

Imperial College
London

100 years of living science

100

staying connected

ISSUE 30 SUMMER 2007 _HER MAJESTY THE QUEEN
JOINS IMPERIAL'S CENTENARY CELEBRATIONS_ THE SCIENCE
OF CLIMATE CHANGE_ FOND MEMORIES_ PLUS ALL THE NEWS
FROM THE COLLEGE AND ALUMNI GROUPS

IMPERIALmatters

Alumni magazine of Imperial College London including the former Charing Cross and Westminster Medical School, Royal Postgraduate Medical School, St Mary's Hospital Medical School and Wye College.

in this issue ...



REGULAR FEATURES

- 1 editorial by Sir Richard Sykes
- 2 letters

NEWS

- 3 Imperial news
- 4 faculty news

FEATURES

- 11 a royal occasion_royalty gathers to celebrate Imperial's Centenary
- 14 the environmental evangelist_Sir David King speaks about his role as Chief Scientific Adviser to HM Government
- 16 looks can be deceiving_solving Lake Victoria's water hyacinth problem
- 17 securing a global future_the Grantham Institute for Climate Change leads the way forward
- 20 a trip down memory lane_celebrate 100 years with 100 stories

EXCLUSIVE ONLINE FEATURES

inventor's corner_Imperial's enterprising academics

farewell to the University of London_looking to the future as an independent institution

ASSOCIATION

- 22 alumni group news
- 24 international group news
- 26 alumni focus
- 30 media mentions
- 31 books
- 32 in memoriam
- 33 honours

IMPERIALmatters

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editorial

DEAR ALUMNUS

Welcome to the summer 2007 edition of your magazine, *Imperial Matters*.

As I write, we are over halfway through our Centenary year, having celebrated our official birthday on 9 July in the presence of Her Majesty The Queen and His Royal Highness The Duke of Edinburgh. This was a day that belonged to everyone who has worked or studied here in the last century, and was one of the highlights of a year-long series of events that have commemorated *100 years of living science*.

Our celebrations on 9 July not only paid tribute to our heritage, but also heralded the beginning of a new era for Imperial, as we became independent of the University of London. The College's new Charter was presented by Her Majesty, enabling us to award the first Imperial College degrees to five honorary graduates. This special ceremony can be viewed online at www.imperial.ac.uk/Centenary and you can read more about the visit on page 11.

What strikes me most about all of our celebrations so far is the sense of community that they have invoked amongst Imperial people – staff, students, alumni and friends have joined together all around the world. We hope that another highlight for our alumni community will be the 2007 Alumni Reunion on 14–16 September, for which over 650 alumni and guests have booked so far. Turn to page 28 to find out more.

Events this year have not been confined to Imperial's campuses; alumni groups around the world have joined the College in commemorating its one hundredth birthday, welcoming College representatives to all corners of the globe. Read more in updates from our alumni groups on pages 22–25.

While our Centenary celebrations are an important focus for 2007, the day-to-day business of what we do at Imperial does not slow. In this issue you can find out about Imperial's role in the pioneering development of the UK's first Academic Health Science Centre, as well as the role of Imperial Professor Tejinder Virdee in

the world's largest experiment, currently in preparation at CERN in Switzerland. News from the college and all of our faculties is featured on pages 3–10.

One of Imperial's strengths over its first 100 years has been the ability to change and respond to the challenges of the times. Important innovations and breakthroughs are increasingly found where researchers of different specialisms work in partnership. Imperial's new Grantham Institute for Climate Change is a prime example of this approach and you can find out more on page 17.

Also in this issue, we have spoken to alumni around the world who are making a difference in the area of the environment. One of those interviewed is Sir David King, Chief Scientific Adviser to HM Government since 2000. We are delighted that Sir David has agreed to be the keynote speaker at the 2007 Alumni Reunion and look forward to welcoming him back to the College in September.

Issue eight of *building the connection*, our fundraising newsletter, is enclosed with your copy of *Imperial Matters*. As I sign off, I would like to acknowledge and thank all of our generous supporters who are helping to enrich the lives of students at Imperial through your gifts to the Annual Fund.

Our students are the lifeblood of the College, coming from many different cultures all over the world to learn and discover. As you did before them, they entrust us with their time, their talent and their energy, and I thank you for your support in helping us to fulfil this responsibility.



The story behind the picture

It was a great privilege to have one of my photographs on the cover of the last issue of *Imperial Matters* (issue 29)! The guy in the photo was the head barman at the time, Brendan Clements, who ran an ‘institution’ throughout the seventies – with many an internal battle between the competing College bars of Southside (Stan’s Bar), College Block (Alan’s Bar) and of course the Union – the only real bar.



I worked in all of them during my time and the ‘bar birthdays’ were one of the many annual events to add to the culture of the day.

My name can be found on at least three of the Union tankards, being in second place on my most prized – the Holbein Award for Sport of the Year. I was one of that elite crew who got elected to a

Union position (City and Guilds Vice-President 1974–75), however a minor contretemps with the examiners did not permit that to happen and full-time Union bar work followed. The photo was taken during this period when I was working there full-time in early 1975.

COLIN WALDRON (Civil and Environmental Engineering 1975)

Commemoration Day celebrations

Recently I have been reading the notes about the College’s Rectors in the last issue of *Imperial Matters* (Imperial’s leading men, issue 29). I was rather surprised that in the notes concerning Sir Roderic Hill,



no mention was made of the fact that it was he who instituted the College’s Commemoration Day.

He felt that graduates and postgraduates should have their own presentation ceremony rather than being somewhat lost amongst the hundreds of students attending the University of London ceremony, so he set up a committee to organise the day. I was Chairman of the Imperial College Union

entertainments committee at the time and was given the task of arranging a Commemoration Ball for the evening.

Notice was short and I had difficulty finding a suitable venue, but eventually I was able to book the ballroom at Claridge’s Hotel and the first Commemoration Day ceremony took place in 1950. The ballroom at Claridge’s was small and many more people wanted to attend the ball than we were able to accommodate, so as soon as the date for the next Commemoration Day was set I booked the Great Room at the Grosvenor House Hotel with music provided by Sidney Lipton and his orchestra. From then on I hope the event has gone from strength to strength, but it was all due to the enthusiasm of Sir Roderic Hill.

REGINALD GILL (Electrical Engineering 1951)

Please send your letters to: *Imperial Matters*, Office of Alumni and Development, Imperial College London, South Kensington Campus, London SW7 2AZ or by email to matters@imperial.ac.uk.

We reserve the right to edit for length. Unless you specify otherwise, letters may also appear on the Imperial College alumni website as part of the online edition of *Imperial Matters*. Please note that any views expressed here are those of the contributors and do not necessarily reflect those of Imperial College London.

**Imperial College
London**

**Share your story
100 years. 100 stories.**

We’re celebrating 100 years of living science with 100 stories. We’ve collected some of them already, and invite you to **share your own stories and memories**. Throughout our Centenary year we will be adding new stories and want to hear yours.

To be in the running for selection of your story, send your memories and any photographs to Centenary@imperial.ac.uk or via post to: Centenary Communications Team, Level 4 Faculty Building, Imperial College London, South Kensington Campus, London, SW7 2AZ

www.imperial.ac.uk/Centenary

100 years of living science

100



Bob Schroter recalls
1968 Morphy Day student antics:

“...I had to take part in the fight along the towpath there was a young policeman who thought he was going to stop this rampaging, so he very foolishly rode his motorcycle into the middle of the foray and got totally but totally plastered in tomatoes and flour...”

Professor Sir Roy Anderson named next Rector of Imperial College London



JAN CHLEBK

Professor Sir Roy Anderson (Zoology 1968, PhD Parasitology 1971), a distinguished epidemiologist and currently Chief Scientific Adviser to the UK Ministry of Defence, will succeed Sir Richard Sykes to become the fourteenth Rector of Imperial College London. Sir Roy will take over from Sir Richard in the summer of 2008, when Sir Richard retires after leading Imperial for eight years.

The Chairman of Imperial's Council, Lord Kerr of Kinlochard, led the international search for its new Rector. Lord Kerr said: "Imperial is a world class research university, and demands a leader with vision, determination and experience, as well as a thorough understanding of the environment in which it operates. Sir Roy more than matches these criteria."

Sir Roy, 60, has spent much of his career at the College, becoming one of its youngest professors in 1982 at the age of 35. He has held Imperial's Chair in Infectious Disease Epidemiology since 2000 and is regarded as one of the world's leading authorities on the epidemiology and control of infectious diseases.

Sir Roy said on his appointment: "I've always had a special affinity with Imperial and am very excited about taking on this new and challenging role. I hope that in my time as Rector I will be able to do as much as Sir Richard to build on all the great achievements of Imperial's first 100 years."

Read more about Sir Roy's appointment as the next Rector of Imperial College at www.imperial.ac.uk/aboutimperial/rectorelect.

Centenary campaign to raise £207 million

Imperial College marked the launch of its Centenary year with a campaign to raise £207 million from philanthropic donations by 2010. Thanks to the generosity of alumni, industrial associates, and trusts and foundations, the College has already raised £136 million. This funding will provide scholarships for gifted students, with over £15 million already raised for this; a further £74 million has been donated to contribute to building and refurbishment projects across Imperial's campuses; and £47 million has been donated to support the College's mission to develop its academic activities to meet the needs

of society, industry and healthcare. Donations to the alumni-supported Student Opportunities Fund alone have so far been translated into scholarships for 42 undergraduates and 18 postgraduates.

Other concrete results of the campaign will include a major redevelopment of the Imperial College Union Building and the ongoing transformation of the Central Library into a high-tech space providing 24-hour computing facilities and wireless information access zones.

Rector Sir Richard Sykes says: "The Centenary campaign is a critical part of maintaining Imperial's ability to be master of its own destiny. From the discovery of penicillin to new treatments for rheumatoid arthritis, we have a long history of making breakthroughs that improve countless lives, but this is only possible when we have the financial freedom to set our own priorities. The campaign will also be vital in ensuring that our next scientific trailblazers are not deterred from taking advantage of a world-class education by financial considerations."

Imperial wins Best of British Award for supporting UK industry

Imperial's vital role in the UK's industrial and economic success was recognised at the inaugural Best of British Industry Awards in February. The College received the Supporter of British Industry Award, which honours organisations that proactively engage with industry and provide it with resources and support that make a demonstrable difference.

Imperial was founded with the mission of applying its scientific research to industry, a principle to which the College remains strongly committed, according to the Rector, Sir Richard Sykes. He says: "Strong partnerships between industry and universities are win-win for both parties, and are also vital for the UK's economy, so I'm very pleased that our commitment to forging relationships has been recognised in this way. Places like Imperial are real powerhouses of expertise and innovation, and it is funding we receive from our industrial partners that helps us to make the breakthroughs. They in turn are able to share the financial benefits when our ideas make it out of the lab and into the market place."

With around £30 million a year in industrial research funding, Imperial has a strong track record in working with industry through collaborative research and consultancy.

Current successful partnerships include the Imperial-BP Urban Energy Systems project, which explores ways to improve the efficiency of cities, and the Systems Biology Industry Club, which fosters relationships between researchers and industrial partners with an interest in systems biology.

>> NEWS IN BRIEF >>

New podcast offers monthly slice of life at Imperial

Available on the first working day of every month, the new Imperial College podcast supplies a roundup of Imperial's latest news, findings and events, providing listeners with a taste of life at the College and the scientific and academic work it carries out.

Imperial's podcast, which is presented by Gareth Mitchell, a lecturer on Imperial's Science Communication MSc, can be downloaded at www.imperial.ac.uk/aboutimperial/pressoffice/podcasts.

Professor of Surgery named Parliamentary Under Secretary

Professor the Lord Ara Darzi, who currently holds the Paul Hamlyn Chair in Surgery and is Head of the Division of Surgery, Oncology, Reproductive Biology and Anaesthetics in the Faculty of Medicine, was appointed as Parliamentary Under Secretary in the Department of Health.

Lord Darzi is widely recognised as one of the UK's leading surgeons in the field of minimally invasive and robot-assisted surgery, and helped develop virtual reality training methods allowing surgeons to practice their skills.

Dancing the night away at the Centenary Ball

Over 2,500 students, staff and alumni danced the night away at the Imperial College London Centenary Ball in June. "It was completely sold out," said organiser Jon Matthews, Imperial College Union Deputy President for Finance and Services.

Highlights of the night included *X-Factor* contestants performing in the College's Great Hall, a funfair and fireworks on the Queen's Lawn, and a casino in the Beit Quadrangle.

Strengthening academic links between Imperial and China

Two new Memoranda of Understanding have been signed with universities in China, with the aim of developing academic collaborations.

Imperial and Shanghai Jiao Tong University's academic affiliation will allow postdoctoral researchers and graduate students to train at both universities. Imperial and the Tsinghua University in Beijing will focus on academic collaboration through the exchange of staff and students, and will explore future possibilities for joint cooperative research projects.

the oceans could take place, and little snowfall would be possible.”

Professor Allen adds that understanding how Earth’s climate has changed in the past provides important data for current climate change models. He says: “We are living in a time of climate change and there is a huge debate going on over what the natural variability of the climate is. Knowledge of climate change in deep time provides clues to the way in which our climate system works under extreme conditions.”

An answer to the energy crisis?

Harvesting solar energy to produce renewable, carbon-free and cost-effective hydrogen as an alternative energy source is the focus of a new £4.2 million research programme at the College’s Energy Futures Lab funded by the Engineering and Physical Sciences Research Council (EPSRC).

The five-year programme will develop both biological and chemical solar-driven processes to develop renewable and cost-effective methods of producing hydrogen which can be used to operate fuel cells, electrochemical devices that can convert hydrogen to electricity and heat. Professor Nigel Brandon, Principal Investigator on the project and Director of the Energy Futures Lab, said: “The successful production of solar energy-driven renewable hydrogen could transform the supply of carbon-free fuel and make an enormous impact on the viability of hydrogen as an energy carrier. In addition, it will be an essential step on the route to fully exploiting fuel cell technology. It will position the UK as a world leader in one of the very few solutions to a truly sustainable energy future.”

The project will culminate in the design, building and operation of a working prototype system, with the aim of demonstrating that solar energy can be directly harvested to produce hydrogen and, in turn, cost-effective electricity and heat.

Royal Academy of Engineering award success

One of Imperial College London’s first successful spin out companies, Process Systems Enterprise, has won the Royal Academy of Engineering’s MacRobert Award, the UK’s most prestigious prize for innovation in engineering.

The company’s innovative software, gPROMS®, helps process-

industry companies to maximise product quality, minimise production cost and control environmental impact through the use of high-accuracy predictive mathematical models of their processes.

The Royal Academy of Engineering has also awarded the ERA Foundation Entrepreneurs Award to Imperial bioengineering PhD student Mario Iobbi, for his idea and business plan for a Saturation Driven Oxygen Therapy (SDOT) device. This new respiratory device will help sufferers of emphysema, cystic fibrosis and other breathing-related conditions by automatically adjusting the flow of oxygen to a patient according to their needs, rather than having a fixed flow of oxygen.

Two members of staff were awarded the Royal Academy of Engineering’s Silver Medal in June 2007; they are listed on page 33. Two members of staff and three alumni were elected as Fellows of the Royal Academy of Engineering in July 2007; they will be listed in issue 31 of *Imperial Matters*.

Chasing the sun

Thomas Middleditch, Peter Huthwaite, Chris Burrows and Oliver Carson, four undergraduate Mechanical Engineering students, are designing, making and testing a solar powered boat, called Solar Spirit, to compete in the Frisian Solar Challenge in the Netherlands. The 220-kilometre, six-day race is the only solar powered boat race in Europe.

Made of glass fibre, the one-man boat will be powered by five 175 Watt solar panels and will be six metres in length. An electric outboard motor will source its power from a combination of solar and battery power through the course of the challenge, depending on the light conditions and racing strategy. The batteries will be charged using power from the solar panels but not necessarily during the racing phase of the day.

Although in an unfinished state, the team hit the water for the first time at the Beale Park Thames Boat Show in June 2007, reaching a speed of 6.3 miles per hour. “The boat turned easily, was very stable and had low resistance,” explained Oliver. “We were very pleased with

the boat’s performance and hope at the actual race next year we will have optimised the motor and have the potential to go significantly faster,” he added.



>> NEWS IN BRIEF >>

Buy me to the stars Jetting into space could become reality for Aeronautical Engineering PhD student Michael Halls-Moore, who aims to raise £1 million to become one of the first space tourists in 2009. He has launched a new website, BuyMeToTheStars.com, and is selling advertising space in the form of a large galactic star chart. Sub-orbital trips into space will start in 2009 and Michael hopes to be among the tourists who will experience five minutes of weightlessness at 400,000 feet.

Catastrophic flooding changes the course of British history According to research published in the journal *Nature*, a catastrophic megaflood separated Britain from France hundreds of thousands of years ago. Using high-resolution sonar waves to capture images of the preserved channel basin, the study, led by Imperial’s Dr Sanjeev Gupta and Dr Jenny Collier, has revealed spectacular images of a huge valley tens of kilometres wide and up to 50 metres deep carved into chalk bedrock on the floor of the English Channel.

Excellence in engineering education The first Teaching Excellence in Engineering Education awards were held in June 2007, recognising teachers who have enhanced the quality of the engineering student learning experience at the College. Awardees were Dr Anthony Field, for significant contributions to the Department of Computing’s top standing in computing education; Professor John Cosgrove, for inspiring structural geologists and generating skills and knowledge through outstanding teaching; and the Constructionarium team, Alison Ahearn,

Dr Sunday Popo-Ola and Rebecca Naessens, who enable hands-on student learning through construction work in a realistic environment.

A taste of real life engineering Over 80 Imperial civil engineering students spent a week at the National Construction College in Norfolk, working on real life engineering projects at the annual Constructionarium event in June 2007. They built scaled down versions of the Millau Bridge, the concrete Kingsgate Bridge built in two halves on swivelling turntables, and a four-storey version of the Gherkin in London.

UK's first academic health science centre

Following a consultation with the public and staff, strong support has been shown for a merger between Hammersmith Hospital's and St Mary's NHS Trusts, which were rated the second and third best hospitals in the country for clinical performance, quality of care and safety in May 2007, and integration with Imperial College to create the UK's first Academic Health Science Centre (AHSC).

More than three quarters of respondents thought the merger was a good idea, with many believing that it would lead to better health services, better use of resources and the development of new and

innovative solutions to modern medical challenges. The Trusts and Imperial College believe that the foundation of an AHSC will strongly improve their performance in turning new scientific research into new treatments that benefit patients.

Professor Stephen Smith, Principal of the Faculty of Medicine and lead officer responsible for the creation of the AHSC, said: "This is

a once-in-a-lifetime opportunity to make a sea-change to health services in west London. We want to work with our colleagues in primary care to enable residents to stay healthier, live longer and enjoy a better quality of life."

The AHSC will be the first organisation of its kind in the UK, integrating the delivery of clinical services, teaching and research. This approach has been adopted in other parts of the world and is proven to be a key factor in providing the world's best healthcare. Health Minister Lord Darzi called for the creation of AHSC as part of his recent review of London health services.



CHRISTIAN RICHARDS

New and improved polio vaccine

The *Lancet* reported in April 2007 that monovalent oral poliovirus vaccine (mOPV1), which prevents type-1 polio, is almost three times as effective as the standard vaccine. mOPV1 was developed, licensed and introduced to India in 2005, where polio persists because of poor sanitation and crowded conditions.

The first published study to confirm the success of the new vaccine found that each dose of mOPV1 protected 30 per cent of susceptible children in northern India. The standard trivalent vaccine in the same setting protected just 11 per cent of children per dose.

Dr Nick Grassly, Department of Infectious Disease Epidemiology and lead author of the study, said: "The clinical efficacy of mOPV1 means a child has an 80 per cent chance of protection after five doses of this new vaccine. With the trivalent vaccine 14 doses were needed to reach this level of protection."

mOPV1 targets type 1 polio, the most prevalent of the three strains of the disease. The trivalent vaccine targets types 1, 2 and 3, but the efficacy of trivalent vaccines can be diminished because different strains of poliovirus interfere with one another inside the body, sometimes producing immunity to one strain but not another.

