

UNIVERSITY OF

# Annual Review 2007/8

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The newly restored ceiling in the Sheldonian Theatre. Painted by Robert Streater (1624–79), the fresco shows Truth descending upon the Arts and Sciences to expel ignorance from the University.

## University of Oxford

Annual Review 2007/8





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### The Vice-Chancellor's foreword

The academic year on which we reflect in this *Annual Review* has once again been significant for the exceptional achievements of our scholars and talented students. In many fields, we are at the forefront of work to tackle the world's most pressing problems. In these pages we focus on human genetics, the environment and mathematics – just three of the many areas in which new ground is being broken.

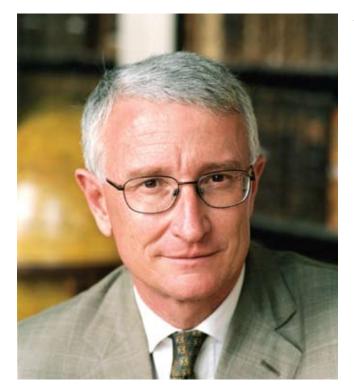
We also continue to extend the boundaries of our endeavour, establishing new schools and student programmes, investing in widening access and reaching deeper into many communities. We continue to record impressive growth in funded research activity throughout the University and colleges. In the year just completed, our research revenues leapt 15 per cent to around £285 million. Almost £390 million of new contracts were signed, so that we can expect a further lift in revenues in the coming year.

But for all that, considerable uncertainties lie ahead. It is clear that the current financial crisis will have far-reaching political and policy consequences. Government fiscal settlements are likely to be tighter and research council budgets will face closer scrutiny. This tougher external environment, coupled with unusual pressure on the University's costs, should be a sharp spur to our philanthropic endeavours. We would do well to build on levels of our endowments and philanthropic support to the point where our collective aspirations can no longer be compromised by external cyclical vagaries, whether political or economic. This will not be a simple or straightforward undertaking, especially in the current climate, but it is one that we can and must approach with seriousness of purpose for the long-term future.

This is the guiding principle of Oxford Thinking, The Campaign for the University of Oxford, which we launched in May. It is the most sustained, coordinated fundraising effort ever undertaken by a European university, and we are already more than halfway towards the target of  $\pounds 1.25$  billion. The Campaign will support both existing and new posts, undergraduate bursaries and postgraduate scholarships, as well as the infrastructure projects which continue to improve the quality of the University's built environment. Across Oxford, there are examples of investment creating landmark new buildings and facilities. Among the most prominent are the development of the Radcliffe Observatory Quarter, the completion of the new Biochemistry building, progress on the Ashmolean project and the opening of a new cancer research building at the Churchill Hospital campus.

Further exciting developments are in the pipeline, three of which – a new building for Earth Sciences, a purpose-built home for our new China Centre and the planned refurbishment of the New Bodleian Library – are featured in this *Review*. Here, too, philanthropy is playing a major role, especially, fittingly, in the case of the libraries which owe so much to the earlier efforts of Sir Thomas Bodley. His aspirations for academic philanthropy are a compelling example, as appropriate to the University's cause today as in his own time.

ph Hoon



✓ John Hood,
Vice-Chancellor

#### OCTOBER

## Mapping human variation and disease

 Blood samples from volunteers in Nigeria helped
HapMap researchers identify common patterns of genetic
differences between individuals The diversity of humanity contributes to the intriguing nature of human society. Yet the majority of the three billion letters in our genetic instruction manual – written in the four-letter alphabet A, C, G and T – are identical between two people. Only a fraction underlies the variation in appearance, behaviour and predisposition to disease that is due to genetics. In 2002, the International Haplotype Mapping Project (HapMap) set out to characterise and understand many of the patterns of genetic differences between individuals. In October, they published results that are transforming efforts to find patterns of inheritance linked with diseases.

Professor Peter Donnelly of Oxford's Department of Statistics (now Director of the Wellcome Trust Centre for Human Genetics) and his colleague Professor Gil McVean were both leading members of HapMap's data analysis group. The data are derived from blood samples taken from

a surprisingly small number of individuals: just 270 in total, from Nigeria, the USA, China and Japan. 'We're trying to capture common variations', says Professor McVean. 'By definition, if they are common we see them in samples of that size.' By the end of the project, the team had studied more than 3 million positions – about one in every thousand – where I might have an A, for example, while you have a T. The goal of HapMap was to look not only at single-letter differences, known as SNPs (single nucleotide polymorphisms), but also for stretches of DNA where groups of variants tend to be inherited

together. Because human populations only diverged relatively recently, many of these 'haplotypes' are common to all populations, while others have arisen through mutation in groups that at some point became geographically distinct.

In some cases, having one letter rather than another at a particular position is known to be associated with an increased risk of, for example, heart disease. Medical researchers are carrying out genome-wide disease association studies to build more of these links. HapMap is a crucial tool in these studies, because instead of going to the time and expense of looking for all the SNPs in a particular patient's DNA, researchers can simply look for the key SNPs that label particular haplotypes.

'A huge change in our understanding of the genetics of common diseases has come about over the past two years because of the possibility of measuring a large number of positions', says Professor Donnelly. 'That's given us the ability to look in an unbiased way across the whole genome. We have a much better chance of finding something – and we've learned that in the previous generation of experiments, where we were trying to pick a few specific places to look that we thought might be important, we were really bad at choosing the right places.'

Professor Donnelly chaired one of the largest genome-wide association

Chancellor's Court of Benefactors Eight new members were admitted: Dr Stanley Ho, Group Executive Chairman of Shun Tak Holdings Ltd; Mr John Booth, Executive Chairman of The Link Group; Mr Landon Clay, financier and philanthropist; Mr Anthony Preston, founder of Pets at Home; Mr J Kenneth Woods, consultant in organisation and human resources; Dr Patrick O'Connell, Managing Director of BT Health and Major Programmes; and Mr Guy Weston, Chairman of the Garfield Weston Foundation. In addition, Ms Antje Schlamm, Director of the London office of the Deutscher Akademischer Austauschdienst (DAAD), replaced Dr Nina Lemmens as the representative of the DAAD.

studies, which involved 200 researchers at 50 British institutions. The Wellcome Trust Case Control Consortium looked at half a million SNPs in each of 17,000 people: 2,000 with each of seven common diseases, including coronary heart disease, depression and diabetes, and 3,000 healthy controls. The study turned up many new variants not previously linked to disease. Publishing its findings in June 2007, the Case Control Consortium has since been widely honoured, and has been named *Scientific American*'s research leader of the year.

There are two reasons for doing this kind of study, Professor Donnelly points out. 'If you take schizophrenia, for example, we don't know many of the details about what triggers the disease or what goes wrong. If we find a difference in gene action between two variants, that might give us insights into the disease process as well as identifying the genes involved.'The second

Understanding the differences between people's genomes, and why those differences exist, is at the core of many questions in modern biomedical research reason for doing such studies is that a patient's genetic code could potentially inform the kind of advice a doctor might give about diet or smoking, for example, or even the choice of drugs to prescribe. 'Will that improve outcomes?' asks Donnelly. 'We don't know yet. My own view is that over a medium time frame some aspects of this information will be routine parts of clinical practice.'

The huge amount of data derived from genotyping has provided the incentive to develop new statistical approaches. 'You've got a lot of information in a small sample in HapMap, and less

information in a much larger sample in a disease study,' says Professor Donnelly, 'and you want to use the HapMap data to extrapolate to the things you haven't measured. That's an area, for example where my colleague Dr Jonathan Marchini has developed methods that are routinely used in disease studies.' Professor McVean, Dr Simon Myers, Lecturer in Bioinformatics, and Professor Donnelly have also developed methods that use the HapMap data to track the process known as recombination, which mixes up the genes from each parent in the next generation. 'We've known since early this decade that recombination tends to happen in hotspots', says Professor McVean. 'Our new methods have revealed combinations of letters that are associated with hotspots. It's pretty exciting.'

HapMap was succeeded in 2008 by the 1000 Genomes Project, with funding mainly from the Wellcome Trust in the UK, the National Institutes of Health in the USA, and the Beijing Genomics Institute in China. It will examine human variation in great detail by fully sequencing the genomes of 1,000 individuals. The Oxford researchers are centrally involved, with Professor McVean leading the project's analysis group. 'HapMap was aimed to capture common variants', he says. 'Rare variants are bound to be important too, and the sequencing technology will give us a chance to find those.'

> Distinguished Friends of Oxford award David Hopkinson, CBE, Director at the ECC Group, has served on St Anne's College's Investment Committee since 1970. John White, CMG, FRS, FAA, FAIP, FRACI, FRSC, Professor at the Research School of Chemistry at Australian National University, has been Chairman of the Oxford Australia Scholarship Fund since 1996.



#### NOVEMBER

## The changing face of the Bodleian Library

Map of Venice (detail) from Bernhard von Breydenbach's Peregrinatio in terram sanctam, the first 'tourist quide' from the late 15th century. The redevelopment of the New Bodleian will enable the library to open its priceless collections for viewing by a much wider public.

In November 2007 it was revealed that the Bodleian Library holds 4 of the 17 surviving copies of Magna Carta. The Magna Carta – or 'Great Charter of English Liberties' – is considered one of the most important legal documents in the history of democracy. The Bodleian holds three of the 1217 issue and one from 1225. 'Only in Oxford can scholars bring such a number of these charters together for comparative study and research', says the Bodleian's Librarian, Dr Sarah Thomas.

But the Magna Carta and other medieval charters form only part of the Bodleian's impressive collection. Scholars using the library for research

are fortunate to have access to a variety of unique materials, such as autograph manuscripts of Mary Shelley's *Frankenstein* and a copy of the Gutenberg Bible. 'The Bodleian contains these and other iconic works but it lacks appropriate space to display them', says Dr Thomas. 'We know people want to look at them because when they go on exhibit for even a day, hundreds queue in the cold to see them.'

Richard Ovenden, Keeper of Special Collections and Associate Director at the Bodleian, says: 'The Bodleian Library was founded in 1602 after a time of turmoil in the world of learning during the Reformation. A key part of its role was to provide a safe home for classic, irreplaceable manuscripts such as these; the Bodleian was the de facto national library for 150 years. This is a task to which we continue to be devoted.'The *Frankenstein* acquisition in 2004 is one he calls 'outstanding' for the Bodleian.

It is, in part, in order to maintain these collec-

tions under the best conditions that the University is so keen to improve the facilities at the Bodleian. Three substantial donations received by the library this year will make a significant difference to this. These are, first, a gift of £25 million pledged to the development of the New Bodleian Library by the Garfield Weston Foundation, the largest gift ever made by the Foundation; second, the Oxford University Press has made a matching £25 million contribution; and, finally, Julian Blackwell has donated £5 million – one of the largest single cash donations ever made by an individual to a university library in the UK.

The renovation will transform the housing of the Bodleian's priceless collections and open up its treasures to the public. Instead of the outmoded book warehouse it currently is, the New Bodleian Library will become a major part of Oxford's infrastructure and a significant new cultural centre, where scholars, citizens of Oxford and visitors to the city can view some of the University's greatest treasures and gain insights into the research

#### Honorary degree

At a ceremony on 24 November, the Rt Hon the Lord Patten of Barnes conferred the Degree of Master of Arts on **Roger White**.

'Wise colleague and well-loved friend, who have supported so many young people in their study of medicine and many professors besides ...'

Mr White joined the Department of Anatomy (now part of the Department of Physiology, Anatomy and Genetics) in 1963 and was Chief Technician from 1998 until his retirement. During his 43 years of service, he supported seven heads of department during a period of great change with exemplary sensitivity and dedication.

#### Queen's Anniversary Prize

The University was awarded a Queen's Anniversary Prize for Higher and

activities of the University. It will have exhibition galleries, archival storage, reading rooms, a lecture theatre and conservation laboratories.

'The beauty of the extraordinary gifts of the GarfieldWeston Foundation and Julian Blackwell is that they will allow the Bodleian to open its collections for viewing by a much wider public', says Dr Thomas.

'Schoolchildren, lifelong learners and members of the local community will be able to enjoy and learn from books and manuscripts that are part of our common heritage in a way never before possible at Oxford. Today's exhibitions draw more than 100,000 visitors annually, an

> astounding number, considering the cramped quarters improvised in the Old Bodleian. With two galleries and copious gathering space, we expect double or triple that number.'

> However, to bring this dream to a reality, more than 3.5 million books, maps, manuscripts and pieces of music need to be moved out of the New Bodleian. In the meantime, access to the collections still needs to be available. 'If you have ever had to feed a family while your kitchen is being remodelled, you'll recognise the challenge', says Dr Thomas.

> The University had planned to offer continuous service by decanting the New Bodleian's holdings into a new depository and delivering requested items from this state-of-the-art storage facility. However, at the close of the 2008 academic year, there was some disappointing news for the Bodleian. The University's appeal against plans blocking the building of a depository on a site at Osney Mead was dismissed. The depository is needed to help house the Bodleian's stock, which

is expanding at a rate of 170,000 new books a year, creating a great deal of pressure on space. The decision means that the renovation of the New Bodleian will be delayed by approximately a year. However, the library staff are determined to make the best of the situation and to ensure that the project is not affected any more than this.

