Eighty years ago Albert Einstein visited Argentina. He arrived on 25 March 1925 and stayed for a month. He delivered 12 conferences, most of them on the theory of relativity, and took part in many receptions and social meetings. After the corroboration in 1919 of the deflection of light rays due to the curvature of space around the eclipsed Sun, and having been awarded the Nobel Prize in Physics for 1921, Einstein was a consummated scientific celebrity. His visit to Argentina was the subject of eager anticipation.

Once there, he collaborated with one of the main newspapers of the time, La Prensa, which, together with another paper, La Nación, published summaries of all of the lectures that Einstein delivered in Buenos Aires. La Prensa also printed ‘Pan-Europa’, an article written by Einstein himself, in which he criticized the growing nationalism and defended the renaissance of the European community and its cultural unification.

Last year, World Year of Physics (also called Einstein Year), commemorated worldwide the 100th anniversary of Einstein’s legendary works of 1905, a year deservedly dubbed the *annus mirabilis*. Last year was also an opportunity for the public to encounter physics in a new and rewarding way.

At the University of Buenos Aires we wanted to work with Einstein Year, first by recognizing that the influence of this great mind was not limited to science, and that his legacy can be seen in many aspects of daily life. Any event to honour Einstein’s achievements and his attitude to life ought to be complemented by a range of topics covering more than just physics.

In Buenos Aires, selected experts from various fields delivered lectures to the general public. They covered the scientific aspects of Einstein’s achievements, but also – and most importantly – many topics where his thinking and actions greatly influenced the 20th century: arts and humanities, literature and history, politics, disarmament and religion. These and other interesting subjects were discussed every Thursday evening from 10 March to 24 November, surrounded by the art exhibits independently organized by the Jorge Luis Borges Cultural Center (see www.ccborges.org.ar), where the conferences took place.

The public response was overwhelming. The meetings were held in different halls depending on the exhibits, and the seats began to fill nearly an hour before each conference. The first meeting, ‘Einstein and Borges’, filled up 20 minutes before it was due to begin, with 150 people seated and 100 more sitting on the floor or standing. There were no complaints, though, as people were happy to listen to the interesting topics and to question the experts.

It may seem unusual for a psychologist to lecture about Einstein, but not if one remembers the important correspondence in 1932 between Sigmund Freud and Einstein on violence and war. Likewise, one might wonder why an expert on molecular biology was

**Lady Wassermann (left) and journalist and writer Elsa Jerusalem pose with Einstein in the garden of the Wassermann’s villa, where he stayed when he visited Buenos Aires. Lady Wassermann accompanied Einstein on his first aerial tour on 1 April 1925, when they flew around Buenos Aires in a Junkers aeroplane that was visiting from the German Navy. (Courtesy Archivo General de la Nación Argentina.)**
among the speakers celebrating Einstein’s *annus mirabilis*. Well, biology gained an important and fresh input when physicists, such as Erwin Schrödinger in 1944, began wondering *What is Life?*

Now, imagine you are a physics professor at the University of Bern in 1905. Having taught Newtonian physics, classical statistical mechanics and Maxwell’s electromagnetism for years, you receive a set of papers from a completely unknown author – a third-class employee of the local patent office – claiming that the physics in your lectures is wrong. Moreover, his reasoning is completely unfamiliar. How would you react? Well, on the conference agenda we included an astrophysicist and expert in debunking pseudo-scientific claims, who explained to us why we should not dismiss this strange character as a crank.

An expert in neurobiology also told us everything we always wanted to know – but were afraid to ask – about the near 50-year search for special features in Einstein’s brain – the myth and the reality. He also presented the results of the most recent brain studies carried out worldwide.

To celebrate this unique year, we wanted to include a local element. Three renowned speakers discussed Einstein’s visit to Argentina. A journalist spoke about the relationship between Einstein and the local press. A historian, born in 1925, lectured about the political and social life in the 1920s when Einstein came to visit. A third expert reminded us about Enrique Gaviola, an outstanding Argentine scientist who was one of Einstein’s students in Berlin from 1924 to 1925, and was included in Emily J McMurray’s *Notable Twentieth Century Scientists* in 1998, nine years after his death.

**A wider view**

With a long and interesting list of interdisciplinary subjects (see [www.universoeinstein.com.ar](http://www.universoeinstein.com.ar)), the general public – and especially teachers and students – were shown that physics is not isolated from the rest of the world – that science is part of the culture that we all enjoy and to which we all contribute.

