

# UOW Campus news

Issue Two 2000

University of Wollongong



## UOW receives No.1 star rating

**W**hen it comes to the overall educational experience for students and outcomes for graduates such as obtaining a job, the University of Wollongong has been officially recognised as the number one university in Australia.

UOW has scored the highest number of stars against all other universities (27 out of a possible 30) for the key areas of students' overall educational experience and graduate outcomes.

These two areas contained six categories. The area of educational experience included (1) graduate rating, (2) staff-student ratios and (3) staff qualifications. The area of graduate outcomes included (1) getting a job, (2) positive graduate outcomes and (3) graduate starting salary. The guide works using star ratings (maximum of five stars per category).

The guide is distributed widely through bookshops and newsagents in Australia and overseas.

"It is regarded as an invaluable tool by a marketplace seeking a truly independent analysis of the performance of universities," according to UOW Vice-Chancellor, Professor Gerard Sutton.

Professor Sutton said the guide was further evidence of the University's strong national and international standing.

The latest rankings follow the release of figures about two months ago by the Graduate Careers Council of Australia showing that UOW was ahead of all other Australian universities when it comes to first full-time employment.

The Federal Minister for Education, Training and Youth Affairs, Dr David Kemp, launched the Good Universities Guide to Universities, TAFEs and Private Providers for 2001 on 26 July in Melbourne.



**Robo-farming: a new agricultural future**

See story p.8

### APPLICATION FORMS NOW ONLINE

Application forms are now available on-line for undergraduate, postgraduate and WUC courses; as well as the study abroad/student exchange program and the international postgraduate scholarship application <http://www.uow.edu.au/applications>

## Asiaweek survey ranks Wollongong in top 10 Australian universities

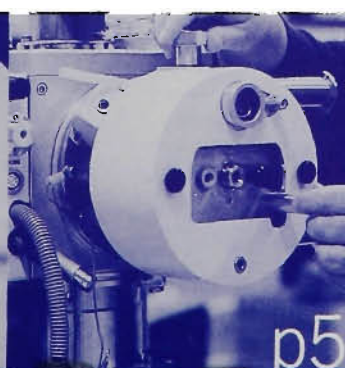
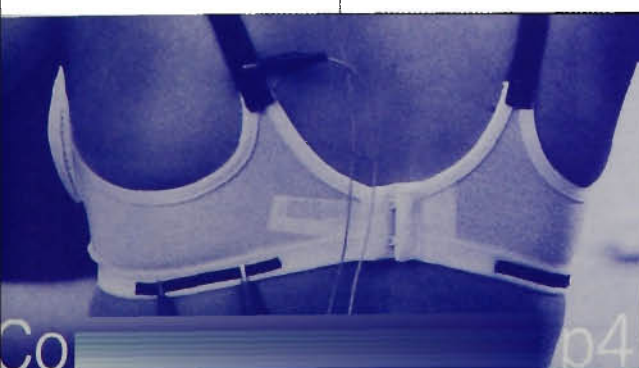
**T**he University of Wollongong has strengthened its position as one of Australia's top 10 universities following the release in late June of Asiaweek magazine's guide to the best universities in the Asian region.

The magazine survey has listed UOW among the top 10 universities in Australia which involves a range of quantifiable categories (such as student

