

Imperial

Summer | 2009 **34**

matters

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



The **fastest**
wind powered
vehicle on Earth



Natural selection

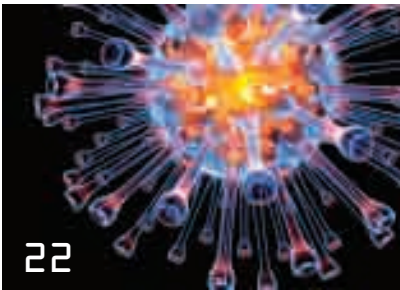
Meet Imperial's evolutionary biologists

Climate change

Sir Brian Hoskins on why we must change the future

Plus all the news from the College and alumni groups

contents//34



news

- 2 College
- 4 Business
- 5 Engineering
- 6 Medicine
- 7 Natural Sciences
- 8 Arts and sport
- 9 *Felix*

features

- 10 **Faster than the speed of wind**
Alumnus breaks the world land speed record for a wind powered vehicle
- 14 **Charles Darwin and his fact of evolution**
Where Darwin's ideas sit 150 years on
- 18 **It's not too late**
Brian Hoskins on climate change
- 22 **The science of flu**
Discover the workings of the influenza virus
- 24 **The adventurer**
Alumnus Simon Murray tells all about his impetuous life

alumni

- 28 Services
- 30 UK
- 34 International
- 38 Catch up
- 42 Books
- 44 In memoriam
- 45 The bigger picture

cover



The land yacht, called the Greenbird, used by alumnus Richard Jenkins to break the world land speed record for a wind powered vehicle sits on Lake Laffroy in Australia awaiting world record breaking conditions.

Imperial College London

Imperial Matters is published twice a year by the Office of Alumni and Development and Imperial College Communications. Issue 35 will be published in January 2010. Contributions are welcome by the copy deadline, Friday 6 November 2009. **Address for magazine enquiries** Office of Alumni and Development, Imperial College London, South Kensington Campus, London SW7 2AZ +44 (0)20 7594 1971 matters@imperial.ac.uk www.imperial.ac.uk/alumni/matters

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Welcome



It has been a very full six months since the last edition of *Imperial Matters*, both for Imperial and the wider world, with the continuing economic gloom jostling with the threat of a swine flu pandemic for domination of the media.

As you may be aware, Imperial has taken a close interest in both of these major issues. The emergence of swine flu created a huge demand from public health organisations internationally for our scientific knowledge and advice and from the media for expert comment on the possible scale and severity of the virus. Someone who has been exceptionally busy during this time is Wendy Barclay, Professor of Influenza Virology, who has devoted a great deal of time to providing common sense advice amidst a sea of sometimes rather alarmist headlines. This edition contains an interview with her and you can read more about her research and opinions on swine flu on page 23.

If it has been a busy time for Imperial, the same can also be said for many of our alumni, and we are always delighted to hear about the new developments in your lives and careers. For one in particular, 2009 has been a record-breaking year. In March mechanical engineering alumnus

Richard Jenkins became the proud holder of the world land speed record for a wind-powered vehicle, beating the previous record of 116mph by just over 10 mph. He has now got his eye on the ice speed record – you can read more in our interview with him on page 10.

The many and varied achievements of Imperial's staff, students and alumni provide a reminder of the many ways in which universities benefit society. That brings me to the other major theme of the year – the ongoing recession and its effects. These, I fear, are set to influence UK universities for some time to come, due to levels of public debt and the inevitable squeeze on government spending. I feel very strongly that this is precisely the time that the UK must treasure and invest in its world-leading universities, whose teaching and research is of enormous economic as well as societal value. It is a message I am making to policy makers at every opportunity, and I hope that many of you will join me in doing so.

Some of you may have spotted recent reports that Imperial, along with other Russell Group universities, has declined a Government offer of extra but

unfunded undergraduate places for UK students. We took that decision because we believe that unfunded places are not in the best interests of current or future students, who have a right to expect a high quality education. Even with the teaching grant, Imperial loses an average of £2,500 per home/EU undergraduate student per year. In difficult economic times, the College's focus is to preserve and foster the academic excellence for which it is globally known and to ensure that its students are provided with the high quality education they deserve and upon which the UK's future economic prosperity depends.

As ever, I would be delighted to hear your opinions on these important issues.

Warm regards

Sir Roy Anderson

New ceremonial mace unveiled



MARTIN STEWART

The Prime Warden of the Goldsmiths' Company presents the mace to Lord Kerr of Kinlochard, Chairman of Imperial's court and council

its longstanding relationship with Imperial, will be used in future ceremonies to lead the academic procession into the Royal Albert Hall.

Weighing 7.1 kilograms and measuring 1.2 metres, the £25,000 mace incorporates a helix-shaped stem representing the structure of human DNA to reflect the College's mission to carry out and apply cutting edge scientific research. It is topped by a head depicting Imperial's crest and also includes the Goldsmiths' Company's coat of arms.

Sir Roy Anderson, Rector of Imperial, said: "We are enormously grateful to the Goldsmiths' Company for this generous and beautiful gift. It was a landmark occasion for the College to achieve independence and receive its new royal charter in 2007, and it is wonderful to have a tangible representation of that in this mace."

A silver and gilt mace created to mark the independence of Imperial College London made its first appearance at the Postgraduate Awards Ceremony in May 2009.

The mace, donated by the Goldsmiths' Company in recognition of



Sir Roy Anderson welcomes Gordon Brown to the College

Prime Minister Gordon Brown visited the College in July 2009 for the launch of the Office for Life Sciences Blueprint, a new government vision for healthcare innovation. He was joined by Lord Mandelson, Secretary of State for Business, Innovation and Skills; Lord Drayson, Minister for Science and Innovation; and Lord Darzi, former Health Minister for Quality and Innovation and Professor of Surgery at Imperial.

During the visit, the ministers enjoyed

a debate on how the environment for life sciences companies in the UK can be transformed to ensure faster access for patients to cutting edge medicines and technologies.

They were also given a tour of the Institute of Biomedical Engineering, where researchers are developing robot-assisted surgery techniques which greatly reduce patient trauma and speed up recovery times; and the laboratories of spin-out company DNA Electronics.

Imperial pledges to clean up its construction waste

Imperial became the first UK university to sign up to the WRAP (Waste and Resources Action Programme) voluntary agreement in February 2009. The agreement helps organisations set targets to reduce the amount of construction, demolition and excavation waste they send to landfill.

The College aims to halve the amount of construction waste it sends to landfill by 2012 by reusing and recycling waste materials. It is also developing guidelines for future construction projects that include working with materials that are renewable and long lasting, and designing buildings efficiently, so that the amount of materials used is reduced and less waste is generated.

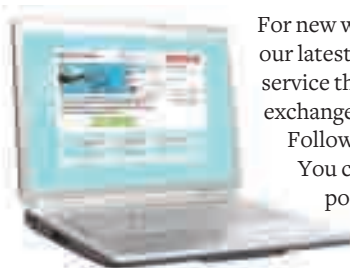
Steve Howe, Director of Building Projects at the College, said: "At the moment much construction waste comes from over ordering materials and fabricating on site. With this new agreement we are now examining opportunities to fabricate off site and reduce waste by ordering smaller deliveries of materials, as well as reusing and recycling more."

He added: "As a university we recognise that we have a duty to our neighbours and to society to spend money wisely, to reduce wastage wherever we can, and to support government and EU targets for waste reduction."



Ministers put healthcare innovation in the spotlight

Stay connected



For new ways to keep in touch with the College and to hear our latest news, follow us on Twitter. Twitter is a free service that lets you keep in touch with people through the exchange of quick, frequent messages.

Follow Imperial at www.twitter.com/imperialcollege.

You can also download the College's monthly magazine podcast for the latest research developments at www.imperial.ac.uk/media/podcasts.

Library collaboration to safeguard research journals

Imperial College London is leading the new UK Research Reserve (UKRR) programme, which will see low-use research journals stored and maintained by the British Library, freeing up university library space to be used in different ways.



Access to the journals will be through the British Library, and researchers and students will be able to access the journals through an ordering and delivery system.

The UKRR is a five-year programme funded through a £9.84 million grant from the Higher Education Funding Council for England.



New internship programme to beat the recession



Imperial College London has launched a new Graduate Internship Programme to assist recent graduates in the challenging economic climate, offering them experience of working for a university and enhancing their future employability. Interns will undertake a paid six-month placement within a College department.

Graeme Rae, Graduate Internship Programme Manager, will act as mentor to the interns. He says: "These internships offer a fantastic opportunity for graduates to pick up some vital work experience and get a leg up to the workforce. It's a great chance to learn about the management of a complex and varied organisation, and to benefit from the College's extensive staff development programmes."

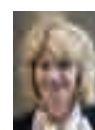
Awards and Honours

New Royal Society Fellows



A microbiologist, a theoretical physicist and a structures expert from Imperial joined the Fellowship of the Royal Society in May 2009. Professors Martin Buck, Division of Biology (pictured top); Michael Duff, Department of Physics (pictured middle); and Robert Ainsworth, Department of Mechanical Engineering (pictured bottom) bring the number of Royal Society Fellows at Imperial to 66.

Buckingham wins prize



Professor Julia Buckingham, Pro Rector for Education, has been awarded the 2009 AstraZeneca Prize for Women in Pharmacology by the British Pharmacological Society. The prize recognises women whose career achievements have contributed significantly to the public's understanding of a particular field through excellence in research.

Professor Holden's new fellowship

Professor David Holden, Division of Investigative Science, is one of 73 microbiologists elected to become Fellows of the American Academy of Microbiology. Fellows are elected annually through a highly selective peer review process, based on their records of scientific achievement and original contributions that have advanced microbiology.

Success in Birthday honours



Two Imperial academics have been recognised in the Queen's Birthday Honours 2009. Professor Anne Dell (pictured top) was made a CBE and Dr Caroline Shuldham (pictured bottom) received an OBE. In addition, former Deputy Rector of Imperial, Professor Sir Bill Wakeham, received a knighthood.



Professional development for healthcare managers

Allied health professionals and junior clinicians will be able to develop their management skills through a new, flexible Continuing Professional Development programme beginning in October 2009. Management skills are crucially important in modern healthcare systems. Healthcare managers are expected to supplement their existing clinical skills, to effectively manage resources, budgets and people.

Delegates do not require any previous business or management qualifications and can opt for those courses most relevant to their own progression. Courses on offer are Accounting, Health Informatics, Health Economics and Management Challenges of Healthcare Organisations.

Each course offers the latest theory and techniques, supported by real-life case studies and external speakers working in the healthcare industry. This ensures that course content remains practical and rooted in current best practice. A certificate of attendance will be awarded on completion of each course; all courses are currently under review by the Royal College of Physicians for accreditation.

More information can be found at www.imperial.ac.uk/cpd.

Investment institute acknowledges Business School excellence



The Securities and Investment Institute (SII) has designated the Business School a SII Centre of Excellence in the field of finance. The decade-old MSc Finance programme becomes the first taught programme in London with both SII exemption and Chartered Financial Analyst partner programme status.

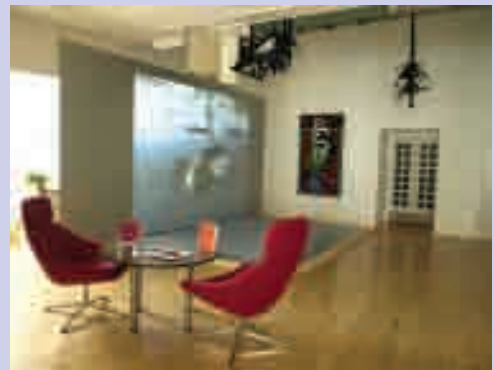
Current and future MSc Finance students will benefit from exemption

from the Institute's examinations. The SII is also exploring other possible exemptions for Imperial College Business School students, for example the MSc Risk Management and Financial Engineering programme. The SII and the Business School have also agreed to establish a jointly organised annual lecture.

Lina El-Jahel (pictured), MSc Finance programme director, said: "Students now gain a clear route to a SII diploma level qualification in the normal course of their studies. This agreement demonstrates that the programme is in tune with needs of the practitioner community and market practice."



Design London offers new state-of-the-art simulation equipment



Design London, a collaboration between the Imperial College Business School, Faculty of Engineering and the Royal College of Art, opened a new Innovation Technology (IvT) Centre in mid-June.

IvT comprises of a range of tools at the forefront of design-led innovation. Whilst manufacturers have long enjoyed rapid-prototyping and CAD as part of their development process, service and system designers are only now realising the benefits of being able to cheaply and quickly see, use and play with their ideas away from the market.

"We now offer the best three-dimensional, real-time visualisation equipment for use by our students and industrial collaborators," said Nick Leon, Design London's director. "We are thrilled to have this technology which allows us to view and interact with early stage products and services as they are progressing toward the consumer."

The IvT Centre also brings together the rapid prototyping and digital three-dimensional printing resources of the Royal College of Art, with the immense expertise of Imperial in fields such as medical imaging, computational fluid dynamics and structural analysis. Taken together, Design London now offers IvT for each stage of service and product development, from design and visualisation through to digital manufacturing.

Meteorite bombardment may have made Earth more habitable



Large bombardments of meteorites approximately four billion years ago could have helped to make early Earth and Mars more habitable for life by modifying their atmospheres, suggested a paper for the journal *Geochimica et Cosmochimica Acta* in June 2009.

Imperial College London researchers analysed meteorites and data from an ancient meteorite shower called the Late Heavy Bombardment (LHB). When they enter the Earth's atmosphere, meteorites deliver water vapour and the greenhouse gas carbon dioxide. The researchers found that during the LHB, enough water and carbon dioxide were delivered to make Earth and Mars wetter and warm enough to sustain liquid oceans.

"The Late Heavy Bombardment may have been a pivotal moment in our early history where Earth's atmosphere finally had enough of the right ingredients to nurture life on our planet," said Professor Mark Sephton, Department of Earth Science and Engineering.



On-the-spot DNA test of tolerance to prescription drugs

A handheld device to predict whether patients will respond adversely to medication is one step closer to the market, thanks to a new partnership announced in February 2009.

Researchers from Imperial, and its spin-out company DNA Electronics, have developed a prototype healthcare device that works by analysing genetic variations called single nucleotide polymorphisms (SNPs) found in DNA. These are the parts of human DNA that make us all respond differently to disease, bacteria, viruses, toxins or medication.

"The 'SNP Dr' device could provide another layer in the treatment process that could help GPs to personalise treatments according to the genetic requirements of each patient," said lead researcher Professor Chris Toumazou, Institute of Biomedical Engineering.



New centre spearheads synthetic biology research

Programming biological cells so that they behave like engineering parts is the focus of research at a new UK centre which was launched in December 2008.

The £8 million Centre for Synthetic Biology and Innovation focuses on synthetic biology, a field in which engineers work with molecular bioscientists to produce biologically-based parts, by modifying DNA. These parts could be used to build biological devices that can detect the early onset of cancer or combat harmful bacterial infections such as *E. coli* or MRSA.

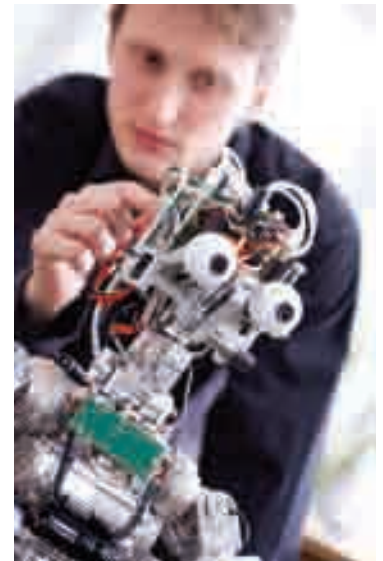
"Imperial will recruit the best scientists from the UK and around the world to carry out collaborative research, generate intellectual property for licensing, and ultimately create spinout companies that will play a part in spawning new industries for the UK," said Professor Dick Kitney, Co-Director of the Centre.

Humanoid robot helps scientists understand intelligence

Scientists say that the delivery of a humanoid robot to Imperial in March 2009 will help them to push forward their work on artificial intelligence and could lead to a deeper understanding of human intelligence.

Researchers from the Departments of Electrical and Electronic Engineering and Computing are using the humanoid robot called iCub to further their research on cognition. This is the mental process of knowing, awareness, perception, reasoning and judgment.

"If we want to understand the nature of cognition better then we really need to understand it in the context of something that moves and interacts with objects. That is where iCub can help us," said Professor Murray Shanahan from Computing.



Pleasant music could restore vision in stroke patients



Patients who have lost part of their visual awareness following a stroke can show an improved ability to see when they are listening to music they like, according to a study published in March 2009 in *Proceedings of the National Academy of Sciences*.

In the new study, patients with impaired visual awareness following a stroke could identify coloured shapes and red lights in their depleted side of vision much more accurately while

they were listening to their preferred music, compared with listening to music they did not like or silence.

Dr David Soto, Division of Neurosciences and Mental Health, said: "Music appears to improve awareness because of its positive emotional effect on the patient, so similar beneficial effects may also be gained by making the patient happy in other ways. This is something we are keen to investigate further."

Dangerous liaisons: bacterial 'sex' causes antibiotic resistance



Some disease-causing bacteria are becoming resistant to antibiotics because they have peculiar sex lives, say Imperial researchers who published results in *Science* in June 2009.

The study, which looked at bacteria called pneumococcus (*Streptococcus pneumoniae*), helps scientists understand how bacteria develop resistance to antibiotics, which is a major challenge for those treating infectious diseases. The findings suggested that bacteria can become resistant to antibiotics if they pick up DNA from other species of bacteria.

Dr William Hanage, Division of Epidemiology, Public Health and Primary Care, said: "Our research shows that bacteria which do this, that is undergo sex, with their own and other species are more likely to develop resistance to antibiotics, protecting them from being killed by these drugs."

