accepted for Enterprise Fellowships twice a year.

The next deadline is 17 April 2019.

For full details about the Enterprise Fellowship programme, visit:

ww.rse.org.uk/awards/enterprise-fellowships

Policy Advice from the RSE

Drawing on the expertise of its Fellows, the RSE provides independent evidence and advice to inform public policy decisions and legislative direction. RSE contributions support decision makers in the Scottish and UK parliaments and the Scottish and UK governments.

Tapping All Our Talents – What Progress?

In November 2018, the RSE and the Young Academy of Scotland launched a joint report, *Tapping All Our Talents 2018 (TAOT 2018)*, on women in STEM (Science, Technology, Engineering and Mathematics). Using the RSE's influential report of 2012 on women in STEM as a baseline, *TAOT 2018* reviews what progress has been made in the last six years to increase the number of women working and studying in STEM in Scotland. *TAOT 2018* has gone further than the 2012 study by exploring every stage of the 'pipeline' from the early years. This enabled the review to consider systematically what needs to be done to further advance gender equality in STEM. *TAOT 2018* was chaired by Professor Lesley Yellowlees CBE FRSE (*pictured above*).

The RSE's report of 2012 highlighted the 'leaky pipeline' through which almost three-quarters of female graduates are lost from STEM. *TAOT 2018* considers what has – and has not – changed for women working in STEM in Scotland today, and makes recommendations for addressing the under-representation of women in STEM.

While much effort has been made to address gender inequality in STEM, this has resulted in a mixed picture of progress. The proportion of female STEM graduates working in STEM industries has increased from 27% in 2012 to 30% in 2017. The number of Scottish university STEMM departments (includes medicine) holding Athena SWAN awards for action on gender equality has increased from a total of five in 2012 to 73 by 2018. The proportion of female professors in Mathematics trebled from 3% in 2012 to 10% in 2017 and in Chemistry doubled from 5% to 10%.

However, by other indicators, progress has been slow or non-existent. The proportion of female pupils taking computing-related courses equivalent to Standard Grade has declined from 32% in 2012 to 18% in 2018, while, in most STEM subjects across colleges and universities, the proportion of female students has seen, at best, incremental improvement and, at worst, further decline.

Gender stereotypes are reinforced from birth, through expectations that are placed on children's behaviour, interests and abilities. It is therefore clear that a step change in real gender equality, in STEM and elsewhere, will require a fundamental shift in societal and institutional perceptions of gender 'norms'. Challenging gender inequality is not a 'women's problem,' nor that of any one individual sector. It requires universal buy-in, underpinned by leadership at all levels.

The following are crucial to addressing gender equality in STEM:

• The need for leadership at all levels to drive cultural changes that promote equality.

• The need for better data that allow real understanding and tracking of the extent of gender inequality, barriers to progress and appropriate solutions. This could include mapping interventions by current strength of evidence, impact and cost-effectiveness, with a view to scaling-up successful interventions.

• Behavioural change, including greater use by employers of proportionate positive action measures that redress the balance of female under-representation.

• Strong, sustained partnerships between educators and industry that deliver high-quality, inspiring and inclusive STEM learning.

The publication of the 2018 report is not the end point for the Society. The RSE is taking forward a range of activities in support of the issues raised by the report. This includes developing an exhibition that will be launched in early April to showcase the achievements of women in science in Scotland. In parallel, roundtables will be held with representatives from across the education, third sector, business and government sectors to discuss actions to be taken forward in partnership to help deliver gender equality in STEM.

The TAOT 2018 report is available at:
www.rse.org.uk/inquiries/womeninstem-2018/

Research Pooling

An RSE working group chaired by Professor Julian Jones OBE FRSE, responded in January 2019 to the Scottish Funding Council's independent review of research pooling. The RSE is clear that the research pools, first established in 2004, have had a significant impact on the Scottish research environment. Their creation has coincided with the improved performance of Scottish universities in the Research Excellence Framework and its predecessor. In particular, the pools appear to have been successful in encouraging collaboration between institutions and improving universities interface with industry, business and policy makers. The pools can be considered as having paved the way for the establishment of other cross-institutional initiatives, including the Innovation Centres.

The RSE believes that pooling should continue to have a significant role within the higher education landscape. The present research ecosystem is now very different to that which existed prior to the establishment of the pools, with research funding now often concentrated in much larger, challenge-led initiatives. There is scope for the pools to work more closely together to support interdisciplinary research. Consideration could also be given to the establishment of new pools in areas of societal challenge e.g., ageing. The pools will require continued financial resource to support independent leadership and administrative capacity.

