New Dean and Heads of Department

Professor Geof Wood (pictured) has taken over as the Dean of Humanities and Social Sciences. His predecessor Professor Ian Jamieson has become full-time Pro-Vice Chancellor for Learning and Teaching. Professor Wood has been replaced as Head of Economics and International Development by Professor John Sessions, an economist specialising in labour economics and industrial organisation.

The other new Head of Department is Professor David Bird, who took over from Professor John Davies as Head of Physics.

New research makes vital photonics research possible

The University’s new building, 3 West North, has the most advanced research facilities in the important area of photonic crystal fibres in the country.

The £2.87 million building, funded by HEFCE, includes drawing towers for making photonic crystal fibres, a 200-seat lecture theatre and two classrooms for 100 and 30 people.

“The new building marks the latest phase in a significant investment in physics at the University of Bath, which has seen the department placed as one of the best in the country,” said Professor John Davies, former Head of the Department of Physics.

University in the top ten nationally

The University was rated 10th in the country by the Sunday Times, up six places from last year’s position. It was also short-listed for the paper’s University of the Year award.

The Sunday Times league table also placed Bath:
- Second for Mechanical Engineering
- Second for Sport
- Fifth for the proportion of undergraduates going on to get graduate-level jobs
- Tenth for the proportion of undergraduates getting first class or upper second degrees
- Equal sixth for the highest number of applicants per student place
- Sixth for the lowest student drop-out rate.

Full-time students settle in at Oakfield

The first intake of full-time students have been settling in at Oakfield. The students, all from the Swindon area, are studying for a BSc in Social Work & Applied Social Studies.

Louise Brown, Social Work Degree Coordinator, says: “Swindon has struggled to find and keep enough social workers, which has put a strain on existing services.

“This new degree, run in partnership with Swindon Borough Council, means that for the first time students are able to train and practice locally.”

The University’s Social Work Department was rated the best in the UK by the Guardian University Guide 2005.
Research may help Parkinson’s patients

People with Parkinson’s disease could find it easier to take their medication as a result of a new research project at the University.

Dr Begoña Dégado-Charro, Department of Pharmacy and Pharmacology, will investigate whether the most commonly used drugs in treating the disease can be delivered using iontophoresis.

The process involves an electric field being applied to a medicine so that it can pass across the skin and into the bloodstream. Using this technique would make it easier for patients to change their dosage and also improve the absorption of the medication.

Improving the diet of the world’s poor

Dr John Beeching, pictured above, Department of Biology and Biochemistry, leads an international project looking at ways of improving the nutritional and storage properties of cassava, the primary food source for more than 250 million Africans.

“BioCassava Plus is a very exciting project to be involved in and I am delighted that we will have the opportunity to work alongside other leading scientists in this area to help solve a pressing problem,” said Dr Beeching.

The improved crop will be handed over to subsistence farmers in the developing world, free of charge.

Cannabis-based drug offers hope to IBD sufferers

Recent research into anecdotal evidence that cannabis relieves some of the symptoms of inflammatory bowel disease (IBD) has revealed a potential new use for cannabis-derived medication.

Dr Karen Wright and Professor Steve Ward, Department of Pharmacy and Pharmacology, looked at the interaction of cannabis with specific molecules found on the surface of cells in the gut.

“The findings have given us the first evidence that very selective cannabis-derived treatments may be useful as future therapeutic strategies in the treatment of IBD,” said Dr Wright.

Centre breathes new life into debate on death

The Centre for Death and Society (CDA S), the first of its kind in the UK, has been set up at the University. It will become a national focus for research into social attitudes to health, dying, grief and bereavement.

“Culturally, death is becoming increasingly prominent through TV and our attitudes to death is changing too,” said its founder Dr Glennys Howarth (pictured below), Department of Social and Policy Sciences. The Centre will provide a focused resource for academia, industry and wider society.”
The Government’s commitment to environmental issues has resulted in a range of best practice initiatives in the higher education sector. These have been supported by HEFCE, in partnership with the Carbon Trust, an independent company working to reduce national carbon emissions. Until now this has manifested itself as gentle encouragement and advice on improving environmental performance. However, imminent legislation and the introduction of financial penalties will have an increasing impact on the operation of university estates.

As a major employer, international research centre and home to 12,000 students, the University could have an impact on the environment in many ways, from toxic waste to traffic congestion.