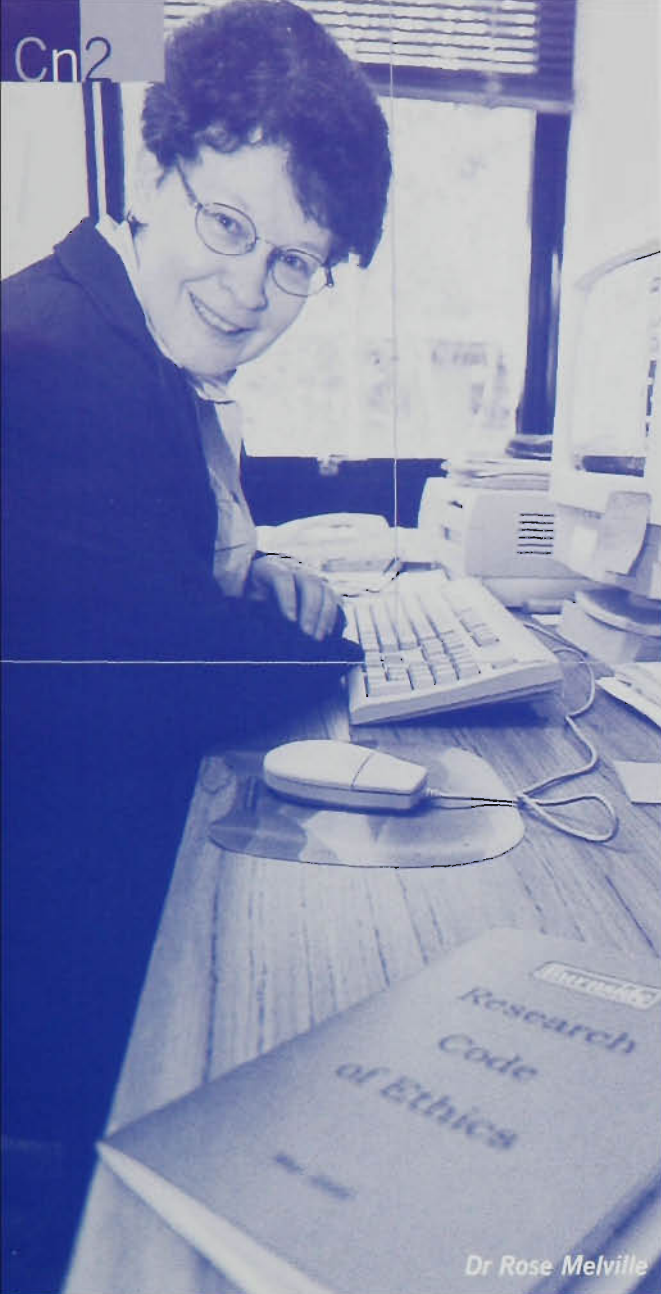
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Dr Rose Melville

**A** new code of ethics for researchers, designed to protect the clients of non-government child and family welfare organisations, has been developed with input from a University of Wollongong academic.

Dr Rose Melville, of the Faculty of Arts Sociology Program, said the guidelines drafted for Sydney's Burnside welfare agency, would set a benchmark for the industry.

The high-profile British children's charity, Bernardos, has already contacted Burnside for a copy of the code, as has the NSW Children's Commission, Smith Family and the Dialysis Unit at the Royal North Shore Hospital.

## Protecting the young and vulnerable

Dr Melville, who convenes Burnside's founding Research Advisory Group (RAG) and is a member of the University's Ethics Committee, said the code borrowed from several UOW ethics policies, which the group had found to be of a very high standard.

The code demands greater accountability for researchers in terms of methodology and dissemination of findings. It aims to protect the privacy of vulnerable clients such as children; prevent the over-use and exploitation of clients by researchers; and ensure research conducted is worthwhile.

Dr Melville said standardising and de-identifying existing agency data for release to external researchers was also a priority for the group. This would stop researchers covering old ground and subjecting clients to interview burnout.

"I'm happy to be involved in something like this that sets a minimum industry standard, and to be working with people who do not usually get the benefit of expert advice," Dr Melville said.

"Until now, this client group had been open to exploitation by researchers and funding bodies who contract out research they don't wish to do themselves.

"Because Burnside has had the strength to take a stand, we hope this will have a flow on effect to other areas of the industry."

Dr Melville praised as proactive and visionary Burnside's Chief Executive Office, Ms Rhonda Stien, who initiated the project in response to an unprecedented demand by researchers for client access.

"This move towards better research practice will affect policy and ensure better decisions are made about people," Dr Melville said.

She thanked fellow UOW academic, Dr Susan Dodds, the Chair of the University's Ethics Committee, and Ms Karen McCrae, the University's Ethics Officer, for their invaluable advice.

The code was derived in part from a document on ethical research in social and behavioural research written by UOW staff, Dr Susan Dodds, Ms Rebecca Albury and Mr Colin Thomson.

To obtain a copy of the code, contact Burnside on +61 2 9768-6866 or [mail@burnside.org.au](mailto:mail@burnside.org.au); or Dr Melville on +61 2 4221 3608 or at [rose\\_melville@uow.edu.au](mailto:rose_melville@uow.edu.au)

## UOW home to new \$4million Nortel centre

**C**anadian telecommunications giant Nortel Networks opened its new \$4million technology centre on the campus in June.

The wireless Internet research and development (R&D) centre was opened by the NSW Treasurer and Minister for State Development, Mr Michael Egan, and Canadian Minister for International Trade, the Hon. Pierre Pettigrew.