'This was obviously a great disappointment, but the pragmatic approach is to move on', says Dr Thomas. 'We need to be creative about rethinking our management of collections and our service strategy. Tough decisions will have to be taken as we absorb the implications of this decision. The library has suffered from over-congestion in unsafe conditions for years because of our inadequate storage. I know, however, that, despite this adverse decision, staff will meet the challenge. They are dedicated both to the provision of an outstanding service to the research community and to the protection of the collections they steward. We now have to review the situation and present creative solutions in due course.'

Further Education for the work of the *Oxford Dictionary of National Biography* (*DNB*). A research and publishing project put together by the History Faculty and OUP, the *DNB* is the largest published work in the English language, comprising more than 56,000 biographies of men and women who have shaped British life from the 4th to the 21st century.

'The Bodleian is unique; it not only has the largest and most important university collections in the world, but it is leading the development of cutting-edge information services which are so vital to academic research.' Julian Blackwell



#### DECEMBER

### Oxford students go international

 Biologist
Zuzana Burivalova
spent the summer studying plant
species in Canada As winter deepens and Christmas approaches, it can be cheering to plan how to spend the summer. This year, Oxford's new International Internship Programme offered students the opportunity to spend the long vacation learning new skills in a new country. 'One of the challenges of educating students in the 21st century is equipping them to work and live in a global context', says Dr Heather Bell, the University's first Director of International Strategy. 'Oxford has a very successful track record of educating future leaders; how to add an international dimension to this is an important question.'

Many universities address this issue by creating joint degrees or exchange programmes. Although Oxford has a handful of degrees that feature an international component (including, of course, modern language degrees), its threeterm rather than two-semester academic year and its unusual teaching and examining style make 'parachuting in' to a course in another country quite difficult. 'We are keen to add that international experience, but exchanges or adding a whole year to someone's degree course

aren't great options for us', says Dr Bell. 'While term time is difficult, the long vacation offers an excellent opportunity to take on a job and, in the ever more competitive job market, work experience is a big plus on a CV.'

Oxford's first international interns visited Canada, Germany and the USA. Biologist Zuzana Burivalova, who is considering whether to do a PhD, left Lady Margaret Hall to undertake research at the University of Toronto (see box), living and working with graduate students both on campus and at the Koffler research reserve. Chinese student, Dan Liu, who studied for an MSc in Management Research at St Cross, joined Xperion, a global corporate group that develops and markets products and structures made of fibre composite materials. Based in Herford, Germany, Dan worked with Xperion's Executive Vice-President for Marketing and Sales on corporate strategy, business development and competition. Sean MacKenzie, who is reading for a BA in Modern History at St Catherine's College, spent the summer working in Birmingham, Alabama. 'I worked at Motorpool.com, a start-up business that will be the world's first social networking website for auto enthusiasts', he explained. 'There were huge cultural differences and at times I felt I was in a Tennessee Williams play, but the adjustment was an easy one thanks to the genuine

openness and kindness of the people there'.

Motorpool is the brainchild of Morgan Murphy, who came up with the idea while studying for an Executive MBA at the Saïd Business School (from which he has just graduated). With a background as executive editor and national spokesman for Time Warner and a career as an award-winning journalist writing for publications such as *Vanity Fair, Harper's Bazaar* and the *New York Post*, he feels strongly that internships should help young people focus their career ambitions, and he leapt at the opportunity to help when he heard Oxford was looking

for placements. 'Sean sat right beside me in my office. He heard my telephone calls, attended meetings with me, met my staff, talked to my designers and developers. I then gave him a large and important assignment: Motorpool needed a database of every manufacturer, model and submodel of automobile built since 1880 – a perfect task for someone keen on history. His work was simply superb and critical to our business.'

Sean found the experience immensely valuable. 'I learned more than I could have imagined was

possible', he says. 'Working closely with Morgan has not only given me a unique insight into the dynamics of start-up business ventures; it has also shifted my outlook towards both my education and my career plans. I'd wholeheartedly recommend internships to other students. They take you out of the "Oxford bubble" and your comfort zone, and give you some idea of what it takes to get on in the real world.'

'The international internships we were able to offer this year were vastly oversubscribed and everyone who offered placements commented on the exceptionally high quality of the applications they received', says Dr Bell. 'Oxford is full of hugely talented young people, and we have students who can do just about anything, whether an organisation needs a scientist or someone with economic modelling expertise. The University is creating other international opportunities for students, for example through the 10 members of IARU, the International Alliance of Research Universities, but we would love to hear from people interested in the energies and skills that Oxford students can bring to their organisation through an 8–10-week international internship. This year's examples show that you don't need to be a big company to create a memorable experience, and we think an internship is an especially great way for alumni to reconnect – in a personal and immediate sense – with Oxford University today.'

Zuzana Burivalova (right) spent the summer on an internship in the Department of Ecology and Evolutionary Biology at the University of Toronto, an opportunity created by an Oxford alumnus who works at the University with the help of the Oxford University Society of Toronto. A Czech national who took her A-levels in England thanks to a scholarship from the Headmasters' and Headmistresses' Conference, Zuzana had just completed an undergraduate degree in Biology. 'I'd always wanted to travel in Canada and considered applying to do a PhD there', she says. 'So when I saw that the only internship being advertised in biology was very related to what I did in one of my final-year modules at Oxford, it seemed like a perfect option to get me started on a gap year in Canada.' She spent 10 weeks working with Professor Spencer Barrett, a leading researcher in evolutionary ecology, helping investigate the reproductive ecology of Purple Loosestrife (*Lythrum*  salicaria), a plant species brought from Europe that has become invasive in North America. Another project – on the evolution of sexual systems in an aquatic plant, *Sagittaria latifolia* – involved travelling, camping and canoeing around the Algonguin provincial park in Ontario to sample rivers and lakes with populations of the plant. And the highlight? 'Canoeing to work and having hummingbirds flying around me at work.'

'One of the challenges of educating students in the 21st century is equipping them to work and live in a global context.'



#### JANUARY

### An enterprising approach to the environment

Sir David King, Director of the Smith School of Enterprise and the Environment, which aims to coordinate efforts to tackle the social, political and technological problems involved in responding to the major environmental challenges of the 21st century

Sir David King's aim is nothing less than to infuse environmental thinking into every government decision. 'I want to see that just as heads of governments are saying "We want to recharge our economies and get them flowing again, but we must control inflation", they are also saying "and we must reduce carbon emissions". Every sentence must contain that as a given.'

Sir David, who made headlines in 2004 when he said that climate change was a more serious threat to the world than international terrorism, joined the University in January 2008 as founding director of the new Smith School of Enterprise and the Environment. The post follows his seven-year stint as Chief Scientific Adviser to the UK government, during which he was credited with persuading the former Prime Minister Tony Blair to take a global lead on climate change. As Sir David's term of office came to an end, Vice-Chancellor Dr John Hood moved quickly to recruit him as head of a new environmental initiative at Oxford, proposed by financier and philanthropist Martin Smith and his wife Elise.

The Smith School, funded with a substantial benefaction of £10 million from the Martin Smith Foundation, will conduct research aimed at finding private sector solutions to environmental problems. With internationally recognised research already under way in many departments across the University, from the Environmental Change Institute to the departments of Chemistry and Engineering, the aim is not to reinvent the wheel. 'There is an enormous amount of really outstanding work in Oxford,' says

Sir David, 'but people working in one lab are often unaware of what's going on in another. We hope to add value by pulling people together.'

The School aims to act as a 'hub', both locally and globally, to focus attention on the social, political and technological problems involved in reducing carbon emissions. Its research fellows will each offer 30 per cent of their time to a department of their choice, acting as ambassadors across the University. In their turn, members of other departments with active interests in the field are being invited to become associate fellows of the Smith School, while a programme of visiting fellowships will bring researchers from across the world. Once these activities are in place, and inspired by his experience of setting up foresight and horizon-scanning programmes while in government, Sir David plans to establish a multidisciplinary 'futures laboratory'. This will conduct futures programmes in specific areas of work, such as clean transport technologies, of direct interest to the private sector and to governments. The programmes will create future scenarios to identify risks and opportunities, and to help inform strategies for managing the future.

Sir David acknowledges that solving real-world problems has not traditionally been seen as the province of universities, particularly the older institutions. 'The Smith School is doing something that our university system is not really used to', he says; 'but there is a tremendous sense of need for this from the academics themselves – we've been amazed at the response we've had.'

Getting the corporate sector engaged is trickier, he concedes. 'Many chairs and CEOs are showing a desire to work with us, but they do need to work it into their business models.' The G8 decision to reduce carbon emissions by half by 2050 will not allow them to drag their feet, however. 'Who will take up the challenge? Those parts of the private sector that see this as an opportunity, that have the ability to move quickly and to seize the advantages emerging around low carbon economies. Those who don't understand what future legislation will bring to them will be in difficulty.'

The role of governments is critical in persuading businesses to look beyond short-term profits, and the Smith School will focus much of its work on national and international environmental governance. 'As Chief Scientific Adviser, I became very aware that the immediate future

'The biggest single barrier to reducing carbon dioxide emissions is getting global agreement.' Sir David King is what every government is concerned about', says Sir David. 'But because individuals do care about the kind of planet their grandchildren will inherit, and because individuals are voters, I don't think there are politicians who can afford to ignore this problem any more.' The biggest problem, however, is gaining global agreement. 'If one major nation does not play ball,' he says, 'then this whole thing will not work. It's almost inevitable that our smokestack industries will move to that large state, and we'll import the

goods and the problem will not have gone away.'

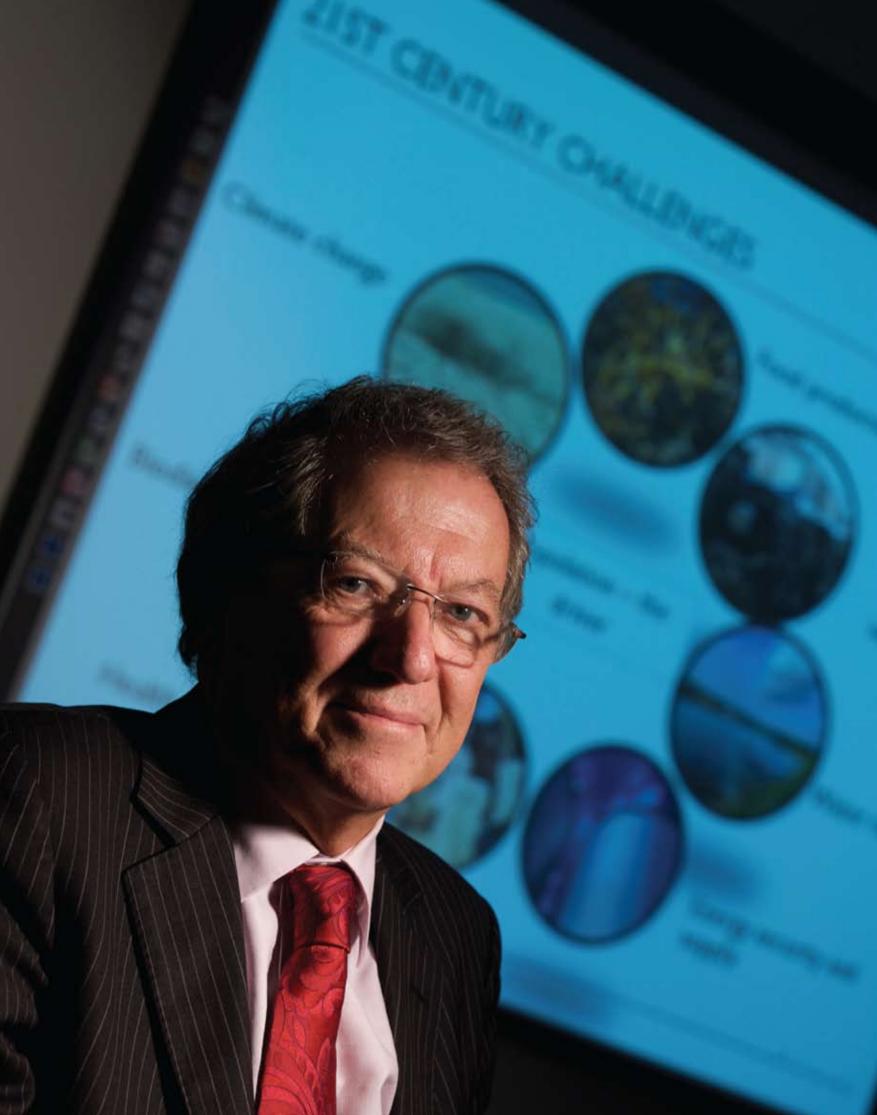
One of the few regrets he has from his time as Chief Scientist is a failure to persuade the government to include the need to build new nuclear power stations in its 2003 White Paper (it eventually announced a new nuclear programme five years later). His insistence that nuclear energy must be part of the carbon-reduction equation has set him at odds with green groups that had otherwise feted him for his uncompromising stand on global warming. 'One has to revisit one's prejudices', he says; 'and my previous prejudice was not to be in favour of nuclear new build, because I could not see why one would take any risk at all. Now we are faced with a massive challenge to decarbonise our economy, and frankly we are not going to manage it without nuclear new build.'