The RSE response on Research Pooling is available at:
www.rse.org.uk/wp-content/uploads/2019/02/AP19_02.pdf

The Implications of Brexit for Scotland's Environment

In November, a working group of the RSE's EU Strategy Group published an advice paper examining the implications of Brexit for Scotland's environment. The working group, led by Professor Roger Crofts CBE FRSE, recommended the establishment of a new, independent environmental scrutiny and enforcement body for Scotland to address the challenges of maintaining and improving Scotland's natural environment following the UK's withdrawal from the EU. The paper recognises the influential role that EU Directives and Regulations have played in shaping environmental policy in the UK, which has coincided with considerable improvement in the quality of the natural environment. The working group asked the Scottish Government and the Scottish Parliament to consider introducing a new Scottish Environment Act which would incorporate key EU environmental principles and instruments in to Scottish law to safeguard Scotland's natural assets. The development and agreement of common frameworks between the UK and Scottish Governments will be critical to this process. The paper also encouraged both the UK and Scottish Governments to take this opportunity to develop a more integrated approach to the implementation of environment law and policy. It recommended the development of a new approach for supporting food production in Scotland that takes greater account of environmental stewardship while continuing to ensure a productive and profitable agricultural sector.

The RSE advice paper on Scotland's Environment post-Brexit is available at:
www.rse.org.uk/wp-content/uploads/2018/11/Brexit-Environment-Paper.pdf

www.rse.org.uk/policy/advice-papers/

The Implications of a 'No Deal' Brexit for Science and Innovation

In January, the RSE responded to the House of Commons Science and Technology Committee inquiry into 'Preparations for a No Deal Brexit in Science and Innovation'. The greatest risk, arguably, of this outcome is the high level of uncertainty associated with it and the potentially deleterious effect it could have on UK research endeavour. The RSE has been clear that securing direct and full participation in *Horizon 2020* and its successor, *Horizon Europe*, should be a priority. In the event of a no deal, the UK Government must provide additional, ring-fenced funding to UK Research and Innovation (UKRI) for the purposes of underwriting UK participation in *Horizon 2020*. UKRI's existing budgets for supporting national R&D must not be used to compensate for the loss of EU research funding. A proportionate and flexible immigration system is required to support the UK's research and innovation sectors. UK immigration policy will need to take account of the distinctive needs and circumstances of the devolved nations. This would include ensuring that any salary thresholds are not arbitrarily defined; rather, they need to take account of regional salary differentials.

The RSE advice paper on Preparations for a 'No Deal' Brexit in Science and Innovation is available at:

www.rse.org.uk/advice-papers/no-deal-brexit-for-science-and-innovation/

Science and the Parliament

First held 18 years ago and organised by the Royal Society of Chemistry, on behalf of, and in cooperation with the Scottish science and engineering community, Science and the Parliament is intended to promote close relations between policymakers and Scottish scientists. It is now a firm fixture in the Scottish parliamentary calendar, held every year at Dynamic Earth, in close proximity to the Scottish Parliament.

Science and the Parliament comprises an exhibition of stands, at which leading scientific societies, professional bodies and universities display their work, together with an impressive speaker programme of keynote addresses and panel discussions, including one with MSPs representing the main political parties. The day ends with an early evening reception.

The RSE team meets Richard Lochhead MSP, Minister for Further Education, Higher Education and Science, who delivered a keynote address at the event. Above, pictured l–r, Debbie Morris, Paul Stuart, Richard Lochhead MSP and Craig Denham

Science and the Parliament 2018 took place in November 2018, the theme for the year being 'Education and Skills'.

Presentations were informed by the Scottish Government's five year STEM Education and Training Strategy, launched in October 2017, and the RSE and YAS publication: *Tapping All Our Talents: Six Years On*, a review into the progress that has been made towards equality in the Scottish STEM workplace over the past six years.

The enquiry, led by Professor Lesley Yellowlees CBE FRSE, reported in Autumn 2018 (see page 8).

Professor Yellowlees is pictured (right), making her keynote speech about the RSE and YAS report.

Professor Dame Anne Glover, President of the RSE, delivered keynote address.

Talat Yaqoob, Director Equate Scotland, took part in panel discussion.

The panel of MSPs comprised (l–r): Johann Lamont; Liz Smith; Clare Adamson; and Patrick Harvie.