As our size increases so does the need to adopt good practice. The Environmental Policy, written by Pete Adams, the University’s Safety, Health and Environment Adviser, considers the areas in which the University has the largest impact and identifies our objectives. A copy of the policy can be viewed at http://internal.bath.ac.uk/executive/policy/ep17.htm

The greatest impact the University has on the environment is through its carbon emissions. In 2003 it became the first university in the UK to produce a Carbon Management Strategy. Funded by the Carbon Trust and written in partnership with Energy for Sustainable Development, the strategy identified short- and long-term aims for cutting emissions at the Claverton campus and looked at targets for sustainable development in Swindon. The full report is available on the Department of Estates web site at www.bath.ac.uk/property-services/energy/Carbonsummary.htm

The campus boiler system contributes to the University’s emissions. With the combination of recent legislation and energy prices predicted to rise by 30 per cent over the period 2005/6, the cost of heating and lighting the University is set to rocket. Pressure is building on the University’s utilities budget and an additional cost is looming, courtesy of European regulations.

The University joined the European Emissions Trading Scheme in January 2005. The scheme monitors carbon emissions produced by the boiler and issues penalties for emissions in excess of agreed limits.

Patrick Finch, Director of Estates, says: “It seems likely that the University may have to budget for penalties in the order of £10,000 per year by 2007 and these have been built into our utilities budgets. In 2008-2012 the fines will increase to £100 per tonne of carbon emitted. If we have not been successful in reducing our carbon emissions by that time, the impact could be measured in tens of thousands of pounds per year for the University.”

For more information on the University’s energy usage and carbon emissions see Treading lightly – our carbon footprint by Patrick Finch, on page 11.
The University's Carbon Strategy identifies transport emissions as constituting approximately one third of our total annual emissions. The University pays more than £20,000 per year to B&NES towards implementing green transport measures in addition to its own Green Transport Plan, one of the initiatives highlighted in the Environmental Policy.

The plan has the basic aim of reducing the number of staff and students who travel to and from the campus by private car. Private car travel accounts for an estimated 50 per cent of the University's transport emissions, the rest come from a combination of business travel and overseas students' trips home.

Pete Adams says, "Our aim is to encourage staff to meet their travel demands through sustainable means of commuting. This includes maximising the bus service, promoting alternative forms of transport, encouraging car-sharing and limiting parking on campus." "We work very closely with First, the local bus company, to make improvements to the service. Frustratingly there is a monopoly so the impetus has to come from us to keep the standards up, rather than from competition."

Cycling is the environmental transport ideal but as the campus is on top of a hill even many local staff use their cars. Despite this the number of people who come to work by bike is more than the national average. "Being on top of a hill is a major obstacle in increasing this number," says Pete. "The University is investing £50,000 to build a cycle track from Combe Down via Rainbow Woods but there is no cycle track that would make getting up those hills any easier."

"The Transport Plan is under constant review. Once the University has finalised its thoughts on the capacity of the campus and the likely requirements for additional accommodation further proposals will be introduced. At this stage it is important to be flexible as decisions can impact in several ways, for example an increase in accommodation on campus will help alleviate transport issues but impact other areas."

The University's environmental initiatives do not stop with how we get to campus but consider what we do when we are here. The disposal of domestic and hazardous waste is a major environmental consideration and has proved a challenge for University staff and local environmental consultants, Envolve.

In late 2004 the University joined a scheme to recycle waste in halls of residence. The project is managed by Alastair Mumford, Envolve's Development & Enterprise Officer.

"Waste from halls of residence is a relatively untapped area of recyclable materials," says Alastair. "Between September 2004 and April 2005 the University of Bath produced 6850kg of paper, 1995kg of cans (equivalent to 4987 cans of beer) and 8645kg of glass (equivalent to 6650 bottles of wine)."

"The University is leading the way with this recycling scheme. The first phase will be completed in November so we won't have any official results until then but the early signs look encouraging."

Although the scheme has increased the University's recycling, the porters who are implementing the scheme in the halls of residence have been faced by a lack of commitment from the students.

Martyn Body, porter of Westwood A, says: "The scheme would really benefit from having the weight of the Students' Union behind it - they could motivate the students to recycle effectively. In some cases the bins are not used at all and in others the students recycle dirty jars and cans and cardboard which are not accepted by B&NES."

"It is frustrating that the scheme is not more successful. I think there should be an information sheet about it in the freshers' introduction pack to engage the students straight away."

The University also produces waste that is classed as toxic to the environment or hazardous to humans. It has provided a free hazardous waste disposal service since 1992.

"Odd socks and knickers from the laundry have been the strangest request for disposal so far," said Pete Jewell, the University's Hazardous Waste Manager. "It is normally things like old computer hardware or clinical waste."