We also spent a couple of months researching where Einstein stayed while visiting Buenos Aires. By mid-2005 we had found Einstein’s residence, an old-style villa – in those days owned by the Wassermann family, one of the most prominent Jewish families of the city.

On 1 September, after another couple of months of negotiations with the city government, a group of scientific and political authorities unveiled a plaque to commemorate that Einstein spent a whole month in that house. The *Buenos Aires Herald* reported the event with an article entitled ‘Einstein’s relativity: OZ = BA’ (3 September 2005 p5). The Australian government now owns the villa, which explains the OZ of the title; and BA stands for Buenos Aires.

In the meantime, the conferences continued. A group of teachers and advanced high-school students requested a special course on relativity so that they could study, discuss and air their doubts with a professional relativist. One of the invited speakers, a member of our physics department, whose sub-
The sweet smell of fragrant molecules

A group of Year 10 girls from Marlwood and Rednock Schools, UK, attended the second in a series of Perfume Chemistry workshops on 11 May 2006, as part of a project designed to promote physical sciences amongst young women.

The project involves collaboration between local science colleges and the School of Chemistry at the University of Bristol (Bristol ChemLabS). The project, which received funding from the Royal Society Partnership Grants Scheme, the Royal Society of Chemistry and Bristol ChemLabS, allows the students to work with professional scientists, giving them a taste of chemical science outside the classroom.

Marlwood student Georgina Hilton reported: ‘It was a really good experience to learn about how the perfume is made. It was especially fun when we made our own perfumes and tested the different scents, even though some of them smelled really horrible! But other than that it was a really educational day.’

Laura Mills added: ‘I really enjoyed the day. We learned a lot about how perfume is mixed and the different quantities of each chemical used. We were also told about the two theories on smell, those of vibration and shape. We even made our own perfume!’

Two follow-on practical sessions are to be held at the University of Bristol. These will cover the analysis of perfumes and the synthesis of some fragrant molecules. In the analysis session the 15-year-olds will be able to work with postgraduate students on how to tell apart fake and real, and the identification of components using gas chromatography and mass spectroscopy. The synthesis lab will introduce the students to techniques and equipment not readily available to schools, such as rotary evaporators and infrared spectroscopy.

In September the students from all four schools will return to Bristol to make presentations to an audience of their peers. This will form a part of an afternoon schools’ conference alongside Dr David Kelly from Cardiff and Dr Dudley Shallcross from Bristol. In recognition of their work the students should obtain a silver Science Communicators award issued by the BA.

Tim Harrison

In total we organized 38 conferences, four ‘Wednesdays of Relativity’ and a theatre performance, all in one of the main cultural centres of Buenos Aires. The website (see above) has been running throughout the year, receiving lots of questions and comments. This site already includes many articles that can be freely downloaded, as well as audio files of three of the most attended conferences, which can be listened to online. The website will be updated regularly and we also plan to include links to more audio files and written contributions from the speakers of the different conferences.

Schools and universities, teachers and students, and the general public have certainly benefited from these conferences and other cultural and educational activities. Organizing an event like this took a lot of time (organization began in mid-2004), but the results have been more than rewarding.

Alejandro Gangui University of Buenos Aires, Argentina (e-mail: gangui@df.uba.ar).

Students learn how chemicals are mixed to create perfume.

Health and Beauty

The sweet smell of fragrant molecules
In April a forum of physics representatives met in Graz, Austria, to discuss physics and society in working groups focusing on different themes.

The forum was arranged by the European Physical Society (EPS) during Austria’s time as European Union chair, as a follow-up to World Year of Physics activities. Max Lippitsch and Sonja Drexel (from Graz University) coordinated the event. During a few intense days the forum participants enjoyed Austrian hospitality while working to produce a document addressing important topics.

I was invited, together with Prof. Urbaan Titulaer from Linz, to moderate the group that was discussing educational issues, or more precisely, ‘Standards and quality control in physics education and comparability in international physics curricula, at all levels of education’.

During our preparations we decided to avoid reinventing the wheel so I went back to the notes and final statement from a working group at Physics on Stage 2 (www.scienceonstage.net) in 2002, which discussed physics and science curricula across Europe. This EPS statement on physics education was given to participants at the start of the meeting, and was endorsed by the forum.

As further input for the discussions we used results from The Relevance of Science Education (ROSE) project, which was coordinated by Svein Sjøberg of the University of Oslo (see www.ils.uio.no/english/rose). ROSE has provided some quite surprising comparisons of the different scientific interests of 15-year-old boys and girls in many countries across the world.