Professor Stuart Monro OBE FRSE, former Scientific Director of Dynamic Earth, added his comment.

Dr Rebekah Widdowfield, CEO of the RSE, chaired the panel discussion around Scottish government's STEM Education Strategy.

Professor Sheila Rowan, MBE FRSE, Chief Scientific Adviser for Scotland delivered keynote speech.

Ken MacDonald, Chief Reporter, BBC Scotland chaired the MSP panel discussion.

Fellows in Action

Professor Roland Paxton MBE

In 1990, Professor Roland Paxton moved from local government to join the staff of Heriot-Watt University in an honorary capacity. Since then, Professor Paxton has represented civil engineering history and conservation disciplines extensively in teaching and research in the UK, as well as in the USA, Scandinavia and Japan. His work has attracted awards from the American Society of Civil Engineers (ASCE), the Institution of Civil Engineers (ICE), an HonDEng from Heriot-Watt University and an MBE; and enabled him to appreciate and promote the engineering significance of historic structures in publications produced in the UK, USA and Japan.

Five years ago, he became particularly concerned at the deteriorating state of the Union Chain Bridge. The following includes extracts from an article Professor Paxton published at the request of Heriot-Watt University's Institute for Infrastructure and Environment.

Recognition and Preservation of the Union Chain Bridge

Completed in 1820, the Union Chain Bridge is a suspension bridge, that crosses the River Tweed between Horncliffe, Northumberland, England and Hutton, Berwickshire, Scotland thus spanning the Scottish–English border.

On 7 November 2018, the ASCE approved a nomination initiated by Professor Paxton on behalf of ICE, and in association with the Japan Society of Civil Engineers (JSCE), that the Union Chain Suspension Bridge be designated an International Historic Civil Engineering Landmark.

More than 200 projects worldwide have earned the designation of ASCE Historical Civil Engineering Landmark, including the Eiffel Tower, Sydney Harbor Bridge, Victoria Falls Bridge, Thames Tunnel, Menai, Wheeling, Brooklyn and Golden Gate bridges, the Forth and Tay Bridges and the Liverpool & Manchester Railway.

In 2014, at an invited lecture as part of the inaugural meeting of The Friends of Union Chain Bridge (now numbering about 700 members), Professor Paxton outlined the case for conserving the bridge and stated his intention of seeking international recognition for it. This has now been achieved and hopefully will help to secure funding for the bridge's ongoing £7.3m conservation, to which the Heritage Lottery Fund (HLF) has made a welcome first-stage contribution of £360,000. A final-stage contribution of £3m is currently being sought from the HLF and it is hoped that international recognition will encourage a positive outcome from this application.

The Union Bridge's main claim for recognition as an international historic engineering landmark is that, from its completion in 1820, until the completion of the Menai Bridge in 1826, it was the world's longest span carrying vehicular traffic; and it is now the longest-serving suspension road bridge. Its type is still of great significance in bridge design as the means of achieving the world's longest spans.

Professor Paxton explained that the technical importance of Union Bridge is that, "by applying long wrought-iron eye-bar cables suspended in catenary, it was possible to erect the bridge in just 12 months, at a fraction of the cost of a stone bridge. Thus it is now more than just a useful bridge on a minor road – it is a unique, readily viewable, exemplification of state-of-the-art experimentally-based bridge technology at the dawn of modern 'strength of materials' design practice".

Professor Paxton went on to describe how the conservation of this significant landmark would be carried out. It had first and crucially been important to establish how the bridge was anchored, as drawings of that detail had been lost. Working with state-of-the-art radar specialist Dr Colin Stove of Scottish-based company, Adrok, a large iron anchor block was discovered about 7.5m vertically under the road approach. This anchor, and its companion on the upstream side are of great historic and general interest and it is proposed that they will be excavated and publicly displayed.

Having discovered how the bridge is anchored, the next stage will be to inspect the main chains before carrying out any necessary refurbishment. It is planned to remove the chains in order to carry out this process off site; this work is expected to take about 18 months. Professor Paxton is confident that although this will mean that the bridge will have to be closed for most of that time, as long as the deck continues to carry light vehicles and derive significant support from the 1820 main chains on completion of the restoration, this will not invalidate its claim to being the longest-serving suspension road bridge.

However, dismantling the bridge will not begin until full funding for the conservation is in place and therefore at present, the main aim is to secure funding for this remarkable and historical feat of engineering, hopefully for a start in December 2019.