"This is a huge boost for Wollongong and the state," Mr Egan said.

"Last year this was Australia's number one university and it is a credit to the university that a decade ago it decided to establish a centre of excellence in telecommunications. Nothing succeeds like success and this centre is a success story".

UOW Vice-Chancellor, Professor Gerard Sutton, said the University, Wollongong, the state and Australia would benefit from the new facility.

"It's a great pleasure to see what started out as an embryonic relationship develop into the strategic alliance which has benefited the whole university," he said.

Three times larger than the old centre, the new facility will cater for 160 researchers, engineers and support staff.

Nortel's South Asia President, Mr Reg Bird, said the latest expansion was only the beginning of the company's plans for UOW.



*The Canadian Minister for International Trade, the Hon. Pierre S. Pettigrew with Lori Lockyer, a lecturer in Education formerly from Toronto (standing to his immediate left) along with Canadian study students at UOW (from left): Laura Clemens, Kate White, Helen Christie, Kevin Klassen, Anish Neupane, Robert Tratch and Jill Smith*

"Quite frankly, this centre isn't big enough for the plans we have in mind. Stage two will be completed in August, then we will look at stages three, four, five and so on," Mr Bird said.

Nortel's staff will expand from 117 to 160 this year.

"There will be lots of job opportunities here," Mr Bird said.

"If Canada is any indication, we are hiring them (graduates) as fast as we can get them".

A year ago, Nortel committed \$150million for five year's R&D Australia-wide, with UOW central to its investment after opening an R&D centre here in 1989.

Mr Bird predicted \$10billion revenue in the US alone this year in mobile commerce and wireless Internet business.

"Combining the freedom of wireless with the Internet is the next big thing. It is a recipe for dynamite," he said.



## Northfields Clinic Psychology Department

ILLAWARRA INSTITUTE FOR MENTAL HEALTH  
Imparting knowledge through research and training



Participating in the project are (from left) Dr Brin Grenyer, PhD student Trevor Crowe, Professor Peter Howe and dietician, Susannah Burrell.

# Eating Omega 3 to combat ailments of the new century

**A** fundamental nutrient with the potential to combat the biggest predicted disease epidemics of the 21st Century is being investigated by University of Wollongong researchers.

The University's Smart Foods Centre is at the forefront of Australian research into the health benefits of Omega 3 fatty acids on depression and heart disease, which are predicted to be the major sources of illness in the world in the next 20 to 30 years.

The Centre's Scientific Director, Professor Peter Howe, said early indications showed that Omega 3, found in oily fish and other foods, had the potential to rival aspirin in its health applications.

"The health role of Omega 3 fatty acids in the early development of infant brains and the treatment of cardiovascular disease is well documented, but little has been done on the potential benefits of

Omega 3 in behavioural disorders such as depression," Professor Howe said.

"To this end, the Smart Foods Centre has initiated the first clinical trial to assess the benefit of Omega 3 dietary supplementation to people with major depression."

Professor Howe and UOW clinical psychologist and senior lecturer, Dr Brin Grenyer, are working with the Illawarra Institute for Mental Health and industry partner, Clover Corporation, on the four-month trial, which promises to increase understanding of depression and widen treatment options for those who suffer it.

Dr Grenyer, the project coordinator, said populations with high consumption of oily fish, such as Japan and Taiwan, recorded lower levels of depression than nations such as Australia, where fish consumption was relatively small.

"Two clinical trials have found depressed patients have lower Omega 3 fatty acid levels in their brains," Dr Grenyer said.

"Of particular importance is docosahexaenoic acid (DHA), an Omega 3 fatty acid, a deficit of which appears to be most closely predictive of depression levels."

The depression-fighting properties of DHA will be tested by men and women with major depression, who will be provided with capsules of test oils and be required to attend weekly counselling sessions.

Smart Foods Centre researchers are also investigating the effects of Omega 3 fatty acids on obesity, insulin resistance, high blood pressure, atherosclerosis, high plasma triglycerides, thrombosis and arrhythmias.

The Centre is collaborating with the Australian and New Zealand Foods Authority to determine consumption levels and develop nutrition claims for Omega 3. The Centre is also exploring ways to enrich foods, such as pork, with Omega 3 fatty acids and other health-promoting substances.