The researchers found that by the end of 2006 in the states of Uttar Pradesh in India, 76–82 per cent of children aged 0–23 months were estimated to be protected by vaccination against type 1 polio, compared with 59 per cent prior to the introduction of mOPV1.

New drug combination to reduce heart attack risk

A *European Heart Journal* study in December 2006, shows that the risk of heart attacks can be reduced by more than 50 per cent by combining cholesterol reducing drug *atorvastatin calcium* with blood pressure lowering drug *amlodipine besylate*.

The research, conducted as part of the Anglo-Scandinavian Cardiac Outcomes Trial, involved over 19,000 patients in the UK, Ireland and Scandinavia and showed that simultaneous initiation of atorvastatin and amlodipine is about three times more effective at reducing the risk of fatal and non-fatal cardiac events than the usual treatment of adding atorvastatin to one of the world's most widely used blood pressure-lowering drugs, a beta blocker called atenolol.

These results have major implications for physicians and their patients worldwide, according to a Principal Investigator in the study, Professor Peter Sever of the International Centre for Circulatory Health within the Faculty of Medicine: "The trial demonstrates that the risk of heart attacks can be more than halved in the many patients at moderate risk who doctors see every day. In addition, there is a reduction in strokes of more than 25 per cent."

The differences in risk reduction between the two treatments may be explained by recent, ongoing laboratory studies, which suggest that amlodipine and atorvastatin may stabilise the fatty deposits in the walls of the arteries which can rupture to cause cardiovascular events such as heart attacks.

>> NEWS IN BRIEF >>

More support for quitting smokers Research published in the *Canadian Medical Association Journal* in June 2007 suggests that smokers have been getting more support for quitting, and the numbers of smokers have reduced, since the introduction of 'pay for performance' incentives for UK general practitioners in April 2004.

The research team from Imperial looked at patients with diabetes, registered in Wandsworth, south London and found that the percentage of smokers with diabetes who were given cessation advice by primary care staff increased from 48

per cent to 84 per cent between 2003 and 2005 while the percentage of smokers decreased from 20 per cent to 16 per cent.

New Centre for outbreak analysis and modelling A new £6 million Medical Research Council (MRC) Centre for Outbreak Analysis and Modelling, funded jointly by the MRC and Imperial College, opened on the St Mary's Campus in March 2007. The Centre will analyse new outbreaks of existing diseases, such as polio, and infections which may pose a serious threat in the future, such as H5N1 avian flu. It will

work closely with governments and health organisations across the world to help them plan and devise policies for potential future pandemics, providing rapid information in the event of an outbreak.

Hope for new obesity drug A hormone found naturally in the gut which plays a role in appetite control is the basis of a new drug to tackle obesity being developed by Professor Steve Bloom of the Division of Investigative Science, and is one of three inaugural awards under the Wellcome Trust's Seeding Drug

Discovery initiative. "Over 30,000 deaths each year are caused by obesity in England alone, so there is a clear need to develop a treatment to tackle this problem," said Dr Ted Bianco, Director of Technology Transfer at the Wellcome Trust.

Immune system boost against TB Scientists have shown that a single 2.5mg dose of vitamin D may be enough to boost the immune system to fight against tuberculosis (TB) and similar bacteria for at least six weeks. Their findings came from a study that identified an extraordinarily

Novel drug sequence improves breast cancer survival

A study published in *The Lancet* in February 2007 suggested that changing the drug therapy given to women being treated for breast cancer could improve the overall chance of survival.

Post-menopausal women with early stage hormone-sensitive primary breast cancer, once free of the disease, are usually treated with tamoxifen for five years to reduce the risk of recurrence. Tamoxifen works by preventing oestrogen from acting on cancer cells, followed by aromatase inhibitors such as exemestane, which stops the body's production of oestrogen.

The Intergroup Exemestane Study examined the benefits of taking tamoxifen for two to three years and then switching to exemestane for the remainder of the five-year period, by examining 2,352 women who switched to exemestane and 2,372 women who were treated with tamoxifen alone.

The study found that the women taking exemestane had a 15 per cent lower risk of dying than those taking only tamoxifen. When women whose tumours were found not to be oestrogen sensitive were excluded (eight per cent of the total), the improvement increased to 17 per cent. Researchers believe that during treatment with tamoxifen, some cancer cells can become resistant to the effects of the drug. Exemestane is subsequently able to kill these resistant cells by withdrawing the oestrogen from circulation.

Professor Charles Coombes, Cancer Research UK Department of Cancer Medicine and lead author of the paper, said: "Just giving one or other drug has not been shown to give added benefit in terms of improved survival. The task now is to determine what other drugs should be given in sequence to prevent cancer cells that have become resistant to exemestane from growing."

Key genes identified in type-2 diabetes

An international study published online in *Nature* in February 2007 identified the most important genes associated with a risk of developing type-2 diabetes, increasing the likelihood that scientists will be able to develop a genetic test to show an individual their likelihood of developing type-2 diabetes.

The researchers identified four loci, points on individuals' genetic maps, which corresponded to a risk of developing the disorder and

believe their findings explain up to 70 per cent of the genetic background of type-2 diabetes.

In addition, one of the genetic mutations which they detected, a zinc transporter involved in regulating insulin secretion, might further explain the causes behind type-2 diabetes, potentially leading to new treatments. Type-2 diabetes is associated with a deficiency in insulin and researchers believe it may be possible to treat it by fixing this transporter.

One of the authors, Professor Philippe Froguel of the Division of Medicine, said: "If we can tell someone that their genetics mean they are pre-disposed towards type-2 diabetes, they will be much more motivated to change things such as their diet to reduce their chances of developing the disorder."

The scientists reached their conclusions after comparing the genetic makeup of 700 people with type-2 diabetes and a family history of the condition, along with 700 controls. They examined over 392,000 mutations in the building blocks, called nucleotides, which make up DNA. This is the first time the genetic makeup of any disease has been mapped in such detail.

Childhood asthma gene identified

A genetic study of more than 2,000 children has established that genetic markers on chromosome 17 has a striking effect on the risk of asthma in children. They alter the levels of a new gene called *ORMDL3*, which was at a higher level in the blood cells of children with asthma than in those without. The research, published online in *Nature* in July 2007, suggests that the disease-associated version of the gene increases the risk of having asthma by 60–70 per cent.

Dr Miriam Moffatt, National Heart and Lung Institute and one of the first authors of the study, said, "This is a large study involving many countries, and we are confident that we have discovered something new and exciting about childhood asthma. These novel findings do not explain completely how asthma is caused, but they do provide a further part of the gene-environment jigsaw that makes up the disease."

The scientists reached their conclusions after comparing the genetic makeup of 994 patients with childhood onset asthma and 1,243 non-asthmatics. They looked at mutations in nucleotides, examining over 317,000 to find those specific to childhood asthma; and also looked at how genes were being expressed within human blood cells. Using these two different types of analysis enabled the researchers to identify *ORMDL3* as a significant risk factor for childhood asthma.

The combinations of genetic and environmental factors which cause asthma have been poorly understood until now, and scientists hope their new findings will lead to the development of new therapies.



DIGITAL VISION

>> NEWS IN BRIEF >>

high incidence of vitamin D deficiency amongst those communities in London most at risk from the disease, which kills around two million people each year. Included in the study were researchers from the Wellcome Trust Centre for Research in Clinical Tropical Medicine at Imperial.

Training the clinical researchers of the future Imperial launched a graduate entry Medicine course in June 2007 to train science graduates to become medical doctors over four years, rather than the six taken on the MBBS/BSc course. It aims to

create tomorrow's clinical researchers by giving medical training to graduates who already have a solid grounding in science.

The first students on the new course will start in 2008 and 50 graduates will be awarded places each year.

Clinical imaging centre opened GlaxoSmithKline's (GSK) new Clinical Imaging Centre, a unique venture undertaken by GSK, Imperial College London and the Medical Research Council, was opened in June 2007 by the Rt Hon. Alistair Darling MP. Located adjacent to the

Hammersmith Campus, this pioneering collaboration between industry, academia and public sector has produced the largest imaging centre in Europe, substantially increasing the entire research base in medical imaging in the UK. At the opening Mr Darling said: "This new centre is right at the forefront of the fight against some of the major diseases in the world."

Inventor of the year award Professor Marc Feldmann, who developed a treatment for autoimmune diseases that has helped

millions of patients around the world, received a prestigious lifetime achievement award in April 2007 at European Inventor of the Year awards.

In 1991, Professor Feldmann and his colleagues found that the cytokine molecules responsible for the cell communication that prompts the immune system to fight itself in autoimmune diseases such as arthritis could be stopped by blocking Tumor Necrosis Factor (TNF α). Since the method was patented in 1995, TNF α inhibitors have become the therapy of choice for arthritis and other autoimmune diseases.

The biggest experiment on Earth



In May 2008, CERN's Large Hadron Collider particle accelerator will be switched on for the first time, accelerating beams of particles around a 27 kilometre circular tunnel underneath the Swiss and French countryside. These particles will collide with each other with higher energies than in any experiment ever before.

Four experiments are due to take place on the accelerator ring, and Professor Tejinder Virdee, Department of Physics, is the lead scientist on one of these – the Compact Muon Solenoid (CMS) particle detector experiment. The aim of the CMS experiment is to find new particles, detect mini-black holes and

solve some of the mysteries of the universe, such as where mass comes from, how many dimensions there are and what constitutes dark matter. One of the particles that the team are hoping to detect is the Higgs-Boson, a particle which has been theorised but never actually recorded.

Professor Virdee explained: "Scientists believe the Higgs-Boson is the particle that gives the property of mass to other particles such as electrons. If we can prove that it exists, we will have taken a big step towards a much fuller understanding of how the universe works."

The CMS experiment has involved thousands of scientists and engineers from 37 different countries working for 15 years to design and build the massive particle detector. "This is a very exciting time for physics," continued Professor Virdee. "The collider is poised to take us to a new level of understanding of our universe."

Watch interviews with Professor Virdee at

<http://ichelix1.cc.ic.ac.uk/ramgen/mediaspool/comms/cern1.rm> and <http://ichelix1.cc.ic.ac.uk/ramgen/mediaspool/comms/cern2.rm>.

Reintroducing wolves to benefit Scottish ecosystems

Research published in the January 2007 *Proceedings of the Royal Society B: Biological Sciences* suggested that the reintroduction of wild wolves to the Scottish Highlands could have a positive impact on local conservation.

The primary benefit would be the control of the population of red deer, the wolves' main wild prey, whose large numbers have considerable negative economic and ecological impacts, hampering attempts to reforest the region, competing with livestock for grazing,

and trampling the trees and vegetation necessary to support bird populations. Currently this high density of deer is controlled by organised culls, carrying a significant cost for local landowners and farmers. Reintroducing wolves to the region from which they were eradicated in 1769 would save landowners' money while restoring balance to the ecosystem and increasing bird biodiversity.

Dr E.J. Milner-Gulland and Dr Tim Coulson, Division of Biology, who were co-authors of the study surveyed people living in rural Highland communities and Scottish cities to assess public attitudes about the idea, finding them generally positive. Dr Tim Coulson said: "Scotland is a very different case to other parts of the world where wolves have been reintroduced. In Scandinavia and North America there is a culture of deer hunting for meat which has led to conflict between hunters and wolves. As Scotland only supports a small trophy hunting industry, these problems wouldn't apply."

No sex for 40 million years

New research published in *PLoS Biology* in March 2007 found that a group of organisms that has existed for over 40 million years and never had sex has managed to evolve into distinct species, challenging the assumption that sexual reproduction is necessary for organisms to diversify.

The research focuses on the study of bdelloid rotifers, microscopic aquatic animals that live in watery habitats and multiply by producing eggs that are genetic clones of the mother – there are no males. Fossil records and molecular data show that bdelloid rotifers have been around for over 40 million years, and now findings show that, despite never sexually reproducing, they have evolved into distinct species.

Dr Tim Barraclough, Division of Biology, explained: "We found evidence that different populations of these creatures have diverged into distinct species, not just because they become isolated in different places, but because of the differing selection pressures in different environments. One remarkable example shows two species living in close proximity on the body of a water louse, one around its legs, the other on its chest. They have diverged in body size and jaw shape to occupy these distinct ecological niches."

Previously, many scientists had thought that the differences in asexual creatures arose solely through the build-up of random mutations that occur in the 'cloning' process. The new study proves that these differences are not random but the result of so-called 'divergent selection', a process which causes the origin of species in sexual organisms.

Dr Barraclough added: "Their ability to survive and adapt to change raises interesting questions about our understanding of evolutionary processes."

>> NEWS IN BRIEF >>

Engineered blood protein produces hydrogen from water

Scientists from Waseda University, Japan, with structural biologists from Imperial, have engineered a new molecular complex that uses solar energy to produce hydrogen gas from water. The complex was synthesised from two molecules that occur in blood, albumin and porphyrin, the latter modified to swap an iron atom at its centre for a zinc atom.

This method of producing hydrogen from water may pave the way for novel ways of creating hydrogen gas for use as fuel.

Prizes galore! A proposal for developing tools to make energy-efficient solar panels and lighting sources available to a wide market at a low cost received the annual £250,000 Brian Mercer Award for innovation in the field of nanotechnology from the Royal Society.

In April new anti-counterfeiting technology received the €100,000 Hermes Award at the 2007 Hannover Messe technology fair. Professor Russell Cowburn, Department of Physics, received the award on behalf of Ingenia Technology Ltd, a company that has commercialised

Imperial research, and Bayer Technology Services.

Catching the wave A team of physicists from Imperial has attained an unprecedented level of accurate measurement by firing a femtosecond laser pulse into a sample of gas, and measuring the spectrum of the responding X-ray pulse emitted. Researchers found that the spectrum of the pulse, which is up to 10 times shorter than the original laser pulse, had all of the information necessary to precisely reconstruct the original laser pulse waveform.

Unlocking the secret of what makes plants flower

New research carried out by biologists at Imperial and the Max Planck Institute for Plant Breeding Research has proposed that the long-distance signal which prompts flowering is a protein known as Flowering Locus T Protein, produced in leaves by the Flowering Locus T gene. The protein was shown to travel through the vascular system from leaf to shoot apex, activating other genes which cause the plant to flower, by tagging it with a green fluorescent protein originally isolated from jellyfish.

The new voice of science

Imperial student Nicholas Harrigan was announced as the winner of the 2007 NESTA FameLab competition on 9 June 2007 after wowing judges with his demonstration on the science of microwaves. Nicholas, a postgraduate student in Quantum Information, Department of Physics, wore a full chef's outfit as he demonstrated to the judges how microwaves work and create heat in food. "It's a bit like rubbing your hands together," Nicholas explained. "The microwaves make the water molecules in things jig about and rub together and so they heat up." Nicholas reached the final after taking part in the London regional heat in April 2007 where he gave a talk on how spiders cling to walls. He had just five minutes to impress a panel of judges whose requirements were "content, clarity and charisma".



JAY WILLIAMS

The final of the annual competition took place at the Cheltenham Science Festival. Nicholas receives a prize of £2,000, a tour of international events and a two-week internship with Channel 4.

On announcing the winner, Kathy Sykes, Co-Director of the Cheltenham Science Festival and NESTA Trustee, said: "Nicholas has huge potential and was prepared to take risks."

Rise of mammals not caused by dinosaur extinction

A new, complete 'tree of life' tracing the history of all 4,500 mammals on Earth shows that they did not diversify as a result of the death of the dinosaurs. A multinational research team, including biologists from Imperial College, has been working for over a decade to compile the tree from existing fossil records and new molecular analyses.

The findings, published in *Nature* in March 2007, contradict the previously accepted theory that the Mass Extinction Event (MEE) that wiped out the dinosaurs 65 million years ago prompted the rapid rise of the mammals we see on Earth today. They show that many genetic 'ancestors' of today's mammals existed 85 million years ago, but were prevented from diversifying and evolving in ecosystems dominated by dinosaurs.

After the MEE certain mammals did experience a rapid period of diversification and evolution, but most of these groups have since either died out completely, such as Andrewsarchus (an aggressive wolf-like cow), or declined in diversity, such as the group containing sloths and armadillos. The 'ancestors' of mammals on earth today began to radiate around the time of a sudden increase in the temperature on Earth, 10 million years after the MEE.

Professor Andy Purvis, Division of Biology, explained: "During the first 10–15 million years after the dinosaurs were wiped out, other types of mammals were running the show. The study suggests a later bout of 'global warming' may have kick-started today's diversity, rewriting our understanding of how humans evolved and giving a much clearer picture of our place in nature."

Tool to track spread of bird flu

A new way of understanding how highly pathogenic avian influenza (HPAI) spreads among farm birds was published in *PLoS ONE* in April 2007. The study, carried out by mathematical modellers from Imperial and the London School of Hygiene and Tropical Medicine, focused on how the H7N3, H7N7 and H7N1 strains of the virus were transmitted between farms in three recent outbreaks in Europe and Canada.

The scientists estimated the farm-to-farm 'reproductive number', a measurement of how many farms an affected farm infects during an outbreak. Dr Tini Garske from Imperial's Institute for Mathematical Sciences explained: "If, at any point in time, each infected farm infects more than one further farm, the epidemic will continue. Therefore, to fight an outbreak of highly pathogenic bird flu, a reproductive number of less than one is required.

"In our case studies the average reproductive number, prior to controls, was between 1.1 and 2.4. Although this falls when standard measures are introduced, it remains close to the threshold value of 1, suggesting that, for outbreaks of HPAI in very dense poultry farming areas, additional measures beyond enhanced bio-security, movement restrictions and culling on infected farms may be needed to halt the epidemic. In the case studies we looked at, pre-emptive culling and de-population of nearby at-risk areas succeeded in containing the outbreak, where other less drastic measures had failed."

The team hopes that their method will be useful for future planning. "Our study uses minimal amounts of data and might be useful in assessing the effectiveness of control measures in areas where data is scarce, such as South East Asia, where currently the strain H5N1 gives cause for concern," explained Dr Garske.

>> NEWS IN BRIEF >>

Grantham Institute for Climate Change The Grantham Foundation for the Protection of the Environment made a £12.8 million gift to Imperial in February 2007 to establish the Grantham Institute for Climate Change, the largest private funding given to climate change in the UK to date. The Institute will contribute to the world's response to climate change by stimulating a research drive for mitigation techniques and impacting directly on public and private policy. Read more about the gift and the Institute on page 17.

Chemistry Nobel Laureates honoured Nobel Laureates Professor Sir Derek Barton FRS (1918–1998) and Professor Sir Geoffrey Wilkinson FRS (1921–1996) have been honoured with Royal Society of Chemistry National Chemical Landmark plaques. The plaques, which are mounted outside the entrance to the Department of Chemistry, were presented to the College in May 2007. Watch a 1985 interview with Professor Wilkinson at <http://ichelix1.cc.ic.ac.uk/ramgen/mediaspool/centenary/wilkinson.rm>.

Imperial physicist chosen to deliver 2008 Royal Society lecture Professor Martin Plenio, Department of Physics, has been chosen to deliver the Royal Society's 2008 Clifford Paterson Lecture. He will speak on the subject of information theory and quantum physics, explaining how current research is paving the way for the 'quantum computers' and quantum communication devices of the future. The lecture, delivered annually on any aspect of engineering, was endowed by the General Electric Company Limited in 1975 in honour of

Clifford Paterson FRS, who created GEC's research laboratories.

Toxoplasmosis infection trick revealed by scientists Scientists from Imperial and Geneva have provided new insight into how the parasite that causes toxoplasmosis invades human cells, by identifying the atomic structure of a key protein released onto the surface of the parasite just before it invades host cells in the human body. The protein TgMIC1 binds to certain sugars on the surface of the host cell.

Design-London

Building on a strong track record of successful collaboration which dates back more than 25 years, the Royal College of Art (RCA) and Imperial College London have announced the creation of a world class £5.8 million multidisciplinary centre called Design-London at RCA-Imperial. This initiative is being developed to address the challenges of future innovation, as part of the core strategic aims of both institutions and in response to the recommendations for higher education described in the Cox Review of Creativity in Business.