On 27 October 2018, Professor Paxton (2nd from right) acted as guide to an ASCE delegation visiting the Berwick-upon-Tweed bridges. Pictured (centre front) is Professor Gordon Masterton FRSE, also a supporter of the bridge's conservation.

Honorary Fellows of the British Pharmacological Society (BPS)

In December 2018, the BPS announced the names of nine new Fellows and eight new Honorary Fellows for 2018. Among these were RSE Fellows:

• **Professor David Webb,** Christison Professor of Therapeutics and Clinical Pharmacology, University of Edinburgh, (*below left*) for his contribution to the BPS as President and in other key roles, and for leadership in clinical pharmacology and regulatory affairs; and

• **Professor Margaret (Mandy) MacLean,** Professor of Pulmonary Pharmacology at the University of Glasgow and RSE Vice-President (Life Sciences), (*below right)* for her contribution to the BPS and for leadership in the public understanding of pharmacology and in pulmonary pharmacology.

The Academy of Medical Sciences

Professor MacLean has also been appointed as Scotland's Regional Champion for the Academy of Medical Sciences.

Appointment to the Scottish Science Advisory Council (SSAC)

Principal and Chief Executive of Scotland's Rural College (SRUC), **Professor Wayne Powell** (*below*) joined the Scottish Science Advisory Council (SSAC) in January 2019. The appointment will last for three years. The SSAC provides independent advice on science-based strategy, policy and priorities to support economic growth, tackle equality and raise the quality of life in Scotland.

Congratulations to RSE Fellows included in Her Majesty The Queen's New Year Honours List 2019

Knight Bachelor

Professor Michael Anthony John FERGUSON CBE FRS
Regius Professor of Life Sciences and Academic Lead for Research Strategy, University of Dundee.
For services to Science

Dame Commander of the Order of the British Empire (DBE)

Jayne-Anne GADHIA CBE
External Member, Financial Policy Committee, Bank of England
For services to Financial Services and Women in the Financial Industry

Order of the British Empire: Commander (CBE)

Professor Robert BARTLETT FBA FRSE
Emeritus Professor of Medieval History, University of St Andrews. *For services to History*
Nicola BENEDETTI MBE
Musician. *For services to Music*
Professor Iain MCINNES
Muirhead Professor of Medicine and Director, Institute of Infection, Immunity and Inflammation, University of Glasgow.
For services to Medicine
Diana Mary MURRAY
Chair, Arts and Business Scotland.
For services to the Cultural and Historic Environment in Scotland

Order of the British Empire: Officer (OBE)

Professor Ian John DEARY FBA FRSE
Professor of Differential Psychology, and Director, Centre for Cognitive Ageing and Cognitive Epidemiology, University of Edinburgh.
For services to the Social Sciences
Margaret Anne, Baroness FORD
Chair, STV Group
For services to Sport and Business
Professor Raffaella OCONE
Professor of Chemical Engineering, Heriot-Watt University.
For services to Engineering
Professor Jonathan Robert SECKL
Moncrieff Arnott Professor of Molecular Medicine, and Vice-Principal, Planning, Resources and Research Policy, University of Edinburgh.
For services to Endocrinology

Order of the British Empire: Member (MBE)

Audrey CUMBERFORD
Principal, Edinburgh College.
For services to Further Education and the community in the West of Scotland

Friends of the RSE

The RSE is grateful to its corporate members for their ongoing support. Together, we will continue to explore areas of mutual interest and benefit. From business innovation and policy to supporting entrepreneurs and international links, the RSE is strengthened by its engagement with businesses. Find out more online at: **www.rse.org.uk/support-us**

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The RSE Young Academy of Scotland

Applying for Academic Jobs: Training Day for Displaced Migrants

In early February, 17 academics from the Democratic Republic of Congo, Iraq, Libya, Syria, Turkey and Yemen convened in the Upper Gallery of the RSE. They had travelled from across the UK to participate in a training day organised by the Young Academy of Scotland (YAS), the first young academy in the world to introduce at-risk academic and refugee (ARAR) professional membership.

Since its inception in 2015, the ARAR scheme has sought to support the reception and integration of ARAR professionals in Scotland by recognising their potential to make an outstanding contribution to Scotland's prosperity; providing access to the YAS network as full members; and helping them regain some of the professional and social capital lost during displacement.

