The newspaper of the physics community

interactions

December 2005

Institute *of* **Physics**

Physics is key to developing world

Dianne Stilwell reports on an international conference on using physics to drive development.

More than 300 people from over 70 countries converged on Durban, South Africa, last month for the first World Conference on Physics and Sustainable Development (WCPSD). The meeting, organised by the International Union of Pure and Applied Physics (IUPAP), was a unique opportunity for the international physics community to formulate a plan to use physics in tackling some of the most pressing problems of the developing world.

The conference centred on four main themes: physics education, physics and economic development, energy and environment, and physics and health. At the end of the three-day meeting, participants in each of these areas identified a range of practical projects to be taken forward by the world's national physical societies.

The Institute played an active part in the conference, including giving grants totalling £31 000 to enable participants from developing nations to attend. Institute president Sir John Enderby, who himself attended, said: "For the first time the worldwide physics community has made a commitment to work collectively on the problems of sustainability. While some of the proposals are ambitious, with determination most are possible. I look forward to seeing real progress being made."

Roy Reed

Children from Clare Ellis-Brown Pre-Primary School, Durban, learn about the physics of bubbles at the WCPSD.

Mobile science

The physics education action plan focused on making teaching resources available over the Web and establishing resource centres in Africa, Asia and Latin America, as well as providing workshops for teacher-trainers.

The Institute agreed to host a new website to support mobile science – www.mobilescience.info. Chief executive Robert Kirby-Harris commented: "This is a simple practical step that the Institute can take to help those who are setting up and running mobile science outreach projects. Sharing best practice and information will help more projects take off, especially in developing countries." One of the Institute's own Lab in a Lorry vehicles concluded its successful South African tour (see p3) by parking up in the corner of the conference hall.

Hashem Rafii-Tabar, co-chair of the physics and economic development group, described physics as "the DNA of advanced technology" and outlined plans to establish two Web-based networks – one on nanotechnology and its use in improving air and water quality, and the other on physics and agriculture. The group also identified a need to teach physicists entrepreneurial skills and proposed the establishment of a training facility that would run month-long courses in the subject. Peter Melville, the Institute's international director, spoke about the idea enthusiastically: "We support it wholeheartedly and will commit money for pilot courses, which the Abdus Salam International Centre for Theoretical Physics has agreed to host."

In Africa, almost two-thirds of the population lacks access to electricity, and energy has become an essential part of the sustainable development debate, said Walter Erdelen, assistant director general for natural sciences at UNESCO. "Physics training helps in two major areas of energy provision. In remote rural areas, off-grid solutions provided by renewable local energy sources need to be developed, while in megacities centralised energy generation needs to be made cleaner and more efficient," he said.

"While some of the proposals are ambitious, with determination most are possible."

The energy and environment group settled on three proposals. They would investigate how new battery technologies and improved internal combustion technology could enhance efficiency and reduce pollution in transportation. Solar photovoltaic technologies and new and environmentally friendly materials for electricity storage and generation would be explored. And an inexpensive multifunctional biomass energy mini-plant – dubbed "Biomass model T" after Henry Ford's Model T car for the masses – would also be developed.

Hans-Holger Rogner, from the International Atomic Energy Agency, explained that the "model T" would cover the basic energy needs of electricity, biofuels and thermal energy for small communities, and would be based on locally available biomass.

The physics and health group announced the launch of a new website with educational resources on physics and engineering in healthcare. A second proposal focused on developing a medical physics curriculum and on validating training programmes. Co-chair Debbie van der Merwe, director of medical physics at Johannesburg Hospital, said: "There was a consensus that the same basic education should be offered worldwide. This project, coordinated by the International Organisation for Medical Physics, will provide guidelines for the development of medical physics programmes." The group also proposed setting up regional training centres for the physics of radiotherapy, using shared resources from institutions and organisations throughout the world.

Challenges ahead

Despite the energy and enthusiasm of the delegates, all were aware of the challenges ahead. Rob Adams, director of South Africa's Department of Science and Technology, reminded them: "Sustainable development is hard – don't beat yourselves up. It is also complex and harder to reduce to a set of laws which embody the essence, meaning that it's less amenable to a classic physics approach."

Nevertheless, there was a determination to put the proposals into action. Yves Petroff, president of IUPAP, said that his organisation would monitor progress and drive the proposals forward. "We recognise that the conference will not have been a success unless a year from now we and our physicist colleagues are actively engaged in follow-up actions. We must all pledge to do our part to ensure that our planned activities are launched and our conference goals achieved," he concluded.

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"My fellow passengers on the flight included a suspected murderer handcuffed to two detectives."

Simon Mitton on astronomy in the Australian outback, p8

INSTITUTE HONOURS

2006 President's Medal

The Institute's 2006 President's Medal has been awarded to Sir Tim Berners-Lee, in recognition of his outstanding contribution to the development of the World Wide Web through his creation of Universal Resource Identifiers (URI), Hypertext Transfer Protocol (HTTP) and Hypertext Markup Language (HTML) and making these freely available. Berners-Lee is now director of the World Wide Web Consortium, a senior researcher at the Massachusetts Institute of Technology's computer science and artificial intelligence laboratory, and professor of computer science in the School of Electronics and Computer Science at Southampton University. The recipient of the medal is personally chosen by the Institute's president each year. Current president Sir John Enderby highlighted Berners-Lee's decision to make the Web's software freely available as his reason for choosing him. He said: "This is the 15th anniversary of the establishment of the World Wide Web, and the openness with which it was done enabled it to perform in the way that we all know today."

New honorary fellows

Three new honorary fellows of the Institute have been elected. They join a distinguished group that includes Nobel prizewinners and others whose renown extends beyond the physics community.

Sir Eric Ash has been honoured by the Institute for his major discoveries in opto-electronics and his contributions to modern electronics. In the 1950s he worked on microwave tubes at Stanford University and Standard Telecommunications Laboratories, moving to University College London (UCL) in 1963 to work on problems in physical electronics, ultrasonic signal processing and imaging. He was rector of Imperial College from 1985 to 1993, then spent four years at UCL tackling problems in educational technology. As treasurer and vice-president of the Royal Society from 1997 to 2002, he presided over a series of reports on energy policy, including the reduction of greenhouse emissions. He is now on the board of Ocean Power Technologies – a company developing wave power.

Alex Bradshaw, scientific director of the Max Planck Institut für Plasmaphysik, has been honoured for his innovative work in surface physics and services to physics in Europe. After gaining a PhD in physical chemistry in the UK, he took up a readership at the Technical University, Munich. He worked at the Fritz Haber Institute of the Max Planck Society in Berlin for 20 years and was director from 1980 to 1998. As head of its department of surface physics, he specialised in spectroscopic and structural characterisation of adsorbed atoms and molecules, in particular using synchrotron radiation. Working with the surface science group at Warwick University, he introduced and extensively applied the method of quantitative photoelectron diffraction. In 1998–2000 he was president of the German Physical Society. He is also editor-in-chief of *New Journal of Physics*.