An important question raised during the discussions was how to make physics teaching a more attractive profession, and how to help teachers maintain both their enthusiasm and their contact with researchers. The workgroup included physicists with widely different cultural and professional backgrounds but similar concerns. For part of the discussion, on the initiative of chairman of the Swiss Physical Society Tibor Gyalog, we were joined by the young Austrian ‘physics ambassadors’ who helped out at the conference

The box on pp281 and 282 details the introduction to the resolution from the forum and the part that discusses educational issues. The whole resolution, as well as presentations, photos and a list of participants, are available online at www.wyp2005.at.

Ann-Marie Pendrill
Resolution and recommendations
Graz, 21 April 2006

Science in general and physics in particular is one of the basic elements in our culture that sustains our communities. It is also a prerequisite for basic job skills and many of our daily functions. Science and physics are also the foundation for the high-technology revolution seen in our societies and the way such technologies influence other societal challenges such as environment, energy supply, and communication and production technologies.

Forum Physics and Society, composed of high-level physics representatives from 20 European countries and 7 countries outside Europe, has discussed the role of physics and its interaction with society. The forum, being part of the Austrian EU-Chair programme, was co-sponsored by the European Physical Society (EPS) and the World Year of Physics initiative.

The forum notes the major challenges facing modern science and thus also physics. Globalization is putting pressure on the 'physics enterprise'. The linear innovation model was abandoned many years ago and more complex systemic models have been introduced, changing the way knowledge is produced, applied, and commercialized in social settings. OECD studies show that a decreasing number of new tertiary graduates choose physics as their field of study. Recognizing the central role of physics in the innovation process, the forum stresses the importance of strengthening physics as a field of study and as a scientific profession.

The forum notes that these challenges are of a global nature and expresses its commitment to address the challenges in Africa. Other regions present similar problems. The forum chooses to address five topics of importance for understanding the role of physics in society: culture, competitiveness and technology, funding structures, education, and ethical issues.

Education, quality assurance and curricula

The forum endorses the EPS position paper on education, noting that physics educational issues are truly international.

The position paper emphasizes that the physics educational system must master two important tasks: delivering physics-based scientific knowledge to all in elementary and especially in secondary schools, and providing tertiary research-based education to train the next generation of scientists for advancing science and for the needs of society.

The forum endorses the Socrates/Erasmus programmes for exchange of high-school and university students and teachers and recommends extension beyond Europe.

Science education for women, particularly as it offers quantitative analysis of problems and the understanding of causality, is a critical factor for development. Women’s particular role in early childhood education makes this especially important. Africa is an important example. There, science education for women can offer the opportunity to allow women to take decision-making control of their lives with respect to, for example, health, work and the future of their societies. This demands action from European countries and their physicists.

The forum emphasizes the importance of high-quality physics teaching and teacher education.

The networking of physics teachers, teacher educators, physics education researchers and physicists is essential and should ensure that the rich variety of European physics teaching experiences is utilized. There is an urgent need for platforms where pupils, teachers and scientists come together, e.g. in the form of in-service teacher training, science centres, museums and science festivals.

The forum emphasizes that teaching should present physics as an international, creative and collaborative problem-solving effort, involving both men and women. Therefore, teachers must have a background in physics and have encountered scientists in action. The quality of physics education is threatened by a shortage of well trained teachers and the forum strongly recommends measures to increase the attractiveness of the profession. Teachers must be given the opportunity to maintain their enthusiasm and the contact with developments in
More than 100 teachers from as far afield as Australia gathered on 25–27 May at the Perimeter Institute (www.perimeterinstitute.ca/) in Waterloo, Canada, for what was a thought-provoking and extremely enjoyable conference.

The theme of the Ontario Association of Physics Teachers (OAPT) conference was two-fold, looking at new approaches to teaching modern physics and also at innovative methods for teaching any area of physics.

Daniel Sandford-Smith from the Institute of Physics was the first speaker on the Thursday, outlining the list of initiatives that are being put in place to support physics teaching in the UK. Ernie McFarland from the physics department at Guelph University in Ontario (www.physics.uoguelph.ca/www_physics/personal_site.php?idx=18) then spoke about teaching relativity, with some interesting examples of pitfalls and ways to avoid them. At the end of the day there was cheese and wine (a fantastic barbecue had preceded the talks) and also a chance to look at the entries for the photography competition and posters.