It will create an 'innovation triangle' between design, represented by the Royal College of Art; engineering and technology, represented by Imperial's Faculty of Engineering; and the business of innovation, represented by Imperial's Tanaka Business School. Research will explore how design can be integrated with business and technology more effectively, and how a dynamic multidisciplinary environment will support unique or unexpected collaborations between different disciplines, promoting knowledge interchange between MA, MEng and MBA students.

The Higher Education Funding Council for England (HEFCE) will provide £800,000 as seed funding over three years, the National Endowment for Science, Technology and the Arts (NESTA) will provide a further £900,000, with the remainder of the funding being sourced from within the RCA and Imperial College.

HEFCE Chief Executive Professor David Eastwood said: "This is an exciting partnership in that Design-London addresses many of HEFCE's strategic priorities, including the delivery of high quality learning experiences to meet the needs of the economy and society and the engagement between HEIs and businesses. It also promises to contribute to UK economic success amid intensified global competition."

New professorship to commercially exploit ideas

Professor Erko Autio is to become the UK's first ever Professor of Technology Transfer in the Physical Sciences. The £1 million professorship is jointly funded by QinetiQ and the Engineering and Physical Sciences Research Council (EPSRC). Imperial College's Tanaka Business School was selected in competition with other universities to host the professorship due to its excellence in entrepreneurship and innovation, and its location at the heart of Imperial College's world class science campus.

The EPSRC-QinetiQ Chair has been established to address the

comparative lack of systematic approaches for the commercial exploitation of ideas in engineering or the physical sciences when compared to the growing body of academic research on the commercialisation of innovation in bio-sciences.

Sir John Chisholm, Chairman of QinetiQ, said: "The EPSRC-QinetiQ professorship will play a vital role in ensuring that effective models for the complex process of transferring ideas between the laboratory and market-place are made pervasive for the benefit of the economy."

Professor Autio, a Finnish academic, arrives from the Strategy Institute of HEC Lausanne where he was Professor in Technology Venturing. He previously held a teaching and research post at the London Business School, where he helped launch the Global Entrepreneurship Monitor (GEM) initiative. He said: "Innovation in engineering and the physical sciences plays a key role in driving economic growth but the process appears to take longer and be more challenging than in the life sciences. I am delighted to become the EPSRC-QinetiQ Chair of Technology Transfer in the Physical Sciences and to play a key role in improving the process of exploiting new ideas."



FERGUS BURNETT

It's a risky world

In a stirring and wide-ranging keynote address at Tanaka Business School's Centenary alumni reunion, Richard Lambert, Director General of the Confederation of British Industry (CBI), warned more than 100 managers and executives that "the good times can't last forever". Lambert suggested that although the economy had boomed over the last 10 years, there are a significant number of British companies who have yet to prepare for the risks they will face in the future.

Lambert cited geopolitical, financial, logistical, innovation and reputation-linked risks as the main challenges facing our corporations. He then focused on both climate change and changes in innovation processes, suggesting that companies need to acquire more skills and change their business models in order to meet global challenges head-on.

He pointed out that strong new innovations are emerging through multidisciplinary activities, and companies must widen their innovation processes to continue to compete, adding: "This is going to take a very different mindset from what we've been used to in the past; less hierarchical, more outward looking, less linear, and with more capacity to build formal and informal networks of relevant partners."

Ending on a positive note, Richard Lambert hailed the magnificent culture of innovation at Imperial College London and its business school, saying that a key way for companies to maintain their competitive advantage is to work with such institutions.

Strategic centre for innovation in healthcare infrastructure

A unique collaborative venture by Imperial College and the universities of Salford, Loughborough and Reading has created an £11 million research centre, coordinated by Tanaka Business School. The Health and Care Infrastructure Research and Innovation Centre (HaCIRIC) is supported by a new grant of £7.2 million from the Engineering and Physical Sciences Research Council (EPSRC), and will promote innovation in healthcare infrastructures for the twenty-first century.

Great show for Tanaka Business School entrepreneurs!

Imperial MBA students and entrepreneurship design fellows achieved second place in the European Business Plan of the Year Competition 2007 at SDA Bocconi in Milan in July. The 'Stick Safe' team presented their business plan for an innovative and highly cost-effective medical device that protects clinical staff from inadvertently stabbing themselves with infected needles. The device is a patented and recyclable paper-pulp tray with a disposable tab into which used needles are safely and conveniently inserted.

Young researcher awarded by leading French research institution

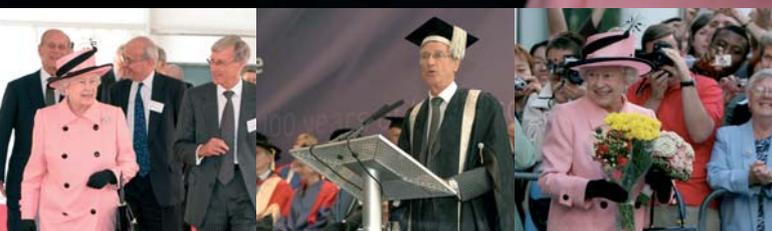
Professor Nizar Touzi, Chair in Mathematical Finance, has been awarded the prize for Best Young Researcher of the Year by Europlace Institute in recognition of the excellence of his growing body of research. Professor Touzi is currently exploring the interaction between financial mathematics and sustainable development and uses the example of the creation of a market for CO₂ permits as a classic way of using mathematical models to build efficient new regulations.

Helping your rivals may prove beneficial

A study by Dr Annabelle Gawer examines how platform owners, specifically Intel, interact with third-party developers to maintain innovation and achieve platform leadership. It found that the company realises both the appeal of entering complementary markets, and the damage that a loss of third-party innovation could have on sales. The study has wide-reaching implications for the understanding of competition in complementary markets and the role of organisational form in structuring competition.

HER MAJESTY THE QUEEN AND HIS ROYAL HIGHNESS THE DUKE OF EDINBURGH JOINED IMPERIAL COLLEGE STAFF, STUDENTS AND ALUMNI TO CELEBRATE 100 YEARS OF LIVING SCIENCE ON 9 JULY 2007.

A royal occasion



BY ZOË PERKINS

WHEN THE DEVELOPMENT OF SOUTH KENSINGTON BEGAN, with the profits from the Great Exhibition of 1851, Prince Albert envisaged 'a Charlottenburg for London' – a scientific university whose exemplary education system supported industry – and Imperial College was founded in pursuit of this goal.

"It was Albert's bold vision that created this hub of culture and science in South Kensington," said the Rector, Sir Richard Sykes, looking back at Imperial's beginnings. "As is often the case with visionaries, he faced a chorus of scepticism – not least from the House of Commons, which feared that his Great Exhibition would encourage 'foreign rogues' to invade the country. But Albert persevered and brought his plan to reality."

On 8 July 1907 these plans came to fruition with the signing of Imperial College's founding Charter, drawing together the three educational institutions that were already established in the area: the Royal School of Mines, the Royal College of Science and the City and Guilds College. In the words of the Charter, the College was established to "give the highest specialised instruction and to provide the fullest equipment for the most advanced training and research in various branches of science especially in its application to industry."

Continuing the College's long association with the Royal Family, which has also included King Edward VII laying the foundation stone of the College in 1909, Her Majesty The Queen and His Royal Highness The Duke of Edinburgh joined staff, students and alumni to celebrate the College's Centenary on 9 July 2007.

Sir Richard Sykes said: "It's thanks to Albert's determination that we are celebrating our one hundredth birthday today, so it's a great honour and very fitting that his descendants have agreed to join us, especially as they both continue his efforts to promote UK science and industry."

The Queen paid tribute to the College community that has played a part in fulfilling her great-great-grandfather's plan for a

scientific and cultural heartland in South Kensington: "It has been a century of great achievement, and my thanks go to all the people, the staff and the students, whose work over the decades has enabled Prince Albert's vision to flourish."

CEREMONIAL PROCEEDINGS

In recognition of the College's heritage, the Queen unveiled a statue of her great-great-grandmother Queen Victoria. However, 9 July was a day not only for celebrating the past, but also for looking to the future, as the College became independent of the University of London. In an official ceremony, Her Majesty bestowed upon Imperial its Royal Charter, after which the first Imperial College degrees were presented to five new honorary graduates.

In a world that increasingly relies upon discovery and innovation in science, technology and medicine, the day also focused on the contribution that Imperial College can make in the future, with the official opening of the new Institute of Biomedical Engineering by the Queen.

Marking the beginning of a new chapter in the College's history, the Rector summed up the spirit of the day: "It's hard to put into words what this day means to Imperial College. It's a day that belongs to everyone who has worked or studied here in the last century. I'm delighted that so many people from the College's past and present join these celebrations, including three former Rectors and our Rector-elect. We also remember those who have gone before us, who have played such a vital role in making Imperial what it is today."

You can watch a RealPlayer stream of the Centenary Ceremony at www.imperial.ac.uk/centenary/royal_visit.shtml.

AN INDEPENDENT INSTITUTION

Imperial College's independence from the University of London, whose degrees it has awarded since 1908 and of which it became a constituent college in 1929, came 100 years to the day since the



College's original Charter was signed. The most obvious and meaningful symbol of this independence is the College's ability to award its own degrees – an ability it gained from the Privy Council in 2003 but which it has not exercised until now.

The new Charter is written on vellum, fine parchment made originally from the skin of a calf, and was granted by the Queen under the Great Seal coming into effect on 8 July. The team responsible for producing the new Charter had to consult with, and gain the approval of, various bodies up to and including the Privy Council. Jon Hancock, Head of Central Secretariat, said: "It was a great relief when we finally received confirmation that everything was approved and sealed. Collecting the sealed Charter from the Palace of Westminster on the same day that Gordon Brown became Prime Minister was also quite an experience."

In conferring the College's new Charter, the Queen said: "Today you renew your mission of applying your learning, discoveries and innovation to meet the changing needs of society, industry and healthcare. You will also, of course, continue to carry out the important task of educating the young people who will become the future inventors, discoverers and leaders of business and society. By discharging this academic mission, you play a vital role in supporting this country's position on the world stage."

The Rector, Sir Richard Sykes, paid tribute to the dedication of the College's students, staff and supporters, and their roles in fulfilling the terms of the new Charter, which echoes the words of the College's founding Charter in stating: "The Objects of the University shall be to provide the highest specialised instruction and the most advanced training, education, research and scholarship in science, technology and medicine, especially in their application to industry; and in pursuit of these objects to act in cooperation with other bodies".

SUPPORTING SCIENCE, TECHNOLOGY AND MEDICINE

The first degrees awarded by Imperial College London as an independent university went to five distinguished figures: Professor Winston Wong, Mrs Lily Safra, Dame Vivien Duffield, Her Highness Sheikhha Mozah bint Nasser al Missned and His Royal Highness Prince Philip The Duke of Edinburgh, who all received honorary degrees.

Sir Richard Sykes said: "All of today's honorary graduates are prominent supporters of science, technology and medicine, and all lead efforts to improve human welfare around the world. We are proud to have this opportunity to recognise their endeavours."



Professor Winston Wong

Professor Winston Wong (PhD Physics 1975) has had an international career in business few of us could hope to aspire to. As principal founder of the GRACE THW Group, China, he has served as Chairman and Chief Executive Officer since 1996, infusing the business with his own brand of energetic leadership, vision and spirit.

He is also the founder and Director of China's Grace Semiconductor Manufacturing Corporation. Professor Wong has retained close links with the College throughout his career and is currently a Visiting Professor at the Institute of Biomedical Engineering and sponsors the Chair in Biomedical Circuits, held by Chris Toumazou. Professor Wong's foresight and passion for interdisciplinary and translational research has led to the application of technology to a new branch of sensors for chronic disease diagnostics in healthcare.



Mrs Lily Safra

Mrs Safra's commitment to bettering the lives of others was shared with her late husband, the well-known banker Edmund J. Safra, after whom the Foundation which she chairs is named. The Edmund J. Safra Philanthropic Foundation supports projects across education, science and medicine, religion, culture and humanitarian relief.

Both personally and through the Foundation, she supports research into Parkinson's and Alzheimer's diseases, multiple sclerosis, AIDS and cancer. She is also Honorary Chairman of the International Sephardic Education Foundation, founded by her husband to promote higher education for gifted, but disadvantaged, Israeli youngsters.

To date over 16,000 scholarships have been granted, including support for more than 1,000 MA and PhD candidates.



Dame Vivien Duffield

Daughter of Sir Charles Clore, one of Britain's most successful post-war businessmen and a generous philanthropist, Dame Vivien Duffield grew up with a firm belief in supporting charitable endeavours. The Clore Duffield Foundation, of which she is Chair, has donated and pledged in excess of £10 million to museum and gallery education, as well as funding Clore Education Centres within institutions including the Tate Modern and Natural History Museum.

The Foundation is responsible for the Artworks Young Artists of the Year Awards, celebrating visual literacy and creativity in schools, and the Clore Leadership Programme, designed to develop a new generation of cultural leaders for the UK. She is closely associated with a number of charities including the NSPCC and Great Ormond Street Hospital for Children.



Her Highness Sheikhha Mozah bint Nasser al Missned

In recognition of her work with the Qatar Foundation for Education, Science and Community Development of which she is Chairperson, Her Highness Sheikhha Mozah bint Nasser al Missned became the fourth person to be awarded an honorary degree.

In 2003, the Qatar Foundation inaugurated Education City, a prototypical university of the future, bringing campuses of international universities together in Qatar to share research and community-based ventures. Actively engaged in education and social reforms in Qatar, she has spearheaded both national and international development projects.

For the past four years, she has been UNESCO's Special Envoy for Basic and Higher Education, promoting projects to improve the quality and accessibility of education worldwide.



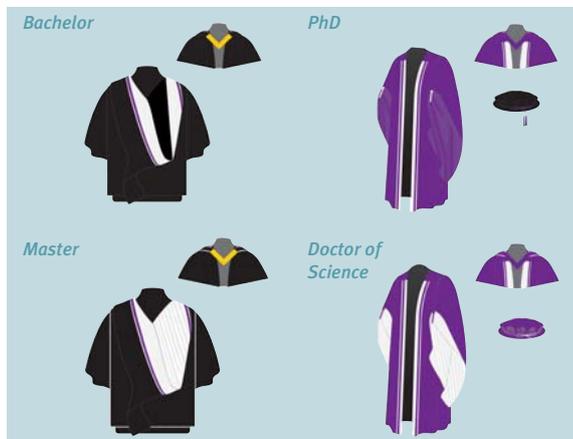
His Royal Highness Prince Philip, Duke of Edinburgh

Recognised for his wide-ranging initiatives for young people as well as his outstanding support for scientific and technological research, Prince Philip is most closely identified with The Duke of Edinburgh's Award, which aims to develop young people's self confidence and help them discover new skills. He plays a prominent part in many parts of our national life, accompanying the Queen on all her Commonwealth tours and State visits overseas, as well as tours and visits across the UK. His Royal Highness has also been involved with higher education for many years, formerly as Chancellor of the Universities of Wales and Salford and currently as Chancellor of the Universities of Edinburgh and Cambridge. He is a Senior Fellow of the Royal Academy of Engineering.

A TRIBUTE TO OUR HISTORY

Wearing a Cambridge-shape robe of purple cloth with front facings of white watered silk and sleeves held back with purple twisted cords and buttons, a purple cloth hood and a purple velvet Tudor bonnet with a white cord and tassel, the honorary graduates were also the first to wear the College's new academic dress.

The new ceremonial robes have been redesigned in purple as a tribute to William Perkin (Royal College of Chemistry), discoverer



of the aniline dye mauveine and founder of the British dyestuffs industry, and reflect the College's own identity following its independence as a university. The purple theme is not confined to the Doctor of Science dress, which was worn by the honorary graduates; it will also be evident on the Bachelors' and Masters' hoods, with the neckbands of the hoods coloured according to the graduate subject colours, and the robes and hoods of PhD graduates.

THE BEGINNING OF A SECOND 100 YEARS

William Perkin's discovery of mauveine is just one of many achievements by scientists, engineers and clinicians associated with Imperial College; among others are the discovery of penicillin, the development of the holographic method and the design of the maglev railway, which all demonstrate the continuing contribution that Imperial has made to society through research that tackles national and global challenges. The next 100 years are an exciting prospect for the College, building on the foundations of what has already been established. Sir Richard Sykes said: "One of Imperial's strengths has been its ability to change and respond to the challenges of the times. The future holds greater challenges still, but I have no doubt that Imperial is equal to them. What we do here today, the world will rely on tomorrow."

STATUE OF QUEEN VICTORIA – A BRIEF HISTORY

In acknowledgment of the long-standing relationship between Imperial College and the Royal Family, a marble statue of Queen Victoria was unveiled by Her Majesty The Queen during her visit.

The statue, which now presides over the College's main entrance on Exhibition Road, was commissioned by the University of London to mark Queen Victoria's Golden Jubilee in 1887 and the jubilee of the Charter granted by Queen Victoria for the foundation of the University. During the work Queen Victoria sat for sculptor Sir Joseph Edgar Boehm, Sculptor in Ordinary to Queen Victoria, several times.

Edward Prince of Wales originally unveiled the statue in 1889 at the former University of London building in Burlington Gardens, but the statue was moved to South Kensington when the University relocated to the Imperial Institute – an entirely appropriate location for the statue as the Institute itself was built for Queen Victoria's Jubilee. Despite the University of London relocating again in 1936, this time to Bloomsbury, and the College's expansion scheme in the 1950s and 1960s, during which much of

the Imperial Institute was demolished, the statue has remained at the College. Kept in the Queen's Tower for many years as a souvenir of the Institute, the statue underwent a conservation process to restore it to its former glory for the unveiling.

THE QUEEN OPENS NEW INSTITUTE OF BIOMEDICAL ENGINEERING

The latest developments in robotic surgery and personalised healthcare technology were demonstrated for Her Majesty when she officially opened the new Institute of Biomedical Engineering, which draws together engineers and medical researchers and clinicians from across Imperial to transform methods of medical diagnosis and treatment. Director of the Institute, Professor Chris Toumazou, said: "We are delighted that the Queen opened the Institute. Many people have put in an enormous effort to get this initiative in place. Interdisciplinary and translational research is all about mixing the core engineering and medical ingredients to create novel technologies."

The Queen viewed the Institute's work on personalised healthcare and wireless sensors, which will allow patients to be discharged from hospital earlier than is currently possible while still receiving continuous monitoring.

Professor Toumazou added: "This work has the potential to have far reaching effects for people suffering from chronic illness. Removing the need to

spend considerable and regular periods of time in hospital, while still ensuring that their health is carefully monitored, will substantially improve quality of life for a large number of people."

The royal party also visited the Institute's robotic surgery suite. These robots give surgeons the clinical and technical capabilities of open surgery but allow them to operate through tiny incisions, making patient recovery time much faster.



Lord Ara Darzi, who led the demonstration with Professor Sir Guang Zhong Yang, explained: "Minimal access surgery reduces the impact trauma of an operation on patients but it requires pinpoint accuracy and a very steady hand. Enabling the surgeon to operate via a robot represents the perfect marriage of human skill with technological advances in biomedical engineering."

More information about the Institute is available at www.imperial.ac.uk/biomedeng.

The environmental evangelist



BY LIZ GREGSON

AUSTRALIA'S GREAT BARRIER REEF, THE WORLD'S BIGGEST single structure made by living organisms; the largest sheet of falling water in the world at Victoria Falls; and the natural coloured light displays of the Northern Lights are among the many natural features of the remarkable environment in which we live. Comprising the landscape, natural resources and wildlife, 'environment' is an all encompassing term, and one that continues to capture news headlines all around the world for the power that it exerts over our existence. From the severe flooding in the UK earlier this year to the threat of Hurricane Dean further afield in the Atlantic, we are all held in nature's delicate balance.

While the human impact on the environment is not fully known, that the natural world has been damaged by human activity is irrefutable. However, Imperial College alumni around the world are playing their part in maintaining and conserving our world. One such alumnus is Sir David King, who spoke to *Imperial Matters* about his role as Chief Scientific Adviser to HM Government.

AN EVANGELIST IN THE MAKING

Sir David King made the decision to join Imperial College as a Shell Postdoctoral Scholar in the summer of 1963 as a PhD student at the University of the Witwatersrand in Johannesburg, after attending a two-week lecture course delivered by Imperial Professor of Physical Chemistry, F.C. Tomkinson.