"It is a challenge to keep everyone informed about the service I offer. The larger departments who produce clinical waste on a daily basis know I will dispose of it for them. It is the smaller departments, who have the occasional monitor to dispose of, that don't know that they should email me on haz-waste@bath.ac.uk to organise collection."

The future

Alastair, from Envolve, believes the University has made real progress.

"The University is really beginning to improve its environmental performance," he says. "It performs particularly well compared to the rest of the sector where environmental considerations remain low on the priority list. It is hoped that the tightening of legalisation will continue to focus the minds of universities on the task ahead."

"There is a lot more that would be done in the ideal world but it is a case of balancing the needs of a university as a business and its moral responsibility."

For more information on going green see the Envolve web site at www.envolve.co.uk
“The MEng was almost certainly the first in the UK with a specialism in environmental management,” says Barry. “The aim of the course was to educate chemical engineers to have a dual-focus on the development of the industry and protection of the environment.

“Over the years the increasing importance of the environmental agenda in chemical engineering has resulted in key material being incorporated right across the Department’s undergraduate programmes. Sustainable development is now a fundamental part of our curriculum and our research. It looks beyond the idea of ‘can we protect the environment and at the same time save money?’ and incorporates the social implications.”

Barry’s interest in the environment can be traced back to his PhD when he looked at the formation of carcinogenic compounds in combustion processes. In the mid-1980s he worked on a research project with Professor Stan Kolaczkowski looking at ways other than incineration by which polychlorinated biphenyls (PCBs) could be destroyed. PCBs were dominating the international stage because they could build up in the environment, threatening the health of fish and people.

As a result of this research, Barry and Stan were invited by the then Department of the Environment to co-author a practical guide on waste minimisation for the UK, bringing in the wider issues surrounding environmental management.

“I had always recognised the importance of the environmental agenda, especially the reduction of energy demands, but writing the guide made me appreciate that it was not just technical engineering problems that needed solving.
Environmental management had huge social implications too.

“The environment must inform the design and that is what we teach our students. To encourage them to appreciate this wider agenda, the department is fortunate to have a Royal Academy of Engineering Visiting Professor, Alan Emery, who specialises in engineering design for sustainable development.

“We use case studies and role-playing to encourage real debate and consideration of all sides of the argument. I’m often called on to act as an expert on environmental issues which provides me with some great material to use when I teach students about the legislation that defines and controls industrial practice.”

Environmental issues influence not just the teaching programmes but also the research carried out in the department.

“Most of our research has a focus on sustainable development and we will use this theme as we look forward to regaining our strong position in the 2008 Research Assessment Exercise. For example, we have particular interests in how hydrogen as an energy vector can be manufactured, stored and used for transport and power; this is known as the ‘hydrogen economy’ and one of our senior lecturers, Dr Tim Mays, is the principal investigator on the UK’s £3.5 million Sustainable Hydrogen Energy Consortium.

“One of my principal research projects, with Dr Semali Perera, is concerned with the removal of volatile organic compounds from the workplace, such as print shops. Rather than simply incinerating the compounds, which wastes energy and resources, the project explores ways of reusing them in the workplace. This research won a national environmental award in 2002.

“This is just one example of an environmentally-focused project moving forward into industry. The research has led to a knowledge transfer project where one of our associates is involved with the development of demonstration units.

This kind of work is only going to increase as chemical engineers have to be increasingly aware of the environmental impact of their work. The days of building taller chimneys to distribute air pollution are long gone and today’s solutions need to consider tackling problems at their source in order to protect the environment and society.

“We encourage our students to get to the heart of the process and develop sophisticated solutions. We led the way with this approach with our MEng in the mid-1990s and now we find that sustainable development is part of the essential syllabus that dictates course accreditation by the Engineering Council.

“In addition, I continue to direct the distance learning MSc in Integrated Environmental Management. Coming from over 40 countries, most of our students on this course are partly or completely sponsored by their employers in recognition of the importance of the subject to their business.

“There is a strong demand for our graduates and competition for places at Bath is now extremely stiff. For the coming session we expect our highest ever number of first year undergraduate and MSc students.

“Environmental issues are firmly embedded in our undergraduate and research programmes and I am sure that in the future we will increase that focus. As a university we really are shaping the future and to do that responsibly we have to teach our students to always look at the bigger picture.”
This method of monitoring the environmental impact or ‘footprint’ of an area takes into consideration the wider geophysical context rather than simply the amount of waste and pollution it generates. The work being done by ICE in this field is establishing the University as a leading centre of global and local environmental research.