Dame Julia Higgins, professor of polymer science at Imperial College, London, has been honoured for her work on the dynamic properties of polymers and her imaginative use of neutron spectroscopy. She did pioneering work on giant molecular chains of polymeric materials in Manchester, Strasbourg and Grenoble before returning for a post at Imperial, where she runs a programme studying the molecular basis of properties in polymeric materials. She was elected a fellow of the Royal Society in 1995 and is its vice-president and foreign secretary. She is a past chair of the Athena Project steering group, supporting the advancement of women in science, education and technology, and chairs the Engineering and Physical Sciences Research Council.

Careers fair attracts students

By Rachel Clarke

The Institute held its first-ever careers fair in London on 27 October. Based on its success, plans are already under way for a bigger fair next year and perhaps a series of regional fairs.

More than 360 students from across the country visited the fair, which was aimed at undergraduates in their final year of a university degree. It was also open to anyone with a science background, including postgraduates and young physicists looking for a new direction.

Seventeen high-profile exhibitors took part, including Accenture, Atomic Weapons Establishment, BP, Dstl, Exxon Mobil, MBDA, NHS Careers, QinetiQ, Sharp Laboratories of Europe and e2v Technologies. There were also opportunities for students to learn about other career paths, such as finance, teaching and law.

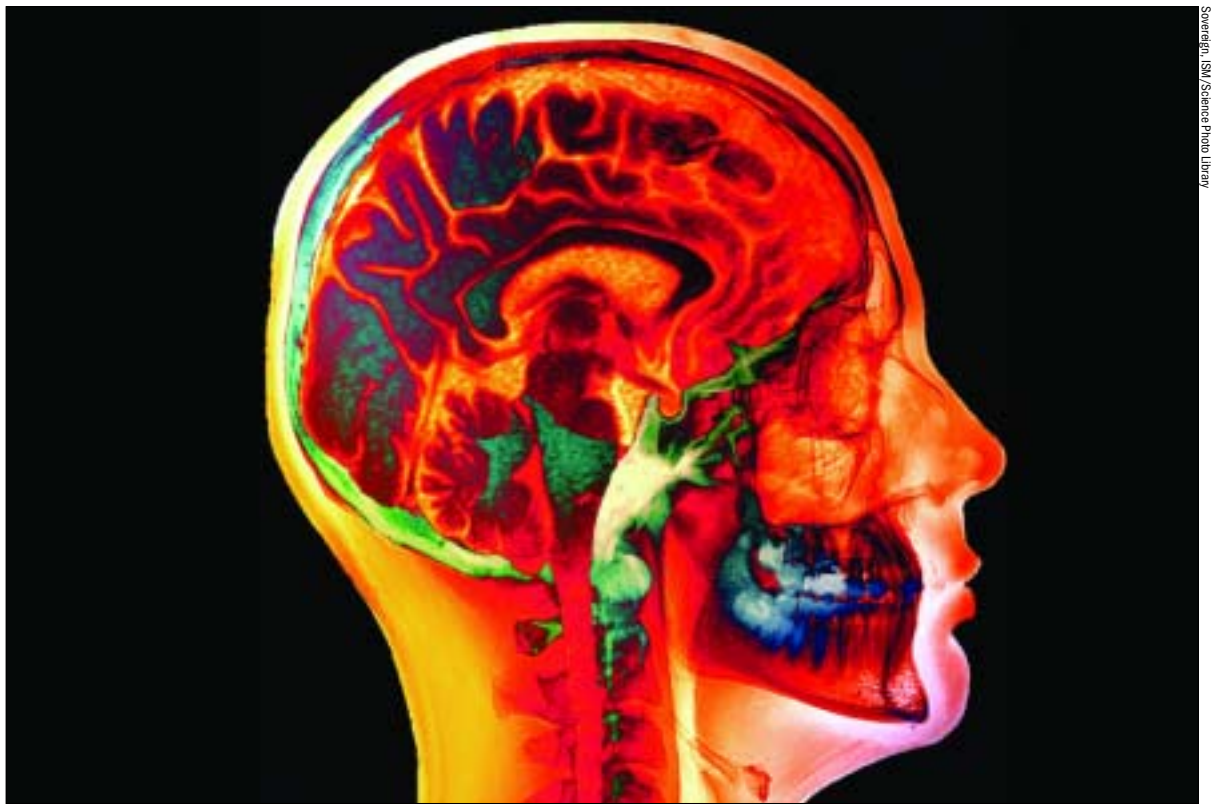
"The fair showed how people with a physics background have so many options open to them. The only thing that everyone really wanted on the day was more," said the fair's main organiser, Clair Collins. "We are looking at expanding our services. The CV clinic was vastly oversubscribed, so we're planning to extend it next year."

The careers fair was also an opportunity to forge links between academic departments, the Institute's Business Partners and the next generation of physicists. Exhibitors, such as Hannah Lloyd from NPL, were especially pleased with the number of science students who came along: "It was a great opportunity for us because of the number of students and because they are exactly the type of people we want to reach," she said.

Much media attention has been paid recently to the issue of declining interest in the physical sciences among students, and the industrial sector has also been expressing concerns. But there was general agreement among students and exhibitors that the specific focus on science contributed towards the careers fair's success. "It was ideal because, unlike in a general careers fair, we were able to reach many more graduates in physics and science," said e2v Technologies exhibitor Suzie Curle.

Nearly 200 students attended the presentations that were put on throughout the day to provide advice to those embarking on a science career. Topics ranged from careers in science journalism and science communication, entering industry, and entrepreneurship in science and technology, to crucial interview techniques, and the pro and cons of undertaking a PhD.

Website requires strong stomach



Sovereign, ISM/Science Photo Library

Teenagers can get an insider's view of physics-based technologies, such as MRI scans, from a new website.

By Sam Rae

Teenagers are being encouraged to play the role of medical physicist on a website created for Einstein Year. Called Inside Story, it demonstrates physics-based technologies being used in life-saving techniques, and includes a game in which visitors can "treat" a tumour.

The interactive website was a joint venture by the Institute and the Medical Research Council and is aimed at highlighting the essential role of physics in modern medicine.

In the Treat a Tumour section, visitors are challenged to give radiotherapy to a patient with a lung tumour. They must position the body and angle the radiation beam, aiming it precisely to damage the tumour as much as possible while minimising the radiation received by healthy tissue. There is also video footage of a real colonoscopy (an inspection of a large intestine using an endoscope). Visitors can guide a virtual endoscope through the colon and take a tissue sample from the intestine wall.

Magnetic Resonance Imaging (MRI) has revolutionised the study of brain processes. Inside Story shows brain scans relating to various sensations including pain, fear, joy and love. The images used for joy were generated by scanning football supporters' brains while they watched footage of their team playing.

The researchers looked at the brain activity of a supporter watching open play and compared it with the extra activity that occurred when the supporter's team scored, hoping to isolate areas of the brain that relate to the feeling of joy.