Asked if he enjoyed his time at the College, Sir David responds: "Very much so. First and foremost, just for the quality of the work and being in constant contact with inspiring people, both from Imperial and from other universities and countries coming through the Department.

"Secondly, being in London in the swinging sixties. Amazing! I arrived here in London, and it seemed to be, for a South African in any case, a dark, wet, grey place. London hadn't really got over the second world war, but, at the same time, there it was,

establishing itself as a kind of young person's cultural centre. It was the right place to be!"

His research was in catalysis, and involved measuring the dynamics and kinetics between gases and clean metal surfaces. After an enjoyable and, at times, eventful three years at Imperial – he once accidentally blew the roof off the lab that he was working in after a line carrying liquid oxygen broke into a vat of isopentane, hospitalising him for several weeks – Sir David spent the next 34 years in a series of increasingly senior academic roles at the Universities of East Anglia, Liverpool and Cambridge. It was whilst at Cambridge, as Head of the Department of Chemistry and Master of Downing College, that he was approached about the role of Chief Scientific Adviser.

"I felt as if I was being offered a job that I knew absolutely nothing about, precisely because I hadn't worked with the government before, so I spent a difficult month trying to figure out whether it was a good move or not. Ultimately, I decided to accept, but it was like walking into a dark room with no lights on. As it turns out, I made absolutely the right decision."

A BATTLE WITH AN EPIDEMIC

Beginning the role in October 2000, Sir David was plunged almost immediately into his first major crisis. "At the beginning of February 2001, an outbreak of foot and mouth disease was confirmed," Sir David recounts. "Initially the Ministry for Agriculture, Fisheries and Food tried to deal with the epidemic by applying the lessons learnt from a 1967 outbreak, as if farming practices, and science and technology hadn't moved on since that time.

"I got together a team of people, including academics at Imperial, Cambridge and Edinburgh, to model the epidemic so that we could then design a containment procedure that was fit to the year 2001. What the government then saw, was how science could deliver into direct policy-making in real time,

because within two days of implementing what we proposed, exponential growth had turned into exponential decay.” Sir David describes the period as an absolutely frantic time, working 24/7 over several weeks to bring the epidemic under control. Deciding that he did not want to be put in that position again, he spent the ensuing months developing a new horizon scanning process – foresight – which is today rolled out into nine government departments and has involved hundreds of scientists studying a broad range of topics in depth, from flood and coastal defence management (a 2004 report helped increase funding by £300 million per annum), through to obesity.

RAISING THE PROFILE OF CLIMATE CHANGE

The environment and climate change have loomed large in the dual arenas of government and science since Sir David’s appointment and have formed part of his motivation for taking the post: “I felt there was insufficient action being taken both in Britain and internationally in respect of the enormously challenging problem of global warming and climate change.

A critical action in this area was the preparation of documentation for the government on the actual science of climate change. This formed the basis of Sir David’s 2002 Zuckermann Lecture, which was widely distributed in printed form and read by many, including former Prime Minister, Tony Blair, who, Sir David says, “was very much affected by it”.

“I feel that I have played quite a high-profile role, not just in talking to the cabinet about the seriousness of this and how much action is required to deliver lower carbon dioxide emissions in Britain, but also in verbalising the importance of establishing an objective in carbon dioxide reduction,” he says.

INSTIGATING WORLDWIDE ACTION

In 2003, the UK government announced that it intended to reduce emissions by 60 per cent by 2050, becoming the first country in the world to make such a declaration. It was a stance that simultaneously gained publicity around the world and pushed the UK into a leadership role.

Sir David explains: “Having persuaded the British government that this was a huge problem and that we should reduce our emissions, the Prime Minister was very keen to see other countries come along with us on this massive programme. So I spent four years travelling round the world, talking in lecture theatres, on the radio and television about the impacts of climate change and what needed to be done. I have committed a significant part of my time as Chief Scientific Adviser to that.” He continues: “I certainly think that climate change is the biggest challenge our civilisation has had to face because it requires collective action. We have taken collective action on an environmental issue once before, the emission of CFCs into the atmosphere, and that proved to be very successful. However that was a much more focused problem than changing our behaviour with regard to energy, but the consequences of not tackling it for

the future of our civilisation are massive.

“Through the G8 plus five, who met in Gleneagles in July 2005, we have seen an international dialogue and I know that very real progress has been established through that. However, in my view we have to have an international agreement in place around the action required by early 2009 at the latest and that is very challenging.

“I think the UN objective in the framework convention for climate change that we should avoid dangerous climate change is now no longer possible and dangerous climate change is already with us. If you look at the hot summer in Europe this year, the UK’s hot summer in 2003, the hurricanes, the rainfall; these are all patterns of weather change which are all predictable within climate change science.

“If we had acted 10 years ago we might have avoided many of the dangerous impacts. By acting now we can very likely avoid catastrophic impacts beyond 2050 to the end of the century. But if we don’t take action then it’s going to be a whole lot worse for our grandchildren.”

THE SEARCH FOR AN ALTERNATIVE TO FOSSIL FUELS

Another indication that there is growing action in the UK was Sir David’s recommendation that the government start investigating alternative energy solutions. “One of the first things that I did in post,” he says, “was set up a team to look at the current state of energy research in the UK. That team reported in 2001, effectively saying that when the electricity and gas boards were privatised, energy R&D in Britain virtually collapsed, leaving a massive gap.” Fast-forward five years to the Energy Technologies Institute announced by then-Chancellor, Gordon Brown, in 2006. The venture was tasked to raise £1 billion over 10 years, with half of the investment coming from industry. Within a year the funding is virtually in place and there is involvement from all key sectors; oil companies, utilities and engineering firms.

Sir David explains: “Energy efficiency is the absolute win-win in this game. If we can use energy more efficiently, we can maintain a high standard of living and at the same time deal with the problem.”

When asked about his proudest achievement to date as Chief Scientific Adviser, Sir David responds in succinct terms: “I suppose I would have to say raising the profile of climate change around the world.” A singularly concise understatement for what has been a singularly vast undertaking.

We are delighted that Sir David King will be providing the keynote lecture at the Alumni Reunion 2007, entitled *The global challenges of climate change*. Find out more about the reunion weekend, taking place on 14–16 September, at www.imperial.ac.uk/reunion2007.

AS BEAUTIFUL AS IT MIGHT BE, WATER HYACINTH HAS CAUSED IRREPARABLE DAMAGE TO LAKE VICTORIA'S ECOLOGY. A LONG-RUNNING BATTLE TO CONTROL THE WEED IS UNDERWAY.

THE BEAUTIFUL PURPLISH PETALS AND GLOSSY OVATE LEAVES OF the South American water hyacinth were not a welcome sight when they were spotted in the Ugandan waters of Africa's largest fresh water lake, Lake Victoria. Its stunning foliage might look harmless, but lurking beneath is a thick, heavily branched, dark fibrous root system that enables the weed to proliferate at an

leaf's epidermis, scraping off small pieces in a rectangular feeding pattern. The tunnelling weevils also attack one of the very mechanisms that give the water hyacinth its strength, the bulbous spongy tissue that keeps it afloat. The weight of water seeping into the plant tissue pulls mats of the weed below the water's surface, where submerged, they begin to decay.

Looks can be deceiving



BY ZOË PERKINS

alarming rate. Nature's delicate ecological balance controls the propagation of the water hyacinth in its natural habitat, but free from its natural predators the water hyacinth thrives, forming thick mats of vegetation on the water's surface, many hundreds of hectares in area.

It remains a mystery how the pernicious invader, native to the Amazon basin, became entangled with Lake Victoria's own flora, but of the damage it has caused there is no doubt. Unable to break through the dense blanket of weeds, life-sustaining sunlight diminished, suffocated native verdure died and decayed, oxygen levels depleted and biodiversity decreased. The devastating effects were also felt among the human population; drinking water fouled by rotting vegetation led to an increase in cases of gastrointestinal diseases and reduced fishing catches resulted in lower incomes and the threat of widespread famine.

Left unmanaged, Lake Victoria's water hyacinths would continue to consume the lake but alumnus **Dr James Ogwang** (MSc Applied Entomology 1984), a Biocontrol Entomologist at Uganda's National Agricultural Research Organisation (NARO), helped put a stop to this by importing *Neochetina bruchi* and *Neochetina eichhorniae* – semi-aquatic beetles, commonly known as weevils, that feed exclusively on water hyacinth.

Explaining the premise of his role, James said: "Biological control entomology uses the natural enemies of pests and weeds to reduce the damage attributed to them, while conserving the environment. A good example is the ancient practice of using domestic cats to control rats and mice in homes. The cat does not eradicate the pests, rather it reduces their populations to a point where they cease to be a menace."

Propagated in tanks by inoculating the petiole, the stalk that joins the leaf to the plant's stem, with weevil eggs imported from Benin, West Africa, the weevils were then set to work on the water hyacinths clogging the banks of the lake. Detrimental to photosynthesis, weevils cause very distinctive damage to the

This pesticide-free method of control prevailed over alternatives due the weevil's specificity, which leaves native species untouched, and because it does not damage the source of raw drinking water for the local population. James affirmed: "The use of natural enemies does not pollute the environment; rather it helps to conserve it."

Uganda, Kenya and Tanzania, the lake's bordering countries, successfully eradicated 90 per cent of the Lake Victoria's water hyacinth using this method. "The result of our work was amazing," James says, "Water hyacinth biomass was reduced to insignificance. Water transport, electricity supply, fish catch and export all jumped back to normal levels. Similarly, cases of gastrointestinal diseases, malaria and bilharzias were drastically reduced."

Having naturalised in many of the world's subtropical and tropical climates, the problems of water hyacinth are wide-reaching. James and his team's topical success was the subject of National Geographic's 2005 series *Strange Days on Planet Earth*, in which the *Invaders* episode tracked various species that are making their homes in places where they don't belong.

Water hyacinth is just one of the pests that James tackled during his role as Head of NARO's Biocontrol Unit. He has also taken on cassava mealy bugs, cassava green mites and cereal stem borers. However, in rural Uganda, where James grew up, the control of cotton bollworms using their natural predator, the ant *Lepisiota sp.*, is nothing more than a way of life for the agricultural communities producing organic cotton. James recalls: "In cotton gardens where the ants (locally called Ngingingini) have nests, cotton yields are high, so farmers would redistribute ants' nests to new fields to increase cotton yield." It was against this background that James pursued his academic career, initially at Makerere University, Uganda, and subsequently as a postgraduate at Imperial College where he explored the control of the plutella moth on Brussels sprouts using a microbial pesticide. Ultimately this led to a role that has benefited millions.

“APPLICATION OF THE PHYSICAL AND BIOLOGICAL SCIENCES HAS MADE TODAY ARGUABLY THE BEST OF TIMES: WE LIVE LONGER AND HEALTHIER LIVES, FOOD PRODUCTION HAS DOUBLED IN THE PAST 35 YEARS AND ENERGY SUBSIDIES HAVE SUBSTITUTED FOR HUMAN LABOUR, WASHING AWAY HIERARCHIES OF SERVITUDE. BUT THE UNINTENDED CONSEQUENCES OF THESE WELL-INTENTIONED ACTIONS – CLIMATE CHANGE, BIODIVERSITY LOSS, INADEQUATE WATER SUPPLIES, AND MUCH ELSE – COULD WELL MAKE TOMORROW THE WORST OF TIMES.”

Professor Lord Robert May, *New Scientist*, November 2006

Securing a global future

BY LIZ GREGSON

WHAT IS CLIMATE CHANGE?

In the vast majority of scientific circles, it is accepted that climate change is a real and significant issue; the greatest environmental challenge facing the world today, warranting a global response to allay its damaging effects.

That the Earth has warmed by 0.74°C over the last hundred years and that around 0.4°C of this warming has occurred since the 1970s is unequivocal fact, and the February 2007 Fourth Assessment Report of the Intergovernmental Panel on Climate Change¹ leaves little room for doubt that human activity is the primary driver of these changes.

The main human influence on the world's climate is the emission of greenhouse gases – carbon dioxide, methane and nitrous oxide. The accumulation of these gases in the atmosphere strengthens the greenhouse effect, which occurs when the heat produced by the sun's rays entering the atmosphere is retained, causing global warming.

Currently over seven billion tonnes of carbon dioxide is emitted each year through worldwide fossil fuel use, and added to that is an additional 1.6 billion tonnes that are emitted by land use change, mainly deforestation. The concentrations of these gases in the atmosphere have now reached unprecedented levels not seen for tens of thousands of years.

The report goes on to state that mean global temperatures are likely to rise between 1.1°C and 6.4°C above 1990 levels by the end of the twenty-first century. This will result in a rise in global sea levels of between 20 and 60 centimetres over the same period, continued melting of ice caps, glaciers and sea ice, changes in rainfall patterns and an increase in tropical weather phenomena, such as cyclones.

For the UK, climate change means hotter drier summers, milder wetter winters, higher sea levels and an increased flood risk to coastal areas. Across the globe, there will be more intense heat waves, droughts and more flooding. Severe problems for regions where people are particularly vulnerable to changes in the

weather, such as Bangladesh, are a possibility, and food shortages and the spread of disease are commonly predicted, implying that the social, environmental and economic costs of climate change could be momentous.

THE GRANTHAM INSTITUTE FOR CLIMATE CHANGE

The Grantham Institute for Climate Change was launched in February 2007, with the announcement of a £12.8 million gift from the Grantham Foundation for the Protection of the Environment, the largest private funding given to climate change in the UK to date.

Prior to this many researchers and research teams around the College were already engaged in a broad spectrum of work related to climate change, with 10 or more senior academics and their teams spending close to 100 per cent of their research time working in this area, and many others spending a significant proportion of their time also. The launch of the Institute enables Imperial to build on this extensive and faculty-wide expertise, bringing all of the College's climate change researchers together under one banner.

Located centrally on the South Kensington Campus, where world-leading scientists are co-located with experts in economics and policy, the central London location facilitates extensive interaction with government and industry, as well as other major public institutions and the general public.

The Institute's research strategy is built solidly upon the quantitative measurement and modelling of climate change and its global consequences, and will enable the College to contribute towards the strategic planning of the world's response, both through the development of mitigation technologies and by making itself heard and impacting on public and private policy. The ultimate aim is to work towards and play a major role in creating a more secure global future in terms of the world's climate.

¹ You can read more about the report at www.ipcc.ch

The current political agenda means that industry is obliged to review its processes to reduce climate change risks and liabilities. Furthermore, governments must proactively plan policies and projects for urban pollution control, agricultural growth, flood management and disaster recovery. There is currently a huge knowledge gap in both the private and public sectors. The Institute will help to bridge the gap between academic research and both industrial applications and government policy.

Imperial's Centre for Environmental Policy (CEP) has regularly provided policy analysis informed by science and technology, and incorporates the £1.2 million Technology and Policy Assessment Function of the UK Energy Research Centre. Imperial academics working in the CEP provided reports on low carbon energy technologies to the Prime Minister's Office, as inputs to G8 strategy development in 2002 and 2004, as well as input to the Stern Review on the Economics of Climate Change in 2006.

At the core of the Grantham Institute for Climate Change lie the research capabilities that are required for scientific and technological developments in this area. However the Institute will play, and in fact is already playing, an important role in other ways.

One critical area is outreach; educating the public in all aspects of climate change and its consequences, providing a one-stop shop for robust and reliable climate change information for the general public and the media. The Institute will organise an annual Grantham Conference, designed primarily for the academic community and opinion formers, as well as the annual Grantham Public Lecture, designed to engage a lay audience.

Another is the provision of scholarships for high-quality PhD-level scientists and engineers in climate change, enhancing world levels of expertise in this discipline. The first seven such students begin their research at Imperial in areas such as ecology, photovoltaics, hydrology, wind energy modelling and CO₂ sequestration in autumn 2007.

It is anticipated that the Institute would be able to offer specialist technical courses in climate change and related areas in the natural, medical, engineering and mathematical sciences. These courses could involve, for example, training in the use of experimental apparatus and equipment. Training in computational techniques and modelling would also be offered.

The research programmes and other activities of the Institute will be overseen by a Management Board, led by a Director who will develop the scientific vision of the Institute. The search for a Director of the Institute is well underway, and as we move towards the appointment, an interim Grantham Institute Operations Committee has been established to handle day-to-day running, chaired by the Principal of the Faculty of Natural Sciences, Professor Sir Peter Knight.

The Management Board includes both Imperial representatives – the Rector, Sir Richard Sykes, and Principal of the Faculty of Natural Sciences, Professor Sir Peter Knight – as well as Jeremy Grantham and two individuals who represent global environmental organisations – Carter Roberts, President and CEO of WWF, and Fred Krupp, President of the US pressure group Environmental Defense. In addition, an Advisory Board will be appointed to oversee the strategic vision of the Institute, as well as to promote the Institute's work to a wide variety of external audiences around the world.

THE SCIENCE OF CLIMATE CHANGE

The combination of research expertise in one place means that the Institute is uniquely placed to provide solutions to the healthcare, environmental and engineering problems caused by climate

change, as well as to influence the international policy makers charged with solving these problems.

Prior to the foundation of the Institute, Imperial researchers already worked across a broad range of expertise, all of which have now become a key part of the Institute. Areas include:

- **Public health specialists developing ways to forecast heatwave events and assessing health risks associated with heat stress and climatic change.**
- **Engineers identifying feasible flight-planning strategies that would reduce the warming effect of aeroplane condensation trails on the Earth's atmosphere.**
- **Atmospheric physicists measuring the effect that solar activity has on climate, leading to more accurate climate change models.**
- **Civil engineers assessing and mitigating flood risks resulting from climate change, which could lead to mass migrations in low-lying areas.**
- **Policy advisers within Imperial's Centre for Energy Policy working at the interface of energy policy and technology who undertake research in bioenergy, hydrogen and fuel cells, decentralised energy systems, and energy in developing countries. The Centre's Professor Dennis Anderson was Special Adviser to the Stern Review on the Economics of Climate Change in 2006.**
- **Ecologists studying the impact of change on population dynamics, ecosystem function and large-scale patterns of biodiversity in terms of their response to climate change.**
- **Atmospheric chemists exploring the chemical processes which affect the concentrations and lifetimes of trace substances (such as ozone, methane and nitrous oxide) in the atmosphere.**
- **Hydrologists generating models of the impact of climate change on water resources, water quality, rainfall and flooding.**
- **Quantum physicists pioneering the use of nanostructures to produce highly efficient photovoltaic cells that convert sunlight into electricity in smart windows.**
- **Multidisciplinary mathematicians, physicists and engineers developing a world leading, high resolution, global ocean circulation model to study open-ocean deep convection (for example in the gulf stream) and ocean-atmosphere coupling, one of the big unsolved problems in climate modelling and prediction.**

Of the donation and the launch of the Institute, Rector, Sir Richard Sykes said: "The Grantham Institute will draw on and expand the existing expertise base of Imperial's world leading academics across the entire spectrum of climate change research. The Granthams' vision in making such a generous contribution to the vital climate change work of Imperial means that our scientists will be able to continue and develop their work to understand and address the greatest challenges that we face."

Read more about the progress of the Institute at www.imperial.ac.uk/climatechange.

Imperial Matters spoke to the man behind the biggest donation to climate change research in the UK to date. Chairman of Boston-based investment management company GMO, British-born Jeremy Grantham is a well known figure in the financial world. His wife, Hannelore, is the Director of the Grantham Foundation for the Protection of the Environment, which is administered solely by the family and in which the couple's three children are also involved. The Grantham family established the Foundation in 1997 to support natural resource conservation programmes both in the United States and internationally.

When did you first become aware of climate change as an issue?

I don't think it reached the top of our list until four or five years ago. We found that an increasing fraction of money from the Foundation was going towards it. And then shortly before I bumped into Imperial, we decided that perhaps half of the funding would go to climate change and the other half to other aspects of environmental protection.

How have you educated yourself about the issue since then?