According to the UN Refugee Agency, nearly 69 million people around the world have been forcibly displaced – an unprecedented number[1]. Scholars are not immune to conflict or persecution. The Council for At-Risk Academics (Cara) is a British charitable organisation that assists scholars in their home countries and in exile. Cara currently supports around 300 Fellows in the UK and abroad as part of its Fellowship programme, as well as 150 people engaged in its Syria programme. At present, there are nine Cara Fellows undertaking PhDs or postdoctoral research in seven Scottish universities.

For those who plan to establish long-term careers in UK academia, however, the policy and practice landscape can seem impenetrable – the 'REF', 'TEF', 'KEF', 'Outcome Agreements', 'Research Pools', 'QAA' and 'SIMD' form part of our higher education lexicon and wider teaching, learning and research culture. Feedback from some members of the at-risk academic community suggested that the application process and/or interview is a major barrier. These comments catalysed the idea for a training day which could utilise the expertise and skills of our wider YAS membership and RSE staff.

The training day concept was simple: to help attendees secure an academic job in the UK by breaking down the policies and recruitment norms in UK higher education. Over the course of the day, eight YAS members – Nathan Bailey, Aidan Brown, Agomoni Ganguli-Mitra, Faye Hammill, Raphael Heffron, Olof Johannson, Matthew Smith and Kate Walker – led sessions on the Research Excellence Framework, grant applications, preparing an application, performing at interview and development planning before conducting one-to-one mock interviews with participants. The day was prefaced with an overview of the Scottish higher education landscape by RSE CEO, Rebekah Widdowfield.

Thanks to the support of Cara and of Scholars at Risk, an international network of institutions and individuals that seeks to protect scholars and promote academic freedom, the event was well promoted to its target audience. In addition to supporting the participation of our YAS members, we funded travel for six additional scholars based in Scotland and England to enable them to take part. Indeed, we reached maximum capacity for the event very quickly, suggesting there is a real need for this kind of support.

Feedback from our one-day workshop will be used to shape a larger event for at-risk scholars at Wolfson College (University of Oxford), 4–7 September 2019. The workshop falls under the remit of the Global Young Academy's At-Risk Scholar Initiative which is overseen by Karly Kehoe, the YAS alumnus who led on the establishment of the YAS ARAR programme.

Comments from participants were all positive. One attendee wrote, *"each session was so relevant and all advice was helpful. I hope that you may continue to organise this kind of constructive and open exchange with refugees and displaced migrants."*

Another commented, *"all speakers provided great information and practical strategies on seeking a job in the UK."*

The only recurring development point was a request for further training in this field – something that the GYA workshop, delivered in partnership with Cara and Wolfson College – seeks to achieve. For one attendee, participation won't be necessary. Three days after the training, one of our ARAR members was successful at interview for a full-time position in his academic field at a Scottish university. This is knowledge made useful.

Article by Kate Walker, Young Academy of Scotland Co-Chair

[1]UNHCR. *Figures at a Glance: Statistical Yearbook*. www.unhcr.org/figures-at-a-glance.html

RSE Unlocking Ambition Enterprise Fellowships

By December 2018, the RSE was six months into the delivery of the Unlocking Ambition initiative, which is supporting 40 highly ambitious entrepreneurs.

Split between two programmes – one led by Scottish Enterprise and the other by the RSE – the programme is taking place over an intensive 12-month period.

To mark the half-way stage, 20 of the entrepreneurs going through the RSE programme presented on their progress, sharing with an audience of stakeholders, business leaders, FRSEs and investors, details of their journey till then and describing successes and challenges that they had faced along the way.

Reported successes included: confirmation of seed investments; completion of A-round financing; team expansions; new clients; new websites and new premises.

Unlocking Ambition Enterprise Fellow Colin Campbell, Founder and Executive Director of Unlocking Potential said, "*It has been a fantastic opportunity. The Unlocking Ambition programme is a great accelerator; we have achieved so much in the last six months*".

The Unlocking Ambition programme plays an integral part in the *Scotland CAN DO* initiative; Scotland's shared statement of intent towards becoming a world-leading entrepreneurial and innovative nation. The RSE was therefore very pleased to welcome Ivan McKee MSP (pictured centre below), Minister for Trade, Investment and Innovation, to the presentations.

At the event Mr McKee encouraged the Unlocking Ambition Enterprise Fellows in their endeavors and said, "*Scotland CAN DO is an established movement now. By bringing businesses, universities and colleges together, we develop a culture where collaboration and innovation are not only encouraged but expected.*"

For full information about the programme, visit:
www.rse.org.uk/awards/rse-unlocking-ambition-enterprise-fellowship-programme/

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