For more details, visit the Smart Foods Centre web site at: [www.uow.edu.au/research/centres/smartfoods/](http://www.uow.edu.au/research/centres/smartfoods/)

The depression study promises to offer new hope for sufferers. Researchers are calling for more volunteers. Participation is free and strictly confidential. Those on anti-depressant medication are welcome to participate, as are those who are currently not taking any medication. To volunteer or learn more about the trial, contact the Northfields Clinic on (02) 4221-3747.

## Special message to all prospective students re UOW Open Day

**I**n order to better meet the flexible needs of prospective students, the University of Wollongong (UOW) will conduct a range of ongoing special events over the coming months in place of the traditional Open Day usually held on the last Sunday in August.

Events planned by the University in coming months are:

- Regular Campus Tours (10am to 11am Mondays and Fridays)
- Parent and student information evenings (August 2000)
- Over 21 years information evening (11 October 2000)
- Postgraduate breakfast (18 October 2000)
- Courses and Careers Information Day (5 January 2001)
- Experience Wollongong for rural Year 11 and Year 12 students (early January 2001)
- Discovery Days for high school students (13-15 February 2001)

For further information contact UniAdvice on 1300 367 869.





# Smart bra heralds new age of intelligent fabrics



**A** UOW project to develop a 'smart bra' that can adjust itself to suit its wearer has attracted international media attention.

Journalists from Italy, France, Spain, England and the Middle East are clamouring to speak with the bra's makers: Intelligent Polymer Research Institute director, Professor Gordon Wallace; Biomechanics Research Laboratory head, Dr Julie Steele; and PhD student Ms Kelly-Ann Bowles.

Crafted from a new generation of intelligent fabrics, the ultimate Smart Bra will tighten and loosen its straps, or stiffen and relax its cups, to restrict breast motion, preventing breast pain and sag.

Predicted to outperform any existing bra in the support stakes, it will encourage more large-breasted women back to sports, and in extreme cases, stop clavicles snapping from the sudden movement of excessively heavy breasts.

Preliminary research using polymer sensors on standard bras to measure strap loading and possible breathing restriction were demonstrated for the media at the University's Biomechanics Research Laboratory in May. The preliminary study is being conducted by Ms Bowles.

Fabric sensors attached to the straps and midriff of a standard bra, worn by a model in motion, monitored breast movement and relayed data in real time to a computer via a telemetry system.

*Berlei house model Georgina McLean, pictured with UOW researcher Kelly-Ann Bowles, models the conventional polymer-coated sports bra integral to the development of the ultimate Smart Bra. (The polymer sensors coated on to the fabric are black).*

Information gathered from the tests will eventually be stored on a tiny microchip that will serve as the 'brain' of the ultimate Smart Bra, signalling the polymer fabric to expand and contract in response to breast movement.

The Smart Bra is the first in a suite of smart textiles projects conducted by researchers from the University's internationally-renowned IPRI in conjunction with the Biomechanics lab.

The unique combination brings together the expertise of Dr Steele's group in breast motion and the sensor/actuator capabilities of the IPRI.

Professor Wallace said that although the eventual Smart Bra would appeal to a fairly small market, applications for the technology were endless, either as a monitoring system or an actuated fabric.

"It will be the first time intelligent polymer systems have been completely integrated into fabric structure," Professor Wallace said.

"This represents a major advance in the field of technical textiles, which is gaining tremendous momentum throughout the world.

"Applications for the technology include support bandages and prosthetics. The IPRI is collaborating with the University of Pisa in Italy, and Smartex, to produce new health-monitoring clothing."

## New millennium materials on show at retreat

**W**hat does a levitating train and a "groaning" fabric have in common? They will be among the demonstrations on show at a weekend retreat to be held on "New Millennium Materials" at the University of Wollongong on 7 and 8 October.

UOW boasts internationally-known research institutes in three areas of materials research that will underpin developments in areas such as transport, bioengineering and textiles in the 21st century.

The weekend retreat, the first of its kind held at the University, is aimed at showing science and engineering students nearing the end of their degrees postgraduate research opportunities available at UOW. The retreat will cater for students interested in the areas of intelligent polymers (for example, a fabric that emits a groan-like sound to warn sportspeople of a body movement which could prove harmful); superconductors and electronic materials; and process engineering. Hands-on sessions will include making a polymer battery, sending a miniature levitation train on its way, developing a groaning fabric, and dealing with the microscopy of metals.