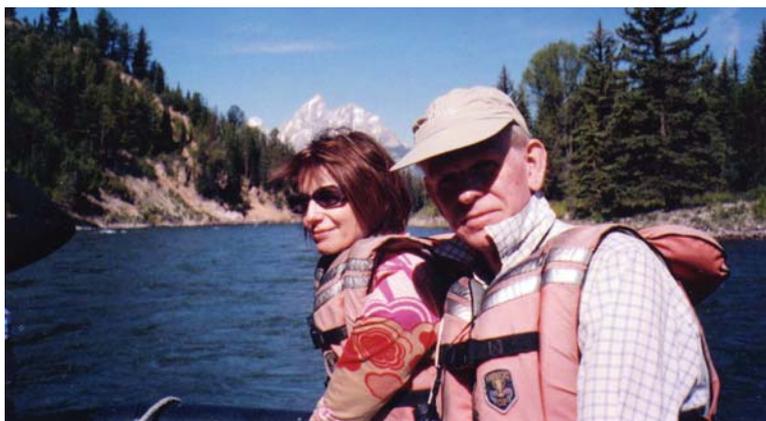
By talking to the movers and shakers of various NGOs, and then reading what you might call the standard material, and of course there are the wonders of the internet. I have under my favourites now quite a selection of resources so whenever I realise I don't know something, which is pretty often, I can go back and check it. Within half an hour these days, you can dig up as much as the layman can understand on any aspect of the climate.

Do you devote a good proportion of time learning about climate change?

No, but I do chip away at it. It's probably one per cent of my time and that allows you to do quite a lot. Assuming we have ten hours a day, that's six minutes a day – 42 minutes a week, which probably captures about what I spend perusing something or other on climate change each week.

Why did you choose to make a gift for climate change research to a UK institution rather than one in the US?

Very conveniently, we were introduced to Imperial just after you had made your decision to set up an entity addressing climate change. The fact that Imperial was already doing this was critical, because to go in there and say 'I've got some money, let's think of something' is not nearly as satisfactory as knowing that I was dealing with an institution that had independently made the decision to go ahead.



Our timing was very good since as soon as we said 'hello' to the College, the US side of the world had an exponential increase in their interest in climate change. I was also a little concerned that, as a Brit, I had not given anything on that side of the Atlantic.

Imperial has encouraged and welcomed our input and we have made introductions to a couple of people who now sit on the Management Board of the Institute; the Head of the WWF-US and the President of Environmental Defense. These are important people who know the politics and know some of the practicalities of the environmental world. That, I think, is a good input into a UK institution.

Finally, I think that in general the UK is better positioned to lead a charge and be fairly high profile about climate change than the US currently is.

So my gift was killing a lot of birds with one stone. More leverage, in a better place for environmental leadership, less hostile than the US has been, and an institution that had made an independent decision to focus on climate change anyway.

What hopes do you have for the Grantham Institute for Climate Change?

There are two aspects. One is the encouragement of good science and part of that is to try and form an alliance of leading scientific institutions around the world in this field, and in doing so to try and counter some of the self-interested bad science that is deliberately put about to obscure the issue. I think Imperial is well placed to do so.

The second is to play a role in the projection of this good scientific data outward to the political bodies in the UK and Europe and around the world, and to help to turn it into good policy, by making good policy suggestions.

So it's good science and good policy, and good projection of both to the political world, and also to the public.

What policy changes would you like to see effected in the area of climate change?

That really isn't for me to say but most of what should be done from a science point of view is getting to be pretty well understood now and I have no reason to disagree with it. It's an approach where you do lots of different things, where you recognise that there is no magic cure.

You need a lot of persuasion to get the general public to do even the economically advantageous things, like changing their light bulbs, updating their refrigerators and getting more efficient cars. They don't do those very willingly, but as they become more aware of the problem, they probably will do more.

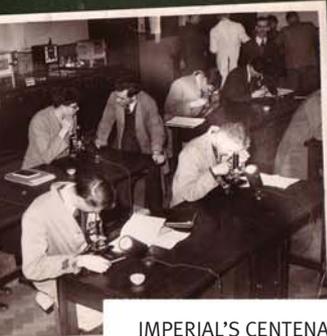
The key is always government. That's where all the real money is and so the prime directive if you will is to change the attitude of government, to make them realise not only that they should do this, they really have to do this, and that it is not as politically dangerous, if handled well, as they fear.

Do you see yourself as an evangelist for philanthropic support in the area of climate change?

The single most important aspect of the next 50 years is protecting the environment, it transcends everything else. So it's pretty easy to be an evangelist, albeit a very part-time amateur evangelist.

WE'RE CELEBRATING 100 YEARS OF LIVING SCIENCE WITH 100 STORIES.

A trip down memory lane



BY ZOË PERKINS

IMPERIAL'S CENTENARY YEAR IS THE PERFECT TIME TO LOOK BACK AT the past 100 years, so we're collecting together the memories that tell the tale of the College's first century through the eyes of the people who have lived it. We want to hear the stories that shaped your time at the College, whether they are about your old lecturers, the College's much-loved mascots, competitive inter-collegiate sporting events, or mischievous Morphy Day pranks. The colleges and schools that merged with Imperial after 1907 are as much a part of that century as the constituent colleges are, and we would be delighted to hear your memories too.

You can read excerpts from some of the stories that have already been submitted below, with the full stories on the Centenary website at www.imperial.ac.uk/centenary, along with many more!

STUDENT PRANKS ON EXHIBITION ROAD

Back in the 1930s when **Rogers Knight** (Mechanical Engineering 1938) was a student, Imperial's constituent colleges dominated the South Kensington landscape, and the College Porter, dressed in his formal red morning coat, greeted the 1,200-strong student body by name every morning; but student pranks were just as common: "One famous one was when the pelican beacon [pedestrian crossing] first came in. The students organised a walk from the Albert Hall into Kensington Gardens. It was something like 25 minutes before somebody finally decided that the queue had to be broken, to let the traffic proceed."

Rogers also recalled the fun to be had with three policemen acting as a speed trap on Exhibition Road: "If the first policeman thought a car was exceeding 30 miles per hour, he flashed his handkerchief, the second policeman immediately tripped his stopwatch, and as you passed him he tripped it again. And if you were exceeding the limit the third policeman stopped you. Well this was just too tempting! The usual trick was to make absolutely certain that you passed the first policeman at 35 or 40mph, if he waved his handkerchief you simply stopped in front of the College, and there was frustration all round. If he didn't wave his handkerchief you just kept going, passing the second policeman at about 50mph, and there was nothing he could do about it."

A SURPRISE VISITOR

A visit of rather short notice that then Prime Minister Margaret Thatcher and her husband Dennis made to the College during Sir Eric Ash's tenure as Rector is recalled by **John Smith**, College Secretary and Clerk to the Governor 1979–89, with affection and amusement: "During the long vacation, probably towards the end of July or early in August, Margaret Thatcher suddenly responded to an open invitation to come and visit the College. She gave us about 10 days warning, and her visit would be in the middle of August, when, to put it mildly, the College was sort of enjoying its usual summer tranquillity.

"We put together a programme for her, and this meant summoning people from beaches from all over the world. Of course there were no undergraduates at all and all of the research students available were almost entirely from Asia or Africa. So she made a few comments, as she had done before when she came to the College: 'Why can't you teach all our children to do all this?'"

"At the end I remember Eric Ash saying to her: 'Very good of you Prime Minister to spare so much time to come and visit', and she said: 'Oh, it was no trouble at all. Dennis and I are just on the way to the dentist and it was convenient', which was a great put down."

WARTIME IMPERIAL

Wartime brought a very different student experience for those studying at the College: squeezing four terms into one year, as well as belonging to the local Home Guard. **Tony Cowley** (Chemical Engineering 1945) recalls a time when fire watching was a regular part of student life: "One incident remains in my memory, and that is of a fellow student and life-long friend Peter Beck (Chemical Engineering 1945), who joined the Hyde Park Home Guard, who were eventually put in charge of the anti-aircraft rocket battery (whose rockets were electronically fired). One day he walked into the

electrical lab laughing. He had been to an army lecture on



GEORGE BENT, ANDREW COGAN, GILLIAN EVANS, SUE MERRIMOTT, PAUL WINTON, PETER CLARK, PETER ALLEN, THEODORE CODDER, WARREN CAVILL, NEVILLE SMILES



electricity, and was told there were two sorts: electricity that flowed down black wires and positive electricity that flowed down red wires.

"Delays due to enemy action were common and towards the end of the course the doodlebugs started up. There were always new, strange sounds. During one lecture an unusual and loud sound was heard, everyone immediately dived under the desks only to emerge a few minutes later when we realised that the noise was caused by the steel wheels of a sack barrow delivering something weighty. "Getting on to the tube at Gloucester Road one day, the sirens went off. Going down in the lift to take shelter were two women with kids, 'It's all this bloody science, that's what it is' observed one. She repeated it all the way down to the platform."

DRESSING ROOM BANTER AND A QUICK SPRAY OF RALGEX

Although disappointed to have missed the Imperial College football team's highlight of the decade – a practice match against England – by just one week, **Giles Breerton** (Mechanical Engineering 1980) recalls the games he did get to play for Imperial: "On getting off the coach from the Union, Arthur Lovejoy, our beloved groundsman, always would offer his usual cheery greeting, amply embellished with expletives. During my 40-odd years of playing, coaching and refereeing football matches, I've never met anyone since who could slice the half-time oranges into so many pieces.

"Back in the 1970s, Harlington had beautifully kept fields, but always gale-force winds. Whenever we left, there always seemed to be a massive scrum at the door of the coach as we scrambled to get a seat, even if there were only 11 of us and the coach seated 60. Maybe they should have strengthened the mathematics entrance requirements!

"The dressing room banter, and exactly what can be cured with a quick spray of Ralgex, still seems as clear to me as if it were yesterday. But most of my memories are of a handful of games in which we were two or three goals down and came back to win. And of my many team mates who gave it everything, in every single game."

MEMORIES OF THE EARLY 1980s

"Mastering the use of punch cards and not dropping the 200 cards you'd just spent hours perfecting was a necessary survival skill, but we did have fun punching greeting cards to each other," said

Ella Shum (Computing 1981) of her first year at the College. "Many of the punch card machines were damaged when they had to duplicate a whole column of holes, a very unnatural act for this IBM invention. We also had to learn to decipher error messages like illegal operation and post-mortem dump – who could predict that after graduation I would make a living as a computer consultant, explaining these un-English messages to tearful computer users?

"Southside was of course the watering hole for all of us. Soo Cheah (Mathematics 1980) and I decided we would drink a Remy Martin for each round of beer the boys had, so needless to say, there were many intoxicated evenings.

Michael Chang's twenty-first birthday celebration was one of the craziest. However, since he is now a Professor, I will refrain from posting the photos which he once begged me to give him the negatives for.

"I was encouraged to run for President of the Chinese Society, which no woman had ever run for before. Given that almost no women were present at the society's last few parties, I promised that there would be more women than men at the next party if I were elected – I should have known then I belonged to the marketing world – I won. For our first function, we had a farewell party for the graduating class at Beit Hall. As promised, there were more women than men, but it was not that hard really. I stuffed flyers under doors of students from nursing and secretarial colleges at my Catholic hostel – they were dying to meet Imperial College graduates."

RESCUING MASCOT MIKE

The City and Guilds had Bo', the Royal School of Mines had Clem, and the Royal College of Science had Jez, but until 1965 the College was without a steal-able mascot. That was until a committee of representatives from each college produced a heavy, scale-accurate micrometer called Mike. **Ralph Cornforth** (Physics 1967), who spent many hours machining Mike's steel parts on an ancient lathe in the Mechanical Engineering machine shop, remembers the first time the mascot was stolen from its concrete plinth in the Union: "The first college to steal Mike was University College London (UCL), but they had to cheat massively to do it.

"They hid a sneaky scumbag in the Union building after a dance. In the middle of the night, this apology for a human being let other low-lives into the building via the back door. These disgusting creeps brought with them oxy-acetylene cutting equipment and used it to cut the clamps securing Mike to the plinth. All of this was, of course, completely against universally accepted mascot-stealing rules!"

Mike was held in a room above a ballroom at UCL, encased in a cement block, but Imperial's rescuers arrived prepared: "We had picks and sledgehammers and were prepared to do whatever it took to get Mike home. After 20 minutes or so of pounding, the room was covered in cement pieces and dust. At this point, a panicked security guard rushed in and said the ceiling of the ballroom underneath was cracking. By that point we had knocked all the corners off the cement block and cut the weight down somewhat so we decided to leave and take Mike with us.

"Mike's recovery back to mostly pristine condition included using a hydraulic press to straighten his frame after the brutal treatment he had received in the hands of those terrible people at University College."

You can submit your own stories for inclusion on the Centenary website by emailing your memories and photographs to centenary@imperial.ac.uk or sending them by post to Centenary Communications Team, Level 4 Faculty Building, Imperial College London, South Kensington Campus, London SW7 2AZ. Please include your name, department and the years that you were at Imperial.



IMPERIAL MATTERS SPOKE TO SOME OF THE COLLEGE'S ENTERPRISING ACADEMICS AND ALUMNI, WHO ARE COMMERCIALISING THEIR RESEARCH IN SCIENCE, ENGINEERING AND MEDICINE, TO FIND OUT THE SECRET TO THEIR SUCCESS.

Inventor's corner

BY ABIGAIL SMITH AND CHARLOTTE STONE

COLLABORATION: THE KEY TO HEALTHY RELATIONSHIPS

Professor **Marc Feldmann**, an internationally renowned medical scientist and inventor, received a further accolade at the 2007 European Inventor of the Year Awards, the European Patent



Office's Lifetime Achievement Award for research leading to anti-TNF therapy, which has helped treat millions of patients worldwide for arthritis and other auto-immune diseases.

Professor Feldmann and his long-term

collaborator **Sir Ravinder Maini**, from Imperial's Kennedy Institute of Rheumatology, have already received other prestigious awards, including the Crafoord Prize of the Royal Swedish Academy in 2000 and the Albert Lasker Clinical Research Award in 2003 for their research.

He was not initially optimistic about winning the award: "The European Patent Office initiated these awards to help raise the profile of inventors who have had considerable impact on the economy. Unfortunately, most of our discoveries' economic impact has been with US rather than UK companies, who were less willing to take a risk on original, untried ideas."

Professor Feldmann describes his research alongside the pharmaceutical industry as "a normal and necessary element of our type of work. For research to become successful and benefit patients, you need support from a company with major resources to develop it."

He advises other inventors to build on relationships they have already established with companies. "You need to find a 'champion' within a company who wants to take on a risk with something new and see a project through."

Professor Feldmann believes that being part of the 'biotech revolution' was down to a combination of "hard work, good luck, talented colleagues and good financial support" from, in his case, the Arthritis Research Campaign. He was fortunate to have ideas which could be developed because of new techniques in molecular biology and immunology.

"As the first group to discover the rate-limiting steps in rheumatoid arthritis, and looking for them in the cytokine family, we were fishing in a new pond and caught the biggest fish. The revolution in rational therapy, based on an understanding of critical disease molecules, is only just starting and our discovery was among the first." Professor Feldmann is confident that his approach to treatment of rheumatoid arthritis could eventually be used in many more diseases. "TNF belongs to a family of proteins called cytokines which are involved in every biological process. It should be possible to treat every disease by discovering and then blocking the appropriate cytokine."

KEEPING IT IN THE FAMILY



Dr **John de Mello** is a member of the team that recently won the Royal Society's Brian Mercer Award for Innovation in Nanotechnology. He is a Senior Lecturer in Nanomaterials in the Department of Chemistry and a founder of spin-out company Molecular Vision, together with his brother, Professor Andrew de Mello, also from the Department of Chemistry, and Professor Donal Bradley, Head of the Department

of Physics.

John enjoys the challenge of working in a spin-out company: “I don’t think you’re ever quite prepared for the sheer hard work and effort involved in getting a company off the ground. It’s all a bit daunting in the early days and it helps to have companies like Imperial Innovations on hand to provide advice.”

He explains the biggest difference between working in academia and in a spin-out company is the need to focus, saying: “In academia, you’re generally driven by curiosity – it took me a while to realise that what’s interesting to an academic isn’t necessarily what’s important to a company.”

The Brian Mercer Award of £250,000 is a welcome boost to the team. Dr de Mello explained that the funding would be used to develop new technologies for solar electricity developed in the Departments of Physics and Chemistry at Imperial. He said: “These technologies have reached that point where they’re just a bit too applied for the Research Councils but still too early stage for most venture capitalists. The Brian Mercer funding bridges this gap perfectly.”

Working with his brother at Imperial was unplanned. When asked how he finds it, he joked: “It’s absolute hell, but mum said I had to.”

His previous employment before joining Imperial included a brief stint in the civil service. He said: “I couldn’t wait to get back to science. Let’s just say the civil service wasn’t for me, but at least they taught me to touch type.”

CARO’S CREATIONS

Professor **Colin Caro**, Department of Bioengineering, has been an academic for over 50 years, and until the 1990s he had never seriously attempted to commercialise his research, however recent changes in attitude have changed all that.



Professor Caro explained: “Previously, it wasn’t seen as the proper thing to do – it was a common belief that you should not make money from your research.”

Easier access to commercialisation resources, both within Imperial and the academic world at large, has led Professor Caro to take on more work than in his previous 81 years. He said: “The

satisfying feeling of truly advancing science and doing some good has always been my main motivation.”

His research has advanced science in two very different areas and has resulted in the formation of two companies: Veryan Medical and HeliSwirl. Veryan Medical’s development of stents and grafts helps lengthen the life of bypass grafts, whilst HeliSwirl uses the same technology to improve fluid flow, which reduces operating costs and energy use in a broad range of fluid handling industries and benefits the environment. HeliSwirl recently won the 2006 Amec Award for Innovation and Excellence in SMEs (small and medium sized enterprises) at the prestigious Institute of Chemical Engineers (IChemE) Gala Awards.

The engineering application of Professor Caro’s research was progressed by Imperial Innovations and Veryan Medical’s CEO Philip Birch, through their collective knowledge and understanding of industrial markets.

Professor Caro explained: “Things are a little less hectic now

the companies are maturing and have a well established and experienced management team to guide them forward.” He feels that he is fulfilling his aim of advancing science in both medicine and the environment.

CATCHING THE BUSINESS BUG

Operating under the banner ‘One day you will need more than just a degree’, Imperial’s Entrepreneurship Centre gives students the opportunity to explore their innovative ideas and develop the skills needed to turn them into successful business ventures.

Riccardo Matjaz Bennett-Lovsey (PhD Biology 2005) is one of the centre’s success stories. Now working with Imperial spin-out



company Equinox Pharma, Riccardo arrived at the College in 2002 to carry out a PhD in bioinformatics, without any expectation that he would end up learning as much about business as about science.

He was persuaded to join a team entering the Entrepreneurs Challenge, a business plan competition run annually by the

Entrepreneurship Centre. The team won the runners-up prize of £5,000 with their plan for a technology providing an alternative to antibiotics for treating bacterial infections.

This success triggered a long-term enthusiasm for business plan competitions, and the team went on to perform strongly in several more. “We probably wouldn’t have carried on if we weren’t doing well, but we were and it became a hobby,” Riccardo recalls.

His enthusiasm led him to apply for and receive an Enterprise Fellowship delivered by the Royal Society of Edinburgh, and funded by Scottish Enterprise and the Biotechnology and Biological Sciences Research Council. This enabled him to study for an MBA at the University of Dundee and also provided a year’s salary that allowed him to work with Equinox Pharma, a biotechnology company founded by his PhD supervisor Mike Sternberg, Division of Molecular Biosciences, with fellow Imperial academics Stephen Muggleton, Department of Computing, and Paul Freemont, Division of Molecular Biosciences.

Following a recent injection of £500,000 from a private investor and Imperial Innovations, Equinox Pharma has taken up a place in the newly-opened BioIncubator and offered Riccardo a full-time position. Professor Sternberg says: “Riccardo has been a major help to Equinox as he combines a detailed understanding of the science with a keen insight into commercial opportunities. His enthusiastic contribution has been most helpful in obtaining funding for the company and developing its IP portfolio.”

Simon Barnes, former Director of the Entrepreneurship Centre, says Riccardo’s experience sums up exactly what the centre aims to do. “Riccardo is a great success story – a bright, technically gifted student who suddenly caught the entrepreneurship bug,” he says. “The centre can take students like this who may not have any background in business and give them the know-how they need to harness their talent.”