UV light cuts spread of TB

Ultraviolet lights could reduce the spread of tuberculosis in hospital wards and waiting rooms by 70 per cent, according to a study by Imperial scientists published in *PLoS Medicine* in March 2009.

Ultraviolet C (UVC) light kills tuberculosis bacteria, including drug resistant strains, by damaging their DNA so they cannot infect people, grow or divide. The study compared the transmission of tuberculosis (TB) from infected patients to guinea pigs, from rooms with and without UVC lights, showing that UVC light reduces the spread of infection.

Dr Rod Escombe, Division of Investigative Science, said: "When people are crowded together in a hospital waiting room, it may take just one cough to infect several vulnerable patients. Preventing infection is much easier and cheaper than treating a patient with tuberculosis."



Is your environment damaging your health?

The damage that our modern living and working environment could be doing to our health is being investigated by a new £5 million MRC-HPA Centre for Environment and Health at Imperial and King's College London, launched in June 2009.

The new Centre will analyse the health of people across the UK and how this is affected by aspects of the environment in which they live and work, from traffic fumes and noise from overhead aircraft, to chemicals in the environment such as the by-products of disinfection in the water supply.

Professor Paul Elliott, Director of the new Centre, said: "It's quite difficult to work out whether certain pollutants are affecting our health because we are exposed to so many over such long periods of time. Our new Centre is developing methods to look at the exposure of many thousands of people."

› More news online at www.imperial.ac.uk/news › New trigger for chronic inflammation in rheumatoid arthritis discovered

EUROPEAN SPACE AGENCY



Blasting off for snapshots of the birth of planets, stars and the universe

Imperial physicists celebrated the successful launch of two new multi-million euro space telescopes in May 2009, which could transform our view of how planets, stars and galaxies are born, and give new insights into what the universe was like shortly after the Big Bang.

Scientists from the College's Astrophysics Research Group have been involved with the two European Space Agency (ESA) space telescope missions, named Herschel and Planck, since they were first proposed 20 years ago.

Once fully operational, Herschel will capture long wavelength light from some of the coldest objects in the universe.

Dr Dave Clements, who leads Imperial's Herschel team, explains: "The great thing about Herschel is that it will reveal more about what's going on deep inside those massive dusty towers where stars and planets are formed, which we've seen with the Hubble telescope."

Planck will look at even longer wavelength radiation than Herschel. This radiation, known as the cosmic microwave background, is a relic or echo of the Big Bang itself. Fluctuations in its temperature can give scientists clues to what the universe's early years were like.

Deforestation causes 'boom-and-bust' development in the Amazon

Clearing the Amazon rainforest only has a short-term positive impact on Brazilian communities' wealth and quality of life, according to a new study published in *Science* in June 2009. The research, co-authored by Dr Rob Ewers, Department of Life Sciences, shows that levels of development revert back to well below national average levels when the loggers and land clearers move on.

Since 2000, 155 thousand square kilometres of rainforest in the Brazilian Amazon have been cut down for timber, burnt, or cleared for agricultural use. Dr Ewers and his colleagues analysed changes in the average life expectancy, literacy and per capita income of people living in 286 Brazilian-Amazon municipalities with varying levels of deforestation.

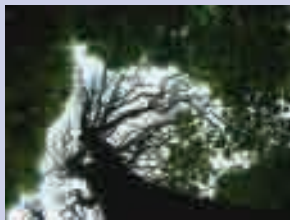
The quality of local people's lives increases quickly during the early stages of deforestation, probably because people capitalise on newly available natural resources, including timber, minerals and land for pasture. However, these improvements are transitory and the level of development returns to below the national average once the area's natural resources have been exploited and the deforestation frontier moves on to virgin land.

Dr Ewers said: "Along with environmental concerns, this is another good reason to restrict further deforestation in the Amazon."



ALEXANDER LEES

Is the UK prepared for Sudden Oak Death?



Imperial researchers have been commissioned to carry out a Government review of Britain's ability to stop the spread of so-called Sudden Oak Death disease.

Despite its name, Sudden Oak Death does not affect just oak trees. The disease can infect a wide range of trees and shrubs found in the UK including beech, ash, yew, rhododendron,

magnolia and heathers. It can kill them by creating cankers which girdle their trunks or stems, and clog up their water-carrying 'veins'.

Leader of the new review, Dr Clive Potter from the Centre for Environmental Policy, said: "A review of the strategies being employed against these new woodland diseases is timely. It will enable us to bring experience from the past to bear, and to evaluate the effectiveness of current policies."

Medics triumph in JPR Williams Cup

This year's annual Varsity Day took place on 25 February 2009 with matches between Imperial College London and Imperial Medicals at Harlington Sports Ground, *Ethos* and Wilson House during the day, whilst the evening JPR Williams Cup match was played at Richmond Athletic Association Ground.

With 42 teams, 21 matches and nine different sports including rugby,



Medics lift the JPR Williams Cup

football, hockey, lacrosse, netball, squash, waterpolo, basketball and badminton, it was a thrilling day packed with fierce competition.

A full-time score of seven all at this year's JPR Williams Cup match between the Rugby 1st XV's forced the match into extra time. The medics seized the opportunity to push forward scoring from a penalty and scoring a try bringing the final score to 15-7 in their favour and making them JPR Williams Cup champions for the seventh time.

It wasn't all misery for the Imperial College London side, however, as overall they were the clear winners beating their medical counterparts by 13.5 points to 7.5.



Raising aspirations

The Blyth Gallery, Imperial's contemporary art gallery, hosted the third annual outreach photo exhibition during June 2009. The exhibition highlighted the College's outreach activities during the 2008-09 academic year, from summer schools and tutoring schemes to volunteering projects and open days.

Imperial has been actively involved in schools' mentoring and tutoring programmes for over 30 years. Each year over 200 undergraduate and postgraduate students volunteer to take part in the Outreach Office's schemes to provide local state primary and secondary schools with positive role models.

The longest running scheme is the Pimlico Connection, which places undergraduates in partner schools as classroom assistants and mentors. The Outreach Office aims to encourage the most able students to apply to Imperial for undergraduate study, raise aspirations among school students to consider applying to higher education and inspire interest in studying science, engineering and medicine.

You can view an online photo gallery at www.imperial.ac.uk/outreach/news/gallery, and you can find more information about forthcoming exhibitions at the Blyth Gallery, visit www.imperial.ac.uk/arts.



Fierce competition at Henley

Three Imperial crews qualified for this year's Henley Royal Regatta, which took place from 1-5 July this year.

The Temple Challenge Cup, a men's coxed eight competition, began with a confident Imperial crew (pictured above) taking on a University of Exeter team in the first round and beating them by two thirds of a length. Facing the University of Melbourne in the second round the following day, the Imperial crew unfortunately had their confidence shaken by their single length defeat.

The Prince Albert Challenge Cup, last won by Imperial in 2006, saw the Imperial crew solidly finishing the first round and beating the University of Reading by two and three quarter lengths. They went on to battle hard in the next round against Yale University, but Yale took the lead from the start and the Imperial team could not come back. Imperial's coxless pair, Wilkinson and Todd, competed in Silver Goblets and Nickalls' Challenge Cup and faced a tough field littered with Olympians. The pre-qualified crew sadly crashed out in the opening round to Australian pair Alfred and Buckland.



The Albert crew prepare for the race



Note from the Editor



The last time you heard from me I told you that I would try to free the cat, or to put it another way, to make sure that *Felix* remains

independent. Being able to comment freely on what happens at the Union is something that we should be able to do, and it is something that we should be able to continue to do for years to come. Looking back at the year, I think that this has been achieved. So as we enter our 60th year, I hope that my successor, Dan Wan, can continue to uphold the traditions that make *Felix* what it is. So it's goodbye from me, and hello from him.

➤ Jovan Nedic, *Felix Editor-in-Chief 2008-09*

Update on the Archive

After several set-backs, namely financial ones, we are glad to report that the project to digitise our archive is well underway and should be completed by November 2009. The project, however, still requires some additional funding to create a high quality user interface; follow the progress at www.felixonline.co.uk.



Imperial's clubs and societies soar to the top

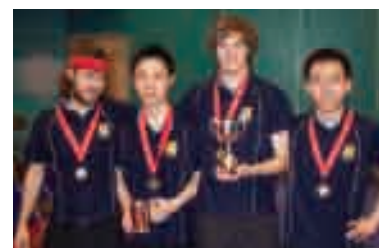


It has been a phenomenal year for Imperial's clubs and societies. The Boat Club, as ever, has led the way bringing home a boatload of British Universities and Colleges Sport (BUCS) trophies, however, it has not been the only club to do so!

The women's fencing team was narrowly beaten in the championship final by the University of Oxford team; however, being the second best fencing side in the country is a great achievement nonetheless. Eugene Weiming Siew and Rahul Bose came away with silver and bronze medals respectively in the judo competition whilst the snooker club also took a bronze.

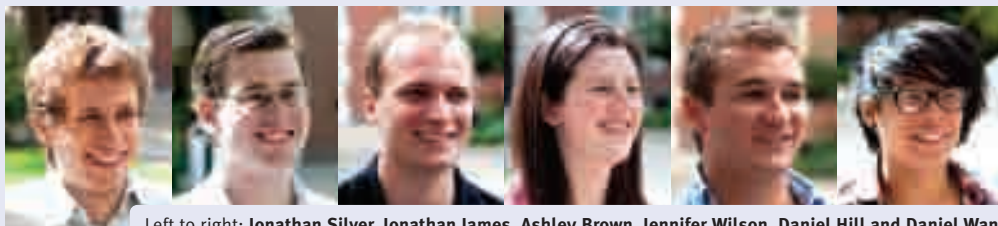
The men's and women's volleyball, men's table tennis, swimming, and indoor athletics teams also represented Imperial at the BUCS finals, which were held in March 2009. The men's volleyball and table tennis teams were victorious. Special mention also goes to table tennis' Eddie Liu, who was named player of the tournament.

Outside the sporting scene, the Jazz Big Band was crowned the best big band in the country when they won the Gold Award



at the National Concert Band Festival. As can clearly be seen, the extra-curricular side of Imperial is both active and successful, something that the students should be proud of.

New sabbaticals welcomed into new Union



Left to right: Jonathan Silver, Jonathan James, Ashley Brown, Jennifer Wilson, Daniel Hill and Daniel Wan.

The new sabbatical team that will lead Imperial College Union next year have moved into their offices, with one extra sabbatical officer in tow. After months of debate in the Union's council, it was decided that the position of Deputy President (Education and Welfare) would be split into two new positions. Since Imperial now stands truly alone, without the support of the National Union of Students or the University of London, there was a need for more work to be done for our students' welfare and education, and the creation of the new positions are expected to achieve this.

Jonathan Silver and Jonathan James were elected as the

Deputy President (Education) and Deputy President (Welfare) respectively, in an election that saw a record turnout of 30 per cent of the student population. Most positions were hotly contested; however, the presidential position only saw one candidate run. As a result, Ashley Brown, stalwart of the Union, was elected President, whilst Jennifer Wilson was elected Deputy President (Clubs and Societies) and Daniel Hill was elected Deputy President (Finance and Services).

The most hotly contested position was for *Felix* editor which saw just over 3,000 students vote, with the eventual winner being Daniel Wan.



Faster than the speed of wind

A chronicle of Richard Jenkins' journey to harness the power of the wind and build the fastest wind powered vehicle on Earth.

by Zoë Perkins

If you happened to be driving along Interstate 15 through the Ivanpah Valley in California on 26 March 2009, you may have seen a flurry of activity through the dust and the haze of Ivanpah's dry lake.

A bright green land yacht comes to a standstill alongside the highway and, as it does, a gloved hand pops out of a little hatch on the front of the yacht with its thumb raised. A young Englishman, with a matching green helmet, climbs out the cockpit and rushes straight to the back of the now stationary yacht to get a glimpse of the GPS unit which holds an all important number – the speed he's just travelled. He is quickly joined by a handful of onlookers; a few seconds later their loud cheers are being carried away on the wind.

This Englishman, Richard Jenkins (Mechanical Engineering 2000), and his land yacht, the Greenbird, have just set a new world land speed record for a wind powered vehicle of 126.2 miles per hour.

Revelling in his achievement, Richard said: "With any other speed record, more power means more speed, so you can put a bigger engine in the vehicle and you will always go faster, almost without exception. In this instance that's not the case; more wind doesn't mean more speed. You have to find a genuine engineering solution to maximise the lift-drag ratio for the specific surface you're running on, at the time of year that you're there. Once you get all of that technically correct then you've got to be incredibly lucky with the weather. It's an insanely difficult challenge."

With the Clarks Mountains to the north west, the Ivanpah Range to the west and the New York Mountains to the south east, the Pacific wind is funnelled through the Ivanpah Valley and over its lake; a perfect setting for Richard to set the world record. It also happens to be the place where American Bob Schumacher set the previous record in 1999. Bob and his land yacht, the Iron Duck, set the bar for Richard at 116.7 miles per hour, and it took some beating. Ten years worth of designing, building, and honing his land yacht to perfection, in fact.

Richard spent a huge proportion of his final year in Imperial's Donald Campbell low speed wind tunnel completing his thesis on land and water speed records. As it happened, some friends who Richard had previously worked with at a boat yard in Hampshire had started building a land yacht for one of their clients, which had become too time consuming and complicated to finish. So, after completing his degree, Richard was able to pick the project up where they had left off.

Explaining why his degree has played such an important part in his career, he said: "I've designed and built all the vehicles, so I've needed to fully understand how to engineer them, and although I didn't learn all of that at Imperial, I certainly learnt the basics."

"With any other speed record, more power means more speed, so you can put a bigger engine in the vehicle and you will always go faster. In this instance that's not the case; you have to find a genuine engineering solution."

Faster than the speed of wind

RAF Waddington in Lincolnshire was Richard's base for two and a half years, during which time progress was slow but the land yacht evolved quite considerably. He clocked 113 miles per hour, but the yacht had reached its limits. Working on RAF Waddington's runway, with its limited length, meant that rather than evolving a high-performance land yacht, Richard had developed a yacht with a dragster configuration so that it could accelerate and decelerate quickly. Not only that, the British weather just wasn't cooperating and the regulations of the North American Land Sailing Association (NALSA) stipulate that a world record run has to be on a natural surface. It was time to try something new and Ivanpah, with its hard, clay-like surface, was calling.

But things didn't go according to plan when he arrived; Richard quickly learnt that on tarmac a land yacht could do up to five times the wind speed, but on dirt you're looking at closer to four times the wind speed. Instead of travelling forwards the yacht was slipping sideways because it didn't have enough grip. It was going 20 per cent slower on the lake's natural surface. He commented: "There was an awful moment where it dawned on me that I'd actually been evolving completely

the wrong machine. It's a bit like a Formula One car compared to a rally car, they go at similar speeds but they're very different machines."

Richard set off in search of a higher traction surface and better winds. There are only a handful of other locations suited to this level of land sailing around the world, and even fewer locations still that are practical for getting observers to. With the window of opportunity just one month a year in each country another constraint, Smith Creek in Nevada and Lake Lefroy in Australia rank highly as alternatives to Ivanpah.

It was to Lake Lefroy that Richard was headed, along with a new version of the yacht. He said: "If you haven't got enough traction on the ground you need to use less power, so I wanted to test a new concept with less power and less drag. It was an experimental craft – a steel version – with really skinny wings, and a very low drag profile. But it had what's called flutter in aerodynamic terms, where the wing just oscillates, which is caused by a combination of structural and aerodynamic instabilities. It was a real mess, and the closest I've come to dying during the whole project."

By this time it was 2007 and, in one last ditch attempt, Richard "borrowed a

whole heap of cash to build the final, ultimate machine, which was going to get this record."

Fortunately things were starting to look up for Richard. The new yacht, hastily put together in just 30 days in Thailand, was a vast improvement, doing 95 miles per hour on its very first run, now back in Australia. With the wind blowing at 50 miles per hour, and "the best conditions you could ever ask for" this could have been Richard's opportunity to break the record, but it wasn't to be. A small amount of flex in the tail wing meant that Richard couldn't accurately control the yacht's power. All that was needed to make it record-ready were some small tweaks.

Lamenting his misfortune on this occasion, Richard said: "It's a combination of being technically perfect, being in the right place at the right time to capitalise on the weather, and having the right people watching. I did break the record once by myself in the middle of the airfield, no timing gear, no one watching, just the speedo so I could see how fast I was going."

Another two years and numerous attempts at the record still didn't see these elements all come together. Three inches of rain totally flooded Lake Lefroy calling off a shot at the record in June 2008 – it was particularly disappointing on that occasion because so sure was Richard that everything was ready, a

"There was an awful moment where it dawned on me that I'd actually been evolving completely the wrong machine."

Greenbird's evolution in pictures



The beginning of a long journey

Designed for a high traction tarmac surface, Mark I was a symmetrical land yacht.



New to natural surfaces

Although Mark II was a similar configuration, the lower traction surface of Nevada's Smith Creek required a smaller sail and a higher aspect ratio.



New concept

Mark III, shown at Lake Lefroy in Australia before its only run, was a crude steel experiment to test an asymmetric, low drag configuration.

whole film crew had travelled to Australia to record his record-breaking attempt. They didn't even see the yacht, newly sponsored by Ecotricity, move. The entirety of November 2008 was spent sitting in Ivanpah, but Richard waited in vain for the wind to blow – there wasn't even a single day of wind. Even when he arrived at Ivanpah on 24 March 2009 and the conditions were perfect, the Greenbird could only manage 83 miles per hour. In front of 200 expectant spectators, it was “embarrassing”.

By this stage, Richard was starting to doubt whether breaking the record was even possible but three days and lots of fine tuning later, the wait was finally over.