Speakers from multinational corporations will be present who will outline various employment opportunities, current PhD students will talk of their experiences and there will be introductory seminars by the institute directors. Students wishing to receive travel subsidies, accommodation costs and meals for attending the retreat should contact Phil Smugreski on (02) 4221 3127 or via email [phil\\_smugreski@uow.edu.au](mailto:phil_smugreski@uow.edu.au)



# Australia's first female professor of Chemistry

**J**ulius Sumner Miller might have asked why is it so that the stereotypical image of chemists and physicists remains one of grey-haired men in white coats poring over test tubes.

It's a lingering perception that Australia's first female Professor of Chemistry hopes to change in order to attract more dynamic young women to the discipline.

A mother, top grant winner and master of high-tech instrumentation, Professor Margaret Sheil is trailblazing a new frontier in what has remained a male-dominated science.

"There's just not been many women at high levels in Chemistry in Australia," she said.

"This omission has been especially glaring since there have been many female professors of Chemistry appointed in the UK, Ireland and the US."

An 'unconscious bias towards women in science', as found by Massachusetts Institute of Technology study, was probably also at work in most Australian universities, Professor Sheil said.

"But Wollongong is different, it's a lot more supportive than other universities."

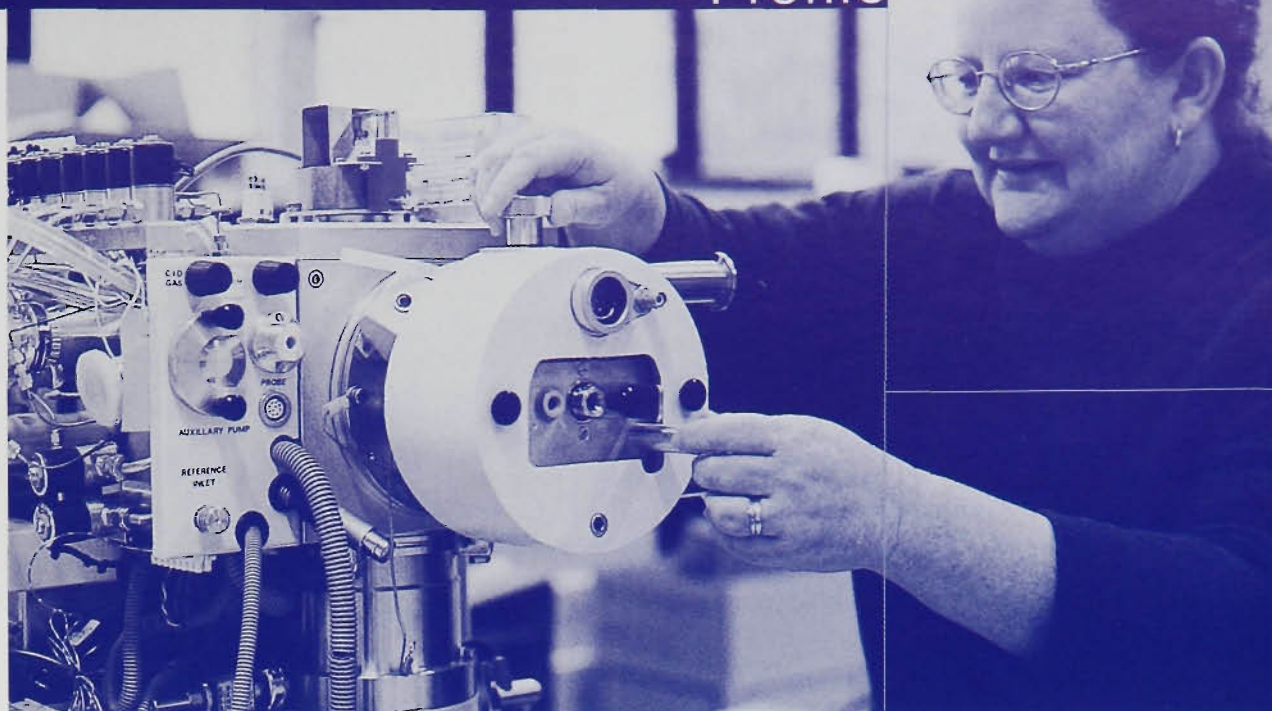
Professor Sheil said the experience of having four older brothers helped her survive and excel in a male-dominated discipline.

"I learned you had to speak up loudly to be heard, and I'm not frightened of a fight, either," she said.

"It's also helped that I am so technically-minded – I'm a techno-head and love new things."