Positron Emission Tomography (PET) is also featured on the site. PET scans look at biochemical processes, so they can diagnose problems before any obvious structural changes have occurred. They are used to confirm diagnoses of Alzheimer's disease, which leads to reduced brain activity in the cerebral cortex – the thin, outer layer of the brain responsible for language and consciousness.

"We hope that Inside Story will get teenagers interested in the possibilities offered by medical physics and perhaps inspire some to go on to develop the medical technology of the future," said Caitlin Watson, programme manager for Einstein Year.

www.insidestory.iop.org

Lab in a Lorry tours South Africa

Ian Cuthbert reports back from the first international tour of the mobile science labs.

South Africa, home of the "big five" for safaris – lion, buffalo, elephant, white rhino and leopard – temporarily became the "big six" when a 10 ton Lab in a Lorry rolled into Cape Town for the start of its South African tour.

A partnership between the Institute and the Schlumberger Foundation, Lab in a Lorry encourages positive attitudes towards science among 11- to 14-year-olds by offering them a hands-on experience. Since its launch in May, the three mobile labs have had 25 000 visitors across the UK and Ireland, with more than 250 volunteer scientists and engineers guiding them through the experiments.

The Schlumberger Foundation conducted the pilot tour of South Africa in order to develop the Lab in a Lorry programme overseas. One of the lorries was shipped over from the UK and visited 15 disadvantaged schools before attending the World Conference on Physics for Sustainable Development (WCSPD). Along the way the mobile lab was supported by 70 volunteers drawn from local Schlumberger staff and universities.

Dave Ansell

Lab in a Lorry travelled across South Africa, visiting schools in townships like Plettenberg Bay (above).

The lorry began its tour at the MTN ScienCentre in Cape Town before going on to visit nine schools in the area. "At first I did not like science but today's experience made me realise science is fun," said a student from Crestway High, one of the schools visited. Dave Ansell, the lorry's operations coordinator, was with the vehicle throughout the five week tour. "The arrival of Lab in a Lorry was a great surprise to many of the teachers involved. Many of the disadvantaged schools we visited lack specialist physics teachers and lab facilities, and many of the students have never done a physics experiment," he said.

The lorry then travelled 1700 km east to Durban, visiting schools in Riversdale, Knysena and Plettenberg Bay en route. In total more than 2000 children visited the Lab in a Lorry during its stay in South Africa.

After the school tour, the lorry was showcased at the WCPSD, where many of the delegates from across the world tried their hand at the experiments. The conference was organised for the international physics community to come together and formulate plans for tackling some of the major problems facing the developed world (see p1).

In the conference's physics education session there was a workshop on the use of mobile science labs. It raised questions such as how to provide access to equipment and resources, how best to support teachers and how to involve the wider science community in education. One result from the workshop was the creation of a website for mobile science around the world (www.mobilescience.info) for people to share ideas and good practice. The Institute will host the site, which will also contain information on how to set up a mobile science project from scratch.

Johana Dunlop, director of the Schlumberger Foundation, was the co-chair of the workshop. "Education is a crucial factor in enabling individuals to fulfil their potential and ultimately for society at large to address the challenges of economic and social development. We believe that mobile science can play a part in helping realise the talents of students and their teachers in countries where learning resources are scarce. This is why the Schlumberger Foundation is keen to start an international programme for Lab in a Lorry," she said.

www.labinalorry.org.uk

Politicians debate solutions for UK energy

By Ayala Ochert

On 10 November a group of scientists, engineers and social scientists presented a joint report on the future of UK energy to a panel of MPs and peers. The report, launched at the Royal Society, was based on the conference Challenges and Solutions: UK Energy to 2050 (see *Interactions*, November), which was co-sponsored by six leading scientific institutions, including the Institute of Physics.

Lead author of the independent report, John Loughhead of the UK Energy Research Institute, warned the politicians that it contained no "magic solution". Instead, the "simultaneous application of many solutions" would be needed, he said.

In the coming decades, energy will be harder to come by than it has been, and this will require fundamental changes in the way we produce and use energy, the report stated. Nevertheless, fossil fuels will remain the dominant source of energy for the next 50 years, it went on, recommending that carbon capture and storage should therefore be investigated urgently.

The report also said that nuclear power "will inevitably have a key role in a future clean energy mix". This conclusion was widely reported in the media, despite the report's acknowledgement of "marked differences of opinion" among the experts consulted.

Renewable energy will play a growing role, but continued support is needed for its development and deployment, said the report. By 2020, renewables could provide 15% of current demand and, by 2020, they could provide up to 40%.

"We tend to focus on supply technology but demand reduction is key," said Loughhead. His report concluded that "existing technology for energy efficiency is not fully exploited, and changing this is as important as [the development of] new [power generation] technologies". Here, the government has a key role to play, engaging the public and providing incentives to bring about these changes, it said.

A panel of politicians, chaired by Lord Oxburgh, debated the report's conclusions. Sir John Lawton, chair of the Royal Commission on Environmental Pollution, agreed with many of them but also called for more leadership from government. "What they have said has mostly been rhetorical. In the 1970s people were saying that we had the technology to reduce energy consumption. We didn't do it then and we're not doing it now."

Bernard Jenkin MP (Conservative) suggested that politicians were not the best placed to make detailed energy recommendations. "We need to take the technical stuff off the floor of the House," he said, endorsing the idea of a cross-party Climate Change Commission, which would have similar powers over greenhouse gas emissions as the Bank of England has over interest rates. Vincent Cable MP (Liberal Democrat) agreed that such a commission would be useful as climate change is an issue that "stretches across generations". But he criticised the report for "reinventing the wheel".

Concluding the meeting, Lord Oxburgh reminded everyone of the need for solutions to be put in place now: "The clock is ticking. Every year we postpone action, the extent of inequable climate change will extend and increase. Just as in times of war, we need to achieve policies that transcend politics."

IN BRIEF

● **Physics students at Dublin City University** took a break from their studies in September to spell out Einstein's famous equation (below).

● **The sounds of experimental physics** being conducted in people's kitchens have been broadcast on several local radio stations this autumn. The Naked Scientists – a group of Cambridge-based researchers and physicians – have incorporated short packages called "Kitchen Science" into their Sunday evening radio show *The Naked Scientists* for Einstein Year.

Broadcast on eight local radio stations in East Anglia, Bedfordshire, Buckinghamshire, Hertfordshire and Northamptonshire, the show has an estimated audience of 50 000 to 100 000 and reaches a further 40 000 people internationally through its website.

At the start of the broadcast, the Naked Scientists read out a "recipe" for an experiment that can be done using only materials found in the kitchen. Listeners phone in during the show to describe their progress and to try to explain the effects they see. There is a prize for the correct explanation, while scientists in the studio answer questions. Managing editor Chris Smith said the show is popular with children but also "a huge hit" with adults: "It gets families together as the kids get the adults to help them."