Sir David is characteristically pragmatic about our ability to cope with the drawbacks of nuclear energy generation. The same optimism emerges from his recent book (with Gabrielle Walker) *The Hot Topic*, which explains the extent of the risks we face from global warming while also presenting solutions. 'We are capable of managing this problem in a scientific, technological and economic sense', he says. 'It's a question of whether we have the governance capabilities to deliver the solutions. It's a manageable and doable problem, so let's get on and do it.'

New Year honours

Eight Oxford academics were recognised in the New Year Honours list:

John Bell, Regius Professor of Medicine, was made a Knight Bachelor for services to medicine. **Kay Davies**, Dr Lee's Professor of Anatomy, was made a Dame of the British Empire for services to science. **Margaret**  Bent, Senior Research Fellow at All Souls College, was made a CBE for services to musicology. Michael Noble, Professor of Social Policy, was made a CBE for services to social research on poverty and deprivation. Richard Ellis, Professorial Fellow at Merton College, was made a CBE for services to science. Peter Neumann, Lecturer in Mathematics, was awarded the OBE for services to education. **Kathy Sylva**, Professor of Educational Psychology, was awarded an Honorary OBE for services to children and families. **Robert Cassen**, Emeritus Professor of the Economics of Development, was awarded the OBE for services to education.



#### FEBRUARY

### Global maths challenges

Professor John Ockendon of the Oxford Centre for Collaborative Applied Mathematics (OCCAM) plans the expansion of Oxford's much-admired programme of mathematical Study Groups to countries all over the world Calculating probabilities is something that many mathematicians do routinely, but Oxford researchers were crossing their fingers in February as they put together a final proposal that could net them \$25 million of research funding. The mathematicians were proposing a new centre for applied and computational maths that they believed could both promote interdisciplinary maths around the world and offer an unprecedented opportunity to address quantitative challenges in the physical and biological sciences and industry. On 1 April they learned that their bid had been successful: the Oxford Centre for Collaborative Applied Mathematics (OCCAM) was born.

OCCAM is supported through the Global Research Partnership (GRP), the extramural research programme of the King Abdullah University of Science and Technology (KAUST). This new graduatelevel university with a multi-billion dollar endowment is being built in Saudi Arabia, about 50 miles north of Jeddah. Its academic structure

will be organised around four interdisciplinary research themes – resources, energy and environment; biosciences and bioengineering; materials science and engineering; and applied mathematics and computational science. The anticipated 240 faculty members, 390 researchers and 2,000 students will work with KAUST's partners around the world.

To help establish its international research expertise, KAUST invited around 60 leading universities to put forward proposals for multiinvestigator partner centres that would address important interdisciplinary problems, particularly those of significance within the Gulf region

and which sit within their research themes. The OCCAM proposal was one of four centres – and the only one outside the USA – to receive funding in the first round of GRP awards.

'For any university to allocate a quarter of its budget to applied maths and computational science is unprecedented', says Professor John Ockendon, Director of OCCAM. 'Maths will be both physically – on the KAUST campus – and intellectually at the heart of the whole enterprise. That is astonishingly bold and farsighted.'

Oxford has a long ethos of applying maths and computational skills to solve problems in science and industry, and OCCAM will build on the skills in four pre-existing groups: the Oxford Centre for Industrial and Applied Mathematics, the Centre for Mathematical Biology, the Numerical Analysis Group and the Computational Biology Group. In addition, the University's burgeoning international network of mathematicians will help establish OCCAM as the hub of a global operation that collaborates to enhance the status of problem-solving mathematics and to harness and train young talent to meet the challenges.

OCCAM's grant of \$25 million over five years will enable it to recruit and support new staff, launch new research projects and expand Oxford's much-admired international programme of Mathematical Study Groups with industry. These one-week workshops, the first of which was held in the Mathematical Institute in 1968, bring together mathematicians and industrial researchers with open problems. The problems, which may vary from modelling subsidence during tunnelling to designing strategies to minimise homelessness, are described at the beginning of the week; the mathematicians then examine possible solutions in a series of brainstorming sessions, all the while keeping in close touch with the industrialists. Innovative mathematical thinking is stimulated and real problems often solved or put in a new light. Study Groups take place around the world, in basic science as well as in industry, and OCCAM is sponsoring new venues this year, including Canada, Northern India and California.

'We have unrivalled expertise in running these groups and are much in demand', says Professor Ockendon. 'Until OCCAM, we simply didn't have the resources to offer. Now we have the money to mobilise our global network to help with Study Groups all over the world. We also have the resources to follow up research projects

coming out of the Study Groups.'

OCCAM has funding to appoint research fellows on five-year contracts, and to support postdocs and graduate students with a flexibility and speed that traditional agencies cannot match. Current projects for such members include topics of clear interest in Saudi Arabia: flow in porous media and the implications for oil recovery; simulating oil reservoirs and using stochastic (statistical) techniques to study oil field histories and predict future supply; looking at plant and crop growth in a hostile environment; modelling the evolution of desert and coastal topographies. Other projects address 'dry eye', a painful medical condition exacerbated in hot

climates, ultrafiltration techniques for biowaste processing and new fast algorithms for multiscale physical processes.

'The maths we do is very interdisciplinary and collaborative – it may involve chemistry, biology, physics, materials or engineering, or any combination of those – and this interaction is a key element in what we do', says Dr Chris Breward, OCCAM's Deputy Director. 'Not only do we try to apply existing mathematical methods to brand new problems but we are always on the look out for new mathematics, be it analytical or numerical, that may be sparked off by the new application. And although we mostly work with desktop machines, KAUST will have a petaflop computer – one of the most powerful in the world – that we can have access to.'

OCCAM staff are equipped with desktop videoconferencing and other interactive technologies to facilitate worldwide communication. Faculty members will also be delivering graduate-level courses directly to KAUST over the internet.

'Our research philosophy is in the spirit of Occam's razor,' says Professor Ockendon. 'We aim to extract the essence of a scientific problem and then use mathematical and computational analysis to extend our intuition and gain deeper insight.' He adds: 'I very much hope that OCCAM will enthuse researchers in countries where there is no tradition of interdisciplinary maths to pursue challenges that are both intellectually exciting and practically relevant.'

'We aim to extract the essence of a scientific problem and then use mathematical and computational analysis to extend our intuition and gain deeper insight.'

OCCAM CC Joburg: Jan 09 Oz: Jan 09 R Toronto: Jun 09. Claremont. n cuboidal offices How many paint the no 'adjac Answer as n - a, # colo



### Oxford on the road

Pupils at Marlborough School in Woodstock discovered the challenges and rewards of studying science In March, schools in Oxfordshire buzzed with lectures and workshops during the inaugural Oxford University Science Roadshow. Visiting a range of schools throughout the local community, University speakers covered diverse topics such as the all-pervading importance of symmetry, astronomy's major questions and the thorny issue of climate change. This big concept approach showed the pupils how fascinating and rewarding the subject of science can be.

At Marlborough School in Woodstock, Dr David Pyle, Lecturer in Earth Sciences, discussed volcanoes and how they link the hot deep earth with its surface and atmosphere. Didcot Girls' School welcomed Marcus du Sautoy, Professor of Mathematics, who boggled everyone's mind talking about the largest snowflake in the world. Cherwell School in Oxford heard about the nature of energy from Peter Atkins, Professor of Chemistry. The astro-physicists Dr Chris Lintott and Dr Kate Land visited Henry Box School in Witney, while climate expert Dr Myles Allen absorbed audiences on a stormy Friday

night in King Alfred's School, Wantage.

Organised by Dr Zareen Ahmed-Stewart, Access Officer for the Mathematical, Physical and Life Sciences Division, and Wendy Fuggles of the Public Affairs Directorate, the science roadshow was part of the University's National Science, Technology and Engineering Week activities. 'We set up the roadshow to help counter the

national drop in applications for science A-levels', Dr Ahmed-Stewart said. 'Many don't see science as relevant to their lives, so we set out to change their minds.' Another reason was to show the youngsters their potential and the doors that could open in later life if they study science.

The roadshow follows on from a science-writing competition that the University ran for 11 years. 'The University supports lots of activities in-house', Dr Ahmed-Stewart said. 'We wanted to reach more kids in a different way, enthusing them about science in a practical fashion. The roadshow seemed the logical next step. It also gave the scientists involved a chance to engage with the community and clearly communicate what they are doing, without dumbing down.'

Dr Ahmed-Stewart was amazed at the level of understanding that the children exhibited: 'They were managing to get to grips with complicated formulae and able to understand quite complex scientific concepts.' In the astronomy workshops, for example, the children were given print-outs of distant galaxies and told to work out how far away they were. Dr Chris Lintott, who ran that session, was very happy with the day's results. 'It was particularly good to expose them to some real data taken by one of the world's largest robotic telescopes', he enthused. 'By the end of the session, between them, they'd calculated the age of the Universe – not bad for a morning's work.'The workshops were not all about mathematics, however. At Marlborough School in Woodstock, the children were given microscopic fossils in Folkestone clay and asked to follow a methodology to find and identify them.

Over the five days, 175 pupils attended the workshops, while around 450 people attended the various lectures. So did the roadshow confound expectations that science is boring? Well yes, particularly for one young girl who, after seeing drops of liquid nitrogen race across the floor, declared: 'I never realised chemistry could be such fun!' It was a particularly entertaining workshop, as chemist Matthew Lodge was also freezing flowers in liquid CO2 and making 'tadpole' polymers.

Lynn Nickerson, who is science coordinator at Didcot Girls' School, was especially pleased at how Professor du Sautoy's talk showed the interconnection between science and mathematics, as well as raising the profile of science within the school and local community. Pupils came with their parents, and children from nearby schools also attended. 'Compared to things we've done before within school time, it made it seem much more special, rather than just a tacked-on

> science class.' Didcot Girls' School is a specialist language centre, so what particularly pleased Lynn Nickerson was that Professor du Sautoy's talk made people realise that mathematics is like another language. Meanwhile, longer term, she has seen a small increase in the number of children who attend the science club, and she would like to see the roadshow back next year.

That sentiment is echoed by Dr Whannel, who

teaches science at The Henry Box School in Witney. His students loved the astronomy workshop, organised by Dr Land. 'They felt it gave a unique insight into the world of science and challenged and stretched their scientific thinking', he said. The talk also went down well. 'The speakers made the audience feel very intelligent, as they felt able to understand very complex phenomena – it was very well pitched.' It also impacted positively on the pupils' view of the University. Dr Whannel said: 'They don't see it just as an aloof institution, but as a place that cares about the community and sharing and broadening its knowledge.' The broadening of knowledge went both ways. 'Seeing the children really enjoy the workshop and get a buzz from what they were doing made all the preparation worthwhile', said Dr Land. 'It was also a useful experience for me to think about how best to communicate complex ideas, and put some of my research into perspective.'

Meanwhile, Professor Atkins, who talked about the nature of energy at Cherwell School, enjoyed the chance to reach out to a different audience. 'The talk might provide the seed from which a career in science will stem, and, if not a career, then an appreciation of the glorious power of science in helping us to understand the workings of the world', he commented.

The University plans to take the project to Banbury and Henley for National Science Technology and Engineering week next year. Its long-term plan is to run the roadshow year round to expand it beyond Oxfordshire.

#### Honorary degree

At a ceremony on 1 March, the Vice-Chancellor conferred the Degree of Master of Arts on **Roger Bowler**. *... a superlative artificer, a trust pillar* 

#### of the scientific community ...'

Mr Bowler worked in the Department of Chemistry for more than 45 years, from 1961 until his retirement in 2007, as Head of the Mechanical Workshop.

'It gave a unique insight

into the world of science

and challenged and

stretched their scientific

thinking.'

His expertise made a significant contribution to the research of a department that has developed an international reputation for its innovative instrumental design.



### Regional Teachers' Conferences

▶ At mock interview sessions, teachers were struck by how the tutors encouraged the student applicants to think for themselves

In April members of the University's Student Recruitment team began detailed planning for a series of UK wide regional teachers' conferences as part of a new initiative which acknowledges the crucial role teachers and careers advisers play in encouraging and assisting young people to go on to higher education.

Speaking at one of the first Regional Teachers' Conferences in June, Student Recruitment Officer Peter Williams explained: 'It's a one-off when we engage with students; when we engage with teachers, we hope it will have a long-term benefit for you and for us. We recognise your importance in offering advice and support to students.'

Events for teachers have previously been held in Oxford by the

University and by some colleges and departments. But it can be hard for teachers to find the time to travel, so the Student Recruitment team has been on the road, visiting seven locations in areas that are under-represented in current undergraduate admissions. 'We chose some of the places where we thought there was the most untapped potential', said Peter Williams. These included Northern Ireland, Scotland, Wales, the north-east, north-west, southwest and East Anglia. Letters of invitation were sent to more than 2,000, mainly maintained, schools and colleges. Of the 218 teachers who attended, threequarters came from the state sector.