At UNSW, where Professor Sheil was the only female PhD candidate in her cohort, she learned to program computers, reconfigure mass spectrometers and, for many years, held the laboratory record of the highest mass detected – a peptide of mass 2000. Now, with improvements in instrumentation, her current students can routinely detect masses up to 100,000.

Today she remains the resident computer expert in her laboratory and, besides the technical officer, is



**Professor Margaret Sheil with the latest addition to her laboratory – a new \$750,000 state-of-the-art mass spectrometer.**

the only member of her research group able to drive the data systems on older instruments.

In the past 10 years, Professor Sheil has won more than \$4million in research funding, making her one of UOW's biggest money-spinners. Her first grant – \$200,000 for one of the first electrospray mass spectrometers in Australia – was at the time the biggest ever awarded to a UOW researcher.

Furnished with more than \$2.5million worth of state-of-the-art equipment, her Biomolecular Mass Spectrometry Laboratory is one of the top such facilities in Australia.

Such success has led to her selection on many committees. She is Deputy Chair of the University Research Committee; Chair of the URC Audit Resources and Allocation Committee; a member of the Standing Committee on Academic Promotions; and spent more than two years as Chair of the Faculty of Science Research Committee.

Professor Sheil said gender equity policies meant it was common for women to serve on more committees than their male counterparts, which made it difficult to fulfill research and parenting commitments.

"The secret is to be strategic about the committees you serve on; to be organised and focused; and to have good help at work and home," she said.

"My husband and mother give invaluable support,

but even so, I go home early two days a week to pick my daughter up from school. On those days, after I've put her to bed at night, I often come back to work for another six to seven hours."

Professor Sheil said she was excited to work in mass spectrometry – an enabling technology underpinning a better understanding of the molecular processes involved in the onset and treatment of a variety of diseases.

Her lab is currently leading the field in studies on drug-DNA interactions, which may in the long term contribute to better treatments for cancer.

Gender battles aside, Professor Sheil is keen to use her position as Australia's first female professor of Chemistry to help avert what she believes will be a crisis in science education.

"If the next generation is to deal with the technological challenges of the coming century, it will be necessary to raise the profile of science and the basic sciences of Chemistry and Physics, in particular," she said.

"It's important to get more young people into science to create that level of excitement that was there in the space age. It's there in biology to some extent with the biotechnology revolution, and it's there in information technology. It can be there in Chemistry too."

• Tina Sorenson



**Professor  
Buddhima  
Indraratna**

**A**fter graduating from Imperial College of Science and Technology as a Civil Engineer in 1982, Professor Indraratna was drawn to Geotechnical

Engineering while working with William Halcrow & Partners (UK) and Central Engineering Consultancy Bureau (Sri Lanka) in several dams and tunnel construction projects.

After several years of field and design experience, Professor Indraratna received a Masters degree in Soil Mechanics and Seismology also from Imperial

## Professorial appointments at UOW

College, and later a PhD in Geotechnical Engineering from the University of Alberta, Canada, in early 1987.

His geotechnical interests were more widely spread, after an exciting period of work and research experience in some of the deepest metal mines in Ontario Province, Canada, as an employee of Geomechanics Research Centre in Sudbury.

Professor Indraratna believes that obtaining a Diploma in French in less than six months (in order to get permanent work in French-speaking Canada) was the hardest hurdle he can remember.

In 1989, Buddhima joined the Asian Institute of Technology, Bangkok, where his academic career started to prosper.

In 1991, he joined the University of Wollongong as

a Lecturer, and immediately focussed his attention to quality teaching as well as dealing with local geotechnical and mining problems, including ground improvement for dams and highway embankments, acid sulphate soils remediation, mining geomechanics and geo-hydraulics.

In 1997, Professor Indraratna received the Vice-Chancellor's award for teaching excellence, and in June 1999, he received the Swedish Geotechnical Society Award for his outstanding contributions to ground improvement using sub-surface drainage.

Professor Indraratna has published over 180 articles in refereed journals and conferences, and has authored and edited several books.

Continued on p.6



**A** new Centre for Canadian-Australian Studies has been established, consolidating the University's strong ties with the northern nation.

The new Centre was officially opened on 1 July – Canada Day – as one of the highlights of a major Canadian studies event, including two conferences, hosted by the University.

The Centre's founding director, Canadian-born Dr Gerry Turcotte, said the facility would be affiliated with the Institute of Social Change & Critical Inquiry. Both are based in the Faculty of Arts.