The strong winds that Richard had been enjoying for the previous two days were meant to have passed, so the objective that day was actually to try to capture some of the footage they were meant to get in Australia the previous year, but events took an unexpected turn. Richard said: “There was totally unforecast wind; it was perfect because it was a really unusual angle of wind for Ivanpah which gave me a much longer run up. The lake's very long and thin, so I could start at one end and get much greater acceleration.”

Describing what it's like at the wheel of the Greenbird, Richard said: “The wind varies down the length of the course, and you don't know ahead of time whether it's going to get stronger or

weaker, so even though the power setting on the craft is the same, you accelerate and decelerate down the course depending on how strong the wind is. You're always hunting the best angle to the wind to maximise the speed and direction, so it's an involving thing to do.

“The conditions were really bad in terms of visibility. I could only see 300 yards in front of me, which is two or three seconds of running at that speed, and there are obstacles that you can hit. Skidding into a pipe or well head would have been terminal.”

Ten years and two days after Bob Schumacher set the previous record, the Greenbird easily reached and surpassed its target. This time there were four official NALSA observers, along with 100 onlookers, to verify the run.

Richard added: “The acceleration curve was very steep – there was no levelling out – so I was aware at the time that the Greenbird could actually go faster, but I was already 10 miles per hour over the record and the yacht was still in one piece. I remember thinking, ‘Do I try to go faster? But actually what have you got to gain by going faster? Probably not much right now’.”

For the moment at least, Richard

doesn't think that there are any serious pretenders to his crown. His own experience has taught him how hard it is to get a perfect run, so it's fairly safe to say Richard won't have anything to worry about for a while, and anyway, he's got other things on his mind right now. Like the ice record.

“The yacht should be faster on ice because it's got less drag,” he said, “but it's actually slower, which is anomalous. I want to find out why, and if it's possible to go faster.”

This time there's an extra element to throw into the mix, there isn't a tried-and-tested surface waiting for Richard to show up. The ice has to be absolutely perfect and to find it in that condition there's a brief window between when a lake freezes and when the ice starts to deteriorate, either through cracking or snow fall. Richard said: “Even if you get half an inch of snow, the lake's toast because the snow drifts, mounts up and becomes like a frozen mogul field. You've got between one day and two weeks at the start of the season in mid-December.”

Until Richard knows which is the fastest wind powered vehicle on Earth, he won't be content. This man's work might never be done. m

“You're always hunting the best angle to the wind to maximise your speed and direction.”



Almost doesn't count

Less wing area still and a very low drag profile, Mark IV was more refined and made entirely of carbon fibre.



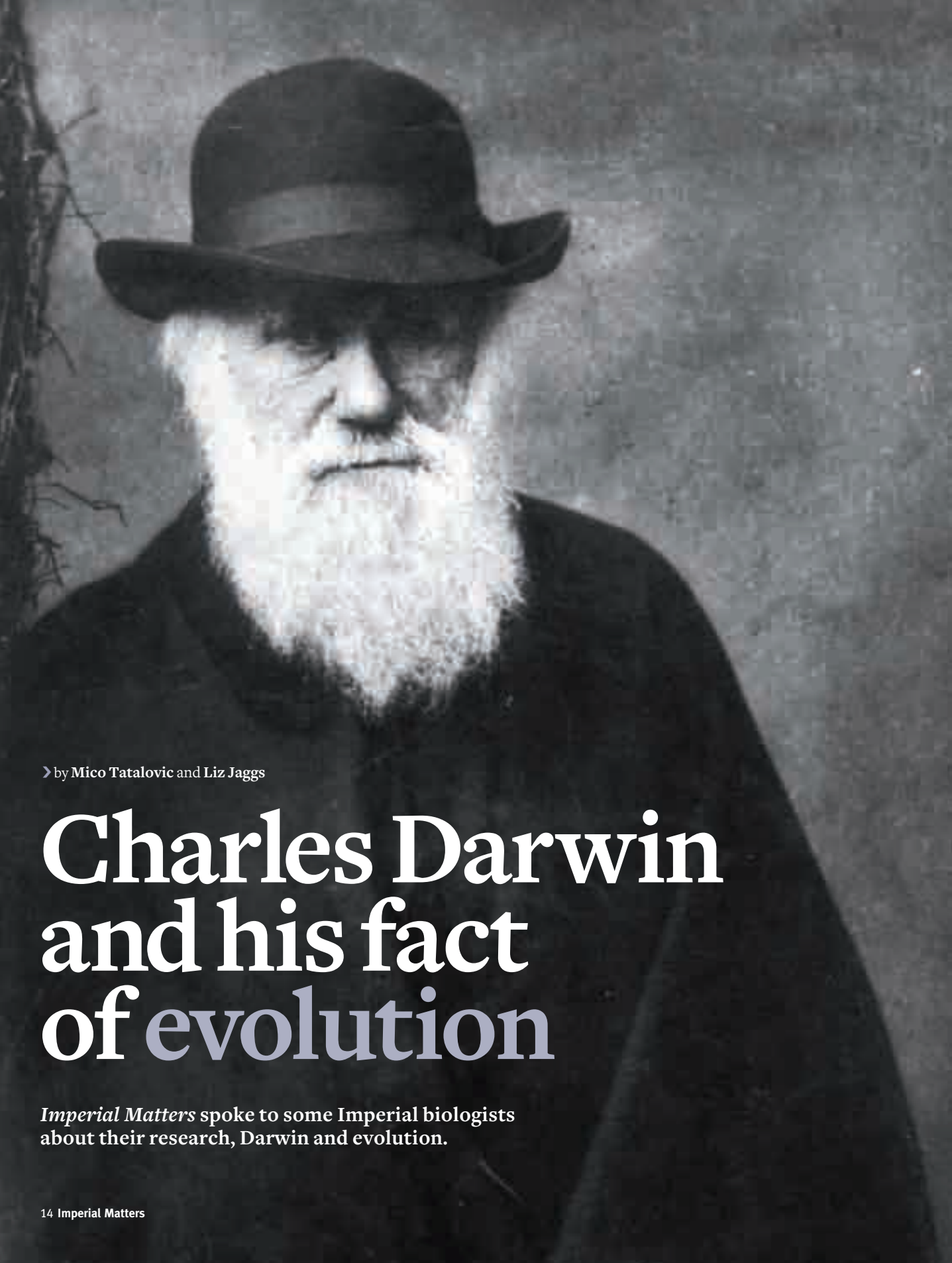
Record breaker

Mark V was fully evolved in terms of wing size and shape, with the least possible parasitic drag.



Jubilation

After 10 years, the wait is finally over! The Greenbird is the fastest wind powered vehicle on Earth.



› by Mico Tatalovic and Liz Jaggs

Charles Darwin and his fact of evolution

Imperial Matters spoke to some Imperial biologists about their research, Darwin and evolution.

For Charles Darwin enthusiasts around the world, 2009 is a special year, marking not only the 200th anniversary of the naturalist's birth but, more crucially, the 150th anniversary of the publication of *On the Origin of Species*, his revolutionary book which established evolution as the dominant scientific explanation of diversification in nature.

Charles Darwin was not the first person to come up with the idea of evolution; indeed even his grandfather, 18th century physician Erasmus Darwin, thought evolution happened. But, alongside fellow naturalist Alfred Russel Wallace, he was the first person to devise the correct mechanism to explain how evolution occurs. This mechanism was natural selection, a process by which the heritable traits that make it more likely for an organism to survive and successfully reproduce become more common within a population over successive generations.

Darwin and Wallace independently came to the conclusion that species change through time via natural selection and they presented their ideas together in a joint paper called *On the Tendency of Species to Form Varieties; and on the Perpetuation of Varieties and Species by Natural Means of Selection* in 1858. However, it was Darwin's subsequent book, *On the Origin of Species*, published a year later, that, for the first time, amassed an enormous amount of evidence for natural selection from various strands of natural and physical sciences into an intriguing and very readable account, bringing the subject firmly into the public arena.

Some of the evidence presented in Darwin's book was collected during his life-changing voyage on *HMS Beagle*, which marked a five-year period (1831–1836) during which his geological and biological studies first led him to question the common view that species were created as fixed entities. From these early musings onwards, Darwin's concept of evolution through natural selection changed the way we view life, and is often described as one of the most important ideas to occur to a human being.

It is, then, not surprising that, as the anniversaries of such significant milestones in Darwin's life take place,

news stands have been packed with magazines carrying stories about Darwin and his theory; and museums, universities and other learned societies around the globe have organised exhibitions and events dedicated to the great man and his work.

Imperial College London has been no exception to this, with articles about Darwin and the implications of his theory for current science and society featured in student publications, and a series of events and lectures taking place throughout the first half of the year. The College's events began on 9 February 2009, with the launch of a new book by eminent Darwinian historians Adrian Desmond and James Moore. *Darwin's Sacred Cause* is described as a ground breaking re-evaluation of Darwin's scientific ideas and the authors' conversation with Imperial biologist and journalist Dr Olivia Judson can be viewed at www.imperial.ac.uk/media/onlinelectures.

Merely days later, to coincide with Darwin's birthday on 12 February 2009, the Faculty of Natural Sciences held a Darwin Day, inviting distinguished speakers to discuss his impact on modern science. Writer Matt Ridley, Charles Darwin's great, great grandson, Randal Keynes OBE, and the College's Professor of Evolutionary Biology, Armand Leroi, entertained and informed a packed lecture theatre. Other events included a pub quiz-style presentation by Darwinian historian Dr Joe Cain of UCL, and a lecture about the hidden history of animal life by Professor Martin Brasier from the University of Oxford.

Imperial's robust participation in marking Darwin's special year has been fuelled, in part, by the College's long standing and eminent Ecology and Evolution section within the Division of Biology, and the complimentary Natural Environment Research Council (NERC) Centre for Population Biology (CPB) at Imperial's Silwood Park Campus, a collaborative centre established to increase knowledge of how ecological systems function. Both are home to researchers who encounter evolution on a daily basis, with many working on ideas that Darwin first formulated, and others developing his views and advancing the field of evolutionary biology.

"In natural selection Darwin established a mechanism for evolution and with his famous tree diagram, a conceptual framework for understanding the diversity of nature."
Dr Tim Barraclough

Dr Tim Barraclough, Reader in Evolutionary Biology

Following a PhD at the University of Oxford, Dr Tim Barraclough arrived at Imperial in 1996 as a NERC postdoctoral research associate. He became a reader in October 2007.

"I work on the evolution of species diversity and aim to understand why life diversifies into the endless forms we call species and the consequences of that diversity on evolutionary processes," says Dr Barraclough. "We do this using a range of study systems, including cases that challenge existing notions about what species are and how they evolve, such as bdelloid rotifers and bacteria, which can reproduce clonally but can also exchange genes widely. The work involves developing new theory, working out methods for testing those ideas, and generating new data."

In the case of bdelloid rotifers, microscopic aquatic animals that live in watery, or occasionally wet, habitats, fossil records and molecular data show them to have existed for over 40 million years without sexually reproducing, instead multiplying by producing eggs that are genetic clones of the mother.

A study by Dr Barraclough and others in 2007 showed some surprising results. He explains: "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 was of two species living in close proximity on the body of another animal, a water louse. One lives around its legs, the other on its chest, yet they have diverged in body size and jaw shape to occupy these distinct ecological niches."

Other recent work involves using bacterial communities to start to explore how evolution proceeds in

Charles Darwin and his fact of evolution

“I think Darwin would have been amazed by what genetics and genomics have revealed on the way species evolve.”

Dr Vincent Savolainen

complex assemblages of species, a process that he terms experimental evolution.

“I want to know how evolution proceeds in complex ecosystems and how new diversity is generated,” he continues. “A lot of evolutionary theory and experiments have focused on single species systems and this has given us an excellent understanding of the genetic mechanisms of evolution, but to translate this into the real world and to understand the rich diversity of nature requires a new approach.”

He believes that Darwin would be amazed by the evidence available to back up the theory of evolution and by the range of techniques that can be used to study it: “In natural selection, Darwin established a mechanism for evolution and, with his famous tree diagram labelled with the words ‘I think’, a conceptual framework for understanding the diversity of nature. He didn’t know the genetic basis of inheritance, and his evidence was mostly circumstantial, but he laid the groundwork with an amazing breadth of vision and insight.”

Professor Tim Coulson, Professor of Population Biology

Professor Tim Coulson completed his PhD at Imperial in 1994, and following spells at the Institute of Zoology and University of Cambridge, returned to Imperial in 2004. A major focus of his work involves developing a general theory to unify ecological and evolutionary dynamics in order to provide improved predictions of the consequences of environmental change, including climate.

Professor Coulson was recently the lead author of a study which provided evidence for climate change as the cause of the mysterious decrease in the size of wild Soay sheep on the remote Scottish island of Hirta, in the St Kilda archipelago.

Body size data for the Soays was analysed over a 24-year period and found to have decreased by approximately five

per cent, contrary to evolutionary theory which suggests that over time the average size of wild sheep increases, because larger animals tend to be more likely to survive and reproduce, and offspring tend to resemble their parents.

Professor Coulson explains: “In the past, only the big, healthy sheep and large lambs that had piled on weight in their first summer could survive the harsh winters on Hirta. But now, due to climate change, grass for food is available for longer periods, and conditions are not so challenging – even the slower growing sheep have a chance of surviving, and are becoming increasingly prevalent in the population.”

In addition, the research team also discovered that the age at which a female Soay gives birth affects the size of her offspring, finding that young ewes are physically unable to produce offspring as big as they themselves were at birth.

“The ‘young mum’ effect explains why Soay sheep have not been getting bigger, as we expected them to,” continues Professor Coulson. “But it is not enough to explain why they’re shrinking, which we believe to be down to climate change. The two factors are combining to override what we would expect through natural selection: primarily an ecological response to environmental changes with evolutionary change contributing relatively little.”

Professor Coulson sees his work as a continuation of Darwin’s ideas: “Darwin developed an easily understandable verbal theory of evolution by natural selection. The mathematical underpinnings of this

theory are still being developed. Challenges arise because quantifying natural selection on complex phenotypic traits in variable environments is mathematically challenging. Darwin’s insights were brilliant, and beautifully simple, turning this theory into a predictive theory is much harder.”

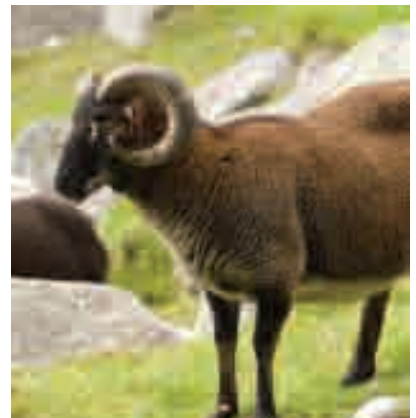
Professor Russ Lande, Royal Society Research Professor

The Royal Society awards a small number of research professorships to outstanding scientists deemed to be intellectual leaders undertaking cutting edge science, providing long-term support and enabling the recipient to focus uniquely upon research and collaboration. Awarded his professorship in 2007, Professor Russ Lande describes the highly sought after position as “the best job in the world”, explaining: “It gives me the freedom to focus on the science that interests me.” It is a responsibility he takes very seriously, and his work is focused upon ultimately producing tools and theories that could benefit the work of evolutionary biologists and ecologists for decades to come.

Professor Lande’s research aims to integrate and unify the theoretical foundations of ecology and evolution particularly in the areas of small population demography and genetics, life history evolution and community dynamics and coevolution. He collaborates widely with biologists around the world who are working



Bdelloid rotifer typical of those studied by Dr Tim Barraclough



Soay sheep studied by Professor Tim Coulson

with populations of species which have complex lifecycles to build a database of species, whose data sets illustrate and inform the methods that he is developing.

Amongst the species included are the long-term studies of birds in Europe undertaken by Professor Bernt Erik Saether of the Norwegian University of Science and Technology, studies of both spatial and temporal effects on tropical butterflies by researchers in the United States, and fellow Imperial ecologist Professor Tim Coulson's studies on the lifecycles of red deer.

He ultimately aims to devise methods that will show those working in the field how to measure natural selection occurring in populations of species with complex lifecycles, as well as shedding light on how fluctuating environments affect the ecology of those populations.

Before arriving at Silwood, Professor Lande spent his earlier career at the Universities of Chicago, Oregon and, more recently, California (San Diego). He has worked over many areas of evolution and ecology including the application of quantitative genetics to animal and crop breeding – artificial selection driven by economical factors – and work in conservation of species including spring-run chinook salmon in Oregon State and the northern spotted owl. His work on the latter eventually resulted in the listing of the owl as a threatened subspecies under the Endangered Species Act, and the implementation of plans to conserve

millions acres of old-growth forests in the Pacific Northwest.

Professor Lande has also worked closely with Professor Georgina Mace, Head of the CPB, co-writing a paper in 1991 for *Conservation Biology* entitled *Assessing extinction threats: toward a re-evaluation of IUCN threatened species categories*. The IUCN (now known as the World Conservation Union) Red List assesses the conservation status of animal and plant species on a global scale to highlight those threatened with extinction, and therefore promote their conservation by local agencies. The paper eventually led to new criteria for the Red List, established by a working group whose membership included Professors Mace and Lande.

Dr Albert Phillimore, Research Associate

Dr Albert Phillimore gained his PhD at Imperial and was recently awarded a Junior Research Fellowship by the College, which he begins in January 2010.

“My main research area looks at the role of ecology in speciation, which is the evolutionary process through which new biological species arise,” he explains. “I am trying to answer questions such as ‘do some ecological conditions make species divergence more or less likely?’”

Dr Phillimore looks at the relationships between species (called phylogenies) to address this question. He also recently developed an interest in how species could adapt to climate change and is currently trying to

determine if widespread species will be able to adapt genetically or respond non-genetically to a changing climate.