Enlisting the help of Oxford academics and a group of enthusiastic students, the programme offered sound, detailed advice on 'technical'

matters relating to admissions. This included significant deadlines, recent changes in the use of contextual information (such as schools' overall exam performance), short-listing, and subject-specific testing. Student finance was also covered. Equally important was more general discussion about the kind of education Oxford offers and the sorts of student who get the most out of it. Topics included the focus on independent study and tutorials rather than coursework, and the fact that Oxford courses are academic and theoretical rather than vocational.

Teachers found out how they could best support Oxford applicants by encouraging them to develop their interest in their subject beyond the A-level, Advanced Higher or International Baccalaureate curricula, and by broadening their intellectual horizons by following current affairs. Ideas included setting up a book club, or suggesting that pupils listen to Radio 4 discussion programmes.

Sometimes a small piece of information can make a big difference to a candidate's self-confidence and ability to do him- or herself justice. A good example is knowing that passages for discussion that are provided in tests and before interview in subjects such as English and History are often deliberately obscure, in the interests of fairness. An applicant who knows this is not likely to fall at the first hurdle, assuming that they needed prior exposure to ancient Icelandic literature when what they actually require is a well-developed literary or historical sensibility - aptitude, rather than knowledge.

The programme provided opportunities to investigate entrance statistics. For example, many students want to know which college gives them the 'best chance' of gaining an offer. In fact, colleges share information on candidates, evening out variations in numbers to ensure that the strongest applicants receive offers, even if not from their original college choice. Thus students can afford to choose without numbercrunching, focusing instead on the environment in which they wish to live and study.

Teachers' participation was encouraged by interactive exercises, which included looking at examples of personal statements and trying to work out whether the student in question had been accepted, and trying

out online tests which help students to develop their 'I feel much more confident in advising students in their application process and, perhaps more subject. importantly, I feel more enthused

about the fantastic experience that Oxbridge offers young people.'

reasoning abilities. Participants shared tips with each other; for example, some schools and colleges have swapped teachers to give mock interviews to each other's candidates, offering a good opportunity to practise talking to someone unfamiliar about their Some questions reflected common misconcep-

tions about Oxford. Many teachers were surprised to find that the majority of UK undergraduates come from state schools; others had not realised that Oxford's maximum formal entry requirement is three As at A-level and does not include a specific number of A or A\* grades at GCSE.

Several brave undergraduates re-lived their Oxford interview experience in front of an audi-

ence. Peter Williams said: 'Seeing these mock interviews helped a lot of teachers. They weren't what they thought they would be. They were surprised at how subject-focused they were, and struck by how the tutors were always trying to get the students to think for themselves, conducting the interview in such a way that coaching would not have helped.'

Feedback from the events was overwhelmingly positive. Teachers appreciated the fact that Oxford had visited their local area. They also liked the format, quality and quantity of information, the approachability of the presenters and the student involvement.

One teacher from the north-west wrote: 'Very interesting to get the "real" information rather than rumour/speculation about Oxford entry." A participant from Northern Ireland said: 'I now fully intend to encourage some of our students to apply', and expressed an intention to come to open days, highlighting another function of the day: publicising other admissions-related activities for both teachers and students. These include regional and Oxford-based open days, teachers' study weeks, Sutton Trust subject-based summer schools, as well as the interviewdemystifying podcasts on the University website.

In 2009 the Student Recruitment Team will be running seven Regional Teachers' Conferences in June and July, targeting those areas in the UK not covered by last year's programme. The programme will then continue on an annual basis covering the whole of the UK on a rolling two-year cycle.

**Distinguished Friends of** Oxford awards Paul Dodyk, Director of the consultancy firm Headstrong, served

on the Americans for Oxford (AFO) Board with distinction for 10 years and has been Chairman of AFO since 2001. E Michael Howarth, retired Dean of

Students at University College, University of Toronto, served as Director of the Canadian Rhodes Trust Scholarship Foundation for 50 years.

www.admissions.ox.ac.ii

Earth Sciences (Geology) Economics and Management English Language and Literature English Language and Literature Fine Art Geography History (Ancient and Modern) History of Art Human Sciences Law Materials Science Materials Science Materials Science Modern Languages and Linguistics Music Oriental and Middle Eastern Studies Physiological Sciences Physiological Sciences Psychology (Experimental) Theology



#### MAY

Studies worldwide.

## China Studies: a giant leap in Olympic year

The Shanghai World Financial Centre, seen here under construction, is a symbol of China's spectacular economic rise over the past 25 years The University of Oxford China Centre, launched in May, has taken up residence in St Hugh's College, while fundraising begins in earnest to create a purpose-built centre there. This year, the first students start a pioneering one-year MSc in Modern Chinese Studies. These are exciting times for the study of China at Oxford, building on more than 300 years of history and a world-class reputation.

The University is already a world-leading centre for scholarship on China: pre-modern, modern and contemporary. The new centre aims to provide a focus for China-related study across the University, play a leading role in strengthening Oxford's relationship with China and extend partnerships with other centres of scholarship in Chinese

Oxford can trace its links with China back to the 17th century, when the Bodleian Library acquired its first Chinese printed book and the University welcomed its first Chinese visitor (Shen Fuzong, who came to catalogue the Bodleian's Chinese holdings). Today, there are more than 40 academics in the social sciences and humanities alone at Oxford whose research is on China. China-focused research is also represented in medicine and public health, engineering science, natural history, earth sciences, business and the environment. The University's largest-scale involvement in China is the longstanding work there on chronic diseases such as heart attack, stroke and cancer by Oxford's Clinical Trial Service Unit. There are scientific collaborations on the sustainability of the Lower Yellow River, fossil assemblages in the Yunnan Province and desert geomorphology and

climate change; economists working on issues such as public finance and public sector reform and other key issues in contemporary China; and rapidly growing strengths in international relations, history, anthropology and politics, amongst others. 'Our brief', says Dr Frank Pieke, the Director of Oxford's Institute for Chinese Studies and of the new China Centre, 'is coordinating and facilitating the network of people across the University who work on and in China.'

A first group of scholars working on contemporary China has already moved to St Hugh's in anticipation of the college being the site of a new building for the China Centre. Fundraising is under way and Dr Pieke hopes it will be up and running by 2011. The leadership provided by Dame Jessica Rawson (Warden of Merton College and Professor of Chinese Art and Archaeology), Vivienne Shue (Professor of Contemporary China) and Dr Pieke has secured a rapid expansion in the number of posts in Chinese Studies at Oxford. The new centre will build on that, seeking out new research and endowment funding to build on the recent success the University has had in raising external monies. This includes a 1999 Leverhulme Foundation grant to Professor Rawson, which established

The University of Oxford China Centre will play a very important role in bringing together people from our two countries, by promoting knowledge and understanding.' Chinese Ambassador to the UK, Madame Ambassador Fu Ying

the Contemporary China Studies Programme at Oxford; a 2006 HEFCE, ESRC and AHRC grant awarded to Dr Pieke to set up the British Interuniversity China Centre with the universities of Bristol and Manchester; and the 2007 Leverhulme Foundation research leadership award to Rana Mitter, Professor of the History and Politics of Modern China, for a fiveyear interdisciplinary research project on the Sino-Japanese War.

The centre will also aim to generate scholarships for both post- and undergraduates, and to organise events. What it won't do, says Dr Pieke, is have its own academic post-holders: 'We will have people in the building and with connections to the centre who have posts in other parts of the

> University. But we want to promote the study of China in the mainstream, so where we help to create new posts they will be in departments, faculties and colleges of the University. That is the whole point. We would like to reach a stage where China is part of what every department of the University does.'

> The new centre will also support Oxford's growing teaching portfolio on the study of China. The most recent addition is the new one-year MSc in Modern Chinese Studies. No previous study of China is required, so the course is attracting first-time students to the subject. The new MSc joins the two-year MPhil in Modern Chinese Studies which focuses on Chinese language and the society, politics, economics and history of modern China. Says Dr Pieke: 'The two courses are run in tandem by the same team, although in different departments. Together they are attracting around 30 students, 15–20 for the new MSc and 10–12 for the MPhil. They are intended as a pathway to DPhil work,

although some students will do one of the Master's as a stand-alone.'

As recruitment to these courses increases postgraduate numbers, so too does the number of undergraduates studying China. Around 50 students now take the BA in Oriental Studies (Chinese), with many more taking other China-focused options. Oxford is also a leader in the study of Chinese as a foreign language. The Centre for Teaching Chinese as a Foreign Language launched in 1998, and initially focused on creating web or CD-assisted programmes, but it has developed and now offers part online, part Oxford-taught programmes. 'It is', explains Dr Pieke, 'one of the most cutting-edge centres of its kind. It is becoming ever more important, and is reaching out to other universities to help develop best practice.'

Dr Pieke was speaking as the 2008 Beijing Olympics came to a close, after two weeks with China in the spotlight of world attention. 'Now,' he says 'people will be even more convinced of China's importance and its place in the mainstream of world affairs.' With its new China Centre, the University will be well placed to respond to the increasing demand that promises.

#### Royal Society honours

Four Oxford researchers were honoured: **Sir Roger Penrose**, Emeritus Rouse Ball Professor of Mathematics, was awarded the Copley medal for his contributions to geometry and mathematical physics. **Simon Fisher**, a Royal Society University Research Fellow at the Wellcome Trust Centre for Human Genetics, was awarded the Francis Crick Prize Lectureship for his research in human language. **Robert Hedges**, Deputy Director of the Laboratory of Archaeology and the History of Art, was awarded a

Royal Medal for his contribution to the development of accelerator mass spectrometry and radiocarbon dating techniques. **James Murray**, Emeritus Professor of Mathematical Biology, was awarded the Bakerian Prize Lectureship, for his work in mathematical biology.





### A vision for Oxford

▶ The Campaign for the University of Oxford will fund three core priorities: attracting and supporting the very best students, investing in academic posts and programmes and providing the buildings and infrastructure to support some of the world's most advanced research centres and teaching facilities On 28 May, the University launched the largest fundraising campaign in the history of European universities. Its aim: to raise at least £1.25 billion to sustain and enhance Oxford's international reputation and maintain its position at the forefront of world-class research and teaching. The Campaign for the University of Oxford is inclusive of all aspects of the University, bringing together the academic priorities of colleges and departments alike.

While Oxford is widely recognised as a world-leading university, it is far from rich in comparison with its Ivy League peers, whose endowments per capita are typically three or four times that of Oxford. For Oxford to undertake the kind of development programme that will allow it to play its full part in meeting global challenges, such as climate change, disease, poverty and global ageing, its financial future must be secure.

Funds raised will be directed towards academic priorities established across the collegiate University and delivered as support focused in three areas: student bursaries and scholarships; academic posts and programmes;

buildings and infrastructure. The University and colleges are determined to enable the brightest undergraduate and graduate students to come to Oxford, regardless of their personal financial situation. Secure permanent posts and research funding are needed to attract and provide a career structure for the world's top academics and first-rate facilities for the 21st century are essential. Plans already in hand include the

development of the Radcliffe Observatory Quarter (formerly the site of the Radcliffe Infirmary) as a new home for the Humanities and for a new Mathematical Institute, plus the transformation of the New Bodleian Library and a new Institute for Cancer Medicine.

'Across the centuries Oxford's great minds have changed and bettered the world through their discoveries, innovations and insights. Our new Campaign will advance the University's historical strengths and draw upon its enormous potential for the future', the Chancellor, Lord Patten of Barnes, promised at the Campaign's London launch at the British Academy. He was accompanied at the event by the Vice-Chancellor, Dr John Hood, and Dame Vivien Duffield, philanthropist and alumna of Lady Margaret Hall, who is Chairman of The Campaign for the University of Oxford. The Campaign is also supported by distinguished patrons around the world, who are lending their influence and support to the cause, and by a committee made up of senior lay representatives who are alumni of the colleges.

Other Oxonians supporting the University at the launch included Sir Roger Bannister, Richard Dawkins, Ian Hislop and Michael Palin. Mr Palin is also the narrator of *Oxford Today*, a film created to reflect the diversity and international impact of Oxford life, which can be viewed on the Campaign website. 'Oxford has a tremendous attraction for people abroad', he said. 'A third of all students are from abroad and, as someone who travels a lot, I think this is one of the strongest things about Oxford and about this appeal.'

The Campaign is an umbrella appeal and encompasses gifts from individuals, foundations and corporations to specific colleges, particular projects or subjects, and to more general funds. Donations totalling £575 million were announced at the launch as gifts made to the collegiate University in the Campaign's pre-launch phase, which dates from Dr Hood's arrival as Vice-Chancellor in summer 2004. This sum includes £25 million from the Garfield Weston Foundation for the development of the New Bodleian Library – the Foundation's largest ever gift – and a fund with a capital value of £25 million established by MrWafic Saïd to create a strategic development fund for the Saïd Business School. In addition, the Shirley Foundation, established by Dame Stephanie Shirley (a Foundation Fellow of Balliol College), pledged £1 million to assist with the conversion of St Cross Church Holywell to an Historic Collection Centre for Balliol College. During this pre-launch period there were more than 20,000 donors to the Campaign – a broad base that highlights the important role of gifts at all levels. 'The Campaign launch attracted phenomenal press coverage in national newspapers, TV and radio, both in the UK and abroad', says Anthony Crampton, Senior Campaign Communications Officer. 'At its peak, shortly after the launch, visits to the Campaign website were running at 1,000 a day – and they're still averaging

about 300 a day.' This website links directly to an online giving facility which allows supporters to make a oneoff or regular monthly gift to a chosen destination.