NEWSMAKERS

Lord Browne of Madingley, chief executive of BP, is to be next year's president of the British Association for the Advancement of Science. He takes on the role in September 2006.

Jonathan Kestenbaum took over as chief executive of the National Endowment for Science, Technology and the Arts (NESTA) on 1 November. He comes from the venture capital group Apax Partners, where he developed the Portland Trust, and has been chief executive of the Office of the Chief Rabbi.

A television programme jointly presented by **Paul Roche** (left) and **Lucie Green**, of the School of Physics and Astronomy at Cardiff University, has won the Royal Television Society's award for best lifelong learning and multimedia show. Their collection of live transmissions and background programmes on the transit of Venus was part of the *Stardate* series.

Engaging with the business community


Keith Winters

"We are moving from a service-based model to one of increased engagement."

Since 1989, physics-based businesses have been enjoying close links with the Institute – as members of our Business Partners Network, our SME Club and through our Industry Representatives Network. As of next January, all these will be brought together under one scheme – the Business Affiliates Network.

This is not just a change in name – we hope it will also be a much simpler and more attractive way for companies to work with the Institute. By increasing the size of the network – as well as the level of engagement between the business community and the Institute – we hope to reach a "critical mass" of businesses that would allow us to truly represent the interests of the business community.

The new network will be free to join, which is a change from how things have worked in the past. Instead of charging a fixed fee in return for a set of benefits (such as discounts on journals, advertising and room hire), we are after something much more valuable from our business members – their engagement. We hope that companies will support the Institute by responding to surveys and policy consultations. And we plan to use this information to produce a biennial report on physics-based enterprise that will monitor the health of the industry, identify the critical issues facing the sector, and analyse trends across those sectors that employ physicists.

The services we offer to businesses will still be available on a pay-as-you-go basis and companies that wish to stick with the current arrangement will be able to do so. Members of the new network will also receive an improved briefing service and access to sector-based news, as well as continued access to the Institute's events – including our popular Key Insight Business Briefings and our SME-focused events.

In moving away from the service-based model to one of increased engagement, we're also responding to feedback from companies. The overwhelming message that came out of a recent survey of existing business partners was that companies value, above all, the association of their company with the Institute and the full range of activities it undertakes on behalf of the whole physics community – in education, research, policy and business. Under the new model, companies will be encouraged to participate more actively with Institute initiatives, such as outreach and education. For example, they may wish to give up some employee time to volunteer in our Lab in a Lorry programme.

Each member of the new Business Affiliates Network will have just one set of contacts in their company, which should allow us to adopt a more coherent approach in our communications with them. This should be particularly helpful when discussing issues that cut across the whole organisation, from recruitment, training and professional development through to high-level policy.

A voice for the business community

We hope that this new, more attractive model will help to increase the number of business members from its present level of just over 50 companies to around 200 to 300 over the next two years. This will include small and large companies, and will include all business sectors that have an interest in physics, either through the technology that underpins their business or through the skills and training requirements of their workforce.

Building a larger, more engaged network will allow the Institute to become a more effective voice for the interests of the business community. Physics-based enterprises currently comprise half of the UK's manufacturing industry, and there is increasing demand for the skills provided by a physics training – in emerging high-tech industries and R&D intensive sectors, as well as traditional sectors such as energy and financial services. So the need for a strong voice is greater than ever.

The development of the new network will also allow us to do more for our individual members who work in industry and business, as well as to grow our membership in sectors where we are currently under-represented. By being more engaged and in touch with the business environment in which our members work, we will be able to provide better quality services tailored to their specific needs. In particular, we are developing our career and recruitment services to help members maximise their opportunities at all stages of their careers.

Now is an excellent time for companies both large and small to join the new Business Affiliates Network and for members within those companies to play a more active role in the network.

Keith Winters is the Institute's vice-president for industry and business. If you would like further information on joining the Business Affiliates Network, e-mail Adrian Huntley at business.affiliates@iop.org or visit http://industry.iop.org.

focal point: council news

Reforms to improve the Institute's awards

The Council of the Institute of Physics met on 20 October 2005 and discussed the following:

- Chief executive Bob Kirby-Harris led an in-depth discussion of the Institute's 2006–2010 Strategic Plan. Council endorsed the broad thrust of the plan, which was produced after a wide consultation with Institute staff and members, but had some caveats around the wording of the vision and values (see *Interactions*, September).

Five core strategic goals were agreed:

– **Members**. To secure a larger, broader, more diverse and more engaged membership.
– **Impact of physics**. To promote and support physics, across education, research and business, in furthering scientific knowledge and providing economic and social benefits.
– **Next generation**. To secure the supply of well educated people with the knowledge and understanding of physics to meet future requirements.
– **Communicating physics**. To be the leading communicator of physics to all audiences, increasing awareness of and participation in physics.
– **Institute capability and reputation**. To ensure that the Institute has the reputation, capability and resources to achieve its goals.

Council also endorsed the overall financial profile for 2006–2010, moving to an increased surplus in the later years of the plan period, after a small operating deficit in 2006 (which will see the start of the Undergraduate Bursary Scheme). Council's comments will be incorporated in a final version of the plan, which will be presented to the membership in early 2006.

- Over recent years a number of questions have been raised over the Institute's awards: whether there are too many, whether the portfolio of awards is correct, whether the selection process is right. A working group chaired by former president Sir David Wallace was created in April to review the awards process, and it reported its recommendations to Council.

Council endorsed the main thrust of the recommendations, the most significant being:

– the introduction of an international medal called the Isaac Newton Medal of the Institute of Physics to be awarded to any physicist, regardless of subject area, background or nationality;
– replacement of the former confusing category names (Premier, Principal and Senior) with three new categories: Gold Awards, Subject Awards and Early Career Awards;
– detailed proposals to make the coverage of the awards more even and complete, including the renaming of some awards;
– a review of the monetary value of the awards and of eligibility guidelines, nomination procedures and promotion to make the awards as accessible as possible.

- Council was updated on the first phase of the Future for Physics project, which will result in a formal bid later this year to the Higher Education Funding Council for England for support in investigating several initiatives to boost the number of physics undergraduates.
- Council was informed about the progress of Einstein Year, which saw more than 280 000 people participate in activities during the first half of 2005.
- Council was told that all universities offering accredited degrees had either signed up to the Undergraduate Bursary Scheme or are in the final stages of negotiation.

Minutes of past Council meetings are available at http://members.iop.org/governance.html.

profile: Kathy Sykes

Going wild for science

Ayala Ochert meets a physicist with a taste for adventure.

Anna Barclay/SWNS

Kathy Sykes wants to take physics out of the lab and into the public arena.

Kathy Sykes is most recognisable as the energetic physicist in the BBC Two series *Rough Science*, but when first approached she turned the role down. She was busy at the hands-on science centre At-Bristol, where she was head of science. "Then I saw the programme with all these scientists having a wild time on an Italian island and I thought I must be crazy to have said no to this," says Sykes, who immediately picked up the phone and begged the producers to reconsider her.