“I have two major goals,” he says. “The first is to understand what the interplay is between ecological conditions and the rate at which speciation and extinction occur. Current thinking suggests that ecological conditions and competition between species may set limits on the rate at which new species arise.”

He continues: “My second target is to develop and apply new methods that quantify the degree to which different populations are adapted to their current climate. Those species which show the greatest degree of local adaptation are unfortunately likely to be those which are in greatest peril as our climate changes.”

Dr Vincent Savolainen, Reader in Evolutionary Biology and Ecology

Dr Vincent Savolainen came to Imperial from the Royal Botanic Gardens, Kew, where he still holds a second appointment. The main aims of his work are to understand the origin of biodiversity, including the genes that lead to the evolution of new species, and contribute to their conservation. He explains: “I combine field ecology, molecular phylogenetics, population genetics and genomic approaches to help explain the origin of biodiversity and, where possible, find solutions for its preservation in a rapidly changing world.”

Dr Savolainen is especially interested in global and regional patterns of biodiversity, evolutionary radiations, speciation genomics and conservation, and collaborates extensively with researchers in South Africa, Australia and Costa Rica where he carries out fieldwork.

Elements of his work also touch directly on some of Darwin's earlier ideas. “Darwin wrote about the origin of species without geographic isolation – a controversial topic called sympatric speciation,” he says. “It has been debated for two centuries, and I published the most convincing case of sympatric speciation so far, looking at two species of palm trees on a remote oceanic island. I think that Darwin would be amazed by what genetics and genomics have revealed on the way species evolve.” 



Northern spotted owl whose conservation was aided by Professor Russ Lande's research



Howea genus of palm typical of that studied by Dr Vincent Savolainen

It's **not** too late

› by Zoë Perkins

Brian Hoskins, the Director of the Grantham Institute for Climate Change, speaks to *Imperial Matters* about why it's not too late to tackle climate change.



by Zoë Perkins

Since time began, glacial periods, during which perennial slow-moving masses of ice have extended over the Earth's surface, have been interspersed with milder periods of very rapid temperature variation called interglacials. Even within the past 1,000 years, the Earth's climate has been characterised by relatively warm temperatures from the eleventh to thirteenth centuries, and relatively cool temperatures from the sixteenth to nineteenth centuries.

The tilt of the earth's axis and its orbit, as well as fluctuations in the radiation from the sun, amongst other things, cause these natural variations in climate, but the unprecedented strength of warming that started during the twentieth century is a different story. Human activity is changing how our climate system works. As Professor Sir Brian Hoskins, Director of the Grantham Institute for Climate Change at Imperial College London, puts it: "What we're now doing to the Earth means that we're actually changing how the climate would naturally have varied. We're still seeing some natural variability, but some of it is due to what humans have done to the climate system and, increasingly, what humans are doing will dominate."

Our climate system is powered by solar energy from the sun. Although some of the sun's radiation is reflected by clouds and the atmosphere, about half its energy reaches the surface and warms the body of the Earth. Rather than releasing the Earth's radiation into space, greenhouse gases in the atmosphere absorb most of the heat, which gives us a warm surface temperature. The heat that does make it out of the atmosphere is released from the higher and, consequently, colder levels of the atmosphere, and there's a very fine balance between how much heat is absorbed and released.

When we add more greenhouse gases – water vapour, carbon dioxide, methane and ozone – to the atmosphere, the emission of heat into space happens at a much higher altitude where it's colder still, which means that the Earth loses even less heat and warms up further. Until a new balance is achieved between the amount of heat that's absorbed and released by the atmosphere, the Earth will continue to warm.

We all know that carbon is at the crux of the problem but, to put it into context, Sir Brian explains: "Over hundreds of millions of years, the life on Earth gradually took carbon out of the atmosphere and stored it underground. At the moment we're shovelling that carbon back into the atmosphere as quickly as we possibly can. In one year, we're putting back 10 million years worth of carbon into the atmosphere, mainly by using up fossil fuels."

He adds: "Carbon dioxide makes up one part per 3,000 in the atmosphere. I've been asked before how such a small amount of carbon dioxide can make such a great difference, >

"In one year, we're putting back 10 million years worth of carbon into the atmosphere, mainly by using up fossil fuels."



but think what a tiny amount of arsenic in someone's food would do to them – they might notice a difference!”

According to Sir Brian, there's no doubt that what we've done already is going to lead to climate change over the next 30 years or so and that the sea level will continue rising for the next 500 years, come what may, because the deeper parts of the oceans are still warming gradually, causing them to expand. But by taking action now, it's not too late to ameliorate the situation.

The Grantham Institute for Climate Change was established at Imperial in 2007 following a £12 million donation from Jeremy and Hannelore Grantham,

through the Grantham Foundation for the Protection of the Environment. It brings together the work of academics from across the College to carry out the cutting edge research still needed on the whole range of climate-related issues. From Professor Howard Wheeler in the Department of Civil and Environmental Engineering, working on the effects on flood risk of rural land management change, to Professor Georgina Mace of the Division of Biology, looking at the potential impact of climate change on species and ecosystems – the broad reach of Imperial's research in this area can be surprising.

Of course, a lot of this work was

already happening throughout the College's departments, but Sir Brian describes his role leading the Institute as “trying to balance academic work across the College and seeing how it all fits together, as well as interacting with some very interesting people along the way.”

Sir Brian's own academic background is in trying to understand how various weather and climate phenomena work, but when you get into the detail of his career, you see that he's really a mathematician at heart. He originally embarked on a mathematics degree at the University of Cambridge, but he realised a year or so



The Grantham Institute for Climate Change's four research areas

The Grantham Institute is catalysing cutting edge, high impact, interdisciplinary research focused on driving the fundamental technological transformation needed to tackle climate change. Researchers are being brought together to work on four research themes:

Risks, extremes and irreversible change looks at improving understanding of the likelihood of extreme climate events and the potential for abrupt climate change.

A lot of agriculture depends on what the weather is like at a particular stage of a crop and if you get frost at a certain stage then that has a downside, but if it's too hot during a certain stage of the fruiting/flowering, then that can also be very damaging.

The Institute's research into **vulnerable ecosystems and human well-being** is focused on understanding the pressures and likely consequences of climate change for ecosystems and for people, to inform better prediction and assist in the development of sustainable management plans and policy mechanisms. The Institute's work looks at forests, land use change and

in that the mathematics “wasn’t quite him”, but found applied mathematics much more his bag. He explains: “I really started to enjoy the things to do with the motion of fluids; the things that describe water moving in a channel, for example. One course was actually on the behaviour of atmospheres and oceans – so viewing them as a mathematical problem and using Newton’s laws of motion to describe their motion.”

When it came to pursuing a PhD, Sir Brian was lucky enough to stumble upon one that was looking at the formation of fronts in the atmosphere as a mathematical problem.

“Fronts, where there are sudden changes in temperature, are where a lot of interesting weather occurs. They occur in the ocean, and even on Mars. My thesis was able to show that it’s a fundamental property of a rotating fluid that fronts are produced. It was the basis of the theory of fronts, if you like, so that was my way in and I gradually got on to trying to understand lots of the phenomena of the atmosphere and the climate system, and how they work.”

Operational weather forecasting, carried out by the likes of the Met Office, with satellite observations and measurements from all around the world coming together to paint the best possible picture of the world’s weather systems, gives one of the bases of Sir

“Just imagine what the pressures on the UK would be like if major parts of the world could no longer sustain their populations. If Bangladesh were no longer liveable, what happens?”

Brian’s academic work. This reveals, for example, that the Mediterranean summer climate is actually part of the Asian summer monsoon season. He explains: “All the thunder storms over India lead to average upward motion there. The compensatory descending air is over the Mediterranean which leads to its settled climate in summer. So you shouldn’t go to the Mediterranean for your holidays until the Indian monsoon has really set in!”

It’s the mathematician in him that gets a bit annoyed with news headlines which claim climate change is the cause of all extreme weather events both here and abroad, and he points out: “You can’t really say that climate change is to blame. You might be able to say that it is more likely because of climate change but, of course, journalists are lost by the time you tell them that.”

The prevalence of extreme weather events such as the heat wave which gripped the UK in the summer of 2006 and the widespread flooding which swallowed up large swathes of central England a year later make the impact of climate change really hit home but, of

course, as Sir Brian quickly points out, we are part of a global community and we’re all in this together: “Just imagine what the pressures on the UK would be like if major parts of the world could no longer sustain their populations. If Bangladesh were no longer liveable, what happens? It’s not just a case of us saying, “We’re enjoying these two degrees warmer”, although maybe we would, because I think the world that we’d be living in wouldn’t be one that we could enjoy very much.”

It might be too late to put an immediate halt to climate change, but it’s not too late for the next generation to benefit from our efforts. Sir Brian says: “When I retire, I would like to be able to say that I, and the Grantham Institute for Climate Change, have really made a difference. We can change what the future is going to be, and we must.”

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biodiversity, changes in the geographical spread and intensity of diseases, new disease emergence and potential mitigating interventions.

The Institute's work in fundamental **earth systems science** will focus on improving our understanding and modelling of key processes that will determine future climate. Innovative ocean modelling will address issues such as stability of ice sheets, polar ice melt and ocean–atmosphere interactions, whilst a second important research programme will be working on improving our understanding of biosphere–atmosphere interactions and feedbacks.

The primary objective of the Institute’s

work on **sustainable futures** is to catalyse the transition to a low carbon economy. A key element of this work is a joint programme on electric futures with the College’s Energy Futures Lab, which is aimed at developing and implementing the technological innovations needed to achieve large scale reductions in global emissions. A second key element is on natural mitigation, the potential for carbon storage in ecosystems.

➤ Find out more about the Grantham Institute for Climate Change at www.imperial.ac.uk/climatechange.

The science of flu

As a virologist Professor Wendy Barclay looks at the way that a virus, specifically influenza, interacts with its host.

› interviewed by Zoë Perkins

Could you explain what the influenza virus does to the cells in our bodies?

Typical of all viruses, the virus starts off on the outside, and it's completely inert there, so it has to gain entry to the inside of a cell; it's a dependent parasite.

The virus has a genome made of nucleic acid, just as we do, and the sole purpose of the virus is to replicate that genome and package it up into new bodies of viruses. The virus diverts all of the cell's machinery into making new copies of viral nucleic acid and viral proteins, which will package that nucleic acid up. The effect is that the cell will die; because it is doing everything for the virus it can't be doing anything for itself. In cellular terms you will have devastation to that layer of ciliated mucus secreting cells in our throats and noses which are the main target of the virus.

Swine flu has obviously hit the headlines in recent months, what's different about this particular strain of the virus?

From the practical point of view, the most important thing about swine flu that is different from the normal seasonal flu we get every winter, is

that the main protein on the outside of the virus, called the haemagglutinin protein, is one which people have not seen before. This means that we have no pre-existing antibodies, or immunity, to that virus and everybody is susceptible.

The outcome of that is that the virus spreads very readily, but as far as we can see, in the early days at least, it's not



Professor Wendy Barclay

really causing any more devastation than normal seasonal flu would do. So it's not one of these highly pathogenic sorts of viruses, but it's the fact that it's novel in the way that it looks to our immune system that's the problem.

Young, healthy adults seem to be most at risk of being infected with swine flu, are there any theories about why this might be?

This is a pattern seen quite often with pandemics. With normal seasonal flu, the 'at-risk' groups are considered to be the over-65s, but it's a hallmark of pandemics that young, previously-healthy people fare badly.

It may be because people who are old enough may have experienced a similar infection earlier in their lives, and they could therefore have some antibody 'memory' which is protecting them against this new swine flu virus. Explaining why it's specifically young adults getting infected with the virus is more difficult. There are theories that the body's innate immune response to the virus is more vigorous the healthier you are and that this response could actually do a lot of harm.

How would a new type of flu, such as swine flu, come about?

All flu viruses are originally bird viruses, and at some point they cross over into humans and pigs, or sometimes horses and seals. Once they're established in a particular species and they're passing around readily between individuals of that species, the viruses gradually drift – they mutate – in response to the antibodies that those species direct at the virus. We call it antigenic drift. So as the virus mutates in pigs, it might go off in different a direction, if you like, than the direction that it might go in people.

What's happened with this particular strain of swine flu that we call H1, is that it got into people and pigs at about the same time, probably in 1918 [the influenza pandemic of 1918 was also caused by a strain of H1]. Since then it's been 'drifting' in humans and pigs independently and, after 90 years of evolution, the virus looks quite different in pigs than it does in humans, because the two viruses have been under different selective pressures in different environments. So, although both viruses in pigs and humans are called H1, they don't look alike any more.

This antigenic drift is the reason why we have to update the normal flu vaccine every year, because the virus is a moving target.

If flu viruses are a moving target, does that mean that it will be a never ending problem?

Yes, because the bottom line is that you will never rid the world of the flu viruses in migratory birds like ducks, geese, swans, and terns, so the virus will therefore always pose a risk.

There are 16 different 'flavours' of haemagglutinin in birds and any one of those could cross between species and cause a new pandemic in people, in addition to those haemagglutinins which have already crossed over from birds and have been evolving in different species.

How will your research help to deal with this ongoing risk?

I have a group of about 10 people. Our research is predominately 'wet' laboratory research which is concerned with the basic workings of the virus and

All flu viruses are originally bird viruses, and at some point they cross over into humans and pigs, or sometimes horses and seals.

being able to deal with the virus in a better way using scientifically-based knowledge. At the applied end that includes improving vaccines, understanding how to administer vaccines sensibly and finding new drugs which might inhibit the virus, but there are also lots of questions that people have about this virus that we still don't really know the answer to. We want to understand why some viruses turn into pandemic viruses and some don't, what the barriers are when a virus tries to cross from animals into people, and why some people get sicker with flu than others, among other things.

Does your research cover all the different strains of influenza?

The only virus that I actually do any serious research on is influenza, but I cover quite a broad range of research on the influenza virus. It's a virus that's medically important and is also important in the veterinary field as well.

We've been working on the H5 strain for the last five or six years because that's what everybody thought might cause the next pandemic. We've been trying to understand why it hasn't. But not just H5, what about all the other H's out there circulating in birds? We're trying to understand those as well.

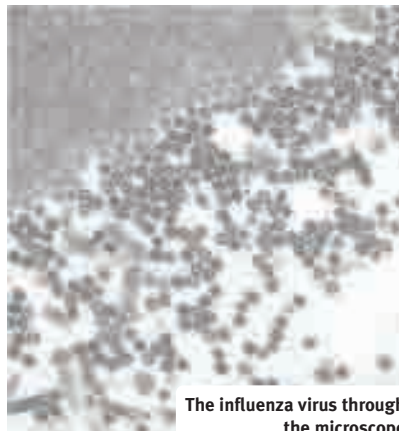
We also work on influenza type-B, for example, which is a much less studied virus that causes seasonal flu outbreaks of huge importance to the elderly and the immuno-compromised year on year, and which is an essential component of the vaccine. From the very pathogenic viruses to what people think of as rather innocuous, we cover the whole spectrum of influenza.

Across all of these areas, is there one research result that you consider most important?

We've got some papers under review at the moment, which we were very excited about, because we think we can explain why the H5 virus hasn't transformed into a pandemic. It's to do with the types of cells in the respiratory tract, which these viruses combine with and subsequently enter. We've found that avian flu viruses attach themselves to and enter different cells types to human viruses, and we think that if H5 could learn to enter a different cell type then it would turn into a pandemic. For me that's quite significant because it's an explanation from a cellular and molecular point of view of what this barrier actually is.

What is it about virology that you enjoy?

I've been working on viruses ever since my PhD, which was done at the Common Cold Unit in Salisbury, although it doesn't exist anymore. It was a human volunteer centre where people came on 'holiday' to be given colds and flu, and then various interventions were tried out on them. I liked the idea of the project and the fact that you were working with human volunteers. It was the real edge of things, quite applied. The thing about virology is that viruses are the tiniest replicative forms, they're not life but they're simple. You can explain everything about them.