On Friday there were more talks, including the presentation of a resource for teaching relativity, ‘Al’s Relativistic Adventures’, which can be found at www.onestick.com/relativity. This was the winning entry in the Pirelli Relativity Challenge and looks like a very useful and engaging

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**Canada**

**Innovative teaching strategies pave the way for modern physics**

The forum stresses the importance that teachers have a voice in curricular reforms. These must be subject to pilot testing and evaluation before full-scale implementation. The forum recommends international collaboration in the setting of benchmarks for education and in developing research-based techniques for measuring learning outcomes.

*The forum notes the importance of rethinking the goals for both primary- and secondary-school science education to achieve ‘scientific literacy’. Scientific literacy includes a basic understanding of how science works and the capability for quantitative thinking. It also covers science-based knowledge for citizens in a society that needs to deal with many complex problems, often related to the resources of the Earth. Secondary schools have to deal with socio-scientific issues, which often require expert knowledge in many different specializations, calling for a multidisciplinary approach. The forum appeals to governments to put more efforts into teacher training (initial and in-service) to enable teachers to realize these goals. It stresses the need for interdisciplinarity while doing justice to the specific characters of the different disciplines.*
A new online science journal, www.youngscientists.co.uk, written by school students for school students has been set up by pupils who attend the King’s School Canterbury. Their main aim is to establish communication between pupils in schools across the world about scientific issues that are relevant to them.

All the writing, editing and Web design has been done by a small group of pupils at the King’s School, mainly as an extra-curricular activity on Thursday afternoons. They started commissioning and collating articles in January 2006 and intend to publish the first issue before the summer holidays as some of the team will be leaving school then.

The remaining team members will continue updating and improving the website as well as adding new articles, reviews, news and ‘A Quick Read’ (a selection of short articles). They hope that school pupils from around the world will become involved, contributing articles and reviews of their own about the science that they are interested in, or even research they are involved in at school. There will be a forum where students can comment on articles or discuss scientific issues.

The students are supported by a small number of advisory editors (teachers and professional scientists), but all the work is done by the students themselves.

If you are interested in getting your school involved or being an advisory editor, please contact cma@kings-school.co.uk or visit the website for more details.

Christina Astin

**Publications**

**New online journal lets young scientists speak for themselves**

Interactive experience.

Following the morning’s talks and lunch there were organized tours of Research in Motion’s test facilities and the University of Waterloo. (The Perimeter Institute was set up by Mike Lazaridis, the founder of RiM, which makes the handheld Blackberry communications devices.)

The day ended with a banquet, with an amusing and informative after-dinner speech given by Cliff Burgess of the Perimeter Institute, in which he compared string theory to *Casablanca*.

Saturday was the final day of the conference and included more talks and a selection of workshops. Pedro Goldman (www.physics.ryerson.ca/faculty/goldman.html) from the Department of Physics at Ryerson University in Toronto presented what can only be described as a brilliant lecture on using radiation therapy to treat tumours. Not only were the explanations concise, the commentary humorous and the slides clear, but the context of saving lives and the speaker’s injection of personal feelings into this very human side of physics made this one of the conference highlights.

Overall this was an excellent programme with far too many great speakers to be able to do them all justice in this article. Congratulations should go to Damian Pope and Jim Ross, chair of the OAPT (www.oapt.ca), for organizing this excellent event.

Gary Williams

‘Al’s Relativistic Adventures’ is a resource for teaching relativity.

Students from the King’s School Canterbury hope to reach out to school pupils all over the world with their online science journal.

**News**
Forthcoming Events

‘Forthcoming Events’ is published twice a year, in the January and July issues. If you have an upcoming event that you would like to publicize or list here, e-mail clare.thomson@virgin.net. The deadline for submissions is six weeks before the start of the month in which the issue is published.

July

2–22 CERN High School Teachers Programme teachers.web.cern.ch/teachers.

3–6 Royal Society Summer Science Exhibition, London. www.royalsoc.ac.uk.

3–8 10th European Association for Astronomy Education (EAAE) Summer School for Teachers, Santa Cruz de La Palma, Spain. For more details contact Alan_C_Pickwick@btinternet.com.

7–9 IOP Physics Update. Three-day residential course for teachers, Sheffield University. For more information contact Leila.solomon@iop.org.