“The footprint measures a population’s consumption and waste production and expresses it in relation to the amount of land and ocean necessary to maintain it,” said Geoff Hammond, Director of ICE and Professor of Mechanical Engineering.

“It provides us with a means of comparing the different components of consumption which in turn serves as an indicator of sustainability, or in some cases, un-sustainability. We have come up with some pretty surprising results.

“In simple terms it looks at whether a country has a greater or lesser impact than you would expect for its Gross National Income per capita. On these criteria the Czech Republic has a greater impact and Australia a much lower impact.”

ICE was established to promote environmental research and education. It is run by Geoff and Deputy Director Adrian Winnett, Senior Lecturer in the Department of Economics and International Development. Adrian’s current research focuses on the management of natural resources in SE Asia and on the economic and environmental impacts of new information technologies within the EU.

“The joint leadership of ICE reflects the University’s aspiration to encourage an interdisciplinary approach to solving environmental problems,” said Geoff. “This approach distinguishes us and our work from other environmental and sustainable development units elsewhere in the UK.”

Research ranges from the local to the global, with projects that consider which factors influence the size of footprints around the world and therefore of the planet itself, as well as the study of local footprints, most recently in the largely urban Borough of Swindon and the more rural Wiltshire.

The results of the research show that both areas have footprints that greatly exceed the amount of geographically available land. If the world’s population reflected their rate of consumption we would need more than two equivalent Earths to sustain them.

“This means that both the rural and the urban areas are using more of the Earth’s resources than they contribute,” explained Geoff.

“By looking at the wider geophysical perspective we get a clearer idea of the demands we are putting on our environment, locally and globally. With the research being done by ICE on environmental footprints, along with its research into carbon emissions, we are in a position to offer a fresh perspective on environmental issues.”
How does education shape the environment, and how does the environment shape education? Over the last decade the role of education (and learning) has come to the forefront of the environment debate.

In 1995, the Centre for Research in Education and the Environment (CREE) was formally established, and since then this influential group at the University has become the most prominent academic centre in the English-speaking world focusing on the relationship between education and learning and sustainable development.

The value and importance of learning came to the forefront of debates about sustainability at the Earth Summit in Rio de Janeiro (1992) and the World Summit on Sustainable Development in Johannesburg (2002).

“The Summits remind us that environmental issues don’t exist independently of social or developmental issues,” says William Scott, CREE’s Director.

“Debate on the environment has become much more holistic. It’s not just about studying problems of global warming, climate change and low-carbon economies, it extends to how your local school sources its lunches, and how the children get to school. This is to say that it is not just about macro-level policies, but also about micro-level preferences. Acknowledging this social context enables us to consider the importance of education in the widest sense.”

Professor Scott heads a team of seven academic staff who are interested in the links between education, environment and a range of disciplines from economics and management to science and geography, which reflects the breadth of interest found across the University as a whole.

“There are many staff from across the University who have an interest in the environment and sustainability – not because they have to research or teach it, but because they recognise the importance of the issues.”

The research areas covered by CREE reflect this broad base of expertise. Professor Scott and Dr Stephen Gough, Senior Lecturer in Education, were part of the core research team that has scrutinised the Government’s attempts to balance economic and social goals in shifting towards sustainability.

Their recent policy brief (Aiming for sustainability - can we keep on track?) summarised the outcomes of recent work with the University of Lancaster on an ESRC-funded project, Natural Capital: metaphor, learning and human behaviour. This has been presented to, and discussed with, policy-makers across the UK. The project took the idea of ‘natural capital’ as a focus for thinking and learning about environmental threats and opportunities in conditions of uncertainty.

Natural capital consists of all those aspects of the natural world that provide resources for humans - both renewable and non-renewable. The project used an idea from contemporary management - ‘real options’ - as a way of developing new approaches to learning and teaching. These measure success in terms of their ability to add value to the future options learners will have. The project was particularly interesting because it brought CREE into collaboration with the School of Management’s Centre for Research in Strategic Purchasing and Supply (CRiSPS).

“This and other research projects have succeeded in pushing both sustainability and the role of education in it higher up the political agenda. Stephen Gough says: “The problem is one of learning our way forward when decisions have to be made now but scientific knowledge is incomplete and there is disagreement about values.”

CREE member and senior lecturer, Dr Alan Reid, says: “CREE’s work addresses the two-sided question: ‘What can education do for the environment - and what can the environment do for education?’ In doing so, we can inform not just national debate, but also international considerations and issues.