The series ships a group of scientists to a remote location, where they are given challenges to complete using their scientific knowledge and whatever they find lying around. It appealed to Sykes because of her sense of adventure and love of the outdoors, and because she's always up for a challenge. "*Rough Science* is really good at showing some of the process of science. It shows us having to be creative, coming up with potential solutions and trying them out – and sometimes failing. We're not a load of scientists who know all the answers."

Now, she makes sure her working life is more flexible. She is currently Collier Chair in Public Engagement in Science and Engineering at the University of Bristol, but the role is part time to allow for her television work (including *Mind Games* on BBC Four and a new series she's presenting on complementary medicine). She also co-directs the Cheltenham Festival of Science and sits on various committees, including the Council for Science and Technology (CST) – the government's top science advisory panel. (Her interview with *Interactions* was sandwiched between a CST meeting with Tony Blair and the launch of FameLab, a competition that seeks out talented new science communicators, which she helped to create.)

In 1989 she got her first experience doing science in a remote and challenging location – not for *Rough Science* but for VSO, teaching physics and maths A-level in Zimbabwe. She had just completed a physics degree at Bristol, and says she was driven to go and live and work in another culture. "It was terrifying at first, but I grew to love it – the challenges and creativity needed to communicate about physics, especially to people very different from me," she recalls.

She returned to Bristol after three years and started a PhD researching a biodegradable plastic. Then, one day, she saw a woman talking to schoolchildren about chemistry. "I thought to myself: that's what I want to do," says Sykes. So she gave talks on the science of food to women's institutes, did street performances in Covent Garden and organised an open day at her lab for schoolgirls. On hearing of the new millennium project that would become At-Bristol, she saw it as a perfect opportunity and set about persuading them to take her on. Sykes began as a researcher and in a short time had become head of science.

Consulting the public in planning exhibits was central to the way At-Bristol worked, and it has become something that Sykes does automatically. She also tries to convey the importance of this approach to fellow scientists at Bristol, where she is using her chair to coordinate the university's engagement with the public.

One of her proudest moments in this role was a dialogue she arranged between the Afro-Caribbean community of St Paul's and scientists from the university. "We asked the community what they would like to discuss, what venue they'd like to do it in and what format they would like."

"At Cheltenham there's a buzz. We try to make sure that everybody has a damn good time."

The event that resulted – Do Drugs Do Your Head In? – was "one of the most exciting nights of my life", says Sykes. "There was genuine listening. We had brain scientists, psychiatrists and Rastafarians. Everybody got to speak, and everybody listened."

Sykes has been testing the format at the Cheltenham Festival of Science, which she has been running with Frank Burnett since 2002. At Cheltenham they are trying to create a "diamond of a festival", says Sykes – a professionally produced event with top speakers, hands-on exhibits, a cabaret and a poetry slam, as well as conversations about science. "Some festivals have a series of rather dull talks in grey rooms – they just aren't very festive. At Cheltenham there's a buzz. We try to make sure that everybody has a damn good time."

Sykes is taking the lessons she has learned in public engagement to government through her role on the Council for Science and Technology. "I profoundly believe that if we as a society get better at listening to the public, as well as scientists, we'll make much better decisions about things that matter, like the future of our planet," she concludes.

OBSERVATIONS

Physics teacher David Richardson describes what happened when he went to Rwanda with four other physicists and more than a quarter of a tonne of practical apparatus.

Tuesday 9 August

We arrived at Heathrow only to discover that the weight limit was 32 kg each. This was a problem as we had 269 kg of physics kit between us! The other passengers looked on bemused as we split the excess oscilloscopes, resistors and prisms between some extra bags. With me were physics teachers Paul Crossthwaite, Paul Welch and David Grace, as well as Adam Aziz – one of my sixth formers.

I first had the idea of going out to Rwanda after my former colleague Rachel returned for a visit during her year as a volunteer for VSO. She told me that the teaching was good but few schools can afford practical apparatus to demonstrate the physics they're teaching. Now, after four months of organisation, we were finally off on our trip to deliver the equipment and train the local teachers in how to use it.

Thursday 11 August

Our welcoming committee at Kigali airport yesterday consisted of Theodore, a representative from the Ministry of Education; Kalissa, the headmaster of Apred Ndera – the school where we'll be staying; and Rachel, who helped organise the trip. We unpacked the suitcases this morning (amazingly, nothing was broken), then saw the laboratory we'll be working in. It's basic but it does have sinks and electricity sockets mounted on the desks. I'm excited to get started, if a little nervous.

Monday 15 August

My nerves were unfounded. I wasn't sure if anyone would turn up, but 12 teachers came along and all seemed genuinely pleased to be here and grateful that we had come so far to share our experience with them. It turned out to be an amazing first day, everyone working hard together, taking readings and plotting graphs. The most popular piece of kit seems to be the oscilloscopes. One of the teachers told me that he'd wanted one for years and was thrilled that he finally had one to show his pupils. Even the simple optics equipment went down well as many had just been using chalk diagrams to explain refraction.

Tuesday 16 August

Over lunch the conversation often turns to physics. Today we compared the different ways we teach the more difficult physics concepts in the UK and Rwanda. Some of the group only speak French so I've had to do a fair bit of instant translation, which has been tiring but satisfying. I'm so glad that I spent a year of my degree in France – otherwise the francophone teachers could not easily have taken part in the sessions.

Friday 19 August

It's the end of our two weeks and we've managed to get through all of the apparatus. We'd been warned about the frequent power cuts, which added to the challenge. One morning the power failed while we were using the oscilloscopes but, fortunately, the recently fitted solar panels kicked in. The teachers have been so enthusiastic about everything and frequently say how much they are looking forward to using the apparatus with their pupils. The chairman of the Rwandan science association came along this afternoon to say a final thank you. There was a real buzz in the air as people packed the apparatus into their own suitcases to take back to their schools.

Wednesday 24 August

Today we visited the schools to watch the teachers using the apparatus with their classes. Some schools are better equipped than others, and for several this is the first time their pupils have ever seen an experiment. I'll never forget hearing one teacher tell his class: "You have heard me describe this to you – now I can show you it and you'll know it is true!" With that, I felt that all our efforts had been worthwhile.

If you would like to contribute to **OBSERVATIONS** please send an e-mail with your idea to interactions@iop.org.

Institute of Physics

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interactions

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LETTER FROM

...the careers adviser

In spring 2004 the Institute hired me as its first careers adviser. My previous experiences had taught me that, despite advances in technology, face-to-face guidance remains the best way of offering advice. But on surveying the membership I found that a large proportion are deterred by the idea of commuting into London for one-to-one guidance.

Then it struck me – why not tour the UK and Ireland offering careers advice to members close to where they live? So at the start of the year I took my "mobile careers service" on the road. My first stop was in the cold – yet friendly – county of Lancashire, where I saw five members in the Tickle Trout Hotel. The thank-you card I received a couple of days later gave me the encouragement I needed to continue touring the remaining 12 branches.