IMPERIAL MATTERS FINDS OUT WHAT THE FUTURE MIGHT HOLD FOR THE COLLEGE, NOW AN INDEPENDENT UNIVERSITY FOLLOWING THE COLLEGE'S WITHDRAWAL FROM THE UNIVERSITY OF LONDON.

Farewell to the University of London



BY ALEXANDRA PLATT

OVER THE PAST 18 MONTHS DR RODNEY EASTWOOD, DIRECTOR of Strategy and Planning, has led the project which saw Imperial withdraw from the University of London on 8 July 2007, its one hundredth birthday. *Imperial Matters* spoke to him during the College's birthday week about what Imperial's status as an independent university means to the College.

What is the history of our collaboration with the University of London?

Imperial became one of the University of London's constituent colleges in 1929 and has been awarding its degrees since 1908. At the time the University of London had a reputation for being particularly forward thinking – for example, they were the first University to accept female students and offer engineering qualifications.

Why have we chosen to leave?

The College has debated leaving the University for a long time. Since the mid 1950s there has been much less reason to remain a member due to the change in funding arrangements. Whereas previously funding came to the College via the University, since the middle of last century Imperial has received this directly from the Government, making it a financially independent institution. There has also been less need to trade on the University of London name as Imperial has become more well known and highly respected in its own right.

What will change now we have our independence?

Students will now gain an Imperial qualification. I can think of no other organisation of our quality that gives other people's degrees, so I believe students will welcome the chance to gain a degree directly from the institution that they have been committed to throughout their studies. Those who are already part way through their courses have been able to choose which degree they

would like to receive. There are also financial benefits as Imperial will now have about half a million pounds to distribute throughout the College that until now was paid annually as a subscription to the University of London.

What does Imperial's withdrawal mean to the University of London?

Many other colleges feel that they benefit from membership of the University and have no intention of leaving. I wouldn't be surprised, however, if a few others felt that their own brand was strong enough to support a move away from the University too. It will be interesting to see what happens next.

You can read further details about the College's withdrawal from the University of London at www.imperial.ac.uk/planning/whatwedo/uol.

From 1 October 2007 Dr Rodney Eastwood will become College Secretary and Clerk to the Court and Council, following Tony Mitcheson's retirement, after 10 years in this post, at the end of September 2007.

Welcome to the Imperial College Association pages

The College's Centenary celebrations are now in full swing and our groups, both in the UK and abroad, have been right at the centre of the festivities. Find out how they've been celebrating on the next four pages.

Email forwarding is a new service that enables you to keep an Imperial College email address for life. Find out more about this, and new careers services for alumni, on page 26.

Meanwhile, on pages 27–29, you can read about alumna Sarah Kelman who won gold in the 2007 Women's Gliding World Championships and other alumni achievements.

Alumni who have sadly died are listed on page 32 and, finally, honours and awards received by alumni and staff can be found on page 33. Read on to find out more...

Charing Cross and Westminster Medical School Alumnus Society

The Charing Cross and Westminster Medical School Alumnus Society Prize 2006 in Primary Care Medicine was awarded, for the second time, to Miss Naveenta Kumar (MBBS 2006). Naveenta was awarded the prize in the light of her performance in MBBS finals and her work in the subject during the year. The Society's committee hopes to fund a further project for medical students' welfare in the next few months from the alumnus fund.

The contact for alumni of all three former schools is the Society's Honorary Secretary, Peter Griffiths, at peter.griffiths9@btinternet.com.

PETER GRIFFITHS
HONORARY SECRETARY

Engineering Chapter

City and Guilds College Association

At our AGM in May, Peter Garratt OBE (Civil Engineering 1968) was installed as President of the City and Guilds College Association (CGCA) for 2007–08. Peter recently retired from Scott Wilson Business Consultancy and is currently Chairman of Canning House, an organisation promoting contacts and understanding between Britain and the Luso-Hispanic World. Upon his election, Peter paid warm tribute to the leadership and example of his predecessor John Banyard OBE (Civil and Environmental Engineering 1966). Members and their guests enjoyed a stimulating talk by Steve Brundle on the role of the engineer in the new economy before sitting down for a buffet supper.

The usual CGCA Decade Reunion Luncheon, which is normally held in November, will not take place this year, in deference to the College's Alumni Reunion 2007 on 14–16 September, to which all

alumni are invited.

The Old Centralians' Trust has continued its role of alleviating student financial hardship, but in addition has granted a wide range of travel bursaries and other awards. These included a total of 14 Student Activity Awards of £700 each, made to engineering students who have shown themselves to be major contributors to the extracurricular life of the College. The Trust's income has been doubled this year as a result of a major bequest from the late Professor Peter Lindsay (Electrical and Electronic Engineering 1944, PhD 1946), and early in 2008 the Trust expects to be funding the first Peter Lindsay Memorial Lecture, to be arranged by the Department of Electrical and Electronic Engineering.

CHRIS LUMB (Electrical and Electronic Engineering 1961)
HONORARY SECRETARY

Royal School of Mines Association

The passing of another year brings with it a change of President. We thank our outgoing President, Roger Clegg (Mining Geology 1993, MSc 1997) for his leadership and significant contribution, and welcome Kurt Budge (MEng Mining Engineering 1992).

The Peter Harding Memorial Fund remains somewhat short of its £5,000 target, having raised £3,000 to date. However, the Fund's inaugural award will be made at the 2007 annual dinner, our prestigious black tie event at the *Polish Club* in November, and we hope that many alumni will attend.

The one hundred and fifth Bottle Match, which finished 5–3 to Camborne, was a disappointing result for the Royal School of Mines (RSM). However, the result should reignite the passions and competitive spirit that this event has fired through the years. Only the RSM squash team managed to win, and congratulations to them for salvaging a trophy.

Imperial's Centenary year is an opportunity to remind the College of the great part that RSM has played, and continues to play, in its history. Alumni are encouraged to attend the RSM reception on Friday 14 September 2007, as well as the rest of the celebrations at the College's Alumni Reunion 2007 that weekend. Book now if you haven't already!

Over the coming months, the RSMA will be communicating with alumni, students and faculty to seek views on the association, what our stakeholders want from us and how best we can stay relevant in an ever-changing environment.

STOP PRESS: We now have a website at www.rsmaonline.org.uk dedicated to the association. We'd welcome feedback and suggestions for improvements or additions would make it of greater use.

REMINDER: Subscriptions increased to £15 a year ago. Please increase your standing orders if you haven't already.

PAUL HOLMES (Mining Engineering 1994)
HONORARY SECRETARY



STEVE FORWARD

Friends of Imperial College

This year we have had record attendance at our events, with audiences averaging twice as many as last year. Our largest audience, of about 150, came to hear Professor Sir John Pendry give an outstanding lecture on invisible materials and see the results of experimentation on the invisible materials built by colleagues at Duke University to his specification. As Arthur C. Clarke's third law says: any sufficiently advanced technology is indistinguishable from magic!

Our speakers have all contributed to the success of this year's



events programme, as well as the promotion as part of the College Centenary celebrations, among them specialist in schistosomiasis Professor Alan Fenwick; alumnus Professor Kevin Warwick (PhD Electrical and

Electronic Engineering 1982); Imperial Innovations' Chief Executive Susan Searle; and three academics from the Department of Environmental Engineering, Dr Adrian Butler, Professor Sue Grimes and Dr Stephen Smith.

Our summer party in July was attended by the Rector, past and future speakers, senior members of College and local dignitaries. We launched our next year's programme, which includes talks on nanotechnology, great inventions of the twentieth century, how Americans play basketball and the rest of the world plays football, and the evolutionary advantages of belief, as well as a visit to the Energy Futures Lab. We are also planning to make a donation to the Student Opportunities Fund.

If you would like to come along to our events you will be very welcome, you can find details on our website at

www.friendsofimperial.org.uk.

RODERICK RHYS JONES (Civil Engineering 1964)
CHAIRMAN

Royal College of Science Association

The Royal College of Science Association (RCSA) has been going underground recently! Members have visited the Cabinet Office War



Rooms and the heating tunnels beneath Imperial College. This visit spanned the generations: there were 60 years between the graduation years of the oldest and youngest intrepid explorers and some of our older members remembered the short cuts under the Imperial Institute.

At our AGM on 20 June 2007, John Sanderson was elected as

the new President of the RCSA. John paid tribute to the work of his predecessors in keeping the association alive and said his aim was to revitalise it, by strengthening links with the RCS Union and the Faculty of Natural Sciences. The recreation of the RCS Union highlights the fact that the association can still be relevant to current students and recent graduates, and recruiting them will be vital to keeping it alive.

The association's one hundredth birthday is approaching and the committee is working on a programme of events to appeal to all. At the AGM, ideas were discussed for events to mark this milestone, lift the profile of the association and engage members in debating current issues in science, so watch this space.

The next event for the association will hopefully not be too explosive

when members visit the Royal Gunpowder Mills at Waltham Abbey for a special guided tour.

Finally a plea; does anyone know the whereabouts of the RCS three-handled pot or the Stan Raimes Memorial Trophy? Both are missing.

JOHN SANDERSON (Physics 1962)
PRESIDENT

Tanaka Business School

This year's Centenary celebrations have provided a particular focus for building up and energising the alumni network. The highlight of our events calendar was the celebratory reunion in July. The business-focused conference programme, social get-togethers and evening cocktail party were hosted in the beautifully decorated Business School, which provided an exceptional backdrop.

In association with Imperial College's new International Ambassadors Scheme, Tanaka Business School Regional Clubs hosted Centenary events in Beijing and Shanghai, which were widely attended by Imperial College alumni and students,

including current EMBA students. Through the donation of seed money we will continue to support the development of our regional clubs, which are important points of contact for alumni and now extend to all corners of the globe.

The Business School's dedicated alumni relations team has recently implemented a very successful 'Itchy Feet' career counselling workshop. The lifetime alumni network card, giving alumni continued access to the School's facilities, is another new initiative proving popular, and the Tanaka Business School group on LinkedIn continues to grow.

Our focus on delivering long-term value to degrees has also seen the Business School offer alumni ongoing opportunities to attend professional lectures and guest speaker events and develop their careers through access to career surgeries. The School's executive education programme of electives for MBA alumni continues to offer an ideal opportunity for alumni to update their skills and keep up with the latest developments in business management.

Alumni continue to actively support the School at various student and recruitment events. For alumni, providing advice and insight can be an enriching way to stay involved with the School, and give students the type of support they themselves sought as students. The student-alumni industry sector groups have also been active this year, hosting a number of events where alumni shared their experience and knowledge with students and other alumni.

NICOLA POGSON
TANAKA ALUMNI RELATIONS MANAGER

Wye College Agricola Club

Alumni are invited to the next AGM and annual dinner, which will be held at Wye Campus on Saturday 22 September 2007. Our guest speaker for the dinner is Adam Afriye (Agricultural Economics 1987), MP for Windsor. To register your interest, please contact Francis at francis@lhgd.demon.co.uk.

FRANCIS HUNTINGTON (Wye College 1964)
HONORARY SECRETARY



FERGUS BURNETT

DIGBY JAMES

The College's expanding programme of events and services for international groups saw the introduction of the International Ambassadors Scheme in September 2006. It has proved a great success since its launch; world-renowned academics from across the College have visited 10 of our international alumni groups, keeping them up-to-date with the latest academic and strategic developments at Imperial.

Among the highlights of the year so far was Deputy Rector Professor Sir Leszek Borysiewicz's visit to Uganda. Three groups of Imperial College researchers are currently working there, focusing on fighting neglected tropical diseases, combating HIV and researching the control of schistosomiasis. While visiting the researchers, Professor Borysiewicz hosted an alumni presentation and drinks reception celebrating the College's research links with the country.



A gala dinner hosted by the Imperial College Alumni Association of Hong Kong (ICAAHK) in celebration of the College's Centenary was a sparkling event. High profile guests, including Stephen Bradley, British Consul-General for Hong Kong, were among the 250 guests who were entertained by a string trio before a 12-course Chinese banquet in the exclusive Island Shangri-La Hotel. Sir Richard Sykes, one of Imperial's 22 ambassadors, spoke of how individuals from across the College have made a significant impact on the world through outstanding achievements in science, engineering and medicine over the past century. The event also marked the launch of the ICAAHK's Endowment Fund, which provides scholarships for Hong Kong students who win a place to study at Imperial.

Throughout the remainder of the Centenary year, ambassadors will continue to join Imperial alumni around the world for their celebrations of 100 years of living science, including four Centenary dinners later this year in the US, Malaysia, Singapore and India to be attended by the Rector, Sir Richard Sykes. Visit www.imperial.ac.uk/alumni/ambassadors for more details.

Imperial College Alumni Association of Argentina

For the first time since the late 1990s, local alumni joined together in April 2007. Following Dr Boccacini's presentation about the current activities at Imperial College, we engaged in an interesting exchange of views about the possibilities of having more frequent meetings and the activities of the alumni group in Argentina.

Many Argentinean alumni were supported by scholarships given by government institutions, private funds or corporations, and the only way to ensure a constant flow of new students is to resume this kind of support. Rodrigo Lencina (Geology 2004), who works

for a mining corporation, pointed out that the Argentinian mining industry will provide interesting prospects.

We also intend to explore contacts between research groups in Argentina with a counterpart at the College, including the ITBA (Buenos Aires Institute of Technology) and the Universidad de San Martín. We hope that alumni who were unable to attend will add to these initial ideas.

RODOLFO GAYOSO (MSc Earth Science and Engineering 1981)
CONVENOR

New South Wales Alumni Association (Australia)

Thanks to the Imperial Ambassadors Scheme, by the time you read this, Sydney-based alumni will have reunited at a dinner on 9 August 2007 at Pennant Hills Golf Club for the first time in five years, with Professor Mary Ritter, Pro Rector for Postgraduate and International Affairs, as guest speaker.

DR WILLIAM MACMILLAN (PhD Chemical Engineering 1962)
CONVENOR

RSMA Sydney Reunion (Australia)

Nine miners braved the elements to attend our reunion on 15 June 2007, but the cold, windy and very wet weather didn't dampen our spirits. We were greatly outnumbered by the apologies from mines men who were too busy (the boom is still on!), overseas (escaping the cold winter months) or ill (hopefully on the mend), so we all agreed that it might be better to have our next get-together in late spring or early autumn.

RON BUTLER (Materials 1952)
REPRESENTATIVE

Victoria Alumni Association (Australia)

A Centenary dinner is being organised in Brighton, Victoria, on 29 October 2007. The dinner will include a presentation by David Bishop on the College's Centenary, as well as an update about the Alumni Reunion 2007, taking place on the College's South Kensington Campus in September, which David will be attending. To register your interest in this dinner, please contact David on db@numerousbenefits.com.

DAVID BISHOP (Electrical and Electronic Engineering 1964, MEng 1965)
CONVENOR

Western Australia Alumni Association

Members of the Western Australia Alumni Association were joined by Sir Richard Sykes, Rector of Imperial College, and Lady Sykes for a series of Centenary celebrations in April 2007. His Excellency Dr Ken Michael (PhD Civil and Environmental Engineering 1967) and Julie Michael hosted afternoon tea at Government House, before a tour of the magnificent building's public rooms. An afternoon tea was hosted by Rita Dickson the following day for Lady Sykes and the association's ladies.

Sixty-six alumni and their partners, a record for the association, attended an evening dinner at the prestigious Weld Club in Perth, hosted by John Wilson (Civil and Environmental Engineering 1948, DIC 1950). Sir Richard talked of the College's history and his ideas for the future.

A function is being planned for 6 September to mirror the Alumni Reunion 2007 at the South Kensington Campus. Please do get in touch if you are interested in attending future events at alan@dickson.com.au.

ALAN DICKSON (Earth Science and Engineering 1968)
CONVENOR



China Alumni Association

We are delighted to invite all alumni to two evening events being held in Beijing and Shanghai in September 2007, organised in association with the Imperial College Tanaka Business School study tour. Imperial ambassador Professor Dot Griffiths, Deputy Principal of Tanaka Business School, will be guest of honour. For further information, please contact the Alumni Relations team at alumni@imperial.ac.uk.

ZEBA SALMAN
ALUMNI RELATIONS EXECUTIVE

Imperial College Alumni Association of Cyprus

Professor Dot Griffiths gave a presentation at the Cyprus Centenary alumni event in May 2007. After a very successful event, with approximately 60 attendees, there is now interest in setting up a formal group and steering committee. A follow-up meeting will be held shortly, with a view to appointing committee officers. If you are interested in being involved in Cypriot alumni activities, please contact Professor Kakas at antonis@ucy.ac.cy.

PROFESSOR ANTONIS KAKAS (PhD Physics 1984, MSc Computing Science 1988)
REPRESENTATIVE

Imperial College Club of Germany e.V.

During the first weekend in May, the Imperial College Club of Germany celebrated Imperial College's Centenary. An engaging lecture programme kicked-off with Dr Hagen Schulz-Forberg, European University Institute, followed by Professor Mary Ritter taking us on a journey through the College's past, present and future. A buffet lunch in the Hilton Hotel Courtyard was followed by the Director of Imperial's Energy Futures Lab, Professor Sandro Macchietto, welcoming us to the world of energy. On Sunday, Werner Ungerer from the German Foreign Office explained how Europe came to be, and outlined his personal challenges in European diplomacy. With his stories still in our ears, we toured the former Bundestag and returned to the Hilton for our farewell lunch.

Photos taken in Bonn, details of future activities and much more, can be found on our website at www.iccg.net.

MIRANDA BELLCHAMBERS (Mechanical Engineering 1986)
PRESIDENT

Imperial College Alumni Association of India

Alumni in India are invited to a special Centenary event in Mumbai to relaunch the Imperial College Alumni Association of India. Celebrating the College's Centenary year, Rector Sir Richard Sykes will be guest speaker at the gala dinner in the exclusive Taj Palace and Tower Hotel in Mumbai on 3 December 2007.

If you are interested in attending or would like further information, please contact Rajive Kaul at rajivekaul@niccogroup.com.

RAJIVE KAUL (Materials 1971)
PRESIDENT



MIRANDA BELLCHAMBERS

South Kensington Kai Imperial College Alumni Association (Japan)

South Kensington Kai hosted a Centenary presentation and dinner in Tokyo on 2 June 2007, attended by Professor Nelson Phillips, Head of the Organisation and Management Group at Tanaka Business School.

Professor Phillips gave an interesting presentation about his research entitled *Learning from iPod: Rules for Succeeding in Digital Consumer Environments*. After the presentation, the 23 Imperial College alumni and friends who attended the event enjoyed a Japanese meal and sake, networked with old friends and recalled their memories of College life.



HITOSHI HAMAGUCHI

DR HITOSHI HAMAGUCHI (Mechanical Engineering 1976)
DEPUTY PRESIDENT

Imperial College Alumni Association of Singapore

It has been a busy six months for alumni in Singapore; Marvin Lee (Biology 2006) fielded many questions from an interested crowd at an education fair in March 2007. Lim Hua Min (MSc Mechanical Engineering 1969) and Tanaka Business School's Dr Thomas Lawton spoke as part of the MBA talk series, and both Stephen Lim (MSc Management Science 1984) and William Liu (MSc Mechanical Engineering 1970) were recognised at the annual IT Leader awards.

Continuing our collaboration with the alumni associations of other universities, ICAAS and the University of Illinois alumni association held the second joint technology innovation symposium, and in partnership with the University of Manchester alumni association, ICAAS have started a new mini-series on wellness-related issues.

Baey Yam Keng (Biotechnology 1994) was the guest of honour at a charity event spearheaded by Benjamin Wong (MBA 1999) in April 2007. Finally, members spent a delightful evening at the Paulaner Brauhaus microbrewery on 30 May 2007. Following an informative guided tour, they enjoyed each other's company over freshly brewed beer and delicious German food.

DR LEE HING YAN (Computing 1981, MSc 1982)
PRESIDENT

Slovenia Alumni Association

In April we gathered for our regular reunion in the Slovenian inn *Breskvar*. Four of the seven alumni from the Ljubljana region met for dinner, and drank a toast to the one hundredth anniversary of Imperial College.

PROFESSOR ANDREJ PAULIN (PhD Materials 1967)
CONVENOR

We have alumni groups in many countries around the world. To find out if there is a group near you, visit www.imperial.ac.uk/alumni/international. If a local group has not already been established, we can help you get together with other Imperial College alumni in your area by becoming an individual contact for your region or setting up a new group. Please contact the Alumni Relations team at alumni@imperial.ac.uk or on +44 (0)20 7594 1931.