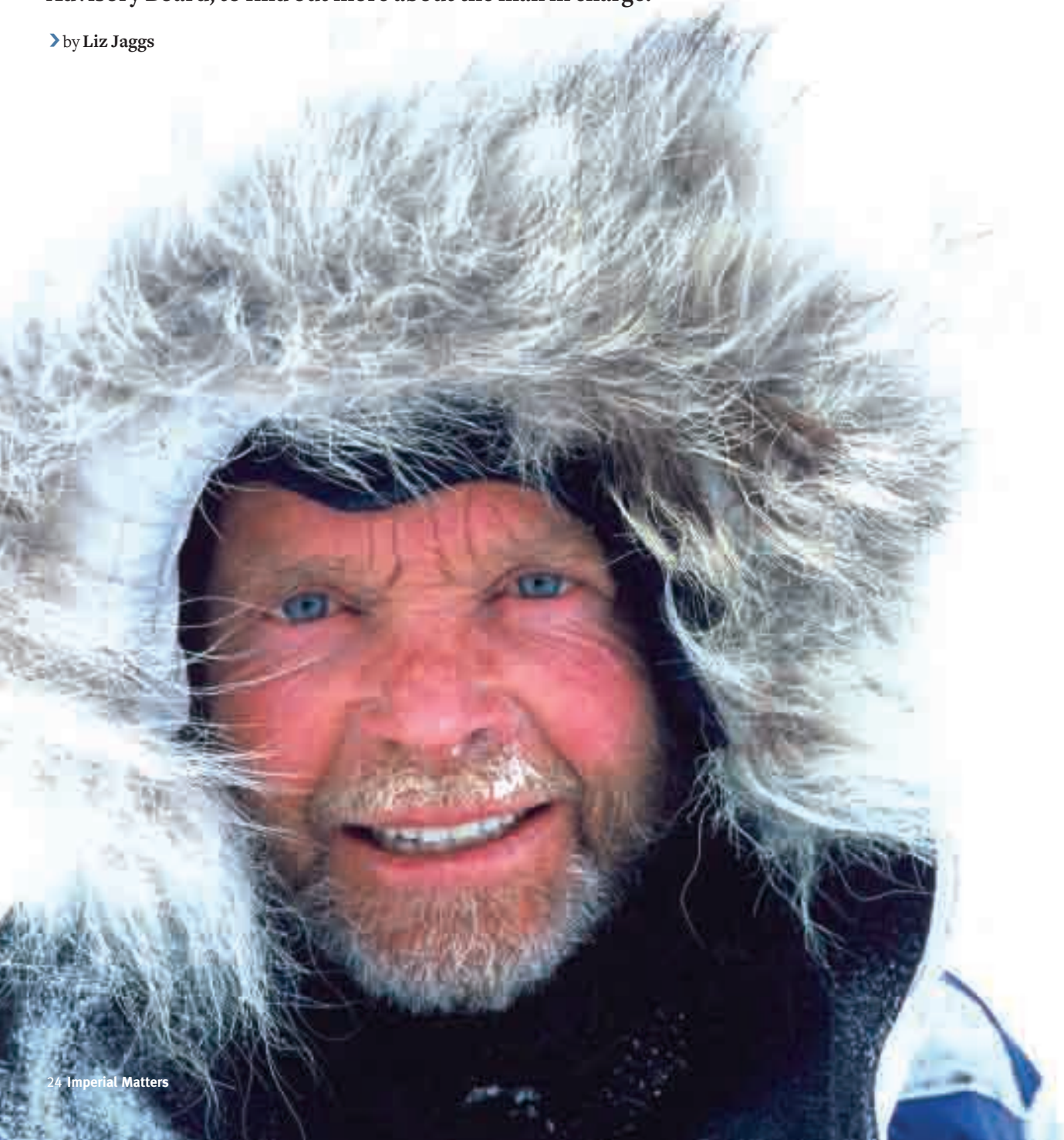


The influenza virus through the microscope

The adventurer

Imperial Matters caught up with Simon Murray, businessman, author, adventurer and new Chair of the College's Development Advisory Board, to find out more about the man in charge.

› by Liz Jaggs



I meet Simon Murray in his offices near Westminster, where Lord Byron's desk forms an impressive centrepiece to the large room in which he conducts his business. The vibe is distinctly warm and welcoming.

He confesses that he is a bit impetuous. At the age of 19, while working in an iron foundry in Manchester, he decided that he would join the French Foreign Legion. It followed on the back of a feeling that he was stuck in rut, a rejection from the British Army on the grounds of colour blindness, and a similar slight from the daughter of the foundry's Chairman, who, he explains "sort of liked me but thought I was a guy with limited prospects. I actually tossed a coin; heads I go, tails I stay. It came out heads, and I was gone!"

It sounds like the stuff of boyhood fantasy, but the reality was entirely different; a life of tough discipline, gruelling regimes and harsh punishment for anyone who failed to toe-the-line, including Simon, who was once during his five-year stint caught asleep whilst on guard duty.

Serving from 1960-65, he was sent to fight in the Algerian War of Independence against the Front de Libération Nationale guerrillas, and was involved in bloody combat, marching miles through the Algerian mountains and countryside to flush out guerrilla fighters. It was an unstable time both in terms of French rule in Algeria, which was nearing its end, and in terms of the Foreign Legion's place within the French military.

The five-year experience is documented in his book *Legionnaire: An Englishman in the French Foreign Legion*. Through the eyes of a young Englishman, the book is both a candid insight into the harsh conditions, disciplines and traditions of the Foreign Legion, as well as an informative snapshot of the political history of the time and place.

Simon recalls: "In the Legion I wrote my diary every single day because I knew that if I stopped for a week, I would stop completely. I always had paper in my rucksack, and I could be sitting there at two o'clock in the morning, hosing down

with rain, just put our tents up, and I would write something, anything I could think of. I just had to get pen to paper. It's very tough keeping a diary, it takes discipline."

He was persuaded to publish his diaries by a friend in 1978. He explains: "I was having dinner with friends at my house and our conversation turned to the military. I spoke about my time in the Foreign Legion, which I didn't usually tend to talk about, and one of my friends told me that I ought to write a book about it and what a pity it was that I hadn't kept a diary..."

The diaries were upstairs in the attic, some of them in exercise books, some on scraps of paper. Simon's friend took great swathes of them home with him to read. He continues: "My friend rang me the following morning and told me that he'd been up all night reading and that I had to publish them."

He describes his time in the Legion as a great leveller: "We were 57 nationalities, and it didn't matter if you were a duke, a prince, a criminal, a bank robber, we were all at exactly the same level, we were all treated the same way. It teaches you to stand on your own two feet; self dependence, and self discipline.

"I often have people write to me and say I'm thinking of joining the Foreign Legion, what do you think? I immediately say no; the very fact that you're writing to me means you're not ready for it. Adventures should be taken on the run, you run to the Foreign Legion, you don't walk."

Running away to join the Legion was

"In life if you don't have energy, the opposite is boredom, and it's incredible to imagine that you could be bored on this planet."

not the first time that Simon's life took an unusual turn. Aged 18 in Rotterdam, where his mother lived at the time, he impulsively signed up as a galley boy on a cargo ship, travelling to South America, the Caribbean and then back to Germany, all the while peeling potatoes, scrubbing the deck and washing the dishes.

As the ship docked in Bremen, Simon decided that he'd had enough adventure on the high seas, but was unprepared for the response he received from the vessel's captain. He explains: "I told the captain 'I've peeled 20,000 potatoes, and I've scrubbed the deck everyday and I'm through with it', and he said 'You're wrong. You signed up for a round trip from Rotterdam to Rotterdam. This is Bremen. You get off this ship when we get back to Rotterdam.' So I asked when we were going to Rotterdam and he said 'I don't know. We're going to Bombay in the morning.' Anyway, I got off the ship, there and then, over the side and was never seen again!"

I ask him what spurs him on to make these kind of decisions, he replies: "It's all about opportunities and grabbing them. When I went to the Foreign Legion it was daunting, but I grabbed it. When I went on the boat, I also grabbed at >

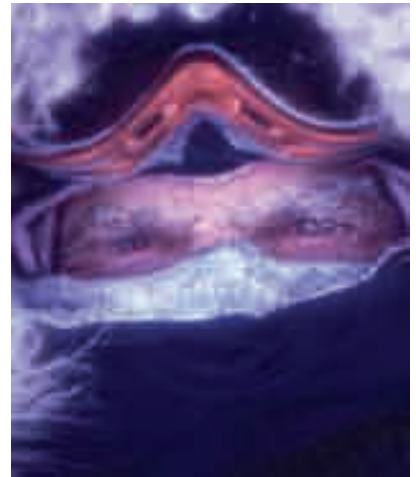


The adventurer

the opportunity. If I'd thought about it for too long – I'm going to Brazil and I'm going to be peeling potatoes when I should be back home doing my A levels and playing a bit of cricket instead – well, I probably wouldn't have gone.

“A lot of people tell me that they're not sure what they want to be. The first thing is never talk to me about what you want to be, I'm only interested in what you want to do. So I tell them that we do well at things that we like doing, obviously because we get our energy and the most important thing in life is your energy and your source of energy. There's a great phrase, I think it's attributed to Buddha, 'you are what you have done and what you do now is what you will become'. In life if you don't have energy, the opposite is boredom, and it's incredible to imagine that you could be bored on this planet.”

Leaving the Legion in 1965, having turned down the opportunity to attend Officers School in France, Simon was pondering his next move, when, at a party thrown by his cousin, he met the Managing Director of Jardine Matheson, who himself had been mulling over the merits of expanding the breadth of his recruitment pool beyond the five Oxbridge graduates that the company traditionally employed each year. On hearing about Simon's experiences in the Foreign Legion, he told him that if he could get to Singapore, Simon should go and see him about a job, and, having



saved enough money to fly out, this was exactly what Simon did next.

Upon arrival, he was sent straight to Thailand, assigned to head up the building materials and industrial supplies department. He recalls: “Jardines was one of those companies that gave it to you on day one. I had nobody to explain anything to me and I just had to learn on the job. It represented a string of companies that were trying to sell their products in international markets, so overnight I became the agent for companies like BHP (Broken Hill Proprietary), the biggest company in Australia, selling tin plate for them. I learnt pretty fast.”

At the time, the Americans were

building airbases for the Vietnam War, which created an opening in the market that Simon seized upon: “I used to go to the building sites and ask them what they needed, and the guy would be sitting there with his slide rule and piles of paper, and he'd say 'I don't know, I ain't got nothing'. So I'd tell him what he'd need and that I could do the whole thing. I was supplying the Americans with everything!”

From these beginnings he went on to become one of Asia's most accomplished businessmen, staying with Jardine Matheson for 14 years, before moving on to a nine-year stint as the group managing director of billionaire Li Ka-Shing's Hutchison Whampoa. Here he led the company





into a new sector of mobile telecommunications, developing Orange as a result. Following a period running Deutsche Bank’s Asian operations, Simon went on to found General Enterprise Management Services Limited (GEMS), a private equity fund management group.

He’s also been kept pretty busy in his home life, having ticked off a notable number of traditionally demanding pursuits such as climbing Mount Kilimanjaro and competing, on his 60th birthday no less, in the infamous Marathon des Sables, which takes place over six days and requires runners to cover 150 miles of the sweltering Sahara Desert. But, at the end of 2003, he topped all of his achievements to date with a 1,200 kilometre unsupported trek from the coast of Antarctica to the South Pole. He undertook this particular feat at the age of 63, with British explorer Pen Hadow, making him the oldest person to walk to the South Pole unsupported. Pen and Simon reached the pole on 28 January 2004, after 58 days of walking and climbing.

It wasn’t a burning ambition or a lifelong goal that propelled him into the record books, but rather his wife, Jennifer, the aforementioned Chairman’s daughter who married Simon as soon as he left the Legion. Herself the first woman to fly around the world solo in a helicopter, she was planning a flight to the South Pole, and wanted to get Simon involved.

He explains: “We were in our house in the Dordogne, in France and over breakfast one day Jennifer said to me ‘Have you ever thought about walking to the South Pole?’ When your wife says that to you over breakfast after 40 years of marriage you want to think a bit before you answer; in fact what you do is go for a croissant, take a bite and chew for a little while. I said ‘Well funnily enough I haven’t, I don’t even know where the South Pole is and I have no interest in going there’.”

It transpired, however, that she had invited Pen Hadow, to lunch the next day, under the auspices of giving her some advice on snow and ice conditions. Simon went to collect him from the airport, and after discovering that Pen had not even yet managed to reach the North Pole, let alone its southern counterpart, the challenge proved too much and the decision was made. He continues: “We decided that we were going to go to the South Pole, the whole 700 miles from coast to pole, and we were going to go unsupported; no dogs, no resupplies, no food drops, nothing.”

Asked what drives him to set these types of challenges for himself, he responds: “People who climb mountains or walk halfway around the world blindfolded make it a challenge to themselves. They start off by saying ‘I don’t think I can do that’, and move on to ‘I wonder if I could do that’, and it’s all inner stuff. It’s not actually to demonstrate to the rest of the world I’ve just climbed Mount Everest. It’s much more personal than that.

“When I was spurred on to go the South Pole, it was about me thinking that I couldn’t do it. I suppose to do that at the age of 63 is a coup for the over-60s but I certainly don’t have a list of achievements that I cut notches into.”

It is the very same upbeat and proactive attitude that he brings to his chairmanship of the Development Advisory Board, feeding into what he hopes to achieve as its Chairman. He explains: “I think the main function is support to the Rector. It enables him to both sound us out, and send us out. He can say ‘look Simon, you’ve got friends in so-and-so, can you introduce us?’ With a broad and global board such as

“Adventures should be taken on the run, you run to the Foreign Legion, you don’t walk.”

ours, a lot of us are well connected in their particular areas and fields.

“I’m hugely impressed with Imperial having got inside it. Much more impressed than when I was outside it and didn’t really know a huge amount about what was going on there. I was in Qatar the other day for a meeting and I was driving along and I saw the Imperial College London Diabetes Clinic and I thought wow, that’s a long way from home. Imperial has this great reach and application.

“In terms of the Development Advisory Board, we have a list of projects that we know that the College wants to do, and we are introduced to those projects by the people who are running them. At the last meeting, we went round the Robotic Surgery laboratory – absolutely fantastic. They can do field operations from a remote distance, so theoretically, a guy in New York can do an operation on a guy in Japan, it’s incredible. And that gets our enthusiasm up and makes us want to go out and help.”

After only an hour in his company, it is clear he is a hugely energising character. This enthusiasm and his thirst for action will doubtless serve Imperial well in its efforts to raise profile and build philanthropy.

In the final summing up of his BBC Radio 4 Desert Island Discs interview, broadcast in January 2009, he claims: “I’m quite happy with myself. Isn’t that outrageous?” Reticent to sum himself up in three words at the end of our interview, he throws the question out to his assistant Jane and a colleague from the Development Office who has accompanied me, who both decline to answer. He eventually arrives at ‘a lovely guy’ – and despite all of the adventures and challenges that Simon Murray has accomplished, you get the impression that this is exactly how he wants to be regarded.



Our global alumni network

Imperial College London is truly a global university; our research collaborations span the world, our staff members hail from 113 different countries, and 29 per cent of the student population have come to Imperial from outside the European Union.

Our alumni community is no different. There are over 180 countries around the world which are home to Imperial alumni, and wherever you are in the world we want you to continue to feel connected to the College. With our global alumni network going from strength to strength, there's no reason not to.

The past six months has seen great resurgence in Californian alumni activity. With a recently elected president and new committee members at the helm, the events, which you can read more about on page 34, have been coming thick and fast. There's similar enthusiasm from the members of the five groups in the Persian Gulf, so alumni in the region can expect great things over the coming months and years. You can get the lowdown on the way plans will be moving forward on page 35.

Even in the UK we're making it easier for you to stay connected with one another. October will see the launch of a new regional drinks programme, which will be taking place in five major UK cities. More details, along with information about other forthcoming events, can be found on page 33.

It all goes to show, that you're probably closer to alumni activity that you can get involved with than you realise.

Alumni Relations team



Get back in touch

Even with the best of intentions it is easy to lose touch with the friends you made during your time at the College, but using our Find a Classmate services you can get back in contact with your former classmates.

More than 16,600 alumni have chosen to be listed in the online Find a Classmate directory, which registered users of the Interactive Alumni Services can search by name and education details. Once you've found who you're looking for you can send a message, through the website, directly to them. They will receive an email containing your message and contact details, and hey presto, you're back in touch!

Don't forget, if you want old friends to be able to get back in contact with you this way, you will need to be listed in the directory, which you can do by registering for a free Interactive Alumni Services account at www.imperial.ac.uk/alumni/register.

We realise that not everyone has access to the online Find a Classmate directory though, so the services that we offer don't end there. We would be delighted to forward on a message on your behalf to any alumni who we have an email or postal address for. All you need to do is email alumni@imperial.ac.uk or call +44 (0)20 7594 6138 with the name, department and year of graduation of the person who you would like to get in touch with.

Visit www.imperial.ac.uk/alumni/classmates for more information.

Reunited after 35 years

Peter Cranfield and one of his former classmates Fauzi Rahman were put back in contact, 35 years after they lost touch, through the Find a Classmate service.

Peter and Fauzi were undergraduates in the Department of Mining and Mineral Technology, both graduating in 1970. Fauzi was one of two Malaysian students in the class, along with Halim Wan, who together sparked a love of Malaysia in Peter that has endured a lifetime. Peter embarked on a career with Pahang Consolidated Co Ltd after graduation, which operated an underground tin mine near Kuantan in west Malaysia, and he has enjoyed a long career in south east Asia. But despite Peter and Fauzi both living and working in Malaysia their paths didn't cross.

Then out of the blue, in May 2008, Peter received an email from the Alumni Relations team sent on Fauzi's behalf, and they have been in email contact ever since. With 35 years to catch up on, the two old friends have found out plenty of surprising things about each other. Peter said: "I discovered that Fauzi quit the mining sector and disappeared into politics. It seems that he became pretty senior in Mahathir's government."

He added: "He has as many as six children and 12 grandchildren, far more than me!"

Peter and Fauzi are intending to meet up next time Peter, who now lives in Lombok, Indonesia, visits Malaysia, to continue the friendship that started in 1967.

Find it online Alumni memories

Whether it's the camaraderie of the student societies, crazy nights at the Union, mischievous pranks or the achievement of having moved away from home and fending for yourself for the first time, your student days probably hold a special place in your heart.

Although your student days are now a thing of the past, the alumni website can help you keep your memories alive. The following excerpts from a selection of the memories that have already been submitted will give you a taste of what you'll find online.

"Chemistry practical classes in the early 1960s involved much weighing at a couple of antique balances on the lecturer's desk and I frequently tripped over the feet of a young man who always stood, splay footed, as he weighed his chemicals when I was going to weigh mine. It was thus not difficult to get to know Basil (Chemistry 1963, PhD 1967) during class time, and this gradually spread to weekends and afternoons sailing on the Welsh Harp reservoir. We married in 1965."

Paula Allsopp née Groom
(Chemistry 1963)

"One of the first things I did [when I came to Imperial] was to dive head first into the Hockey Club, and immediately added some more scars to my knobbly knees courtesy of the Harlington astro turf pitch. It just so happened that the club's slogan was "Never



mind the knobbly knees" so I felt I fitted right in. Two years of my near zero talent play in the men's third team slipped by, as did some beverage-based bar games, the details of which will remain a secret to protect all those involved."