By October 2008, the Campaign had raised £630 million in gifts and pledges in support of colleges, departments, libraries, museums and sports.

Amongst the major gifts made since the Campaign launch was a donation of \$50 million to Christ Church

from Michael Moritz, a partner at California-based venture capital firm Sequoia Capital, and his wife, writer Harriet Heyman. Mr Moritz, who is North American Chairman of The Campaign for the University of Oxford, read Modern History at Christ Church. The money will form a permanent part of the college's endowment and the extra income from this will fund academic posts, maintain, modernise and restore buildings, and provide student bursaries. Under the terms of the gift, the college will transfer an additional £75 million of its existing endowment into the Oxford University Endowment Management Fund. The donors said: 'This is an expression of our gratitude for the compass to life that Christ Church and the University provided many years ago. As the Campaign continues many other major gifts are being announced.

'The academic priorities identified by the Campaign provide a broad set of opportunities for support at all levels. I hope that every alumnus and friend of Oxford wishes to support this transformational appeal', says Sue Cunningham, the University's Director of Development. She highlights the fact that the UK government has recently announced a matched funding scheme for English universities, whereby Oxford will receive £1 for every £3 raised through qualifying donations, up to a £2.75 million cap. 'This creates a sense of impetus and encouragement for the higher education sector and many donors alike', she adds. 'Every pound received, to any part of the collegiate University, makes a real difference.'

A series of autumn international events highlighting the Campaign saw senior Oxford representatives, including the Chancellor and the Vice-Chancellor, visiting Tokyo, Singapore, Beijing, Hong Kong, Sydney and Melbourne. North American events will take place in spring 2009.

#### Royal Society honours

Seven Oxford academics were elected Fellows of the Royal Society: **Fraser Armstrong**, Professor of Chemistry; **Sir John Bell**, Regius Professor of Medicine; David Deutsch, Visiting Professor, Department of Atomic and Laser Physics; Brian Foster, Professor of Experimental Physics; Russell Foster, Professor of Circadian Neuroscience and Chair, Nuffield Laboratory of Ophthalmology; **Graham Russell**, Professor of Musculoskeletal Pharmacology and Honorary Consultant, Nuffield Orthopaedic Centre; **Ulrike Tillmann**, Professor of Mathematics.

The most sustained, coordinated fundraising effort ever undertaken by a European university



#### JUNE

## Acting globally, expanding locally

➤ Aerial view of the crater of Mount Saint Helens volcano in Washington State following the 1980 eruption Discovering how volatile metals from volcanoes are found in polar ice cores, investigating evidence of the biggest meteorite ever to hit the British Isles and explaining what speleothems (stalagmites and stalactites in caves) can tell us about past climates: these are just three examples of research by members of the University's Department

of Earth Sciences to inspire international attention in the past year. But in June, it was a news announcement about a development much closer to home that highlighted the University's commitment to the subject in the 21st century.

Earth Sciences at Oxford is one of the world leaders in its field, with a research agenda spanning billions of years from the very begin-

nings of the Earth itself to present-day issues of past and future climate change. 'Our subject has expanded enormously in the past few decades,' explained Professor Philip England, Head of the Department, 'allowing earth scientists to apply a wide range of scientific tools to topics as diverse as the origin and evolution of the solar system, the past and future of the climate system, the biology and chemistry of the oceans, natural hazards and environmental change.'

Currently, more than 120 people undertake teaching and research across a wide range of fields in geology, geophysics, geochemistry, climate and the environment, but the ever-increasing scope of the department has stretched the current building to its limit. This year, planning permission was granted for a new purpose-built centre on the site of the old central Chemistry block on South Parks Road. It will provide the department with state-of-the-art facilities, including laboratories, offices, teaching rooms and 'interaction space', which, says Professor England, 'is very important for a multidisciplinary department like ours.'

Hailed as 'the flagship for Oxford University's redevelopment of its science area', the new Earth Sciences Building project has received a significant donation from Gareth Roberts, the President and CEO of independent oil and gas company Denbury Resources Inc. A graduate of the department and honorary fellow of St Edmund Hall, Mr Roberts is a long-standing advocate of Earth Sciences at Oxford. 'He has been a tremendous supporter, helping us in all sorts of ways', says Professor England.

The new building will be home to the increasing number of academics working in Earth Sciences on subjects which, the Vice-Chancellor, Dr John Hood has said, 'provide the foundations for

> society's response to global change, to natural hazards and to pressure on natural resources'. This includes research on volcanic eruptions and earthquake hazards, and the work of Professor Stephen Hesselbo and colleagues using modern geochemical techniques in the study of past environments. The extra space in the new building will allow the Palaeobiology group to move back in with the rest of the department, a develop-

ment that, according to Professor Martin Brasier, 'means we can participate more fully in the multidisciplinary discussions which are the life-blood of Earth Sciences'. They will join the department's geophysicists, including Professor Shamita Das, who uses the information stored in seismograms to investigate how earthquakes rupture huge areas of the Earth; Professor Barry Parsons, who leads the Dynamic Earth group of the National Centre for Earth Observation hosted at Oxford; and Professor Bernie Wood, a recent addition to the Earth Sciences team at Oxford, who explained: 'The opportunity to work with world-class geophysical and geochemical scientists in a new purpose-built facility is a major attraction.'

The geochemists include Professor Alex Halliday, whose research investigates isotopic systems that became extinct during the violent early history of the solar system; Professor Gideon Henderson, who is developing new tools for the chemical detection of the signature of past climate changes (including the ground-breaking work on climate records in speleothems); and Dr Ros Rickaby, who has recently received a significant grant from the EU to investigate the coevolution of phytoplankton and the carbon cycle.

'As the scope of the subject expands, so does the number of students and academics we attract,' explained Professor England, whose own research has recently won a major grant as part of its work with the National Centre for Earth Observation. 'Our 08/09 cohort of undergraduates is the largest we have ever had.'

#### Lambeth degrees

Three Oxford academics were honoured with a prestigious Lambeth degree, awarded by the Archbishop of Canterbury:

**Bill Ives**, choirmaster of Magdalen College, received a DMus in recognition of his significant contribution to church music, particularly as a composer and as Organist and Informator Choristarum at Magdalen College, Oxford.

The Very Revd John Drury, Fellow of All Souls College and former Dean of Christ Church, received a degree in recognition of his theological scholarship, particularly in religious art, and for his significant contribution to liturgy and church music. **Terence Copley**, Professor in Educational Studies, received an award in recognition of his contribution to the theory and practice of Religious Education in schools and his promotional work highlighting the importance of the subject in relation to both the educational and wider public agendas.

'Earth Science has

never been more

exciting, or more

relevant to society,

than it is today.'

#### Queen's Birthday honours

Three Oxford academics were recognised in the Queen's Birthday Honours: **Andrew McMichael**, Professor of Molecular Medicine, was knighted for services to medical science. **Paul Collier**, Professor of Economics and Director of the Centre for the Study of African Economies, was made a CBE for services to scholarship and development. **Professor Paul Harvey**, Head of the Department of Zoology, was made a CBE for services to science. In addition, **Andrew Lilley**, News International Visiting Professor of Broadcast Media 2007–8 and Chief

Creative Officer of Magic Lantern Productions, was awarded an OBE for services to media and the creative industries.

**Hugo Brunner**, Lord–Lieutenant of Oxfordshire, the University's Deputy High Steward and an Honorary Fellow of Trinity College, was made a Knight Commander of the Royal Victorian Order.



Earth Sciences maintains a strong link between its research and teaching responsibilities. As recent international study noted, its research programme enriches its undergraduate teaching. Fieldwork (as postgraduate student Ed Nissen emphasises on these pages) is an essential component of studies here. The department is also committed to outreach activities. Dr Tamsin Mather, Research Councils UK Fellow in Physics and Chemistry of the Earth and Environment, whose research won her a L'Oréal UNESCO Fellowship for Women in Science this year, commented: 'We want to convey the

#### Graduate student profile: Ed Nissen

Watching England in the 2006 football World Cup at 4 am in the morning on a tiny black-and-white TV linked to a satellite powered by a car battery, while being warmed by the heat of a fire made from dried yak dung and surrounded by members of a sleeping nomadic family in their tent pitched in remote Mongolian countryside – that, says Earth Sciences postgraduate student Ed Nissen, rates as one of the fondest memories from three field trips he's made during his four-year PhD studies of tectonics and earthquakes at Oxford.

The earthquake-prone regions of south-east Europe, the Middle East and south Asia have been the focus of Ed's studies, with particular attention paid to the Siberia-Mongolian border which suffered its

Ed Nissen



excitement of the subject to school children, who often are unaware of the fascinating ways in which physics, chemistry, biology and mathematics illuminate our understanding of the Earth and our environment.'

Whether it's studying stalagmites deep in China's Heshang caves or sampling volcano fumes high up on Mount Etna in Sicily, investigating the impact of a meteorite that hit Scotland 1.2 billion years ago or mapping current earthquake ruptures in Mongolia to predict likely patterns of activity for the future, Oxford's earth scientists are certainly doing their fair share of illuminating.

biggest earthquake for almost 50 years in 2003. 'Mongolia has a very low population density', says Ed, 'so the human impact on the landscape is much smaller than it would be, for example, in Japan or California. I went two years after the 2003 earthquake and you could still see large fissures 3–4 metres wide. Also, because there is so little human impact, the effects of old earthquake ruptures are still visible, giving us a fantastic record of tectonics over hundreds of years.'

It is work, says Ed, that holds lessons for other earthquake-prone areas: 'We are trying to map the average intervals between earthquakes — is it hundreds of years or thousands? Knowing this helps, for example, planners and people who develop building regulations, and of course it's important for the insurance industry.'

Ed came to Oxford via school in Hammersmith, where he studied Chemistry, Maths, Further Maths and Geography to A-level. After a gap year doing voluntary work in Nepal, he went to Cambridge to study Chemistry, and took modules in Material Sciences and Geology. The latter, he says, 'gradually made me realise I was interested in seeing the world and studying as much as possible outdoors'. So he came to Oxford, which, says Ed, 'has one of the strongest groups in this field in the country', and works closely with Cambridge, University College London and the University of Leeds, through the Centre for the Observation and Modelling of Earthquakes and Tectonics (COMET).

Alongside his studies, Ed has found time to pursue a family interest in music. His younger sister studied music at Oxford, completing her final year as Ed did his second. Ed, who had a music scholarship at school, played with the Oxford Millennium Orchestra and has done 'a bit of singing' with University College choir. He played college football and is a member of the University triathlon squad. He also devotes time to 'The Good Life' (although he says he's not seen the BBCTV programme that helped coin the phrase), growing vegetables in his garden, catching crayfish and keeping chickens.

He says: 'Oxford is a great city and University and I'm in a very sociable department which I enjoy. There are lots of teaching opportunities, which I find rewarding.' His next step will take him back to Cambridge for a two-year stint of postdoctoral work on earthquakes and tectonics – and maybe a chance to get to Mongolia in time for the next World Cup.

#### Honorary degrees Degree by diploma

The degree of Doctor of Civil Law was conferred at a special ceremony on 5 June on **His Majesty King Abdullah II** of Jordan.

'Most noble Sovereign, who have shown yourself a staunch friend of the British people, and a leader of the Jordanian people distinguished for sagacity and humanity ...' After the ceremony, King Abdullah visited Pembroke College, where he was awarded an honorary fellowship. In addition, seven Oxford academics were elected Fellows of the Royal Society:

Fraser Armstrong, Professor of Chemistry; Sir John Bell, Regius Professor of Medicine; David Deutsch, Visiting Professor, Department of Atomic and Laser Physics; **Brian Foster**, Professor of Experimental Physics; **Russell Foster**, Professor of Circadian Neuroscience and Chair, Nuffield Laboratory of Ophthalmology; **Graham Russell**, Professor of Musculoskeletal Pharmacology and Honorary Consultant, Nuffield Orthopaedic Centre; **Ulrike Tillmann**, Professor of Mathematics.

### Encaenia Honorary Degree ceremony

This year's Encaenia Honorary Degree ceremony was held on 18 June in the Sheldonian Theatre, the Chancellor, The Rt Hon Lord Patten of Barnes presiding:

#### Degree of Doctor of Civil Law



**Mr Montek Singh Ahluwalia** Deputy Chairman of the Planning Commission, Government of India

'Learned and brilliant counsellor, who have explained economic growth in your writings and promoted it in your career ...'