11–14 Natural History Museum, London, UK Student Summit 2006: Climate Change Climate change is the big issue hitting the headlines. But how do you separate fact from fiction? This special four-day Student Summit will tease out the truth and debate the possible solutions with a line-up of impressive speakers. These include the government’s chief scientific advisor Sir David King, co-founder of Forum for the Future and eminent writer Jonathon Porritt, Minister of State (Climate Change and Environment) Elliot Morley, and Deputy Mayor of London Nicky Gavron. For more information see www.nhm.ac.uk/education/activities/school-activities/student-summit.

12–13 Residential Physics Summer School, University of Birmingham. For AS students in physics and maths. More details at www.ph.bham.ac.uk/prospective/schools under forthcoming events.

16 July – 5 August Tremesek, Czech Republic Astronomical Youth Camp 2006 Every year the International Astronomical Youth Camp brings together 60 young participants from all over Europe with a strong interest in astronomy. Typically more than 20 countries are represented. Over three weeks the participants work on their own astronomical project, with a team of young scientists to help and guide them. The theme of the project depends entirely on the participant’s own interests. And at night there is plenty of time to enjoy the night sky and practise and share observational skills with the other participants.

Since this is an international camp, the language of communication is English. Anyone between 16 and 24 years old and able to communicate in English can apply. The participation fee (including accommodation with all meals) is €450; a limited number of grants is available. For more information see www.iayc.org/next_camp.php Contact: info@iayc.org.

22–26 American Association of Physics Teachers Summer Meeting in Syracuse, NY, at Syracuse University. www.aapt.org

July–August

Launch of STEREO – two identical spacecraft, carrying UK instruments, will study the Sun from different positions in space to give a 3D view.

Inspection of NASA’s STEREO spacecraft in the cleanroom environment ahead of their launch scheduled for this summer. (Photograph: NASA.)
August
Planned end date of SMART-1 mission (first European Space Agency mission to the Moon) – likely impact with the Moon. www.esa.int/smart1.

12 Perseids meteor shower (peak)

September
Launch of SOLAR-B satellite (Japan/US/UK) to study the Sun’s magnetic field and corona. www.mssl.ucl.ac.uk/solar-b.

2–9 The BA Festival of Science, Norwich Research Park. This year’s theme is ‘People, science and society’. www.the-ba.net

4–9 3rd International Conference – Hands-on Science at the Universidade do Minho Braga, Portugal. www.hsci.info/hsci2006/index.html.

7 Partial lunar eclipse visible from UK

12–14 Royal Society Glasgow Science Exhibition, Glasgow. www.royalsoc.ac.uk.

18–21 GeoSciEd V at Bayreuth, Bavaria, Germany. Contact info@geoscied5.de.

19–21 Physics at Work, Cavendish Laboratory, University of Cambridge. This annual event is organized and supported by the Cavendish Laboratory, the Institute of Physics and the Cambridge Physics Centre. The primary aim of this exhibition is to stimulate interest and encourage wider participation in physics among 14- to 16-year-olds by showcasing the many and varied ways in which physics is used in the real everyday world. Further details are available from Dr Lisa Jardine-Wright (tel: 01223 333318; e-mail outreach@phy.cam.ac.uk).

22–24 Wolfsburg, Germany Teaching Science in Europe conference. At the conclusion of the biennial European exchange process for developing teaching concepts and materials in science education, the publication Teaching Science in Europe will be presented. More information: www.scienceonstage.de/. Contact and registration: info@science-on-stage.de.

22 Annular solar eclipse (not visible from UK)

23 Autumnal equinox

October
4–10 World Space Week. www.spaceweek.org. Deadline for entries to the Institute of Physics Paperclip Physics competition for Y11/Y12 students.

November
8 Transit of Mercury (not visible in the UK)

17 Leonids meteor shower (peak)

December
8–10 Institute of Physics Physics Update, Engineering Department, University of Cambridge. Contact Leila.solomon@iop.org

22 Winter solstice

January 2007
4–6 Association for Science Education Annual Conference, University of Birmingham. www.ase.org.uk.

5–10 American Association of Physics Teachers Winter Meeting jointly with AAS in Seattle, WA. www.aapt.org.

February
IOP Physics in Perspective – a three-day course for sixth formers and college students, London. Contact Leila. solomon@iop.org.

March
9–18 UK National Science Week. www.the-ba.net.

March–April
National Particle Physics Masterclasses. www.particlephysics.ac.uk/teach/master-classes.html.

April
2–6 Science on Stage 2. European science teaching festival in Grenoble, France. For more information go to www.scienceonstage.net or contact the UK steering group coordinator: AlisonAlexander@iop.org.

Edinburgh International Science Festival. For information see www.sciencefestival.co.uk.