Paul Bland
(Mechanical Engineering 1996, PhD 1999)

"Morphy Day traditionally consisted of a flour and tomato fight on the towpath in Putney whilst the three constituent colleges rowed out the Morphy and the Lowry races along the river. I always remember that there was a young policeman on one of those Noddy early motorcycle bike things that he thought he was going to stop this rampaging on the towpath, so he very foolishly rode his motorcycle into the middle of the foray and got totally, but totally, plastered in tomatoes and flour."

Bob Schroter
(Chemical Engineering and Chemical Technology 1962, PhD 1964)

You can submit your own memories of your student days at Imperial College London, or one of the constituent Colleges, for the alumni website by emailing matters@imperial.ac.uk.

www.imperial.ac.uk/alumni/memories

Festive fun

It's never too early to start planning your Christmas party, and this year Imperial could help you to make it an exciting and unforgettable experience for all of your guests. With two different Christmas packages to choose from, whether it's an event to thank your staff for all their hard work throughout the year or a party to celebrate the festive season with friends, the College's Conference and Events team is here to help you create the perfect bash.

For larger gatherings, the Tower Rooms is a newly refurbished space which can accommodate up to 400 guests, and our Christmas package includes a delicious festive feast, drinks and dancing all in a fabulous Christmas setting. If you need a more intimate venue, you could opt to host your party in the refined and elegant period venues of 170 Queen's Gate and 58 Prince's Gate.

Depending on your requirements, Christmas packages start at £35 per person and include complimentary room hire, festive fizz on arrival and half a bottle of wine per head.

To view menus and find out more details about hosting your 2009 Christmas party at the College, visit www.imperial.ac.uk/conferenceandevents or, better yet, speak to one of the College's event team on +44 (0)20 7594 9494 or at conferenceandevents@imperial.ac.uk.

If you would like to celebrate Christmas at the College without planning your own party, come along to the Winter Wonderland alumni event on Thursday 10 December 2009 at the South Kensington Campus. Visit www.imperial.ac.uk/alumni/winterwonderland for further details.



> In the next issue... Alumni blogs

If you write a regular blog and would be willing for us to share excerpts from it with other alumni in a future issue of Imperial Matters and on the alumni website, we'd like to hear from you. Email us at matters@imperial.ac.uk with your full name, the URL of your blog and, if you have it to hand, your eight-digit alumni membership number.

Let me introduce you

John Loughhead (Mechanical Engineering 1970, MSc 1971, PhD 1975) and Coen Louwarts (Earth Resources Engineering 1996) have just taken the reins of the City and Guilds College Association (CGCA) and Royal School of

Mines Association (RSMA) respectively. Following their election, we wanted to know a little bit more about them, so read on to gain an insight into the associations' new presidents.



John Loughhead
President of the City and Guilds College Association

What is your fondest memory of being a student?

It was the stimulating interactions with those around me. We were the first phase of the big expansion in university education provision, and for many of us we were the first of our families to attend university. Moving to London to do it was another bonus.

What trait do you most value in your friends and colleagues?

Honesty, integrity and always an ability to enjoy the trivial and absurd – something we all encounter frequently in life.

Describe yourself in three words.

Sociable, interested, stubborn.

How do you feel about being elected as president?

I am both surprised and honoured. Looking back I have benefited enormously, both professionally and personally, from my time in the City and Guilds College and from the people I met there, a number of whom I'm still in contact with regularly. I hope during my year as president I'll be able to put a little back into the organisation.

What will be your first priority as CGCA president?

The world continues to change and we have to respond to that. My priority is therefore to help the CGCA anticipate

how it needs to respond, develop a clear vision of its future role, and implement it without losing the traditions and understanding of its history and culture. It's an unusual organisation that must support members who span 70 years of the life of the association so it must be approached with great sensitivity.



Coen Louwarts
President of the Royal School of Mines Association

What did you study at Imperial College?

I came over to the Royal School of Mines from Delft University of Technology in 1995 to do my final year in Mining Engineering. I had already had the opportunity of doing vacation work in the mining industry in Australia for three months, which ultimately resulted in my first job.

What makes you most proud of being an alumnus of the RSM?

The Royal School of Mines has produced some outstanding alumni throughout the years, and continues to do so. It has a very good reputation in the industry and being part of the RSMA provides access to a great network of fellow professionals.

What has been the most interesting moment of your career?

One memorable moment early in my career was that after setting off a large overburden blast in a mine, I received a phone call from a geological survey department about 1,000 kilometres away asking whether there had been an earthquake in the region.

What will be your first priority as RSMA president?

Initially it will be to build further upon the results of last year's member survey and the good work that my predecessor, Kurt Budge, started. Especially in the current climate, I think that providing more networking opportunities will be very important for our existing alumni as well as for the students about to graduate. I also want to make the 125th Annual Dinner in November a great success.

➤ See the event calendar on page 33 for more details of the annual dinner.



The Imperial College Union Rugby Football Club (ICURFC) is setting up an ICURFC Old Boys Society. If you would like to sign up, please email the Alumni Relations team at alumni@imperial.ac.uk with your full name, details of when you were a member of the club, and, if you have it to hand, your alumni membership number.

In the hot seat



Competitive spirits were high on 12 May 2009 as 17 teams battled it out in a bid to be crowned Imperial's Alumni Quiz Team of the Year. Over 100 alumni and guests competed for glory, not to mention an impressive selection of prizes.

Neil Mosley, Head of Sport Imperial, turned quizmaster for the evening and was on hand to dish out penalties for foul play, as well as spot prizes and bonuses to keep competitors on their toes.

P&G were the victorious team with a fantastic score of 108.5 out of the 120 points on offer. Captained by Chris Harrison (MSc Computing 1995), the victory marked a triumphant return to form for the winners of the alumni quiz in 2006. Connect 5 took second place with 101.5 points, and Munich Reunited came a very close third with 101 points.

A special mention must go to Javed's Jokers, and particularly to team member Dan Lester, who not only correctly identified that the quote "A long

farewell to all my greatness" came from William Shakespeare's Henry VIII, but also that it is Cardinal Wolsey's line from act III, scene II. Dan's superb knowledge won him and his team a well deserved round of drinks.

Relive the relay

In January 1949, Anthony Watts (Mechanical Engineering 1949, PhD 1953) and Robert Gigg (Physics 1950) struck upon the idea of the Hyde Park Relays. Acknowledged as possibly the swiftest organisation in the history of the event, the first relay race through Hyde Park and Kensington Gardens was held the following month. Still going strong 60 years later, alumni teams are being invited to compete in next year's relays which will be held on Saturday 13 February 2010. See the event calendar on page 33 for more information.



The perfect pairing

The creamy taste of soft brie or the sharp tangy flavour of mature cheddar; cheese always gets the juices going, and along with a crisp white wine or a full-bodied red, it's a perfect combination. So what better way to spend a March evening than sampling six specially selected cheese and wine pairings?

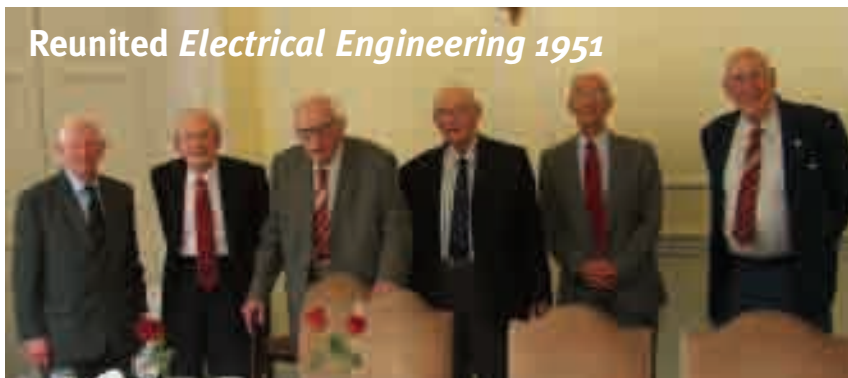
During the course of a two-hour tasting session around 100 alumni and friends tasted the delights that Whole Foods Market on Kensington High Street had to offer.

The favourite choice of the evening was the organic Chapoutier Cote du Rhone, a classic red, paired with cave-aged mature cheddar. We were assured that the generous servings of this wine had no bearing on its popularity!

Age proved no limit to wine appreciation as Imperial alumni who graduated in the 1950s were joined by some of our most recently graduated alumni from 2008 and plenty of alumni who graduated in between.

➤ Due to the popularity of this event, a second tasting evening will be held at Whole Foods Market later in 2009. See the event calendar on page 33 for more information.

Reunited *Electrical Engineering 1951*



More than 60 years since they first met, six Electrical Engineering alumni had lunch at the New Cavendish Club on 9 May 2009. Pictured above, left to right, are Tony Roberts, Cyril Messenger, Bruce Mackenzie, Ray Goodburn, Chris Clemow, and Alan Dawe. If you are one of their missing cohort and would like to join future events, or your class has reunited recently we'd like to hear from you. Email us at matters@imperial.ac.uk.



Time-honoured traditions Boomalaka

The Boomalaka, the rallying cry for members of the City and Guilds College, rang out from the livery hall of the Stationers' Company at the City and Guilds College Association's annual dinner in February 2009.

The City and Guilds College Union (CGCU) mascots, Spanner and Bolt, were held aloft by Richard Parasram (Civil and Environmental Engineering 2009) and Jovan Nedic (Aeronautics 2008), both wearing requisite white gloves, whilst Mark Mearing-Smith (third year Mechanical Engineering student), President of the CGCU, called the Boomalaka.

Words of the Boomalaka

President:

*Ladies and Gentlemen of Guilds,
please be upstanding...
Ladies and Gentlemen of Guilds,
are you in good voice?*

All:

Yes!!

President:

Then let's have a Boomalaka!

All:

One. Two. Three...
Boomalaka! Boomalaka!
Ra Ra Ra!
Zingalaka Zingalaka!
Ya Ya Ya!
Boomalaka Zingalaka!
Who are we?
We are, we are C and G!
Kubal-ai-o Gee, Kubal-ai-o Gee!
Ra Ra Ra!
Hooray!

The chant originates from Māori culture explains Chris Lumb (Electrical Engineering 1961), Honorary Secretary of the City and Guilds College Association (CGCA): "Being based on Māori tradition, it may perhaps be intended to strike (abject?) fear into the hearts of any non-City and Guilds College people in the vicinity. The meaning is not fully clear, but if you have ever been to a traditional *Hangi* [feast], you'll be aware of the force with which the Māori sing their chants. They really mean business!"

The Boomalaka has been a CGCU tradition as far back as anyone can remember, and actually featured in a BBC broadcast as long ago as the 1930s when Martin Storrar (Civil Engineering and Surveying 1939) led a group of students past the Holborn Empire, formerly a music hall on High Holborn, to the pub opposite during a live broadcast.

We'd like to hear about other traditions that have stood the test of time and continue to play an important part in the lives of alumni. Email us at matters@imperial.ac.uk.



Mark Mearing-Smith leads the Boomalaka



The winning veteran team

Veterans race to Head of the River

A team of sporting heroes, many of whom are also Imperial alumni, took to the water on 21 March 2009 for the annual Veterans Head of the River rowing race organised by Imperial's Boat Club.

The team was made up of four gold medallists from the men's eights team at the Sydney Olympics in 2000, Louis Attrill (Civil Engineering 1997), Simon Dennis (Biology 1997), Steve Trapmore (Head of Rowing at Imperial) and Kieran West. Two-time Henley Royal Regatta winner George Whittaker (Chemical Engineering and Chemical Technology 2004), John Dick (postgraduate Materials student), Bronze World Rowing Champion Dan Ouseley, and a member of GBR Challenge's sailing team Iain Weighell joined them. Seb Pearce (Mechanical Engineering 2005) completed the team as cox.

Competing against over 200 veteran crews from rowing clubs all over the UK, the race from Chiswick Bridge to Putney Pier was quite a challenge for those crew members who hadn't raced for four or five years. Despite the challenge the team won outright, in a time of 19:40:12, five seconds ahead of Danske Studenters Roklub.

More information about Imperial College London Boat Club and its alumni activities can be found at www.imperialboatclub.co.uk/icbc-alumni.

UK event calendar



Regional drinks evenings

Since 2006, alumni in London have enjoyed successful bi-annual drinks evenings, and now alumni all around the country can join in the fun too. During the last two weeks of October, Aberdeen, Newcastle, Birmingham, Oxford and Bristol will host a drinks event each.

As always there will be plenty of opportunity to network with fellow Imperial alumni, and you will be able to enter the ever popular business card draw for the chance to win a bottle of champagne!

Tuesday 20 to Thursday 29 October 2009; Various locations

www.imperial.ac.uk/alumni/regionaldrinks; +44 (0)20 7594 6130

Friends of Imperial College lecture: Engineering and emotion

Tuesday 20 October 2009;
South Kensington Campus, London

www.friendsofimperial.org.uk;
+44 (0)5601 308693

GOLD Drinks

Tuesday 27 October 2009; TBC, London

www.imperial.ac.uk/alumni/GOLDdrinks;
+44 (0)20 7594 6130

Whole Foods tasting evening

Wednesday 11 November 2009;
Whole Foods Market,
63-97 Kensington High Street, London

www.imperial.ac.uk/alumni/tastingevening; +44 (0)20 7594 6130

Friends of Imperial College lecture: Seeing is believing

Tuesday 17 November 2009; South Kensington Campus, London

www.friendsofimperial.org.uk;
+44 (0)5601 308693

London social and speed networking for Business School alumni

Thursday 26 November; Venue to be confirmed

www.imperial.ac.uk/business-school/alumni; +44 (0)20 7594 6137

City and Guilds College Association Decade Reunion Luncheon

Saturday 28 November 2009;
Polish Club 'Ognisko',
55 Exhibition Road, London

david.law@delphi.com;
+44 (0)20 8998 2701

Felix 60th Anniversary Dinner

Saturday 5 December 2009;
South Kensington Campus, London

www.imperialcollegeunion.org/events;
+44 (0)20 7594 8072

Winter Wonderland

Thursday 10 December 2009;
South Kensington Campus, London

www.imperial.ac.uk/alumni/winterwonderland;
+44 (0)20 7594 6130

City and Guilds College Association Christmas Lunch and Seminar

Thursday 10 December 2009;
170 Queen's Gate, London

www.cgca.org.uk;
+44 (0)20 7594 1184

Hyde Park Relays 2010

Friday 13 February 2010;
Hyde Park, London

www.union.ic.ac.uk/acc/crosscountry/hpr; +44 (0)7717 848368



Royal School of Mines Association 125th Annual Dinner

The Royal School of Mines Association's new president, Coen Louwarts, will host its 125th Annual Dinner, and welcomes the Rector of Imperial College, Sir Roy Anderson, as a special guest for the occasion.

In honour of the anniversary, the association would like to be joined by one alumnus or guest for every year of its existence. Find out more about how our Find a Classmate services can help you reconnect with old friends and the Association reach its target on page 29.

Friday 20 November 2009;
Polish Club 'Ognisko',
55 Exhibition Road, London
rosemary.tipples@imperial.ac.uk;
+44 (0)20 7594 8606

Annual Alumni Lecture delivered by alumnus Geoff Nicholson

Monday 22 February 2010;
South Kensington Campus, London

www.imperial.ac.uk/alumni/annuallecture;
+44 (0)20 7594 6130

Friends of Imperial College lecture: Life in the solar system

Wednesday 24 February 2010;
South Kensington Campus, London

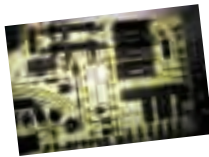
www.friendsofimperial.org.uk;
+44 (0)5601 308693



California dreamin'

Alumni at the Computer History Museum

On 28 February, 25 alumni and their families met for the first Imperial College Alumni Association of Northern California event of 2009; a visit to the Mountain View Computer History Museum. John Mashey, former Vice President and Chief Scientist at Silicon Graphics, gave a guided tour with the help of his wife, Angela Hey (PhD Management Science 1979).



The visible storage galleries formed the main attraction, with displays ranging from Chinese abacuses to handheld computers, with the CDC 6600 exhibit evoking memories for those who toiled in the Department of Mechanical Engineering's computer centre. Association president, Fabien Schmitt (Mechanical



Engineering 2000) said: "It was amusing to see John ask, at regular intervals: 'Does anybody know what this exhibit is?', and, much to his disbelief, see a third of the group raise their hands."

A second event, an invigorating hike through the Santa Cruz mountains, took place on 30 May. Both events were well received by alumni and their families, particularly those attending for the first time, who appreciated the opportunity to meet fellow Imperial alumni.



For more information about alumni activities in Northern California, please contact Fabien Schmitt at fbn_schmitt@yahoo.com.

New York, New York

Michael Barron (Mechanical Engineering 1962) and Sandy Eames (Electrical Engineering 1970), respectively the most recent and present 'stuckees' of the Imperial College Exiles North America East, are currently formulating plans for an autumn event in New York City. With over 500 alumni resident in the tri-state area, they hope to build a new era of alumni activities in the region. Contact michael.barron@piller.com and sandyeames@aol.com if you are interested in getting involved.



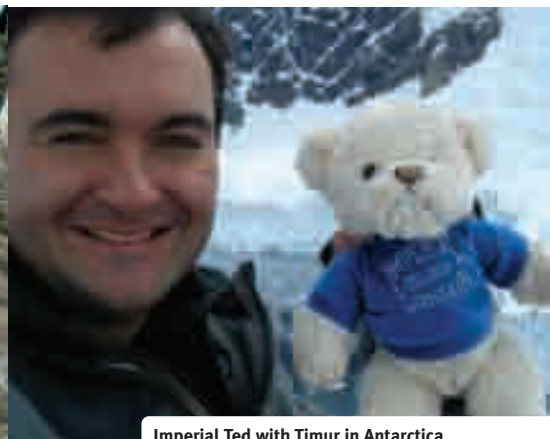
Italian fare in the windy city

An event for alumni took place in Chicago on 22 June 2009 to coincide with a visit by Professor Dot Griffiths, Deputy Principal of Imperial's Business School and International Ambassador.