I've visited Birmingham, Nottingham, Manchester, Preston, Glasgow, Edinburgh, Cambridge, Southampton, Plymouth, Bristol and Durham, and have advised more than 60 members – from recent graduates to those nearing retirement. Many are interested in starting a new career, and the most common request has been for examples of physicists who've made a career transition from one field to another. So on returning from my tour I commissioned the booklet *New Directions*, which contains profiles of members who've made the leap to a new career, with tips on how to do so yourself.

Of course, not everyone wants to change career. Some people come for advice on how to improve their CV, others are looking for information on particular career paths, still others are looking for clarification on their career direction. One member I met with had been working in the oil and gas sector but was trying to transfer to the finance sector. He was being called for interviews but hadn't been able to secure a job. We discussed his interview technique and, in particular, worked on sounding less negative about his previous employer and more positive about the skills he had gained. Having turned around his technique, he was offered a job at the next interview he attended. I can't guarantee such a result every time, but I hope it shows the value of careers advice.

I will be starting a new tour of the mobile careers service in the new year, so why not come along and take the first step towards changing your career for the better?

Vishanti Lall is the Institute's careers adviser. For details of where the mobile careers service will be in 2006, visit http://careers.iop.org/Mobile-careers. For a copy of the *New Directions* booklet, e-mail members.careers@iop.org.

A tonic to read

The October edition of *Interactions* was the best yet. It was well written and a good read, full of interest and information. Congratulations to you and your team. It made me wish I was 50 years younger and could start a new career in the exciting physics of today.

Norman Sherry
Heckington, Lancashire

Unsatisfactory careers

I am writing to express my disgust at finding the Atomic Weapons Establishment exhibiting at the Institute of Physics careers fair in London in October. This was going to be a big event for me, possibly leading to a career in physics. The long journey wasn't worth it and I was disappointed. I would have thought that environmental concerns would have been a big part of the exhibition but it was mainly about defence.

David Greenwood
Manchester

Clair Collins, careers fair organiser, responds: *In planning the recent Careers Fair, the Institute remained impartial and open, making all exhibitors welcome no matter what their background. The fair showcased companies offering a variety of careers, from finance to consulting, of which defence companies comprised about one-third.*

Repeated experiments

Recently I've become a fan of Marvin and Milo's experiments on the back page of *Interactions*. I particularly liked the one in the November issue, which I used today with my GCSE group. We've just dealt with atmospheric pressure, so the timing was ideal. Are earlier ones available on your website?

Graham Smith
Croydon, Surrey

Editor responds: *Yes. The cartoons are available at www.physics.org/funsites.*

New moonshine

I happened upon a copy of October *Interactions* and was impressed by the winning entries in the Fallacious Physics competition. I offer for your amusement a late entry: "The timing of the new Moon – the point at which the Sun and Moon occupy the same position in the sky" – published on the front page of... *Interactions*, October! I am sure I don't need to explain that the Sun and Moon only occupy the same position in the sky during a full solar eclipse. What chance does Joe Public have in comprehending science when your own learned journal can err so badly?

Rashmi Sudiwala
Cardiff

Write to interactions@iop.org or the address above. Letters may be edited for length.

notices

NEW MEMBERS

Grant Allen, Ben Beake, Alexis Busfield, David Carmichael, Neil Forknall, Laurence George, Christopher Greener, Nobukuni Hamamoto, Alan Heathcote, Elizabeth Holloway, Paula Martin, Gagan Mohanty, Andrew Mulligan, Damian Mutch, Sameer Savani, David Thomas, Martin Turner, Subrahmna Vinjanampaty.

NEW FELLOWS

Peter Clough, Nicholas Fisher, Jack Hale, Jerry Meyer, John Powell, Terence Sale.

IN MEMORIAM

Richard Peckover, Terence G Smith, Pauline Thornley.

NEW BUSINESS PARTNER

Geomerics.

ANNOUNCEMENTS

● **The Diversity Programme** at the Institute is currently working on a disability good practice guide, which will be distributed to university physics departments. If you have any experiences you would like to share, or any other comments or suggestions, please contact Saher Ahmed (saher.ahmed@iop.org).

● **Research Councils UK** is inviting entries for the Research Councils Business Plan Competition 2005/6. Would-be entrepreneurs who have an idea arising from research and want to turn it into a successful business are encouraged to take part. The competition is open to researchers based at UK higher education institutions or public sector research establishments, including postgraduates, postdocs and academic staff. Those accepted to go through to the second round will get business training, and the winning team will receive up to £25 000 to further their idea. Closing date for the first round is 31 December 2005. Further details are at www.rcuk.ac.uk/innovation/bpc. Contact Sarah Cooper on 01793 444422 or e-mail rcbpcomp@epsrc.ac.uk.

WANTED

● **Nominations for the Culham Thesis Prize**, sponsored by the Institute's Plasma Physics Group and the UK Atomic Energy Authority. The prize is open to physicists awarded a PhD by a UK or Irish university for a thesis in the area of plasma physics in 2004 or 2005. For further details, contact David Neely (d.neely@rl.ac.uk). The closing date is 10 December 2005.

MEMBER OFFER

● **Online subscriptions prize draw**
Carolyn Withers from Burnham-on-Sea, Somerset, is October's prize-draw winner and will receive a 512 MB data stick. For your chance to win one, pay your subscription online at http://members.iop.org when you receive your next subscription notice.

Visit **whatson.iop.org** for the Institute's full online calendar for the physics community or **www.einsteinyear.org** for Einstein Year public outreach events (indicated in **blue**).

DECEMBER 05

New Directions in Liquid Crystal Science
The Royal Society, London, UK
5 December
www.royalsoc.ac.uk/events

The New European Landscape for Electricity Markets: Developments in Liberalisation and Security of Supply
IEE, London, UK
5 December
www.iee.org/Events/NELEM.cfm

Terahertz Technology for Space and Earth Applications
IEE, QinetiQ, Malvern, UK
5 December
www.iee.org/events/terahertz.cfm

● **Debates with a Difference – Nuclear Energy**
Ecsite-uk, W5 Belfast, Think Tank Birmingham, and Centre for Engineering and Manufacturing Excellence, Rainham, Essex, UK
5 December
tobin.may@ecsite-uk.net

CONFERENCE

Anglo-French Physical Acoustics Conference 2006 (AFPAC 06)
Wye College, Kent, UK
17–19 January
To review progress, discuss ongoing work and enhance collaboration in all areas of physical acoustics. For details, including online registration, visit the website:
http://conferences.iop.org/AFPAC06

Second Workshop on Noise, Chaos and Complexity in Lasers and Nonlinear Optics
Universidad de la Republica, Colonia del Sacramento, Uruguay
5–9 December
www.fisica.edu.uy/~cris/workshop.html

The Supercool Submillimetre
IOP in Scotland, Royal Society of Edinburgh, UK
6 December
http://scotland.iop.org