Mr Montek Singh Ahluwalia was an undergraduate at the University of Delhi, a Rhodes Scholar at Magdalen College, of which he is now an Honorary Fellow, and a graduate student at St Antony's College. He was President of the Oxford Union in 1966. He began his professional career as an economist with the World Bank, Washington DC, in 1968. For the next 11 years, he served the World Bank as Deputy Division Chief in the Public Finance Division and as the Chief of the Income Distribution Division in the Development Research Centre respectively. Returning to India in 1979, he has been extensively involved in India's economics reforms as Commerce Secretary and in posts at the Ministry of Finance and Department of Economic Affairs. He was also the first Director of the Independent Evaluation Office at the International Monetary Fund. Publications and articles include co-authoring *Re-distribution with* Growth: An Approach to Policy and several articles in international professional journals.

#### Degree of Doctor of Letters



Mr Yves Bonnefoy Poet, critic, translator

'Eloquent and luminous poet, who clothe deep thought in beautiful expression ...'

Born in France, Yves Bonnefoy showed an early interest in mathematics before going on to study philosophy at the University of Paris, and later to pursue his interest in French and Italian art, studying under André Chastel at l'Ecole Pratique des Hautes Etudes. His first book of poems, Du Mouvement et de l'immobilité de Douve, published in 1953, quickly became a landmark in modern French poetry. His investigation into the ends and ethics of poetry has been pursued not only through poetry but also in his essays and translations. He has written widely on other poets, including Baudelaire, Rimbaud and Mallarmé, published acclaimed translations of Shakespeare's plays and has produced monographs on the visual arts, including the Baroque period in Rome, Miró and, most recently, Goya. He has been honoured in many countries including Italy, Japan and the USA; his numerous awards include the Prix des Critiques in 1971, the Prix Montaigne in 1978, and the Prix Balzan and the Prix Mondial Cino Del Duca in 1995.



Ms Ariane Mnouchkine Stage and film director

'A bright star, whose beams light up the French stage ...'

Ariane Mnouchkine is Director of the Théâtre du Soleil, the company she founded in 1964 with her contemporaries of the Theatre Association of the Students of Paris. The troupe operates as a creative collective with the aim of making theatre accessible. Its first major success was 1789 (1970), an interpretation of the French Revolution. In the 1980s she applied Japanese theatrical conventions to some of Shakespeare's history plays and comedies: Richard II, Twelfth Night and Henry IV, Part 1. Oriental techniques were also employed in epics based on the lives of Prince Sihanouk of Cambodia (1985) and Mahatma Gandhi (L'Indiade, 1987). She has also directed films, including a live production of the epic play Le Dernier Caravansérail (Odyssées) (2003), and Molière (1977). She was nominated for an Oscar for the screenplay of the 1964 film L'Homme de Rio. Together with the Théâtre du Soleil, she received the UNESCO Picasso Medal in 2005 in recognition of an outstanding contribution to the arts and culture.

#### Degree of Doctor of Letters



**Professor Thomas Nagel,** FBA University Professor, Professor of Philosophy and Professor of Law, New York University

### 'Wise master, in whose works weight and eloquence are combined ...'

Professor Nagel was an undergraduate at Cornell University and a graduate student at Corpus Christi College (of which he is now an Honorary Fellow) and later at Harvard University. He taught at Berkeley from 1963 to 1966, at Princeton from 1966 to 1980, and since 1980 he has been established at New York University, where he is University Professor, Professor of Philosophy and Professor of Law. He works in several areas of philosophy: ethics, political theory, philosophy of mind, and theory of knowledge. He has also brought philosophy to bear on questions of general human interest and public policy and was one of the founders of the journal Philosophy & Public Affairs, which provided a forum for philosophical discussion of such questions. His books include The Possibility of Altruism, Mortal Questions, The View from Nowhere and The Last Word. He is a recipient of the Mellon Foundation Distinguished Achievement Award and of the Rolf Schock Prize in Logic and Philosophy from the Royal Swedish Academy of Sciences. He is a Fellow of the American Academy of Arts and Sciences, a Member of the American Philosophical Society and a Corresponding Fellow of the British Academy.

#### Degree of Doctor of Science



**Professor Bert Sakmann,** MD Director of the Department of Cell Biology and Professor of Physiology, Max Planck Institute for Medical Research

### '... a penetrating investigator of the tiniest things ...'

Professor Sakmann studied at the Universities of Munich and Tübingen before completing his medical education at the University of Göttingen. He worked in the Department of Neurophysiology at the Max Planck Institute for Psychiatry in Munich and in the Department of Biophysics at University College London, before joining the Department of Neurobiology at the Max Planck Institute for Biophysical Chemistry in Göttingen in 1974. In 1979 he became a research associate in the membrane biology group at the Max Planck Institute for Medical Research, Heidelberg, becoming Head of the Membrane Physiology Unit in 1983 and Director of the Institute's Department of Cell Physiology and Professor of Physiology in 1985. Together with Erwin Neher, he won the Nobel Prize for Physiology or Medicine in 1991 for research into basic cell function and for their development of the patch-clamp technique, a laboratory method widely used in cell biology and neuroscience to detect electrical currents through cell membranes. He is a Foreign Member of the Royal Society and a Foreign Associate of the National Academy of Sciences (USA).



**Professor Sheila Evans Widnall**, MS SCD, FRAES, FAAAS, FAIAA, FAPS Institute Professor and Professor of Aeronautics and Astronautics, Massachusetts Institute of Technology

### '... a lady whose leadership has been as outstanding as her science ...'

Professor Widnall completed both her undergraduate and postgraduate education in aeronautics and astronautics at the Massachusetts Institute of Technology (MIT). She continued her long association with the Institute when she was appointed Abby Rockefeller Mauzé Professor of Aeronautics and Astronautics in 1986 and served as Associate Provost from 1992 to 1993. She was the first female Secretary of the Air Force from 1993 to 1997 after which she returned to her faculty position at MIT; in 1998 she was appointed Institute Professor. She served as Vice-President of the National Academy of Engineering and as a member of the Executive Committee of the National Research Council of the National Academies. She is a past president of the American Association for the Advancement of Science and the American Institute of Aeronautics and Astronautics. She has received numerous awards and honours, including the National Academy of Engineering Distinguished Service Award in 1993, and the Spirit of St Louis Medal from the American Society of Mechanical Engineers in 2001.

#### Degree of Doctor of Science



**Professor Ada Yonath** Martin S and Helen Kimmel Professor of Structural Biology and director of the Helen and Milton A Kimmelman Center for Biomolecular Structure and Assembly, Weizmann Institute of Science

### '... an exceptional investigator of the foundations of living matter ...'

Professor Yonath was an undergraduate and a Master's student at the Hebrew University before completing her graduate studies at the Weizmann Institute of Science. She conducted postdoctoral studies at Carnegie Mellon University and MIT. In 1970 she established the first protein crystallography laboratory in Israel, which remained the only lab of its kind in the country for more than a decade. She pioneered ribosomal crystallography in collaboration with the Max Planck Institute in Berlin, which led in 1986 to the introduction of cryo-bio-crystallography. Between 1986 and 2004 she headed the Max Planck Research Unit at Deutsches Elektronen Synchrotron, Hamburg, in tandem with her activities as a professor at the Weizmann Institute. She is a Foreign Honorary Member of the American Academy of Arts and Sciences, a Foreign Associate of the National Academy of Sciences (USA), and a Member of the Israel Academy of Sciences and Humanities. She has been awarded numerous honours, including the 2008 UNESCO-L'ORÉAL Prize for Women in Science.

#### Degree of Doctor of Music



Dame Carolyn Emma Kirkby, OBE, FGSM, FRCM, Hon FRAM, Hon FTCL Soprano and proponent of Early Music

'... an English nightingale, a tenth Muse ...'

Dame Emma studied Classics as an undergraduate at Somerville College and sang for pleasure, notably with the Schola Cantorum. She joined the Taverner Choir in 1971 and in 1973 began her long association with the Consort of Musicke; with these groups and with the Academy of Ancient Music she took part in the early Decca Florilegium recordings. She has built long-term relationships with chamber groups and orchestras, in particular London Baroque, the Freiburger Barockorchester, L'Orfeo (of Linz) and the Orchestra of the Age of Enlightenment. She has appeared in several hundred recordings of all kinds, from madrigals of the Italian and English Renaissance to works in the 20th-century repertoire. In 1999 she was voted Artist of the Year by Classic FM Radio listeners and in 2007 a survey of critics for BBC Music Magazine placed her in the top 10 greatest sopranos.



### Big prizes for Small

Dr Helen Small, winner of two major literary prizes in 2008 Old age is a subject that affects everyone, but most people don't wish to think about it in depth. However, with her book *The Long Life*, Dr Helen Small, Lecturer in English, has proved how important it is to address this almost taboo subject. *The Long Life* was awarded the British Academy's prestigious Rose Mary Crawshay Prize in July, capping a successful year for Dr Small; earlier in the year, the book also won the 2008 Truman Capote Award for Literary Criticism.

'I'm honoured and delighted for the book, and for those at OUP who did a beautiful job on the production and design', said Dr Small. 'Before *The Long Life*, my research and writing were concentrated primarily in the Victorian period, so this book represented a big elastication for me.'

Published in 2007, The Long Life examines old age in literature

and moral philosophy by inviting readers to range widely from the writings of Plato through to recent philosophical work by Derek Parfit, Bernard Williams and others, and from Shakespeare's *King Lear* through to Balzac and Dickens and more recent writing by Philip Roth and J M Coetzee.

'I think it has attracted attention because the subject is so evidently important to everyone', explained Dr Small, 'and yet there is very little written about it, which doesn't encourage people to put the subject aside "until later". Because *The Long Life* is about the very basic ways in which

we reflect on the whole of our lives, the shape they take, the value we attach to them, when we think it is best to die, it isn't "just" about the old, but about all of us.'

Dr Small, who is a Fellow at Pembroke College, argues that if we want to understand old age, we have to think more fundamentally about what it means to be a person, to have (or lead) a good life and to be part of a just society. 'It seemed to me one of the few great subjects left almost untouched – at least by philosophers and literary scholars', she said. 'It's a subject that affects all of us, at least potentially, and yet many of us try hard not to think about it too much. But there are so many issues – such as what it will mean for us to grow old, what we can expect our capacities to be, how our relationships with others and the world may change, what may be good about it as well as what may be bad and when we would it want it to end.'

Although literature can sometimes be dismissed as less important than science, Dr Small disagrees, and believes her book is of interest to the wider society, not just academia. 'Literature, including drama, is one of the places where old age has been seriously thought about, from Sophocles onwards. So if you want to think about scenarios of old age that have substance, detail and emotional depth, then literature is the best place to go.

*'King Lear* is especially important as I believe it still has a deep hold in our culture's imagination of old age, because, unlike other Shakespeare tragedies, Lear's only "flaw" seems to be his age – and the misjudgements and intemperance that come with it. So, it raises really fundamental questions about how much of what happens to our character in old age can be ascribed to old age, and about how far what happens to our lives in old age should affect other people's sense of the meaning and value of our whole life.'

As well as promoting *The Long Life* this year, Dr Small has also finished a chapter entitled 'Subjectivity, Psychology and the Imagination'

for the new *Cambridge History of English Literature* (Victorian volume), and has been editing *Wuthering Heights* for World's Classics. Her next project will be a new book, which will also be in the terrain of literature and philosophy.

The Truman Capote Award is the largest annual cash prize for literary criticism in the English language and is administered for the Truman Capote Estate by the University of Iowa Writers' Workshop. Dr Small formally received the award in September in a ceremony at the University of Iowa. The award, which is designed to reward and encourage excellence in the field, was stipulated in

the author's will, and reflects Capote's frequently expressed concern for the health of literary criticism in the English language. Dr Small is in good company in winning it, as previous winners have included Irish Nobel Laureate and former Oxford Professor of Poetry Seamus Heaney and Malcolm Bowie Marshal, Foch Professor of French Literature at Oxford from 1992 to 2002.

'This year has been a very good one for the English Faculty', commented Dr Sally Mapstone, Chair of the English Faculty Board, 'Highlights have included Helen Small's *The Long Life* winning both its awards. In addition to this, Professor John Kelly, with his co-editor Ron Schuchard, won the Morton N Cohen Award of the Modern Language Association of America (MLA) for the fourth volume of *The Collected Letters of W B Yeats*, described as "an exemplary marriage of literary pleasure and scholarly brilliance"; and Professor Roger Lonsdale won this year's MLA Prize for a distinguished scholarly edition for his four-volume edition of Samuel Johnson's *The Lives of the Poets*. Furthermore, we were delighted when Professor Richard McCabe was elected a Fellow of the British Academy.'

British Academy honours Sir Adam Roberts, Senior Research Fellow at the Centre for International Studies, has been elected the next President of the British Academy. Nine Oxford scholars were elected Fellows of the British Academy: John Blair, Professor of Medieval History and Archaeology; **Martin Browning**, Professor of Economics; **Christopher McCrudden**, Professor of Human Rights Law; **Linda McDowell**, Professor of Human Geography; **Iain McLean**, Professor of Politics; **Peter Neary**, Professor of Economics; **Vivienne Shue**, Professor of the Study of Contemporary China and

Director of the Contemporary China Studies Programme;

Mark Williams, Professor of Clinical Psychology and Wellcome Principal Research Fellow.