Thirty Imperial alumni from the mid-west enjoyed dinner at contemporary Italian restaurant *Trattoria No. 10*, beginning with a welcome and update from Professor Griffiths. This was followed by a delicious three-course dinner and a glass or two of *vino*.

Ted's travels

Imperial alumni turn up in the most unexpected places around the world and, to celebrate this, the Office of Alumni and Development have invoked the services of a new mascot, Ted, to record the travels of the most adventurous. Dr Timur Kouliev (MBA 2005) became the first alumnus to travel with Ted, when he visited Antarctica in January 2009 as a medical officer for an expedition. If you are planning a trip or expedition to an unusual or far-flung location, please contact alumni@imperial.ac.uk to see if Ted is free to join you on your travels.



Imperial Ted with Timur in Antarctica



Bridging the gulf

Alumni activities in the Persian Gulf are on the increase thanks to a growing number of committed alumni contacts in the region.

The largest concentration of alumni can be found in the **United Arab Emirates**, and a meeting at Dubai's Central Perk Cafe on 28 February 2009 saw members of the recently established Imperial College Alumni Network of the United Arab Emirates explore ways of taking the group forward with a particular focus on events and meetings.

Following this, the network held the first in a series of inaugural lectures at the Dusit Thani Hotel on 7 April 2009, where alumnus Dr Sadek Owainati (Civil Engineering 1971), co-founder and former Chairman of the Emirates Green Building Council, gave a talk entitled *Sustainability: the way forward*. Special guest, Her Majesty's Consul-General in Dubai, Guy Warrington, offered the alumni group his encouragement and highlighted the importance of combating climate change and promoting sustainable development in British foreign policy, which is one of the UK's key objectives.

Over the border, a reception at Muscat's luxurious Chedi Hotel was held on 5 May to coincide with a visit to **Oman** by Dr Timothy Heymann of Imperial College Business School. Attendees

enjoyed catching up over drinks and canapés and Dr Heymann provided an update on life today at Imperial.

The event sparked interest in future networking events in Oman, and an alumni network is currently taking shape as a result. In support of this

effort, Salim Al-Omairi (Earth Science and Engineering 2004) has put the Office of Alumni and Development back in touch with a number of alumni with whom they had previously lost touch, increasing the number of contactable alumni in Oman by over a third.

Since the inauguration of the Imperial College Alumni Association of **Bahrain** in June 2008, membership has grown to over 40 alumni from a range of industry sectors. Following a series of successful get-togethers in 2008, the Association hosted a spring gathering attended by patron His Excellency Dr Hassan Fakhro, Minister of Industry and Commerce.

The event was opened by Bahrain Petroleum Company CEO, Abdulkarim Al-Sayed, who provided insight into recent developments at the firm and the regional oil and gas market recent developments. This was followed by dinner at the Saffron Restaurant of the Banyan Tree Resort.

In addition to activities in Bahrain, Oman and the UAE, there are also networks developing activities in **Kuwait** and **Qatar**. Contact details for each of these networks can be found in the table below.

Imperial alumni in the Persian Gulf

Group	Resident alumni	Contact
Bahrain	59	Imperial College Alumni Association of Bahrain Christos Poullaides (Civil Engineering 1979), pccbah@batelco.com.bh
Kuwait	58	Imperial College Alumni Network in Kuwait Mohammed Abdullah (MBA 2004); alumni-international@imperial.ac.uk
Oman	90	Imperial College Alumni Network in Oman alumni-international@imperial.ac.uk
Qatar	43	Imperial College Alumni Network in Qatar Rajavel Inbarajan (MSc Civil and Environmental Engineering 1997); rajavel.inbarajan@ghd.com.au
United Arab Emirates	210	Imperial College Alumni Network of the United Arab Emirates Ghanem Nuseibeh (Civil and Environmental Engineering 2000, PhD 2003); ghanem.nuseibeh@ghasadaz.com



Singapore round up

The Rector in Singapore

Alumni in Singapore enjoyed a number of meetings and gatherings over recent months, thanks to an active Imperial College Alumni Association of Singapore calendar.

On 7 April, over 65 alumni and guests



Enjoying the Tiger Tavern

enjoyed a meeting with Rector, Sir Roy Anderson, and Pro Rector for Postgraduate and International Affairs, Professor Mary Ritter, at Singapore Polytechnic. A few days later, alumni and guests enjoyed a visit to Singapore's famous Tiger Beer brewery. The event, organised by Yap Tiong Peng

(Bioengineering 2003), included a presentation on the company's history and a tour around the brewery, and a few beers in the Tiger Tavern.

At the end of July, alumni were treated to a scintillating MBA talk on the subject of *Demystifying the Alternative Investments Industry* by Dr Bernard Lee (PhD Business School 2005), Deputy Director of the Sim Kee Boon Institute at Singapore Management University.

If you would like to find out about alumni activities in Singapore, please visit the Association's website at www.icaas.org.



First decade bash for German club

Founded in 1999, the Imperial College Club of Germany has been a great network for alumni in Germany over the ensuing decade. To commemorate its 10th anniversary, the Club held its 2009 event in the French city of Strasbourg from 11–13 September, and welcomed alumni from both Germany and France along.

The weekend incorporated a visit to the Strasbourg Parliament, several guest speakers including Chief Operating Officer of EnBW, Christian Buchel, a midnight visit to the newspaper offices of *Dernières Nouvelles d'Alsace*, and a tour of a local Alsace winery. Find out more about the club at www.iccg.net.



Shanghai social

Around 30 alumni from Imperial College London, LSE, and the Universities of Cambridge and Reading met for an after-work drinks gathering organised by Wu Ying (MSc Finance 2006) in the trendy Bund district of Shanghai on Thursday 16 July 2009. Alumni indulged in cocktails and tapas on the terrace of the famous Bar Rouge, which provides spectacular panoramic views of the river, Bund and the Pudong skyline.



Alumni at the Attock Oil Refinery

A fine day out

On 19 April 2009, members of the Association of Imperial College Alumni, Pakistan enjoyed a day trip to the Attock Oil Refinery in Morgah, Rawalpindi. The oldest refinery in Pakistan, it is responsible for refining about 42,000 barrels of crude oil per day from oil fields of the Potowar Plateau. A guided tour provided alumni and their families with the perfect opportunity to learn all about the principles and procedures involved.

To find out about forthcoming alumni activities in Pakistan, please contact the Association's Secretary General, Shahid Hussain, at sshahid_hussain@hotmail.com.

Five questions for an Ambassador



Professor Dot Griffiths with alumni in Shenzhen

Imperial Matters asked the Deputy Principal of the Business School, Professor Dot Griffiths, about what her role as an International Ambassador involves.

Why be an Ambassador?

I decided to become an Ambassador because it would provide me with the opportunity to meet lots of alumni as I was travelling. It is always interesting to meet alumni and find out what they have been doing since they left the College.

What makes being an Ambassador enjoyable?

The College wants to get better at keeping in contact with its alumni, so I have enjoyed being able to help make



Professor Griffiths in Chicago

some reconnections. Everyone who comes to an alumni event is pleased to hear about what is happening to the College and it is always interesting to talk about the College in previous years.

Who have you met?

A lot of alumni! I met an alumnus in China who had studied engineering here in the 1940s. It was amazing to think what he had lived through when he returned to China.

What was your most memorable visit?

That's not a fair question! The inaugural alumni event in Cyprus was memorable for being the most well attended event, we have a lot of really enthusiastic and committed alumni there. In Delhi, we had father and son alumni, and we have some very well-organised alumni in China.

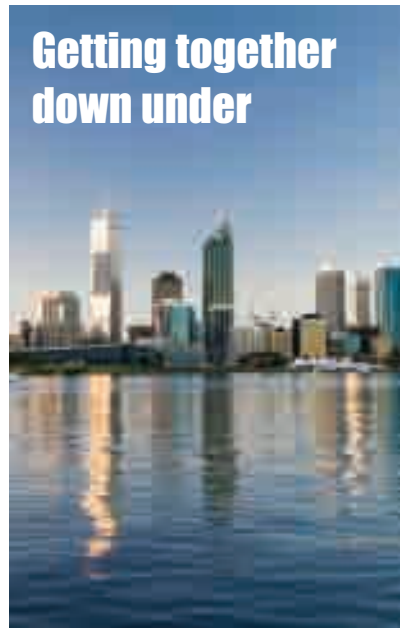
What are your future plans?

In March we took the Executive MBA Study Tour to South Africa, so we attended a great alumni event in Johannesburg. I went to an Ambassador event in Chicago at the end of June and, in September, we will be holding events in Shenzhen and Shanghai.

› International event calendar

A number of events and meetings for alumni of Imperial will be taking place around the world over autumn and winter 2009–10. Please visit the events calendar at www.imperial.ac.uk/alumni/events for further details. If you would like help or information about organising an alumni event overseas, please contact alumni-international@imperial.ac.uk.

Getting together down under



Alumni gathered at Esposito restaurant in Melbourne's Italian district in March 2009 to welcome Imperial Ambassador Professor Nelson Phillips of the Business School. After a College update, food, drink and discussions continued late into the evening, with relatively few world problems not resolved.



Cross country in Perth, alumni assembled at the beautiful home of Dr Brian Welch (Mining 1959) in May for lunch overlooking the magnificent Swan River. Good wines were sampled and new alumni welcomed. The Western Australia alumni group meet up every first Friday of the month at the Celtic Club in West Perth. Please contact Alan Dickson (Mining 1968) at alan@dickson.com.au for further information.

catch up

1960s

Roger Gabriel

Charing Cross Hospital Medical School
1962

After seven years of work as locum physician from Elgin to Gibraltar and Turo to Cyprus, I have recently started a contract at the Royal Naval Hospital, Gibraltar. Pleasant and warm. I have three main ambitions: to help bring up my second family, to practise medicine for at least 50 years and to defeat the grim reaper for another 20 plus years.

Roger Leaman

Electrical Engineering 1966

Now retired after 40 years in the defence industry. More time to go sailing!



David Longbottom

Mathematics 1965



I am currently Pro-Chancellor and Chair of London South Bank University; I'm also Chair of executive search firm Horton International (UK) and Non-Executive Director of the European regional airline Flybe. I live in Buckinghamshire with my partner Ai Lin.

Stephen Pick

Physics 1961

I worked in telecommunications with GEC in the UK and Nigeria, Bell Canada in Montreal and Ottawa, ITT in Puerto Rico, Madrid and Brussels, and finally ITI in Dallas, but retired in 2007. I've been living in Richardson, Texas, since 1989. I still play football, as of May 2009, but only just. I have had fun over the last several months finding old friends from Imperial and the University of London football team, Sidonain XI, and now have had contact, or are aware of their death, of over 40 of my contemporaries.

www.flickr.com/photos/25221379@No7

Peter Whitehead

Mathematics 1964, PhD Computing 1967

Held various posts in the Centre for Computing Services at Imperial from 1964 to 1994, Deputy Head of Centre from the late 1970s. In 1994 moved to the Royal Postgraduate Medical School (now part of Imperial's Faculty of Medicine) as Head of Centre. In 1998 moved to the Royal Free Medical School, again as Head of Computing Services. Retired in 2007, and now work as a part time IT consultant to UCL Medical School.

1970s

Howard Cheetham

Metallurgy and Materials Science 1975



After 18 years in South Africa, three years in Belgium, and eight years in the United States, I am now teaching high school math in North Carolina. Happily married to Ros (Zoology and Applied Entomology 1979); we have a daughter, Alex, who will complete her degree at Tufts University, Boston, next year. She hopes to go to medical school after that. Ros and I have taken up sailing and get away most weekends. Delighted to get reacquainted with old friends, perhaps you can find me on Facebook!

Stuart (Sam) Hallas

Electrical Engineering 1971

I have spent over 30 years in the provision of safety-related telecommunications to the rail industry – firstly with British Rail and later with the privatised industry. I took early retirement in 2006 allowing me to continue to work, but on a (very) part-time basis. I am actively promoting

Spotlight on Teo Chee Hean

Following several years spent in the Republic of Singapore Navy, reaching the rank of Chief of the Navy in 1991, Teo Chee Hean (MSc Computing 1977) left the navy to pursue a political career. By

December 1992, Teo Chee Hean had been elected a Member of Parliament. This was the beginning of a path that's



led to his recent appointment as Deputy Prime Minister of Singapore in April 2009.

Since August 2003, Teo Chee Hean has held the role of Minister for Defence and Minister in charge of the Civil Service, which he will continue. His successful political career has also seen

him as Minister for Education and Minister for the Environment, among other roles.

the history of telecommunications, especially railway communications, through my website and membership of the Telecommunications Heritage Group. www.samhallas.co.uk

David Lane

MSc Mechanical Engineering 1971
I'm still business and finance correspondent for *The Economist* in Italy. I'm glad to say that Silvio Berlusconi lost his defamation case against me and my Italian publisher in the court of first instance though, as expected, he has appealed against the ruling. I hope a book on the Mafia causes less trouble.

You can read about David's new book, Into the Heart of the Mafia, on page 42.

Basilio Pereira

PhD Mathematics 1976
I have been at Federal University of Rio de Janeiro since my return to Brazil, with joint appointments at COPPE Postgraduate School of Engineering. Initially with the Mathematics Institute, and since 1998 with the School of Medicine.

Since 2006 I have visited London frequently to visit my son, who was born while I studied at Imperial. I would be pleased to see and hear from my colleagues.

Gordon Varley

Physics 1972
I took early retirement from teaching to do a bit of educational consultancy in August 2008. Then I took a two-term post in Marbella until July 2009! Barbara and I are well and soon we will be back on the road with our motor home.

1980s

Allan Dumont

Computing 1981
After leaving Imperial in 1981, I returned to Guyana where I worked as a Systems Engineer with IBM for six years. For the last 22 years I have lived and worked in Toronto, Canada. I now manage and report clinical trial data for pharmaceutical clients.

Spotlight on Andreas Mogensen

Following a Europe-wide recruitment process, Andreas Mogensen (Aeronautics 1999) has been selected as one of six new astronauts by the European Space Agency (ESA). The 8,413 applicants were whittled down through a rigorous recruitment process, which included psychological and professional aptitude evaluation, a thorough medical evaluation, and a formal interview. The last recruitment campaign for new astronauts was held in 1992, so this really was a rare opportunity.

Andreas commented: "Undoubtedly, my technical background as an aerospace engineer and my passion for space exploration played an important role [in my selection]. I also think my international background was important; I have lived in eight different countries on four different continents. That has a tremendous influence on someone's personality and



ESA - A. LE FLOCH, 2009

outlook on life." Andreas' selection is only the beginning of a long journey from new recruit to astronaut, as he now begins basic training at the European Astronaut Centre in Cologne, Germany, in preparation for space missions from 2013 onwards.

Andreas added: "I am expecting a lot of tremendously rewarding and exciting experiences, including EVA simulations in the swimming pool, weightlessness training during parabolic flights on the 'Vomit Comet', team-building and survival exercises, and most importantly of course, learning about all the exciting missions that the European Space Agency is involved with. The training will definitely be tough and require a lot of dedication and hard work, but I can't wait to get started."



ESA - S. CORVAIA, 2009



Andreas, left, was presented at a press conference in Paris

ESA - S. CORVAIA, 2009

Karen Hardy

Biology 1980

Having spent 28 years working in telecommunications, I have now settled happily in the third sector working for homeless charity Crisis. I have supported Crisis and its work for homeless people for many years so it is a perfect fit. I continue my mad personal fundraising activities with this year seeing me walk from Land's End to John O'Groats.

www.justgiving.com/womblejog

Alison McDougall née Jefferies

Chemical Engineering and Chemical Technology 1986

I have been living in the United States for the last 18 years now and have completely lost touch with all my old Imperial buddies. I would love to hear from anyone who remembers those crazy days!

Spotlight on Gareth Wilson

One of 14 oarsmen, Gareth Wilson (Electrical and Electronic Engineering and Computing 2003) set off from Gran Canaria in a rowing boat, La Mondiale, on 4 January 2009 hoping to make it to Barbados in less than 33



1990s

Per Hansson

Computing 1999

I have been working as a developer for business support systems in telecoms most of my career, customising billing data mediation, order management and billing systems for telecommunications operators. Currently, I work for Sunrise in Zurich, Switzerland, as a senior system admin for EAI and portals applications which also includes development for monitoring, etc.

Gerhard Keyter

MSc Civil Engineering 1994

After College I spent about seven years working for SRK Consulting in their Rock Engineering Department in Johannesburg, South Africa. I then joined De Beers' Venetia Diamond Mine in Musina (near South Africa's northern border with Zimbabwe) as head of the

days, seven hours and 30 minutes – the current world record for the fastest row across the Atlantic.

However, things didn't quite go to plan, as Gareth explained: "Unfortunately we did not reach Barbados; 11 days, 1,000 miles into the journey, and three days ahead of the current world record, we lost our rudder from a suspected killer whale attack on our boat.

"The boat was no longer steerable and we had to be rescued by a passing container ship which took us back to Gibraltar. On the positive side we did raise thousands of pounds for our nominated charities."

No stranger to challenges, Gareth has already completed Marathon des Sables, a six-day, 156 mile ultramarathon, swum the English Channel and climbed Mount Kilimanjaro. Not one to give up, Gareth is hoping to make a second attempt at rowing across the Atlantic in December 2010. You can follow Gareth and the team's progress online. www.oceanrowevents.com; wilsongareth@hotmail.co.uk

on-mine geotechnical engineering department for about a year and a half. I am currently back in Johannesburg, working with Knight Piesold Consulting Engineers, and since 2005 have been on full-time secondment to a joint venture project team carrying out the detailed design of the new 1332 megaWatt Ingula hydro-electric pumped storage scheme in South Africa. I am working mainly on the design of the tunnels and caverns for the scheme. I am married to Beverly and we have two children, Klarika, eight, and Ruard, six. I would love to hear from anyone from the MSc Soil Mechanics class of 1993–94.