Diamond Industry Open Day
Diamond Light Source, Didcot, Oxfordshire, UK
6 December
www.diamond.ac.uk

Material Properties for Finite Element Simulations: Getting it Right (Part 1 Metals)
IMechE, London, UK
6 December
www.imeche.org.uk/events/FES

● **Visualise – the Beauty of Science**
Millennium Centre, Cardiff, UK
6 December
syropdk@cardiff.ac.uk

Christmas Meeting on Solid State NMR
IOP Magnetic Resonance Group (BRSG), London, UK
7 December
http://conferences.iop.org/CMS

The Hunter Memorial Lecture and Dinner 2005
IEE, Austin Court, Birmingham, UK
8 December
www.iee.org/Events/hunter.cfm

RAMBERT DANCE COMPANY

Constant Speed – UK tour continues
Her Majesty's Theatre, Aberdeen
7–9 February
Theatre Royal, Newcastle
14–18 February
Snape Maltings Concert Hall
24–25 February
Hall for Cornwall, Truro
1–2 March
Clwyd Theatr Cymru, Mold
14–17 March
Theatre Royal, Brighton
22–25 March
Sadler's Wells, London
23–27 May
A celebration of Einstein's life and work, interpreted through dance.
www.rambert.org.uk

The Measurement and Characterisation of Medical Biosensors
Micro & Nano Technology Measurement Club, NPL, Teddington, UK
9 December
www.npl.co.uk/metrology_clubs/mnt

● **How to Survive a Croc Attack with Custard Powder and Other Stories**
University of Leeds, Leeds Town Hall, UK
9–10 December
Georgina Wilkins 0113 343 3848

2nd International Conference on Nanomaterials and Nanotechnology
The Royal Society, London, UK
12–15 December
melanie.boyce@iom3.org

● **'Jewish Science' – Einsteinian Physics and Freudian Psychoanalysis**
The Jewish Museum, London, UK
13 December
marketing@jewishmuseum.org.uk

IEE Wheatstone Discussion Meeting, Lecture and Dinner – The Quantum Toolbox
IEE, London, UK
14 December
www.iee.org/events/wheatstone2005.cfm

ONE-DAY MEETING

A Celebration of 25 years of Tribology at the Institute of Physics
76 Portland Place, London, UK
1 February
The Institute of Physics created the Tribology Group, chaired initially by David Tabor, 25 years ago. To celebrate the group's long and distinguished history over the last quarter century, this meeting will bring together some of the prominent former members of the group.
http://conferences.iop.org/CELE

Quantitative Methods in Finance 2005
Manly, Sydney, Australia
14–17 December
www.qfrc.uts.edu.au/qmf

IOP Theory of Condensed Matter Group – Annual Meeting
University of Warwick, Coventry, UK
19 December
http://theory.warwick.ac.uk

JANUARY 06

Postgraduate Workshop on Neutron Scattering and Muon Spin Rotation Techniques in Magnetism
IOP Magnetism Group, Rutherford Appleton Laboratory, Didcot, UK
15 January
d.t.adroja@rl.ac.uk

Physics, Chemistry and Astronomy of H_3^+
Royal Society, London, UK
16–17 January
www.royalsoc.ac.uk

Chaos Theory and Dynamical Systems
IOP in Scotland, Royal Society of Edinburgh, UK
17 January
www.phy.hw.ac.uk/~phydtr/iop

Seniors Lunchtime Rendezvous
IOP in Scotland, Glasgow, UK
26 January
http://scotland.iop.org

FEBRUARY 06

14th Gaseous Electronics Meeting (GEM XIV)
Murramarang, New South Wales, Australia
5–9 February 2006
www.physics.usyd.edu.au/gem2006

Ultrasound in the Processing of Industrial Soft Materials
Food Chain CIC/Industrial Centre of Particle Science & Engineering/IOP Physical Acoustics Group, Leeds, UK
6–10 February
www.ultrasound06.com

Physics and Music
IOP in Scotland, Royal Society of Edinburgh, UK
14 February
www.phy.hw.ac.uk/~phydtr/iop

NASA Laboratory Astrophysics Workshop
Las Vegas, Nevada, USA
14–16 February
www.physics.unlv.edu/lab

The Status of Observations of the Highest Energy Particles in Nature
University of Glasgow, UK
22 February
i.heng@physics.gla.ac.uk

MARCH 06

Quantum Information Processing with Light – Where to Next?
University of Strathclyde, Glasgow, UK
1 March
klaas.wynne@phys.strath.ac.uk

Introduction to Interpreting Images
Sira, Bromley, UK
1–2 March
www.sira.co.uk/courses

Negative Refractive Index Meta-Materials
IOP in Scotland, Edinburgh, UK
7 March
www.phy.hw.ac.uk/~phydtr/iop

Introduction to Image Processing
Sira, Bromley, UK
7 March
www.sira.co.uk/courses

Advanced Image Processing
Sira, Bromley, UK
8–9 March
www.sira.co.uk/courses

Strategic Roadmapping
IfM, Hilton Hotel, London, UK
9 March
www.ifm.eng.cam.ac.uk

Optical Engineering I
Sira, Bromley, UK
14–16 March
www.sira.co.uk/courses

Introduction to Military Thermal Imaging
Sira, Bromley, UK
14–16 March
www.sira.co.uk/courses

The Perfect Lens – Resolution Beyond the Limits of Wavelength
University of Strathclyde, Glasgow, UK
15 March
klaas.wynne@phys.strath.ac.uk

International School on Vibrational Spectroscopies
Cinvestav-Unidad Queretaro, Mexico
19–22 March
www.qro.cinvestav.mx/~isvs

CONFERENCE

Condensed Matter and Materials Physics (CMMP 06)
University of Exeter, UK
20–21 April
Themes will include:
- nanoscience
- correlated quantum systems and magnetism
- semiconductors and quantum devices
- soft matter, biophysics and statistical physics.

http://conferences.iop.org/CMMP06

Optical Spectroscopy of Biomolecular Dynamics II
Weizmann Institute of Science, Eilat, Israel
19–23 March
www.weizmann.ac.il/conferences/OSBD

Physics at the LHC
University of Glasgow, Scotland, UK
22 March
i.heng@physics.gla.ac.uk

Seniors Lunchtime Rendezvous
IOP in Scotland, James Clerk Maxwell Foundation, Edinburgh, UK
22 March
http://scotland.iop.org

Sensor Applications of Micro-Systems
Sira, Bromley, UK
28 March
www.sira.co.uk/courses

Fracture Patterns
University of Strathclyde, Glasgow, UK
29 March
klaas.wynne@phys.strath.ac.uk

APRIL 06

Materials Congress 2006
Institute of Materials, Minerals and Mining, London, UK
5–7 April
www.iom3.org/congress

IOP Plasma Physics Group – 33rd Annual Conference
IOP Plasma Physics Group, Crieff, Perthshire, UK
10–13 April
a.w.cross@strath.ac.uk