If you are living in Ireland, Michael Byrne (Chemistry 1994) would like to hear from you, he is interested in meeting up with other alumni in the area and can be contacted at michael.byrne@qbc.ie.

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events

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Read on to find out about the new and exciting online resources available to you: email forwarding and job postings for experienced alumni.

We're continually developing new services to help you keep in touch and to enhance your experience as an alumnus of the College. Two recent additions to our Interactive Alumni Services are email forwarding and a job vacancy listing for alumni who have already gained experience in the workplace.

If you haven't already done so, make sure you sign up for your free Interactive Alumni Services account to start using the online network. The registration process is quick and easy. Visit www.imperial.ac.uk/alumni/register.

Email forwarding

Staying in touch with your friends, colleagues and classmates has just got even easier with the new alumni email forwarding service. The service provides you with an Imperial College email address that you can keep for life, meaning that you will no longer have to let people know that you have changed your email address each time you switch email provider or employer.

The service automatically forwards emails sent to your Imperial email address to your current email address, which you specify when setting up the service and can change at any time. So provided you maintain the link

between your Imperial College email address and your current email address your friends and family will always be able to contact you through your 'imperial.ac.uk' email address, simplifying your online life.



You can set up email forwarding from your Interactive Alumni Services account at

www.imperial.ac.uk/alumni/emailforwarding.

You will be supplied with a unique alumni email address which will be based on your name and year of graduation, and will simply be required to enter the email address that you would like emails to be forwarded to in order to activate the service.

For more information, please visit the alumni website at www.imperial.ac.uk/alumni/interactive or contact the Alumni Relations team at alumni@imperial.ac.uk or on +44 (0)20 7594 6131/6138.



Careers services

Evidence shows that a high proportion of graduates change jobs at least once within the first two to three years of their career and the Careers Advisory Service at Imperial offers a continued service to graduates for up to three years following graduation.

This is all well and good, but what happens to alumni who need a bit of support further on in their careers? Mindful of this gap, the Careers Advisory Service, in collaboration with the Office of Alumni and Development, has introduced a new job vacancy service specifically for alumni who have already gained experience in the workplace. It offers a wide range of opportunities from many employers who are keen to tap into the Imperial alumni talent pool. You can access the service at www.imperial.ac.uk/alumni/careers and you will need to be logged

into your Interactive Alumni Services account in order to use it. If you are an employer looking to recruit the very best Imperial talent, you can learn about how to advertise your vacancies here too.

Recent graduates still have access to advice, information, resources and the *JobsLive* vacancy database, all of which can be accessed electronically. *JobsLive* includes details of a wide range of vacancies and an online careers calendar shows full listings of all careers events including employer presentations, seminars, workshops, recruitment fairs and online booking for careers appointments.

So if you are thinking about making a career move or are an employer looking to advertise your job vacancies to Imperial alumni, visit the Careers Advisory Service website at www.imperial.ac.uk/alumni/careers.

focus on alumni



High flying

Gliding high above Romorantin in the Loire Valley, France, Sarah Kelman (née Harland, MEng Aeronautical Engineering 1993) claimed gold in the Women's World Gliding Championships 2007. The culmination of nine days racing through the skies at speeds of up to 200 kilometres per hour, Sarah claimed the Championship having led since the opening day. It was the second time Sarah had won gold at a World Championship event, a feat she first achieved in Lithuania in 2001.

Of her latest win, Sarah said: "The competition proved tough, as ever, with strong competition from the Poles and Czechs especially, but we had a strong team and the other five British pilots were invaluable. There were several days when the weather conditions were particularly tricky, and so all the training I'd had back in the UK's atrocious start to the summer really helped. I'm very proud to have won the gold for Great Britain."

A cross-country course of up to 500 kilometres in length, around up to three turning points, was set for competitors each day. Winning three races and never finishing outside the top five, Sarah seized the title with a comfortable margin over her nearest competitor; her final score, 6,046 points.

It was during her third year at the College that Sarah got involved with the gliding club, and she recalls her instructors with great fondness: "It was amazing to be involved in the Imperial College Gliding Club whilst it was still under the auspices of the late Frank Irving. It was not until much later that I realised what a monumental figure he was for the whole of the gliding movement internationally, and not just at the College. I often had the opportunity to go cross-country in the two-seater and find out that gliding isn't just about going up, round and down! I also got involved in crewing for some of the top Nationals pilots and so got to see the amazing flights being done at that time."

"Initially, gliding was just an affordable way to get airborne, but I soon discovered how challenging and enjoyable gliding is as

a competitive sport," she added.

Sarah's first competitive outing in a glider was in the 1992 UK Junior Championships, which she recalls clearly: "I had just gone cross-country and was persuaded to enter, so flew the club's most basic single-seater. I was so inexperienced that I decided it would be unsafe for me to try to go cross-country on most of the days as I couldn't even stay airborne, but I had a good long flight on the last day and still didn't finish last!"

After this her rise to the top levels of women's gliding was rapid, Sarah had bought her own glider and started competing in senior UK regional and national championships – winning at her first attempt. Qualifying for the British gliding team is on merit and her success at regional and national level meant that in 1999 Sarah was offered a place on the team for the Women's European Gliding Championships. Much to her surprise she won, and three medals from World Gliding Championships have followed.

Even seven months pregnant with her second child, Sarah was still competing at the highest level; her passion for gliding is resolute: "Every flight is a challenge of reading the weather and using the elements to achieve the farthest distance or fastest speed. I have flown over 750 kilometres in one flight and taken my glider to 32,000 feet, all without an engine. It is those times that you really appreciate the wonder of our planet and power of our atmosphere."

When she's not gliding Sarah still spends a lot of time enjoying the freedom of the skies as a pilot for easyJet's Airbus fleet, and her fervour for the skies even extends to ornithology. Sarah is involved with the British Trust for Ornithology, carrying out survey work. She said: "It can tend to interfere with competition flying as when I get to share my thermal (a small rising column of warm air produced when the Earth's surface is unevenly heated) with a vulture or sea eagle, I find it very tempting just to sit back and watch the birds flying with me in their element, rather than concentrating on the racing."

In Sarah's busy life of flying, ornithology and bringing up her children, Elizabeth and Matthew, there'll always be time for gliding and maybe a few more world titles yet.



focus on alumni

Upped sticks and moved to a zoo

Rescuing a loose jaguar from a tiger enclosure, ferret walks and climbing trees to hang meaty treats for hungry lions are all in a day's work for Ben Mee (MSc Science Communication 1993), one of the new owners of Dartmoor Zoological Park, along with his mother, Amelia, and brother, Duncan. It's quite a change from writing his *Guardian* column and books about DIY but, believe it or not, the dream all started with a brochure advertising a 30-acre zoo for sale, which dropped through his mother's letterbox in Surrey. Nothing more than a fanciful idea to start with, it wasn't too long before the family's bags were packed for the move to Devon.

It has been by no means easy for the Mees, dealing with bankers, lawyers and mortgage brokers to get together the £500,000 needed to develop the site, which was somewhat the worse for wear, to a condition where a public licence would be granted. There were many obstacles in the way, not least that "no one lends that kind of money to a 76-year-old woman", as Ben pointed out. There have been occasions when finances have been the least of their worries, *that jaguar incident* being one of them.

Happening only four days after they had moved in, it put their resolve to the test right away – with jaguar Sovereign lunging at Tammy, the tiger; and Tammy retaliating by swiping at Sovereign's head, the situation was desperate. If they'd started fighting, one of them would have had to have been put down. Fortunately, creating enough noise made Tammy more inclined to retreat into her house, so the keepers could focus all their efforts on getting the jaguar back to his rightful home.

Sovereign's escape just reaffirmed the sheer amount of work that had to be done to bring the zoo up to standard. Not only were the enclosures badly in need of upgrading but the pathways, restaurants and shops, as well as a whole host of other things, were also on their to do list.

With a lot of elbow grease, and a four-strand electrical fence to make sure Sovereign stays where he belongs, the zoo was granted its public licence in time for its opening on 7 July 2007. With over 7,000 visitors walking through the gates in the first month, Ben is delighted with the big success that the opening has proved to be.

Looking after the zoo, home to over 200 exotic animals, the Mee family don't often get a quiet life, especially with Solomon, an African lion, whose roar can be heard up to a couple of miles away. Joining Solomon are four Amur tigers, seven wolves, three European brown bears, a Brazilian tapir, vervet monkeys and some large boa constrictors, and many more animals besides. Ferret walking has proved a massive hit with Milo and Ella, Ben's two young children, who join the ferrets, fitted with little ferret harnesses, several times a week for a walk around the park; as have the otters and their squeaky-toy noises.

Lion vasectomies and clipping bear claws are regular features of Ben's day-to-day life running a zoo, which he juggles with family life, and it really does involve climbing trees in pursuit of giving the lions a tasty treat. While the lions are safely locked away, Ben installs calves' heads from 'fallen stock' (those that die or are culled on farms), wedged into trees or hung from the branches to give the lions a puzzle. Fortunately feeding the herbivores isn't such a gruesome task, as fruit and vegetables past their sell-by date are provided by local supermarkets.

Already having enriched the animals' habitats, Ben and his family have plenty more ideas to build a bigger, better zoo: from introducing giraffes, Galapagos tortoises and maybe even elephants; to building new, bigger enclosures; and getting involved in coordinated endangered species breeding programmes with other zoos.

It's a fascinating story, so much so that they will be the subject of a BBC2 television series airing from September, with a film and book also in the pipeline. Find out more about the Mees and their zoo at www.dartmoorzoologicalpark.co.uk.





Imperial College Centenary meeting and gala dinner: energy, healthcare and the environment

At the end of September, leading academics from Imperial College and the Massachusetts Institute of Technology (MIT) will unite in Cambridge, Massachusetts, to discuss key issues facing the world today.

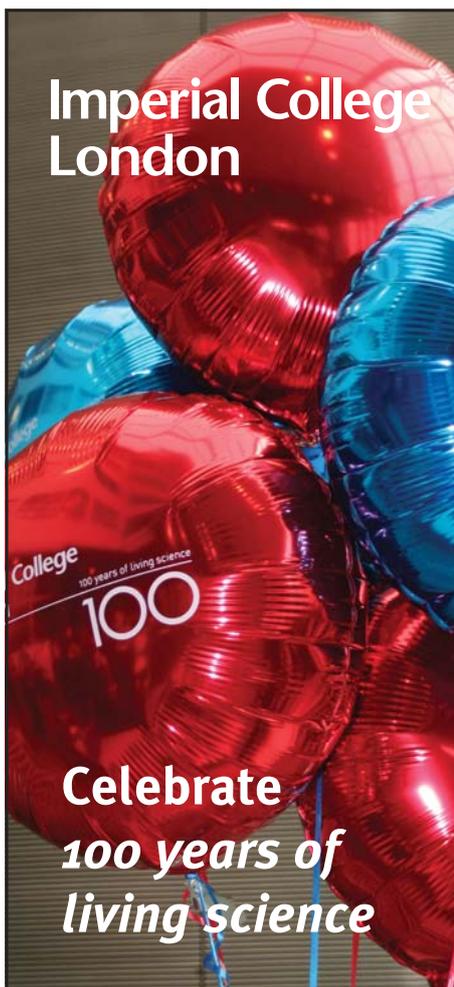
The two-day programme will offer alumni and guests an insight into a wide range of topics, all presented in an intelligent way, yet accessible to the layman.

- Take the opportunity to discuss the issues under debate in more detail with the experts.
- Meet up with old and new friends.
- Celebrate *100 years of living science* at the sumptuous Gala Dinner together with Sir Richard Sykes, Rector of Imperial College, and distinguished guest Professor Susan Hockfield, President of MIT.
- Take in the striking colours and beauty of New England in the fall.



We hope that you will join North American alumni and friends for what promises to be one of the highlights of the Centenary calendar. Book online today at www.imperial.ac.uk/alumni/Massachusetts2007.

Imperial College London



Celebrate
*100 years of
living science*



All alumni of Imperial College London are invited to join the College's Centenary celebrations at the Alumni Reunion 2007 on **14–16 September 2007**. Come along to the South Kensington Campus to take part in a weekend filled with lectures, departmental tours, campus activities and social events.

The programme is designed to be flexible; you are welcome to attend any combination of events, most of which are free of charge.

- Listen to Sir David King, Chief Scientific Adviser to HM Government, delivering his keynote speech *The global challenges of climate change*.
- Find out about Imperial's current research from renowned academics from across the College, including civil engineer Professor John Burland, physicist Professor Sir John Pendry, surgeon Professor the Lord Ara Darzi, and business strategist Professor Nelson Phillips.
- Catch up with former classmates and reminisce about days gone by at the Reunion Dinner, with guest speaker Johnny Ball.
- Test your trivia against other some of the College's other great minds at the Centenary quiz night.
- Show your family where you studied during the Campus open morning.

With more than 650 attendees already registered, we're looking forward to a successful reunion. Find out more about the reunion, and if *Imperial Matters* reaches you after the event you can find out about everything that happened during the reunion, at www.imperial.ac.uk/alumni/reunion2007.

Keep up to date with other alumni events taking place throughout the year, both on campus and further afield, at www.imperial.ac.uk/alumni/events.

media mentions

Tea leaf paradox produces new blood test technique

A principle elucidated by Albert Einstein in 1926 is the driving force behind a new technique for rapidly separating red blood cells from plasma that could allow quicker and cheaper tests for illnesses such as anaemia and kidney disease. A new device to separate the blood has been designed by mechanical engineer Dr Leslie Yeo (Chemical Engineering 1998, PhD 2001) and his colleagues at Monash University in Australia.

Many medical tests require samples of plasma without components such as red and white blood cells. Einstein's 'tea leaf paradox', which explains why stirred tea leaves accumulate at a container's bottom rather than its sides, is the basis for Dr Yeo's device, which involves electrifying a needle which hovers over a sample of blood. The resulting electric field tugs at ions in the plasma, triggering enough collisions to make the sample's surface layer begin to circulate. As a miniature tornado ensues, the red blood cells swirl to the bottom and settle below the plasma.

Smaller and easier-to-use microfluidic devices like this have begun to replace older ones, such as the spinning centrifuge, for blood separation. They have two main advantages: they require less blood, making the test easier for patients, and they contain no moving parts, which could increase the reliability of results.

Source: *ScienceNOW Daily News*, 18 January 2007

Young gun becomes Chief Executive of Otto Energy

Career-wise, Alex Parks (Petroleum Engineering 1997), has squeezed a lot into the nine years since he graduated from Imperial College. He has travelled most of the globe, looked after 20 staff as Managing Director of a west Australian oil and gas consulting firm, and been recognised as the best young petroleum engineer in south east Asia.

Alex's latest accomplishment is particularly noteworthy: at the age of 32, he has become one of the youngest Chief Executives of a publicly listed company in the oil and gas industry, taking the reins of Perth's Otto Energy, which has exploration interests in the Philippines, Turkey and Argentina.

Source: *BRW*, 15–21 March 2007

Success in income sector borne out of MBA studies

Norwich Union's Income Manager Ian Lancaster (MBA 1999) is reaping the benefits of an investment strategy that began its life as his MBA dissertation in quantitative screen techniques.

The man behind the Norwich UK Income Opportunities fund has generated 125.1 per cent bid-to-bid returns over the 60 months to 26

March 2007, outperforming many others. The £53 million fund, which was brought under the Norwich banner last year, was first run as a notional portfolio on a website between 1999 and 2001, and set up as a unit trust (Elite Moneyguru Income with Growth) in February 2002.

During his studies, Ian spent months looking back at every academic screen used to find the winners and losers in the stock universe over the previous 30 years. He then boiled them down to 13 different criteria that he felt worked consistently across all economic cycles.

Source: *Investment Week* (www.ifaonline.co.uk), 9 April 2007

Appointment to Canada's National Round Table on the Environment and the Economy

The Honourable John Baird, Canada's Minister of the Environment, announced the appointment of Dr Robert Slater (Mineral Technology 1963, PhD 1967) to the National Round Table on the Environment and the Economy (NRTEE) in May 2007.

NRTEE is dedicated to exploring new opportunities to integrate environmental conservation and economic development in order to sustain Canada's prosperity and secure its future. Its mandate has recently been enhanced to provide advice to Canada's new government with respect to the clean air regulatory agenda.

Dr Robert Slater is currently President of Coleman, Bright and Associates, a multinational consulting firm specialising in sustainable development issues. He is a Senior Fellow with the International Institute for Sustainable Development and an adjunct Professor in Environmental Policy at Carleton University. He was instrumental in establishing the Round Table in 1988.

Source: *Canada NewsWire*, 15 May 2007

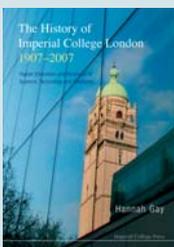
Disposable bands to reduce the spread of MRSA

For a long time top scientists have racked their brains to come up with ways to reduce the spread of MRSA. Now two newly graduated doctors have come up with a novel way to minimise the spread of the life-threatening bug: a disposable band that could replace tourniquets.

"Watching some of our colleagues in the hospital environment, it struck us that even though their technique was stringent, they were limited by the reusable equipment available," explained Ryan Kerstein (Medicine 2006) and Christian Fellowes (Medicine 2006). "We saw tourniquets being transferred from patient to patient, which we felt was unacceptable."

Source: *The Guardian*, 22 May 2007

books



The History of Imperial College London 1907–2007

Dr Hannah Gay (Chemistry 1961, PhD 1964)
Imperial College Press

Senior Research Investigator at the College's Centre for the History of Science, Technology and Medicine Dr Hannah Gay has produced the first major history of Imperial College London.

The book's launch on 1 May 2007 drew together a range of familiar faces from Imperial's past and present, including former Rectors Lord Flowers, Lord Oxburgh and Sir Eric Ash, all contributors to the book. Congratulating Dr Gay, current Rector Sir Richard Sykes said: "Hannah has been very successful in not only providing us with a 'grand narrative' but also unearthing some fascinating nuggets about life at Imperial over the years. This book is such an achievement because it tells us not only about Imperial College as an institution, but also about the many different people who have shaped it through their work, study and play."

Of her work, Dr Gay said: "It focuses mainly on the twentieth century

history of the College. Some of the chapters are thematic covering topics such as student and corporate life as it evolved over the century, others cover College governance in the larger British politico-cultural context, and yet others cover academic and departmental histories.

"Since I believe the many people who have worked at Imperial are collectively responsible for its success, I wanted to include as much detail on them as possible. This personal information forms the bulk of the many and rather long endnotes. So please read the endnotes; one of my readers told me that that was where all the interesting bits were located!"

Dr Gay added: "I tried to write a book that would be of interest to historians and, at the same time, one that could be enjoyed by a more general readership – especially by people who have some attachment to the College. I would be delighted to have many alumni read the book and to hear their comments."

The History of Imperial College London 1907–2007 is available to purchase at the Union Shop on Imperial's South Kensington Campus or online through the publisher at www.icpress.co.uk/histsci/p478.html where a 20 per cent discount can be received with discount code P478.

Raising Venture Capital Finance in Europe

Keith Arundale (Physics 1974, MSc 1975)
Kogan Page

The book provides a step-by-step approach to exploiting the venture capital market in Europe and funding new projects effectively, including 18 real life case studies from venture capitalists and entrepreneurs from around Europe, each filled with practical tips for successful venture capital finance raising, including two cases from Imperial Innovations.

Project U.L.F.

Stuart M.W. Clark (MSc Science Communication 1996)
Silver Leaf Books

In this science fiction adventure, set in a hostile world, Wyatt Dorren leads a team of unidentified life form trappers on a specimen gathering expedition for Chicago's interplanetary zoo. But Wyatt is soon to discover that he is the victim of a foul conspiracy, sent on a one-way trip to a planet more hostile than any he's seen before – the hunters become the hunted.

Pro Java 6 3D Game Development

Dr Andrew Davison (PhD Computing 1989)
Apress

This book explains how to program three-dimensional games in Java on a PC, with an emphasis on the construction of three-dimensional landscapes. It describes the latest Java SE 6 features relevant to gaming, including splash screens, JavaScript scripting, and the desktop and system tray interfaces.