Georgios Koutsos

MSc Chemical Engineering and Chemical Technology 1998, MBA 2001

Following my MBA, I worked for a couple of years for the Boston Consulting Group and another couple of years with iVen, the business incubator and seed capital fund of the National Bank of Greece. For the last four years, I have been working for NBSI, the investment banking arm of the National Bank of Greece.

Gordon Lau

Aeronautics 1999

Been working as an interest rate trader in HK/Taipei/Shanghai since graduation. Now back in Hong Kong and still surviving this financial tsunami...

Catherine McGrath

Chemistry 1992

After my PhD, I worked for several years in the pharmaceutical industry in the UK, Ireland and in America. Most recently have returned to study and I am close to the end of my medical degree in the Czech Republic.

Gillian Miller

Wye College 1995

After leaving Wye College in 1995, I studied for a PGCE in Secondary Science. I now live in an Italian farmhouse on the borders of Piemonte and Liguria, not far from Genoa. Our main business is self-catering holiday accommodation. A sideline is trying to get English plants to grow happily in the

heat of the Italian summers. Have a look at my plant photo gallery on our website to see the successes!

www.cascina-aie.com

Vincent So

Mechanical Engineering 1991,
MBA 1994



I am proud to announce the arrival of my twins, Adrian and Aster, who were born on 28 February 2009 at Canossa Hospital in Hong Kong. My wife, Daphne (Cambridge 1997), and the twins are doing well.

Samantha Watson

Biology 1994

Qualified as a doctor in 2000. Married Matt in 2002. Became GP in 2004. Now working in Oxfordshire.

2000S

Patrick Alberts

PhD T.H. Huxley School of Environment, Earth Sciences and Engineering 2001

After Imperial, I joined the Boston Consulting Group (BCG) in their Hamburg office. Three years of consulting later, I went to complete an MBA at INSEAD in France and Singapore. Back at BCG, I am now a project leader and core member of our telecommunications, media and technology practice, focusing on mobile Internet and media topics. Not long ago, I returned to Imperial as a recruiter for BCG.

Chun Ewe

Electrical and Electronic Engineering 2003, DIC 2006

Currently working as a Consulting Analyst at Deloitte.

Azadeh Neman

Mathematics 2004



Still in France. Finishing the PhD and looking for postdocs.

<http://math.univ-lyon1.fr/~azadeh/>

Johan Nystrom Persson

Mathematics and Computing 2006

I am currently a computer science PhD student at the University of Tokyo.

Christos Panitsas

MSc Bioengineering 2002

I finished my Greek army duty in 2003 and then worked in medical equipment sales. Selling is not my strength, and doctors in Greece do not appreciate the technical aspects of equipment! I returned to my hometown, Patras, and laid the foundations and organised the clinical engineering department of a new private hospital. Since then, I have been working against the chaotic forces (healthcare personnel, doctors and Amazonian butterflies) that want to devour the medical equipment of the hospital and digest it into junk.

Kuldeepsinh Rana

MSc Bioengineering 2004

Currently a PhD student in the Bioengineering Department at Cornell University, Ithaca, NY USA.

➤ Make sure you keep us updated with your life post Imperial; we would love to hear from you. Visit www.imperial.ac.uk/alumni/catchup to view more updates from other alumni or to submit your own update. Alternatively you can email us at matters@imperial.ac.uk or write to us at *Imperial Matters*, Imperial College London, Level 2 Faculty Building, South Kensington Campus, London SW7 2AZ.

Awards and Honours

New Fellows

Julian Downard (PhD Biochemistry 1986) who leads the Signal Transduction Laboratory at Cancer Research UK's London Research Institute, and Neil Poulter (St Mary's Hospital Medical School 1974), Professor of Preventive Cardiovascular Medicine at Imperial College London, were elected to the Academy of Medical Sciences in April 2009.

Michael Duff (PhD Physics 1972), Abdus Salam Professor of Theoretical Physics at Imperial College London; John Hardy (PhD Biochemistry 1979), Professor of Neuroscience at UCL; Angela McLean (PhD Biology 1986), Professor of Mathematical Biology at the University of Oxford; and Keith Shine (Physics 1978), Professor of Physical Meteorology at the University of Reading were elected Fellows of the Royal Society in May 2009.

Royal recognition

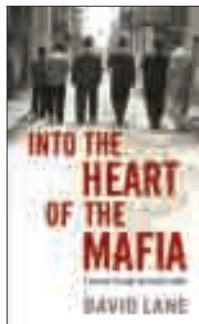
Her Majesty The Queen honoured 12 Imperial alumni in the 2009 Birthday Honours for outstanding achievement and service across the UK community.

Receiving CBEs were Dr Martin Barnes (Civil Engineering 1960) for services to civil engineering, Professor Yvonne Carter (St Mary's Hospital Medical School 1983) for services to medical education, Brigadier Christopher Parker (Westminster Medical School 1981) in the Military Division of the list, Peter Saraga (MPhil Electrical Engineering 1969) for services to science and engineering, and Ian Shott (Chemical Engineering 1978) for services to the chemical engineering industry.

Dr Thomas Coffey (Charing Cross and Westminster Medical School 1988), Dr Annette Doherty (PhD Chemistry 1985), Dr Alan Hepper (Mechanical Engineering 1988, PhD 1998), Dr Robert Hunt (Physics 1943, DIC 1947), Alan Moore (Mechanical Engineering 1970), and Dr Caroline Shuldham (PhD National Heart and Lung Institute 1999) all became the proud recipients of OBEs, and Professor Raymund Donnelly (St Mary's Hospital Medical School 1961) was awarded a MBE.

books

Into the Heart of the Mafia



David Lane
(MSc Mechanical Engineering 1971)
Tramping through Sicily's Greek ruins or Roman Pompeii, tourists do not ask about the Mafia or imagine how close it might be. They do not wonder

which young men are the Mafia's emissaries extorting protection money, or if the middle-aged man given everyone's respect is a mafia boss. From Naples and its Mafia-controlled toxic waste, through no less rotten Calabria to Sicily, the hold of the Mafia on southern Italy is as strong as ever.

In this memorable journey around the cities and villages of the Italian south, David Lane gives us a shocking exposé of the operations of the Mafia today. He shows how globalisation has transformed the Mafia into more than simply a local phenomenon.

Part reportage, part travelogue, *Into the Heart of the Mafia* is also a richly coloured portrait of the south's long and tumultuous history and of a European region under siege.

PROFILE BOOKS; ISBN 978-1846682698

The Dying Keats: A case for euthanasia?

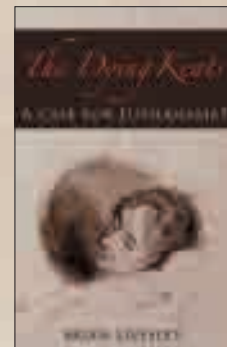
Brian Livesley (Charing Cross and Westminster Medical School 1988)

As claims for negligence, failures in medical care, and the fears of many about dying, lead to repeated cries for the legalisation of euthanasia, the avoidable and prolonged suffering John Keats endured before he died in 1821 is particularly relevant today.

This publication raises several questions and aims to stimulate an appropriate debate, leading to better recognition by all professionals at the bedside that dying is a clinical diagnosis requiring action. Once this is understood the needs of affected patients and their relatives can be earlier and more appropriately addressed.

Those who are dying should not have to undergo the Keatsian experience. They, as well as their relatives and friends, should know that palliative care, properly delivered, can mean the end of unendurable distress in life's last weeks, days, and hours.

MATADOR PUBLISHING; ISBN 978-1848761711



CITY OF LONDON, KEATS'S HOUSE

more books by alumni >

> Recently published Imperial alumni and their books are also listed on the alumni website at www.imperial.ac.uk/alumni/books.

Electrochromism and Electrochromic Devices

by **Paul Monk, Roger Mortimer** and **David Rosseinsky**

Electrochromism has advanced greatly over the past decade with electrochromic substances providing widespread applications in light-attenuation, displays and analysis. Roger Mortimer (Chemistry 1977, PhD 1980) and his co-authors lead from electrochromic scope and history to new presentations of optical quantification and theoretical mechanistic models. CAMBRIDGE

UNIVERSITY PRESS; ISBN 978-0521822695

Guide to Microsoft Excel 2007 for Scientists and Engineers

by **Bernard Liengme**

Electronic spreadsheet analysis has become part of the everyday work of researchers in all areas of engineering and science. As the industry standard, Microsoft Excel has a range of scientific functions that can be utilised for the modelling, analysis and presentation of quantitative data. Bernard Liengme (Chemistry 1960, PhD 1964) provides a straightforward guide to using these functions.

ACADEMIC PRESS; ISBN 978-0123746238

in memoriam

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

Alumni are listed according to their year of graduation. When an alumnus has obtained more than one degree from the College they are listed according to the graduation year of their first degree.

Where indicated by an *, 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.

1920S

Dr K.H. Lachlan (Westminster Medical School 1923)

1930S

Mrs Eva Bateman née Dovey (Wye College 1939)

Brigadier Richard M. Brydges (Electrical Engineering 1930)

Mr Srutiraj Ghosh (Mechanical Engineering and Motive Power 1935)

Dr Alfred G. Maddock (Chemistry 1938, PhD 1940)

* Mr Leslie R. Prout (Electrical Engineering 1934)

Dr Charles Simons, FRSC (Chemistry 1935, PhD 1937)

* Mr Nilkanth R. Tembe (MSc Civil Engineering and Surveying 1938)

Mr Patrick S. Tillard (Electrical Engineering 1938)

* Mr Eric W.K. Walton, FCGI (Civil Engineering and Surveying 1939)

* Mr Robert C. Winton (Electrical Engineering 1935)

1940S

* Mr Edward G.U. Band (Mechanical Engineering 1946, DIC Aeronautics 1947)

Professor Leslie O. Butler (Chemistry 1944, PhD Botany 1946)

Mr Ernest C. Clear Hill, FBCS, FRAS (Civil Engineering and Surveying 1941, DIC Aeronautics 1942)

Dr Anthony J. Everett (Chemistry 1946, PhD Chemical Engineering and Applied Chemistry 1948)

* Dr Colin A. Fothergill (Geology 1948, PhD 1951)

* Mr Elwyn W. Hamley (Civil Engineering 1949)

* Mr John R. Harpur (Geology 1947)

* Mr Norman F. Harpur (DIC Aeronautics 1946)

* Dr Peter E. Hodgson (Physics 1948, PhD 1951)

* Mr Anthony J. Lucking (Physics 1943, Electrical Engineering 1949)

Mr Alan MacDonald (Mechanical Engineering 1948)

Dr E.R. Mitchell (St Mary's Hospital Medical School 1948)

Dr Philip W.J. Oldroyd (Mechanical Engineering and Motive Power 1941, PhD Aeronautics 1947)

Dr Leslie W. Phipps (Physics 1948)

Dr Alexander C. Porteous (St Mary's Hospital Medical School 1942)

Mr Raymond F. Sargent (Mechanical Engineering 1949)

Dr Donald N. Stewart (Charing Cross Hospital Medical School 1942)

Dr A.L.G. Stuart (St Mary's Hospital Medical School 1943)

* Professor Peter W. Taylor (Geology 1949)

* Dr J. Geraint N. Thomas (Chemistry 1945, PhD 1950)

Mr Harry E. Threlfall (Electrical Engineering 1944)

* Mr Peter G.L. Vipan (Mining 1944)

Mr James M.J. Whellens, OBE, FIET (Electrical Engineering 1945)

1950S

* Mr Michael A.E. Adams (Civil Engineering 1950)

* Dr Lionel G. Booth (PhD Civil Engineering 1954, Member of staff 1963–92)

Mr Timothy J. Calcutt (Wye College 1957, President of the Agricola Club 2004–09)

* Mr Malcolm D.C. Campbell (Chemistry 1954, Chairman of the Imperial College Trust)

Dr J.H. Darrell, FRCPath (Charing Cross Hospital Medical School 1954)

Mr John W. Donaldson (Metallurgy 1951)

Dr Marion S. Edwards (Charing Cross Hospital Medical School 1954)

Mr John T. France (Electrical Engineering 1958)

* Dr Peter J. Fryer (Charing Cross Hospital Medical School 1957)

Mr Donald Goldhawk (Electrical Engineering 1952)

Dr Roy Grice (Chemistry 1958, PhD 1961)

Mr John C. Hendy (Chemistry 1954)

Dr Hans Hirsch (PhD Chemical Engineering and Applied Chemistry 1952)

Mr Humphrey G. Holme (Mechanical Engineering 1957)

Professor M.W. Humphrey Davies (Electrical Engineering 1957)

Dr Donald A. Leigh (St Mary's Hospital Medical School 1956)

Dr Roy C. Macfarlane (Charing Cross Hospital Medical School 1958)

Mr Terence F. Mears (DIC Civil Engineering 1959)

Mr William H. Naphine (Aeronautics 1952)

* Mr David E.G. Peckham (Mechanical Engineering 1952)

Dr Charles D. Plows (Westminster Medical School 1957)

* Mr Ian H. Reith (DIC Civil Engineering 1959)

Mr Peter F. Romney (Wye College 1956)

* Professor Charles P. Sandbank, FREng (DIC Electrical Engineering 1956)

Mr Alan K. Sargent (Mechanical Engineering 1950)

Mr David Springale (Physics 1957, Electrical Engineering 1959)

Mr John W. Stevens (Chemical Engineering 1954)

* Dr Howell D. Williams (Materials 1958)

* Dr Colin E. Wright (Charing Cross Hospital Medical School 1953)

1960S

* Dr Lawrence J. Austin (Chemical Engineering and Chemical Technology 1961, PhD 1963, Member of staff 1963–69)

* Mr Raymond M. Ayres (MSc Mechanical Engineering 1969)

* Dr James S.R. Baxter (Charing Cross Hospital Medical School 1961)

* Dr William G. Burrows (DIC Electrical Engineering 1963)

* Dr Kailasanatha Chandrasekharan (PhD Chemical Engineering and Chemical Technology 1962)

Mr Kishore Chitre (PhD Electrical Engineering 1961)

Mr Ranjit S. Dhaliwal (Mathematics 1966)

Dr William R. Emmerson (St Mary's Hospital Medical School 1965)

Dr John D. Hardwick (PhD Civil Engineering 1961)

Dr Edward Proctor (Westminster Medical School 1960)

Dr D. Robinson, FRCS (Westminster Medical School 1962)

Dr Raymond T. Smith (PhD Mechanical Engineering 1966)

Dr Iris Trayner (St Mary's Hospital Medical School 1962)

Mr Walter F.W. Ulrich (Aeronautics 1960)

Dr Christopher C. Ware, FRCS (Westminster Medical School 1962)

Mr David I. Williams (Botany and Plant Technology 1966)

1970S

Mr Robert J. Abraham (Metallurgy and Materials Science 1976)

* Mr Robert B.V. Bain (Botany and Plant Technology 1976)

Dr Philip Bosworth (Chemistry 1971)

Dr Edwin A.B. Cameron (St Mary's Hospital Medical School 1972)

* Mr Paul W.R. Clarke (Physics 1973, MSc Computing and Control 1974)

* Sir Martin Doughty (Chemical Engineering and Chemical Technology 1971, MSc Civil Engineering 1973)

Mrs Julia H. Harasewych née Onuferko (Physics 1974)

Dr Kamal N. Karna (Electrical Engineering PhD 1976)

* Mr William J. Powell (Chemistry 1977)

* Dr Alexandros Roussopoulos (MPhil Civil Engineering 1971)

Mr Per Songstad (MSc Geology 1972)

Mr Virender K. Vashisht (MSc Computing and Control 1974)

Mr Christopher J. Wainwright (Chemical Engineering and Chemical Technology 1976)

Dr Kay Wolfenden née Nicholson (Physics 1972)

1980S

* Mrs Alison J. Deane née Moon (Wye College 1984)

* Mr Frank Newton (MSc History of Science and Technology 1980)

Mr Timothy A. Symons (Mathematics 1981)

Miss Sarah J. Walton (Wye College 1985)

Mr Andrew T. Weal (Chemical Engineering and Chemical Technology 1986)

Dr Cynthia Yiu (Westminster Medical School 1983)

1990S

Miss Joan M. Roberts (MBA 1993)

2000S

Dr Simon L.J. Nicolle (MSc Primary Care and Population Health Sciences 2000–03, partially completed)

Mr Scott Rennie (Mechanical Engineering 2003)

Members of Staff

* Emeritus Professor Derek Moore (former Professor of Applied Mathematics)

* Professor Philip Poole-Wilson (former Head of the National Heart and Lung Institute)



Greenhouse in the sky

A futuristic £1 million rooftop 'greenhouse' which will enable scientists to grow large quantities of plants for experiments, ranging from developing new sources of biofuels to helping sequence the tomato genome, has been built on top of the five-storey Roderic Hill building on the South Kensington Campus.

Imperial College London

Coming to a city near you!

This October we are launching a new series of regional drinks evenings so that Imperial alumni all around the UK can meet and network. During the last two weeks of October, five cities will be hosting the post-work events.

Each event will start at 18.30 and is free to attend. There will be a chance to win a free bottle of champagne just by entering a business card draw, and you'll even get a free drink on the College just for letting us know in advance that you're coming, so make sure you register online soon.



Aberdeen
Tuesday
20 October 2009



Newcastle
Wednesday
21 October 2009



Birmingham
Thursday
22 October 2009



Oxford
Wednesday
28 October 2009



Bristol
Thursday
29 October 2009

www.imperial.ac.uk/alumni/regionaldrinks