“On a more local level we hope that, as the links between sustainability and education become more clearly recognised, demand from the teaching profession will enable us to support further the work of schools and teachers - and the learning of students - about these important matters.”
Insider asked a random selection of staff and students what we should be doing around campus to be more environmental:

“Computers have increased the amount of paper we use. People write endless drafts because they can be amended so easily. There are simple steps we could take to reduce the amount of paper. For a start, I think you should get a discount in the library for double-sided photocopying.”

— Professor Michael Danson
Department of Biology and Biochemistry

“It would be good if all departments used the Blackboard virtual learning facility on the Web for lecture notes. It gives students the choice about what they want to print out rather than being handed a pile of paper.”

— Tara Rees-Jones
Project Officer, School of Management

“We have a problem keeping our offices cool because the computers put out so much heat. We end up using fans to keep the temperature down which means we’re using even more energy. There must be a better way of keeping cool.”

— Phil Wilson
Web Developer, BUCS

“If you really want to encourage people to walk or cycle to work, there should be more showers for staff. I used to hitch up the hill when I first started here but that doesn’t happen now – I think its time for an organised lift-share scheme.”

— Janet Westell
Research Contracts Officer,

“I recycle what I can but in the labs it’s hard – most of the waste we produce has to be incinerated. I think it would be really good to have more recycling points in the places where students eat their lunches – otherwise everything just gets thrown in the bin.”

— Lea Lango
MRes in Bioscience, Department of Biology and Biochemistry

“As well as all the usual steps to reduce paper waste, it would make a real difference if everyone printed two sheets on one piece of paper – it just requires changing a setting in Word. Also, it’s worth remembering that turning off computers at night doesn’t just save energy but it also stops them being a fire risk.”

— Paul Maggs
Health and Safety Advisor,
Safety Office
In any analysis of the major environmental issues which face a university, the management and development of the estate will be near the top. In this issue, Patrick Finch, Director of Estates, comments on the overall environmental performance of the campus and ambitions for the new 4 West.

Over the past five years, the Department of Estates has initiated a wide-ranging programme to improve its environmental performance. Recently, this programme has focused on the need to reduce carbon emissions.

When the consultancy Energy for Sustainable Development reported on the University’s carbon generation in 2003, it identified that 64 per cent of the total carbon emissions emanated from the operation of the estate. The University aims to reduce emissions in line with the Government’s own commitments (a 12.5 per cent reduction on 1990 levels by the year 2012).

The age and design of much of the original estate creates significant challenges in trying to manage energy usage and hence carbon emissions. Construction techniques in the 70s and 80s gave little thought to thermal insulation.

The estate does, however, have some advantages. Most of the Parade buildings are heated by a central boiler plant, pictured above, which brings significant operating efficiencies over a network of individual boilers. A combined heat and power unit has been installed to run alongside this plant, enabling the University to generate its own electricity.

The University of Bath was one of the first to install such a facility, now recognised as one of the most efficient ways of providing energy on large estates.

Estates is currently working with the consultant, Halcrow, and with the Carbon Trust to determine how the unit can be developed to greater effect. In the last two years, surplus power has been sold back to the electricity grid but this could be used more productively if channelled into mainstream requirements on campus.

As the original 1960s buildings reach the end of their useful life, the opportunity exists to carry out major refurbishment or even demolition as in the recent case of 4 West. This enables the University to improve its thermal efficiency. A recent survey of the latest campus buildings constructed from the mid 1990s onwards shows that they are typically using between 30-40 per cent of the energy of their earlier counterparts.

A degree of environmental innovation has been introduced into those buildings constructed during the University’s most recent redevelopment phase. The Centre for Power Transmission and Motion Control and the Sports Training Village both feature extensive use of natural ventilation rather than reliance on mechanical cooling or full air conditioning. Both buildings have electrically controlled windows or rooflights which allow night time purging of surplus heat while rain sensors allow for openings to be automatically closed in inclement weather. The recently completed Eastwood housing features high levels of thermal insulation and the use of sustainable construction materials.

The new 4 West building has provided an opportunity to incorporate environmental considerations from the start of the project. For the first time, the University has elected to attain a formal environmental accreditation for the building using the Building Research Establishment’s (BREEAM) methodology. An ‘excellent’ rating is sought for the new 4 West, the highest standard currently available, which would place the building in an elite group of similarly assessed higher education buildings across the UK. At the same time, an evaluation is currently underway to determine whether renewable energy can also be a feature of the new design via solar water heating, photo-voltaic panels or even mini wind turbines.

The University has led the way with several environmental initiatives (see the feature Going Green by Degrees on pages 4 and 5 for more details) and the new 4 West has the potential to be a showcase for the improvements made in the University’s environmental performance.