Hydrogen and Fuel Cells – Group Exhibit
Hannover, Germany
24–28 April
www.fair-pr.com

Hydrogen and Fuel Cells on Their Way to Commercialisation – International Conference
Hannover, Germany
25 April
www.fair-pr.com

Ultra-cold Atoms in a Large Period Optical Lattice
University of Strathclyde, Glasgow, UK
26 April
klaas.wynne@phys.strath.ac.uk

The IEE Seminar and Exhibition on MEMS Sensor Technologies
IEE, London, UK
27–28 April
http://conferences.iee.org/mems

CONFERENCE

Preservation and Conservation Issues Related to Digital Printing and Digital Photography
76 Portland Place, London, UK
24–25 April
To inform conservators of digital prints and photographs about developments in digital photography and digital printing technologies, progress in research on inks and substrates, and their significance for the archiving of artefacts, including digitally printed textiles.
Organised by the Institute of Physics Printing, Papermaking and Packaging Group and the London College of Communication.
http://conferences.iop.org/PPP

MAY 06

Summit for the Future on Risk
Club of Amsterdam, University of Amsterdam, the Netherlands
3–5 May
www.clubofamsterdam.com/summit2006.htm

Applied Web Handling Conference (AWEB06)
AIMCAL, Charlotte, North Carolina, USA
7–10 May
www.aimcal.org

The 2006 International Conference on Computational Science and its Applications (ICCSA 2006)
IEE, Hilton Hotel, Glasgow, UK
8–11 May
www.iee.org.uk

einstein year

For full details of Einstein Year events (indicated in **blue**) and of what's happening near you, visit **www.einsteinyear.org/events.**

Comedian Rob Brydon gives a stellar performance

A new comedy featuring a bunch of astronomers gets the characters spot on, if not the physics, says *Simon Mitton*.

BBC/Hartswood Films

This autumn BBC Two aired a comedy mini-series in a novel – and I would say inspired – setting. The action takes place in the Australian outback in the fictional Royal Australian Observatory, the world's most advanced observational facility.

In *Supernova*, writer Harry Cripps makes full comic use of the entertaining possibilities of life in an observatory. These outback astronomers are not temporary visitors from Sydney – they live in the isolated observatory, just as some astronomers did in the 19th century, so this observatory has bedrooms (in this case tastefully furnished with double beds). As the only intellectuals for hundreds of miles around they have only themselves for companionship and collegiality. But how realistic is this observatory, and are the characters knowledgeable astrophysicists?

The series opens with the hapless British astronomer Dr Paul Hamilton (Rob Brydon) landing in a light aircraft on the scorched red earth of the outback (the exterior scenes were shot near Broken Hill). Hamilton's mode of arrival was familiar to me. In 1976, the first time I visited the Anglo-Australian Telescope, I arrived at the nearby town on a little aircraft that circled the grassy airstrip a couple of times to scare off the roos. On the return flight my fellow passengers included a suspected murderer handcuffed to two detectives. Outback astronomy, as portrayed here, is full of surprises.

The brilliant Dr Hamilton is initially the odd man out with his reserved manner, gauche eagerness to please and wrong clothes. His colleagues include two entirely plausible postdocs, a gritty mechanic and the beautiful scientist Rachel (Kat Stewart) – a brilliant ice maiden. Her partner Chad is an astronaut. In one episode he's orbiting Mars, in another he's on the Shuttle and in others he's on a space station. He's a brave guy: at one point he undertakes a space walk while the Shuttle is being battered by a meteor shower.

A comedy show must entertain, and if we are to laugh along with the script then we must suspend our disbelief. The film set is clearly a low budget affair, but it does convey the feel of a real observatory dome, despite the fact that the telescope looks like a stage prop made for an amateur dramatics society.

When it comes to characterisation, the series really hits the spot. These astronomers are thoroughly modern, and the three visitors from the Research Board in Canberra look just like RAE scrutineers. It is also refreshing that the stock characters often seen in scientific dramatisations are absent. There is no mad scientist with Einstein hair, no long-bearded sage, no labcoats.

I liked the episode in which Dr Hamilton suffers a temporary fit of depression. He's just written a paper on the ultimate fate of the universe. Merging black holes "at the edge of the universe" tear a hole in the fabric of space-time, through which dark energy is streaming out. This causes the expansion to stop, and our universe implodes to a singularity (not a noun the script uses). Hamilton, who is portrayed throughout as an under-confident, underachieving genius, gets thoroughly unnerved by this eschatology in which humanity has no future in the universe. His colleagues cheer him up by pointing out how far away the far future really is. Another episode shows Hamilton confronting the science–theology watershed after he thinks he's seen the face of God in a wormhole.

The observatory's research programme is decidedly odd. It hops from accreting black holes, to wormholes, to comets and the discovery of an exoplanet. Rachel and Paul are international experts on every branch of astronomy, it seems. Although technical language features only fleetingly, the right phrases are there: dark energy drives the expansion of the universe, recent missions such as the Wilkinson Microwave Anisotropy Probe provide data, and even ESA's Planck mission (not due to launch until 2007) is mentioned. But we should not expect the science to be exactly correct – and it isn't. The focal ratio of the telescope is off by a factor of 10, at least, and Dr Paul improbably detects lithium-12 bursting out of a black hole. At one stage I got the impression that the telescope was in use in broad daylight, and I doubt that any observatory runs air-conditioning in the dome during observations.

There is no mad scientist with Einstein hair, no long-bearded sage, no labcoats.

Arguably the series would have benefited from scrutiny by an astrophysicist sympathetic to the genre. For example, when some important visitors from Canberra arrive, the director decides that the staff should make a 15 minute presentation on the planet Venus, which is "currently at the point of closest approach to the Earth". There are big problems here. Astrophysical observatories do not conduct planetary observations and, in any case, Venus is hard to observe when it's at closest approach.

Fortunately, these technical slips do not detract from a hugely enjoyable and entertaining series, delivered with sparkling wit. Astrophysicist observers can even amuse themselves by matching the screen characters to their colleagues. And, who knows, *Supernova* may even draw a new cohort of students into astronomy, giving a whole new spin to public outreach.

Simon Mitton, a fellow of St Edmund's College, Cambridge, is a historian of astronomy. His latest book is *Fred Hoyle: a Life in Science* (Aurum Press 2005).

particles

Environmental Physics Essay Competition

The Institute's Environmental Physics Group is running an essay competition to recognise excellence in communicating the significance, value and rewarding nature of engaging with environmental physics. Entries can cover any aspect of environmental physics and should be no more than 2000 words. The competition is open to all, but entries from students are particularly welcome.

First prize

- a £500 prize will be awarded to the winning author
- the winning entry will also be considered for publication in *Physics World*

Entries must be original and will be judged on writing quality and content. Essays can be purely scientific in content or can adopt a policy-related or other perspective. Entries and enquiries should be e-mailed to **env.essay@physics.org**. Further details can be found at **http://groups.iop.org/EP**.

Closing date: 31 December 2005