In addition, **Dr Helen Small**, Fellow and Tutor in English at Pembroke College was awarded this year's Rose Mary Crawshay Prize.

'If you want to think about scenarios of old age that have substance, detail and emotional depth, then literature is the best place to go.'



#### Undergraduate profile: Charlotte Spurrell

Had it not been for an encouraging teacher, final-year English student Charlotte Spurrell would never have thought of applying to Oxford. Coming from a state school in Milton Keynes that was just 10 years old, Charlotte knew it would be 'extremely competitive' to get a place at Oxford.

'My parents both went to university but as neither went to Oxford I didn't know much about it. Fortunately, my teacher had been a student at Regent's Park and had really enjoyed his time at Oxford, so he encouraged me to apply', Charlotte explained. 'I was the only person in my year to apply here, and the first in the history of the school to get a place.'

Choosing what subject to study was a tough decision for Charlotte, but her interest in drama finally attracted her to the English course. 'It offered me the opportunity to study the full history of English literature and introduced me to texts I had never seen before', she said. 'It also allowed a lot of flexibility as well as diversity, allowing me to choose which authors and texts I could study and which areas to specialise in.'

The decision proved a good choice: 'The course has been everything I hoped it would be, and more', she says. She describes the tutors as helpful and supportive and her tutorials as challenging and interesting – and was rewarded for her hard work by achieving a scholarship in her first year. 'Although the course is challenging, I have never felt overwhelmed by my workload', she adds.

Charlotte settled easily into college life, attending Mansfield College, where the smaller size meant she got to know everyone, while the location made it easy to get involved in University activities. And she has certainly made the most of that opportunity. Charlotte has found time to participate in dramatic performances, hold a committee position in OULES – a charity organisation that brings drama to people who may not otherwise have access to it, such as special needs schools or the elderly – sing with her college choir and play cello with Trinity College Orchestra. She also often helped out her college with jobs such as acting as a runner during interviews.

'It's been an amazing experience studying at Oxford, and I've taken up so many great opportunities that have arisen during my time here', Charlotte says. 'I'm now looking into staying on to do postgraduate studies and after that I might consider a career in publishing or advertising. Also, I've loved all the acting I've done here at Oxford and have done some professional work already, such as at the Edinburgh Festival with an Oxford/Cambridge theatre company, so I may pursue that line instead.'



 Charlotte Spurrell rehearses for the Oxford University Light Entertainment Society's production of Beauty and the Beast

### New Heads of House



#### Green Templeton College

Professor Colin Bundy was appointed the first Principal of the newly created Green Templeton College on 1 October 2008, having been Warden of Green College since 2006. Educated at the Universities of Natal and the Witwatersrand, Professor Bundy was a Rhodes Scholar at Merton College and a Beit Senior Research Scholar at St Antony's, graduating as a MPhil and DPhil. In a distinguished academic career, his appointments have included Vice-Rector of the University of Western Cape (1994-7), Vice-Chancellor and Principal of the University of the Witwatersrand (1997-2001), Director and Principal of the School of Oriental and African Studies (2001-6) and Deputy Vice-Chancellor of the University of London (2003-6). His chief research interests are contemporary South African history and higher education policy formation.



#### University College

#### Sir Ivor Crewe,

Vice-Chancellor of the University of Essex, took up the post of Master of University College on 31 July. Sir Ivor read PPE at Exeter College and was a Junior Research Fellow in Politics at Nuffield College. Following this, he held a series of academic appointments, becoming Professor of Government at Essex and then Vice-Chancellor. He is a former President of Universities UK, the national association of universities, and a former Chair of the 1994 Group, a coalition of smaller research-intensive universities established to promote excellence in research and teaching. His research interest is British and American politics, mainly elections, parties and public opinion. He has been a regular political commentator on television, radio and in the press, and directed the British Election Study from 1973 to 1981. He has published numerous books on elections, parties and public opinion, including a leading textbook, The New British Politics.



#### Wolfson College

Hermione Lee, CBE, FBA, FRSL, Goldsmith's Professor of English Literature at Oxford, took up the post of President of Wolfson College on 1 October. Professor Lee read English Literature at St Hilda's College and then took an MPhil at St Cross College. She began her academic career as a lecturer in Williamsburg, Virginia and at Liverpool University. She taught at the University of York from 1977, where over 20 years she was lecturer, senior lecturer, reader and professor in the Department of English Literature. She is an Honorary Fellow of St Hilda's and St Cross Colleges, has honorary doctorates from Liverpool and York Universities and is a Foreign Honorary Member of the American Academy of Arts and Sciences. She has written widely on women writers, American literature, life-writing and modern fiction. Her biography of Virginia Woolf won the British Academy Rose Mary Crawshay prize. Most recently, she has written a biography of Edith Wharton.



#### The Queen's College

Paul Madden, FRS, FRSE, Professor of Chemistry and Director of the Centre for Science at Extreme Conditions at the University of Edinburgh, was appointed Provost of The Queen's College from 2 August. After studying theoretical chemistry as an undergraduate at the University of Sussex, he undertook research at UCLA. He returned to Sussex to complete a DPhil. In 1984, after holding positions in Cambridge, where he was a Fellow of Magdalene College, and at the Royal Signals and Radar Establishment, he was appointed lecturer in the Physical Chemistry Laboratory at Oxford and a fellow of The Queen's College. He was appointed to a professorship in 1996. He took up several positions in the college and University, most notably a short spell as senior tutor and as vice-chair of the University's Information Technology Committee. He moved to Edinburgh in 2004. His main research interest is developing methods for atomistic and *ab* initio computer simulation of material properties, especially ionic materials.

### New Heads of House



#### Kellogg College

Jonathan Michie, Professor of Management at the University of Birmingham and Director of Birmingham Business School, was appointed Director of the Department for Continuing Education and President of Kellogg College, with effect from 1 April. He was educated at Balliol College and Queen Mary College, University of London, where he received a Master's degree with distinction. Previously, he held the Sainsbury Chair of Management at Birkbeck College, University of London, where he was Head of the School of Management & Organisational Psychology. He is a member of Council of the Advisory, Conciliation and Arbitration Service (ACAS), whose audit committee he chairs; a member of the Department for Business, Enterprise & Regulatory Reform (BERR) Advisory Forum on the implications of employment regulation; and a Director of Mutuo, a think-tank for the cooperative and mutual sector. He is currently running an ESRC seminar series on 'complexity economics for sustainability'.



#### All Souls College

Sir John Vickers, formerly Drummond Professor of Political Economy at Oxford, became Warden of All Souls College in October 2008. After studying PPE at Oriel College, he worked as a financial analyst in the oil industry before returning to Oxford as a Prize fellow at All Souls to pursue graduate work and then teach economics. In 1991 he was appointed Drummond Professor of Political Economy. From 1998 to 2000 he was Chief Economist at the Bank of England and a member of the Monetary Policy Committee - an interest he continues to pursue by teaching the first-year undergraduate Macroeconomics course at Oxford - and then spent five years as head of the Office of Fair Trading. He is currently President of the Royal Economic Society, a Delegate of Oxford University Press and chair of its finance committee. His current research concerns the economics of competition and regulation.



#### Campion Hall

The Reverend Brendan Callaghan SJ, Senior Lecturer at Heythrop College, the specialist philosophy and theology college of the University of London, was appointed Master of Campion Hall with effect from September 2008. After teaching in Southern Africa and two years' Jesuit novitiate, Fr Callaghan studied philosophy and theology at Heythrop, and psychology at the Universities of Oxford and Glasgow. He was ordained a Catholic priest in 1978. From 1985 to 1997 he was Principal of Heythrop, and Acting Principal from 1998 to 1999. He is a chartered clinical psychologist and an associate fellow of the British Psychological Society. For many years he was involved in medical ethics education and practice, and was general secretary of the Institute of Medical Ethics and vice-chair of the Local Research Ethics Committee at St Thomas's Hospital. He is a Fellow of the Royal Society of Medicine. His research interests focus on developmental issues and the contribution of object-relations theory to the psychology of religion.

### New appointments

#### January

#### Computational Aerothermal Engineering

Li He, Professor of Thermodynamics and Fluid Mechanics at the University of Durham, took up the post of Rolls-Royce/Royal Academy of Engineering Professor of Computational Aerothermal Engineering and became a fellow of Lady Margaret Hall.

#### **International Relations**

Andrew Hurrell, Director of the Centre for International Studies and Lecturer in International Relations, was appointed Montague Burton Professor of International Relations and became a fellow of Balliol College.

#### Enterprise and the Environment

**Sir David King**, the government's Chief Scientific Adviser, took up the post of Director of the new Smith School of Enterprise and the Environment and became a fellow of University College.

#### April

#### Social Sciences

**Roger Goodman**, Nissan Professor of Modern Japanese Studies, Director of the Nissan Institute of Japanese Studies and Head of the School of Interdisciplinary Area Studies, took up the post of Head of the Social Sciences Division; he remains a fellow of St Antony's College.

#### Trauma Rehabilitation

Sarah Lamb, Director of the Warwick Clinical Trials Unit, Professor of Rehabilitation at the University of Warwick, and Visiting Professor at the Kadoorie Critical Care Research Centre at Oxford, took up the post of Kadoorie Professor of Trauma Rehabilitation on a part-time basis, and became a fellow of Wadham College.

#### June

#### Physics

**Savas Dimopoulos**, Professor of Physics at Stanford University, took up the post of Wykeham Professor of Physics and became a fellow of New College.

#### July

#### **Buddhist Studies**

**Vesna Wallace**, Associate Professor in the Department of Religious Studies at the University of California, Santa Barbara, was appointed Numata Professor of Buddhist Studies and became a fellow of Balliol College.

#### September

#### **Rothermere Institute**

**Dr Nigel Bowles**, University Lecturer in Politics, was appointed Director of the Rothermere American Institute; he remains a fellow of St Anne's College.

#### **Reuters Institute**

**David Levy**, journalist, academic and former Controller of Public Policy at the BBC, was appointed Director of the Reuters Institute and became a fellow of Green Templeton College.

#### **Experimental Philosophy**

Paolo Radaelli, Crystallography Group Leader at the Rutherford Appleton Laboratory, Didcot, and Visiting Professor in the Department of Physics and Astronomy at University College London, was appointed Dr Lee's Professor of Experimental Philosophy, and became a fellow of Wadham College.







Left to right:
Dr Nigel Bowles
Dr David Levy
Professor Paolo Radaelli

### New appointments

#### October

#### Head of Medical Sciences

Alastair Buchan, Professor of Clinical Geratology at Oxford, Head of the John Radcliffe Division of the Nuffield Department of Medicine and Director of the Oxford Comprehensive Biomedical Research Centre, was appointed Head of the Medical Sciences Division and became a fellow of Green Templeton College.

#### Broadcast Media

**Paul Gambaccini**, radio presenter and writer, was appointed News International Visiting Professor of Broadcast Media and a fellow of Green Templeton College for the academic year.

#### **American Literature**

Jonathan Freedman, Professor of English and American Studies at the University of Michigan, was appointed Drue Heinz Visiting Professor of American Literature for the academic year.

#### Social Anthropology

**Dr David Gellner**, University Lecturer in the Social Anthropology of South Asia at Oxford, was appointed Professor of Social Anthropology and became a fellow of All Souls College.

#### Surgery

**Freddie Hamdy**, Professor and Head of Urology at the University of Sheffield and Head of the Section of Oncology at the University of Sheffield School of Medicine, was appointed Nuffield Professor of Surgery and became a fellow of Balliol College.

#### George Eastman Visiting Professor Lynn Margulis, Distinguished University Professor in the Department of Bioscience at the University of Massachusetts, Amherst, was appointed George Eastman

at the University of Massachusetts, Amherst, was appointed George Eastman Visiting Professor and became a fellow of Balliol College for the academic year.

#### American Literature

**Peter Onuf**, Thomas Jefferson Foundation Professor at the University of Virginia, was appointed Harold Vyvyan Harmsworth Visiting Professor of American History and became a fellow of The Queen's College for the academic year.

European Comparative Literature Marjorie Perloff, Sadie Dernham Patek Professor of Humanities (Emerita) at Stanford University and Scholar-in-Residence at the University of Southern Carolina, was appointed Weidenfeld Visiting Professor of European Comparative Literature for the academic year; the post is associated with St Anne's College.

#### Latin Language and Literature

**Tobias Reinhardt**, University Lecturer in Classical Language and Literature at Oxford, was appointed Corpus Christi Professor of the Latin Language and Literature and became a fellow of Corpus Christi College.

#### **Contemporary Theatre**

**Kevin Spacey**, actor and Artistic Director at the Old Vic Theatre, was appointed Cameron Mackintosh Visiting Professor of Contemporary Theatre for the academic year; the post is associated with St Catherine's College.

#### Fine Art

**Richard Thomson**, Watson Gordon Professor of Fine Art at the University of Edinburgh, was appointed Slade Professor of Fine Art for the academic year; the post is associated with All Souls College.