Compiled Labelled Deductive Systems: A Uniform Presentation of Non-Classical Logics

Dr Krysia Broda, Professor Dov Gabbay, Dr Luis Lamb (PhD Computing 2000) and Dr Alessandra Russo
Research Study Press

This book introduces the compiled labelled deductive system (CLDS), a general framework for a unified presentation of logics. It shows how

this technique is applied to various families of non-classical logics widely used in computer science and artificial intelligence.

Those That Trespass Against Us

Dr Meto Onwuamaegbu (MSc Cardiology 2002)
Lulu.com

A nine-year-old girl loses her father in a car accident on the day of the first military coup in Nigeria. She returns with her mother to her ancestral home in Scotland only to find that Aberdeen was not what she imagined it would be. Amanda Blake is thrown into the murky world of family politics and adult intrigue as she enters a battle of wits with her widowed mother.

Analytical Techniques in Materials Conservation

Barbara Stuart (Chemical Engineering PhD 1993)
John Wiley and Sons

This book deals with the scientific methods that can be applied to heritage materials including paintings, sculptures, manuscripts and ceramics, providing a valuable resource for those working with culturally important objects and an understanding of the instrumentation and sampling techniques used in materials conservation.

Your Planet Needs You

Dr John Symes (Charing Cross Hospital Medical School 1964) and Phil Turner
Your Planet Needs You

Containing over 40 illustrations, this book shows simple and practical ways in which we can play an individual part in creating the world we want for our children and future generations, how we can respond to the crises we see in the world, and how all of our actions and thoughts add up to create a future worth choosing.

Further details of each of the books listed on this page, along with other books by alumni, can be found on the alumni website at www.imperial.ac.uk/alumni/books.

in memoriam

It is with regret that we announce the death of the following alumni of Imperial College and the constituent medical schools and Wye College.

Alumni are listed by department. Where an alumnus has obtained more than one degree from the College they are listed under the department of their first degree.

AERONAUTICS

Mr John R.D. Kenward (DIC 1946)
Mr Ronald A.B. Macfie (1953)
Mr John M. McNeil (1961)
Mr Colin Webb (1956, Mechanical Engineering 1957)

BIOCHEMISTRY

Mr Peter M. Browne (1981)

BIOLOGY

*Mr Peter B. Cornwell (1950, MSc 1951)
Mr Vincent E.F. Eyre (1937)
Mr Tadeusz M. Wielogorski (1975)

BOTANY

Mr Arthur E. Bishop (1953)
*Dr Arthur H. Dadd (1949, PhD 1952)

CENTRE FOR THE HISTORY OF SCIENCE, TECHNOLOGY AND MEDICINE

Dr Bhaskar C. Chakravarti (MSc 1976)
Mrs Joyce Meyer (MSc 1990)

CHEMICAL ENGINEERING AND CHEMICAL TECHNOLOGY

Mr Ronald H. Assersohn (1943)
Mr David O. Briscoe (1954)
Mr Edward J. Challis (1946)
Mr Denis H. Desty (1988)
*Mr Richard Etherington (1951)
Emeritus Professor Geoffrey G. Haselden (1944, PhD 1947)
Mr John M. Hutchings (1953)
Mr Desmond C.F. Pratt (1941)
Dr Leonard Reed (PhD 1952)
Mr Donald F. Riley (1941)
Mr Anthony W. Sedgwick (1945)
*Dr Clifton A. Shook (PhD 1960)

CHEMISTRY

Mr Kenneth Hargreaves (1941)
Mr Roy W. Hodgkinson (1940)
*Dr Alexander King (1929, MSc 1931)
*Mr John R. Lawrence (1958)
*Mr Donald F.A. Maclachlan (1957, DIC Materials 1964)
Mr Anthony Miller (1973)
*Dr Joseph A. Morice (1965, DIC 1968)
Dr Paul A.L. Northcott (1953, PhD 1955)
Mr Anthony H. Rieck (1941)
Dr Stanley L.S. Thomas (1936, PhD 1938)
Dr Raymond S. Thornhill (PhD 1934)
Dr Paul Snowden (1953, PhD 1956)
Dr Aubrey M. Woolman (1936, PhD 1939)

CIVIL AND ENVIRONMENTAL ENGINEERING

*Mr Christopher F. Armstrong, OBE (1928)
Mr Bryan H. Bates (1961)
Professor Eric H. Brown (1948)
Mr Peter L. Cubitt (1935)
Mr Collin F. De Souza (1958)

Mr Thomas E. Dennis (1953)
*Mr William E. Foster (1965)
Mr Michael H.G. Jennings (1949)
Mr Grant (Zygmunt) Kafarowski (1952)
Mr Christopher (Kit) Morris (1953)
Mr Kenneth M. Odell (1948)
Mr Ekundare O. Oguniye (DIC 1960)
Mr Kenneth A. Phillips (DIC 1960)
*Mr John A. Pickford (1943)
*Mr Ralph A.P. Pritchard (1950)
Mr Sven Rindl (1954)
Mr Makewitige J.F. Senaratne (MSc 1967)
*Professor Thambyahpillai Sivaprakasappillai (1933)
Dr Roger W. Smithies (PhD 1952)
Mr Christopher H. Swan (1940)
Mr James L. Thompson (DIC 1962)
*Mr Ronald (Bill) M. Wild (1938)
Dr Aziz A. Yassin (PhD 1950)

EARTH SCIENCE AND ENGINEERING

Mr Roger J. Casalis De Pury (1953)
Mr Colin J. Dixon (1957)
Mr William E. Evans (DIC 1958)
Mr Thomas B.H. Hall (1955)
Mr Richard A. Jones (DIC 1961)
Mr Asbjorn Sæboe (MSc 1972)
Mr Robert W. Stevens (1951)
*Emeritus Professor John S. Webb (1941, PhD 1947)
Mr Peter J. Winship (1986)

ELECTRICAL AND ELECTRONIC ENGINEERING

Mr Peter M. Adams (1973)
*Mr Arthur T. Aust, OBE (1940)
Mr Charles R. Bent (1933, DIC 1934)
Mr Emmanuel M. Boye (1967)
Dr Paul Bura (1948, MSc 1949)
Mr Barry G. Coetsee (1944)
*Mr Edward L. Ellis (1955)
Dr George W. Jull (PhD 1955)
Mr Robert Langford (1940)
Mr Albert D. Longman (1946, DIC 1947)
Mr Douglas P. McKeon (1934)
*Mr David J. Onslow (1961)
Mr Harry W. Pout (1940)
Mr Gerald A. Ruddock (1937, DIC 1938)
*Mr Dennis L. Trumpy (1945)
Mr Peter Wilde (1946)

LIFE SCIENCES

Mr Terry Walker (MSc 1967)

MATERIALS

*Mr Edwin A. Bailey (1948)
Mr John H. Fisher (DIC 1966, MPhil 1973)
Dr Peter K. Footner (PhD 1970)
Dr Bernard M. Henry (1987, MSc 1988, PhD 1991)
Dr George K. Notman (1957)

MATHEMATICS

*Dr Geoffrey C. Fletcher (1949, PhD 1953)
Mrs Janet Guz (1953)
Mr Alan F. Thirst (1946)
*Ms Carole F. Willis (1973, MSc 1974)

MECHANICAL ENGINEERING

Mr Alexis Banister (1930)
*Mr Edward F.P. Bennett (1936)
Mr Christopher J. Brinkworth (2000)
Mr Christopher M. Bussy (1936)
Mr Neil M. Clark (1945)
Mr Brian V. Gaskell (DIC 1958)
Mr Bernard A. Hudson (1947)
Mr David F. Penny (1955)
Mr Frederick J. Pidgeon (1940)
Mr George S. Sanders (1940)
Mr Anthony A.H. Scott (1938)
Mr David H. Scrivener (1951)
Mr Hugh B. Spivey (1965)
Mr Jonathan R. Young (MSc 1968)

MEDICINE

Charing Cross Hospital Medical School

Dr Tapan Agrawal (1995)
Dr Michael E. Arnold (1943)
Dr Helen Baker (1989)
Dr James H. Bradshaw (1982)
Professor Neville R. Butler (1943)
Dr John E.D. Charles-Jones (1955)
*Dr Gwilym P. Hosking (1969)
Dr Dermot H. McFerran (1950)
Dr David E. Savage (1946)
*Dr David Todd (1967)

St Mary's Hospital Medical School

Dr E. M. Blenkinsopp (1958)
Dr George L.W. Bonney (1943)
Dr Jack Brittain (1952)
Dr R.B. Cheatham (1991)
*Dr David Dewhirst (1943)
Dr Ieuan L. Evans (1954)
Dr R.C. Fuller (1939)
*Professor David M. Greenfield (1940)
Professor John Hankinson (1946)
Mr Charles M.J. Mardel (1952)
Dr John E. Routh (1947)
Dr Stanley Rowlands
*Dr David A. Watkins (1945)

Westminster Medical School

Dr J.G. Bevan (1925)
Dr Gwyneth J.D. Botherway (1954)
Colonel E.R. Briant (1953)
*Professor Arthur H. Crisp (1956)
Dr John E.O. Dunwoody (1954)
Dr William H.W. Jayne (1940)
*Dr Michael A. McDonald (1953)
Dr A.S. Watts (1940)

METEOROLOGY

Mr Alexander J. Murray (1963)
Dr David C. Thomas (1953, PhD 1959)

MINING ENGINEERING

*Mr Christopher C. Dell (1942)
Mr Anthony D. Lewis (1952)
Mr Douglas A. Miller (1970)

PHYSICS

Professor Stephen A. Benton (1996)
*Dr Kenneth G. Brummage (1942, PhD 1943)
Mr Pramude Buranasiri (1957)
Mr Charles T. Corney (1951)
*Dr Patricia E. Davison (1943)
Mr David H. Duvall (1956)
Mr Felix B. Engel (DIC 1952)
Mr James F. Graham (1958)
*Dr Geoffrey Manning (1952, PhD 1954)
*Dr Aderji B. Sahiar (PhD 1961)
*Mr Francis E. Speed (1948)
Mr John B. Spooner (1958)
Mr Vladimir W. Tuman (DIC 1950)
Mr John West (1950)
Mrs Lisa M. Wiffin (1983)

TANAKA BUSINESS SCHOOL

Mr Patrick Dixon (MSc 1976)
Mr David Hutchings (MSc 1979)

WYE COLLEGE

Ms Judith Bartlett (1997)
Mr Gordon K. Cabban (1931)
*Mr Thomas F.D. Easton (1996)
Mr A.G. Gaskin (1956)
*Miss Belinda Greenwood (1985)
*Mr John W.I. Jenkin (1949)
Mr F.A. Leeds (1938)
Reverend M.H. Norman (1939)
*Mr Anthony J.A. Pearson (1951)
Mr I.G. Reid (1956)
Mr Reginald J. Spooner (1940)

MEMBERS OF STAFF

Mr Albert H. Gunner (Department of Physics)
Emeritus Professor Graham F. Joplin (Emeritus Professor of Endocrinology, Hammersmith Hospital)
Professor James H. Whitelaw (Head of Thermofluids Section)

Where * is indicated, obituaries are available online at www.imperial.ac.uk/alumni/obituaries. Printed copies of obituaries are also available on request from matters@imperial.ac.uk or by writing to *Imperial Matters*, Office of Alumni and Development, Imperial College London, South Kensington Campus, London SW7 2AZ.

honours

New Year Honours 2007

PROFESSOR SIR MALCOLM GREEN

Lately Vice-Principal, Faculty of Medicine, Imperial College London and Head, National Heart and Lung Institute
Knighted for services to medicine

MR KEITH S. OSBORN, MBE (MSc Environmental Technology 1985)

Lately Chief Scientist, United Utilities plc
MBE for services to business and to public health

PROFESSOR JOHN D. PERKINS, CBE

(Chemical Engineering 1971, PhD 1973)
Visiting Professor, Department of Chemical Engineering and Chemical Technology, Imperial College London and Vice-President and Dean, Faculty of Engineering and Physical Sciences, University of Manchester
CBE for services to science and engineering

DR TREVOR TAYLOR, MBE (Mathematics 1970)

Technical and Projects Director, MBDA UK
MBE for services to the defence industry

DR PAUL A. TWOMEY, MBE (Charing Cross Hospital Medical School 1986)

General Medical Practitioner, Grimsby, North Lincolnshire
MBE for services to healthcare

DR PATRICK C. UPSON, CBE (Chemical Engineering 1970, PhD 1973)

Managing Director, Enrichment Technology Company Limited
CBE for services to industry

PROFESSOR JEFFREY K. WAAGE, OBE (PhD Biology 1977)

Professor of Applied Ecology, Imperial College London
OBE for services to science

Birthday Honours 2007

DR RAYMOND R. BAIN, MBE (St Mary's Hospital Medical School 1962)

Lately General Medical Practitioner, Langley Health Centre, Berkshire
MBE for services to healthcare

MR JAMES BARKER-MCCARDLE, QPM (Rural Environment Studies 1980)

Deputy Chief Constable, Kent Police
Queen's Police Medal

DR STEPHEN DOWBIGGIN, OBE (Wye College 1972)

Principal, Capel Manor College, Enfield, Middlesex
OBE for services to further education

DR MARY HARRIS, OBE (MBA Tanaka Business School 1994)

Director, National Grid's Young Offender Programme
OBE for services to disadvantaged young people

DR DAVID R. HATTERSLEY, MBE (Civil and Environmental Engineering 1955)

MBE for services to the construction industry and to charity

MR ANDREW L. HOLMES, OBE (Civil and Environmental Engineering 1965)

OBE for services to British business interests in Ghana, including efforts to promote corporate social responsibility

PROFESSOR GEORGINA M. MACE, CBE

Chair in Conservation Science and Director of NERC Centre for Population Biology, Imperial College London
CBE for services to environmental science

MRS MARJORIE A. WILKINSON, MBE

(Wye College 1954)
MBE for services to the community in Poulton-le-Fylde, Lancashire

Royal Academy of Engineering Silver Medallists 2007

PROFESSOR NIGEL P. BRANDON (PhD Mineral Resources Engineering 1985)

Shell Chair in Sustainable Development in Energy, Department of Earth Science and Engineering, Imperial College London

PROFESSOR CHRISTOFER TOUMAZOU

Head of the Institute of Biomedical Engineering, Imperial College London

Fellows of the Academy of Medical Sciences 2007

PROFESSOR NEIL BROCKDORFF, FMedSci

Professor of Genetics, MRC Clinical Sciences Centre, Imperial College London

PROFESSOR ANDREW D. DICK, FMedSci

(Charing Cross Hospital Medical School 1985)
Head of Academic Unit of Ophthalmology, University of Bristol

PROFESSOR ELIZABETH M.C. FISHER, FMedSci

(St Mary's Hospital Medical School 1987)
Professor of Molecular Genetics, University College London

PROFESSOR PHILIPPE FROGUEL, FMedSci

Chair in Genomic Medicine, Division of Medicine, Imperial College London

Fellows of the Royal Society 2007

PROFESSOR PETER J. BARNES, FRS

Professor of Thoracic Medicine, National Heart and Lung Institute and Head of Respiratory Medicine, Imperial College London

PROFESSOR GILLIAN P. BATES, FRS (St Mary's Hospital Medical School 1987)

Professor of Neurogenetics, Department of Medical and Molecular Genetics, King's College London

PROFESSOR ANTHONY J. KINLOCH, FRS

(Mechanical Engineering 1989)
Professor of Adhesion, Department of Mechanical Engineering, Imperial College London

SIR RAVINDER N. MAINI, FRS

Emeritus Professor of Rheumatology, The Kennedy Institute of Rheumatology Division, Imperial College London

PROFESSOR STEPHEN B. POPE, FRS (Mechanical Engineering 1971, MSc 1972, PhD 1976)

Sibley College Professor of Mechanical Engineering, Sibley School of Mechanical and Aerospace Engineering, Cornell University

PROFESSOR DAVID L. WARK, FRS

Professor of Physics, Blackett Laboratory, Imperial College London; and Science and Technology Facilities Council, Rutherford Appleton Laboratory

PROFESSOR TREVOR D. WOOLEY, FRS

(PhD Mathematics 1990)
Professor of Pure Mathematics, School of Mathematics, University of Bristol

Member of the National Academy of Engineering 2007

PROFESSOR ASAD A. ABIDI (Electrical and Electronic Engineering 1976)

Professor of Electrical Engineering, University of California
For contributions to the development of integrated circuits for MOS RF communications

Other awards and appointments

DR COLIN P. CROSBY (St Mary's Hospital Medical School 1979)

Appointed Senior Clinical Fellow, Postgraduate Medical School at Hertfordshire University

MR KENNETH J. LAMB (Electrical and Electronic Engineering 1981)

Appointed Chief Executive Officer of Cyan Holdings Plc

MR PHILIP S. MARTIN (Earth Science and Engineering 1965)

Appointed to the Board of Directors of Energy Metals

DR SUZANNE MILLER (PhD Geology 1990)

Appointed Director of the South Australian Museum

DR EDWIN L. RICHARDS (Chemistry 1970, PhD 1973)

Appointed Vice President for Global Clinical Development (Europe and Africa) of Kendle

DR ROGER SELLEK (MBA 1992)

Appointed Managing Director of Global Financial Services of A.M. Best

DR ROBERT W. SLATER (Mineral Technology 1963, PhD 1967)

Appointed to the National Round Table on the Environment and the Economy

MR JUSTIN J. VAN WIJNGAARDEN (Physics 1989)

Appointed Chief Operating Officer and Chief Financial Officer of Jefferies International Ltd

If you receive a special honour or award, we will try to include your name on a future honours page. Email matters@imperial.ac.uk to let us know.

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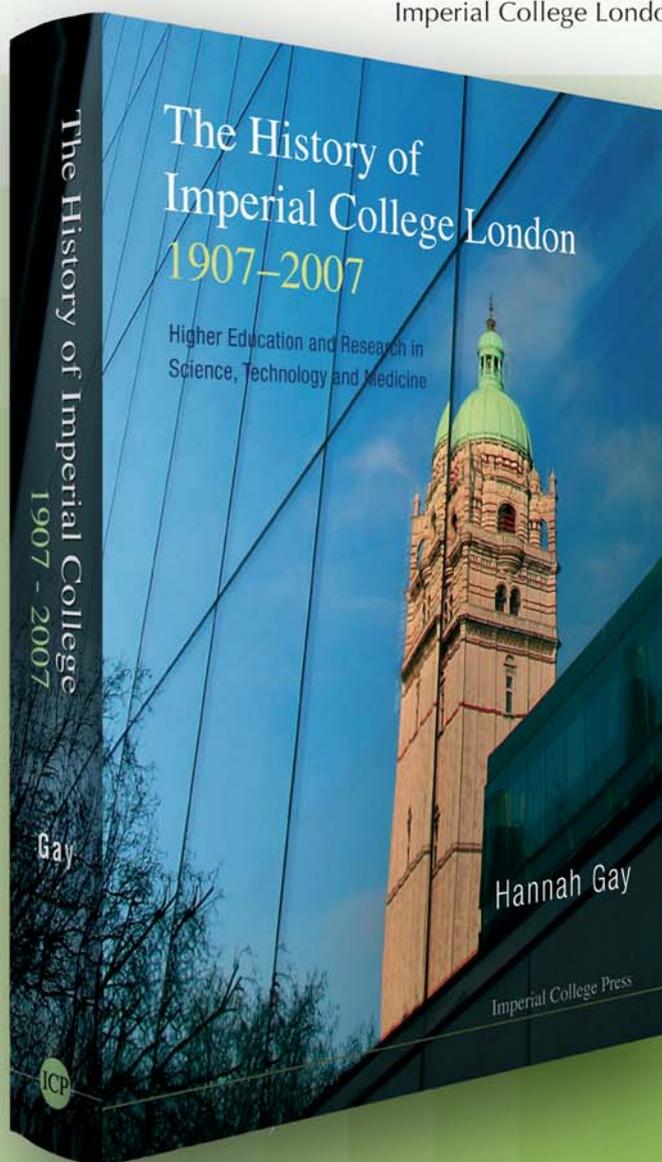
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