In addition to the new appointments mentioned in this review, the University has conferred the title of Professor on 86 staff members, in recognition of their outstanding achievement.

Left to right:
Professor Lynn Margulis
Professor Freddie Hamdy
Professor Vesna Wallace







### Alumni Weekends

More than 1,700 Oxonians and their guests enjoyed 'behind the scenes' tours, lectures and debates, visits to colleges and museums and many other stimulating events at the 2007 and 2008 Alumni Weekends Welcoming more than 700 delegates to 'Meeting Minds', the very first Oxford University Alumni Weekend, which was held on 14–16 September 2007, the Chancellor Lord Patten said: 'The "Oxford community" encompasses not just academics engaged in [teaching and] research, but the people all over the world who are members of this great institution. We are proud that this weekend's programme recognises not only the achievements of our current staff and students, but also the immense contribution made by our alumni, whose work in everything from aeronautics to zoology owes a debt to their Oxford experience.'

Over three days, Oxonians and guests, who had travelled from near and far, enjoyed a varied and intellectually challenging programme of lectures and panel discussions; took part in behind-the-scenes tours, exhibitions, performances and social events; revisited favourite old

haunts and discovered hitherto unknown corners of the city and University; and caught up with old friends and made new ones. In addition to the University programme, nearly all colleges and halls ran events. The weekend was a chance for alumni to reflect on both continuity and change at Oxford; perhaps to feel a little nostalgic, but also to feel proud of the teaching and research the University is doing today, and inspired by its ambitious plans for the future.

This inaugural weekend, organised by the staff of the Alumni Office, was such a success that it

was repeated on 19–21 September 2008, and has now become an annual fixture for the autumn. More than 1,000 people attended the second weekend, some making the journey to Oxford from as far afield as Argentina, Vietnam and Australia. This year saw an expanded programme offering more than 130 events, including some that were laid on specifically for families. Other innovations included 'taster' sessions in several modern languages.

The overarching theme in 2008 was 'Global Oxford', and the weekend showcased many aspects of the University's research on global issues; celebrated the increasingly cosmopolitan makeup of its student, staff and alumni bodies; and considered the challenges that face all institutions of higher education in a world that is changing very rapidly, including implications for funding and recruitment.

Heather Bell, Director of International Strategy, reminded delegates that 14 per cent of Oxford's undergraduates and 62 per cent of its graduate students are now citizens of countries other than the UK, as are 39 per cent of its academic staff – proportions that have all increased significantly over the past 10 years.

With this richly varied human resource base, and in the wider context of globalisation, both the subjects of and approaches to research are becoming ever more international. Talks covered many important topics of current study, including the problems and opportunities presented by increasing international migration; the challenges of changing demographics, notably ageing populations; and the need for global markets and institutions to better serve the needs of people in developing countries.

Certain discussions focused more on institutional topics, such as the experiences of international students at Oxford, and how Oxford can best serve its alumni, an estimated 46,000 of whom live overseas, many maintaining their relationship with Oxford through one of the Oxford University Society's 121 branches in 57 countries.

As in 2007, the visits and walking tours proved to be some of the most popular events of the weekend. Around Oxford, 17 colleges

'The experience is like a chocolate box – you have to ration yourself as so much is on offer.' Attendee, Oxford Alumni Weekend 2008 opened their doors to all participants, allowing them to visit gardens, archives and libraries, as did many University departments, some offering 'behind the scenes' tours that were quickly booked up. Many delegates were delighted to have the chance to visit a place they had never visited as a student; to explore places that are not usually open to the public, such as the Bodleian Library's underground tunnels; or to have a privileged preview of work in progress, such as that taking place in the exceptional new Biochemistry building, imaginatively designed

to maximise the opportunities for scientists to meet, interact and innovate.

Alumni and their guests also enjoyed a wide range of social and cultural events, including evening receptions in the Divinity School and at the Oxford Playhouse, college dinners and a concert featuring Somerville alumna Dame Emma Kirkby with the London Baroque. Sporting activities included swimming in the University Pool and Tai Chi at the University Club. Bus and cycle rickshaw transport, which proved particularly popular, was provided between venues.

Feedback from delegates has been overwhelmingly positive. As one alumnus commented: 'I enjoyed it so much, it will become a permanent fixture.'

Nancy Kenny, Director of Alumni Relations, said: 'Some [delegates] had signed up for as many as 15 of the 130 separate events, and all had a stimulating time, reminding themselves of the Oxford of their student days and learning about the Oxford of 2008. With an attendance more than 25 per cent larger than last year's, the 2008 Alumni Weekend was a great success, and promises well for next year's event.'

The 2009 Alumni Weekend will take place from 25 to 27 September.



### The year in review

While income has continued to grow, particularly research income, the upward pressure on costs continues to be significant. The margin of income over expenditure remains low, with a small surplus on continuing operations of £6 million (2006/7 £2 million). After donations of heritage assets and a transfer of £5 million from endowment returns accumulated in previous years, the surplus for the year is £16 million (2006/7 £8 million).

	2007/8	2006/7
	£m	£m
Income	755	676
Expenditure	(749)	(674)
Surplus on continuing operations	6	2
Donation of heritage assets & minority interests	5	1
Transfer from endowment income	5	5
Transfer to reserves	16	8

#### Income

Compared with the previous year, income to the University rose by 11.6%, from  $\pounds 676$  million to  $\pounds 755$  million, as follows:

	2007/8		200	06/7
	£m	%	£m	%
HEFCE/TDA grants	186	25	180	27
Academic fees	111	15	94	14
Research grants and contracts	285	38	248	37
Other income	139	18	126	19
Investment income	34	4	28	4
Total income	755	100	676	100

Research grants and contracts continue to be the largest single source of income to the University and increased by 14.9% to £285 million, most of which is matched by related expenditure.

Grants from the Higher Education Funding Council for England (HEFCE) represent the second largest source of University income and amounted to £186 million, up by 3.6%.

Academic fees and support grants amounted to  $\pm$ 111 million, up by 17.4%, with growth of 16.5% in overseas fees, and with a further cohort of UK/EU undergraduate fees based on the new higher level.

The 10.0% increase in other operating income to  $\pm$ 139 million was driven principally by other services rendered, including expansion in educational services and medical services.

Endowment and investment income, at £34 million, increased by 19.8% compared to the previous year, through higher interest receivable and profits from the realisation of investments in spin-out companies, principally Oxford Catalyst Ltd.

#### Expenditure

	2007/8		2006/7	
	£m	%	£m	%
Staff costs including research staff	403	54	351	52
Other research costs	97	13	87	13
Premises	45	6	47	7
College capitation payment	46	6	44	7
Depreciation	42	6	45	6
Other operating costs	116	15	100	15
Total expenditure	749	100	674	100

The University's expenditure of £749 million rose by 11.1%, and includes staff costs of £403 million, which increased 14.8%, compared to 2006/7. This resulted from the annual negotiated pay settlement, extra staff for research activities, which were matched by related income and the expansion of academic activities and related support.

Other operating expenses amounted to £116 million, an increase of 16.0%. Major factors include additional expenditure on new departments, higher professional fees, and increased bursary and scholarship costs.

#### Cashflow

Net cash inflow, before use of liquid resources and financing for the year, was £39.0 million and compares with £24.8 million in the previous year. The increase in the net cash inflow is largely due to improved working capital management and capital grants in advance.

#### Balance sheet

	31/07/08	31/07/07
	£m	£m
Fixed assets	844	824
Endowment assets	653	688
Net current liabilities	81	58
Net assets	1,578	1,570

Prior year comparatives have been restated to reflect the change in accounting policies due to the introduction of the 2007 HEFE Statement of Recommended Practice.

The balance sheet shows a small increase in net assets of 0.5%, from £1,570 million to £1,578 million. Tangible fixed asset cost (including heritage assets) increased by £118 million, reflecting the continued building programme to support the University's expanding research base. Significant capital expenditure was incurred on a number of projects in 2007/8, including the Old Road Campus, the Ashmolean Museum, the new Biochemistry Building, the Begbroke Supercomputer and the Biomedical Building.

Endowment funds decreased in total value from  $\pm 688$  million to  $\pm 653$  million due to weak equity markets and property values. New funds invested during the year amounted to  $\pm 15$  million.

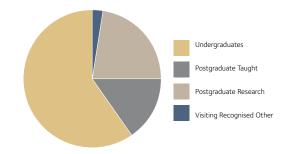
Treasury risk has increased significantly in 2008 as a result of the global banking crisis. An early impact of the banking crisis on the University occurred in October 2008, when three Icelandic banks and their UK subsidiaries were placed in administration. The University has £31.25 million of fixed-term deposits with these banks, and debtors include a further £2.5 million of accrued interest in relation to these deposits. No provision has been made against the carrying value of the deposits and the accrued interest in respect of the possible non-recovery of some or all of the amounts.

## Appendices

### Student numbers 2007/8

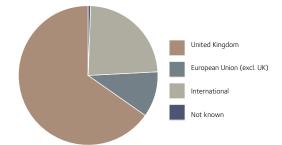
#### 1. Total students

	UNDER- GRADUATES	POSTGRADUATE TAUGHT	POSTGRADUATE RESEARCH	VISITING RECOGNISED	TOTAL
				OTHER	
Men	6,279	1,661	2,594	215	10,749
Women	5,638	1,412	1,913	302	9,265
Total	11,917	3,073	4,507	517	20,014



#### 2. Students by nationality

	UNDER- GRADUATES	POSTGRADUATE TAUGHT	POSTGRADUATE RESEARCH	VISITING RECOGNISED OTHER	TOTAL
United Kingdom	10,193	1,060	1,795	5	13,053
European Union (excl. UK)	665	503	847	74	2,089
International	1,012	1,437	1,840	423	4,712
Not known	47	73	25	15	160
Total	11,917	3,073	4,507	517	20,014



Students come to Oxford from 139 countries and territories, creating a vibrant and diverse student community. The largest groups of international students come from:

	UNDER- GRADUATES	POSTGRADUATE TAUGHT	POSTGRADUATE RESEARCH	VISITING RECOGNISED OTHER	TOTAL
USA	148	441	446	359	1,394
China	323	179	235	8	745
Germany	175	152	246	32	605
Canada	37	120	180	8	345
India	42	146	86	7	281
Australia	45	59	146	3	253
France	72	41	51	13	177
Ireland	73	45	59	-	177
Italy	41	38	68	7	154
Greece	24	34	87	-	145
Japan	27	34	50	6	117
South Africa	16	39	53	1	109
Singapore	62	28	16	2	108
Poland	64	20	21	1	106
Malaysia	42	18	43	1	104

# Appendices

#### 3. Undergraduates

	5	
1.	Ancient and Modern History	56
2.	Archaeology and Anthropology	67
3.	Biochemistry, Molecular and Cellular	346
4.	Biological Sciences	298
5.	Chemistry	679
6. 7	Classical Archaeology and Ancient History	59
7. 8.	Classics and English	24 42
8. 9.	Classics and Modern Languages Classics and Oriental Studies	42
9. 10.	Computer Science	84
10.	Economics and Management	272
12.	Engineering and Computer Science	18
13.	Engineering, Economics and Management	84
14.	Engineering and Materials	1
15.	Engineering Science	510
16.	English	742
17.	English and Modern Languages	86
18.	European and Middle Eastern Languages	34
19.	Experimental Psychology	161
20.	Fine Art	59
21.	Geography	264
22.	Geology/Earth Sciences	109
23.	History/Modern History	736
24.	History/Modern History and Economics	32
25.	History/Modern History and English	27
26.	History/Modern History and Modern	80
	Languages	
27.	History/Modern History and Politics	144
28.	History of Art	31
29.	Human Sciences	105
30.	Jurisprudence	612
31. 32.	Jurisprudence with Law in Europe	122 456
32. 33.	Literae Humaniores	456
33. 34.	Materials, Economics and Management Materials Science	91
34. 35.	Materials science	611
35. 36.	Mathematics Mathematics and Computer Science	59
30. 37.	Mathematics and Philosophy	86
37.	Mathematics and Statistics	107
39.	Medicine (Pre-clinical, Clinical & Graduate	950
55.	Entry)	550
40.	Modern Languages	684
41.	Modern Languages and Linguistics	82
42.	Music	185
43.	Oriental Studies	166
44.	Philosophy and Modern Languages	70
45.	Philosophy, Politics and Economics	738
46.	Philosophy and Theology	70
47.	Physics	604
48.	Physics and Philosophy	48
49.	Physiological Sciences	64
50.	Psychology, Philosophy and Physiology	93
51.	Theology	169
52.	Continuing Education Certificates and Diplomas	556
53.	Diploma in Legal Studies	16
55.	Certificate in Theology/Bachelor in Theology	106
	Total	11,917
		.,

#### 4. Postgraduates

	POSTGRADUATE TAUGHT	POSTGRADUATE RESEARCH	TOTAL
Medical Sciences	180	905	1,085
Social Sciences	1,665	1,077	2,742
Mathematical, Physical & Life Sciences	181	1,545	1,726
Humanities	554	946	1,500
Continuing Education	493	34	527
Total	3,073	4,507	7,580

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