Senator Poy delivered the inaugural Nortel Networks Canadian Studies Keynote Address, sponsored by the Canadian telecommunications giant, which operates a major research and development laboratory at UOW (see story p.2).

## Canadian-Australian Studies centre launched

"Now we are beginning the serious work of bringing together the many researchers on campus who have an interest in Canadian Studies," Dr Turcotte said.

"It's an exciting task solidifying links with the many corporate, government and educational partners who have already signalled an interest in further research work with the Centre."



**Canadian Senator Vivienne Poy gave the inaugural Nortel Networks Canadian Studies Keynote Address.**

The Centre was launched by Canadian senator, scholar and entrepreneur, Vivienne Poy, the first Canadian of Chinese descent to be elected to the Parliament of Canada.

### PROFESSORIAL APPOINTMENTS AT UOW

*Continued from p.5*



**Professor David Steel**

**P**rofessor David Steel, who was recently appointed Head of the School of Mathematics and Applied Statistics, undertook his undergraduate studies at the University of Adelaide, completing a

**BSc with majors in Pure Mathematics and Mathematical Statistics in 1973.**

In 1974 he undertook an honours year in Mathematical Statistics supported by a cadetship from the Australian Bureau of Statistics (ABS).

He then moved to the Statistical Service Branch in the ABS's central office in Canberra where he learnt the craft of sample survey design and estimation, working on the design and analysis of large number of social and economic surveys.

During 1977-78 Professor Steel did a Masters Degree in Statistics by coursework (part-time) at the Australian National University. In 1982 he obtained a Public Service Postgraduate Study Award which enabled him to undertake a PhD in the Department of Social Statistics at Southampton.

More than 100 hundred guests from Canada, Australia, New Zealand and some 20 other countries attended the event – Renegotiating Identities: Canadian Studies in an Asia-Pacific Context.

Delegates from China, Korea, India, Mexico, the Philippines, Taiwan and the United States discussed issues including the future of multiculturalism in the Asia Pacific region; indigenous/multicultural relations; land rights; media and communication studies; and literary studies.

The event was comprised of two conferences – the 2nd Asia-Pacific Conference in Canadian Studies and the Biennial Conference of the Association for Canadian Studies in Australia and New Zealand (ACSANZ).

Dr Turcotte thanked conference sponsors for their generous support, which he said further reinforced the University's reputation for building successful industry partnerships.

The Canadian Department of Foreign Affairs and International Trade contributed more than \$40,000 for the conferences and \$15,000 seeding money for the Centre.

He completed his PhD in 1985 and returned to the ABS to become Director of the Sampling (Social Statistics) section.

While Director of the sampling area, he provided sampling and other statistical services to the Social, Labour and Demography Division within the ABS. This involved developing the sample design, estimation and analysis procedures for a large range of surveys, including the ABS's main household survey the Monthly Labour Force survey, the Household Expenditure survey and the National Health survey.

He undertook research into methods of producing estimates from sample surveys for small geographic areas, non-sampling errors in statistical collections, time series methods in the design and estimation of repeated surveys, and the use of telephone and other methods in sample selection and data collection.

In 1988 Professor Steel was promoted to head a branch responsible for a large range of economic statistics including detailed statistics on the manufacturing, distribution and service industries as well as a number of important regular economic indicators, including capital expenditure, manufacturers' sales and indexes of production, company profits, business stocks and retail trade. He was also responsible for statistics on science and technology and small businesses.

In 1992 David moved to the University of Wollongong so that he could research more deeply into the issues associated with obtaining and

Dr Turcotte also thanked Nortel for its generous support, hoping the gesture marked the beginning of a long-standing relationship between the company and the Centre.

The four-day conference opened with a civic reception at the Novotel Northbeach, hosted by Wollongong Lord Mayor, Cr George Harrison.

Also at the reception was British Columbian artist and Kwagiutl carver, David Neel, who opened an exhibit of indigenous ocean-going canoes.

"The idea for the conference was to showcase the University and the region – to celebrate the intellectual and cultural richness of Wollongong," Dr Turcotte said.

"As a result, we co-organised events with the Wollongong City Gallery, Surfing Diversity, the Wollongong City Council, Project Centre for Contemporary Art, the South Coast Writers' Centre, the Sydney Biennale, the English Studies Program and the Faculty of Creative Arts. It was a true celebration of the diversity and potential of the region."

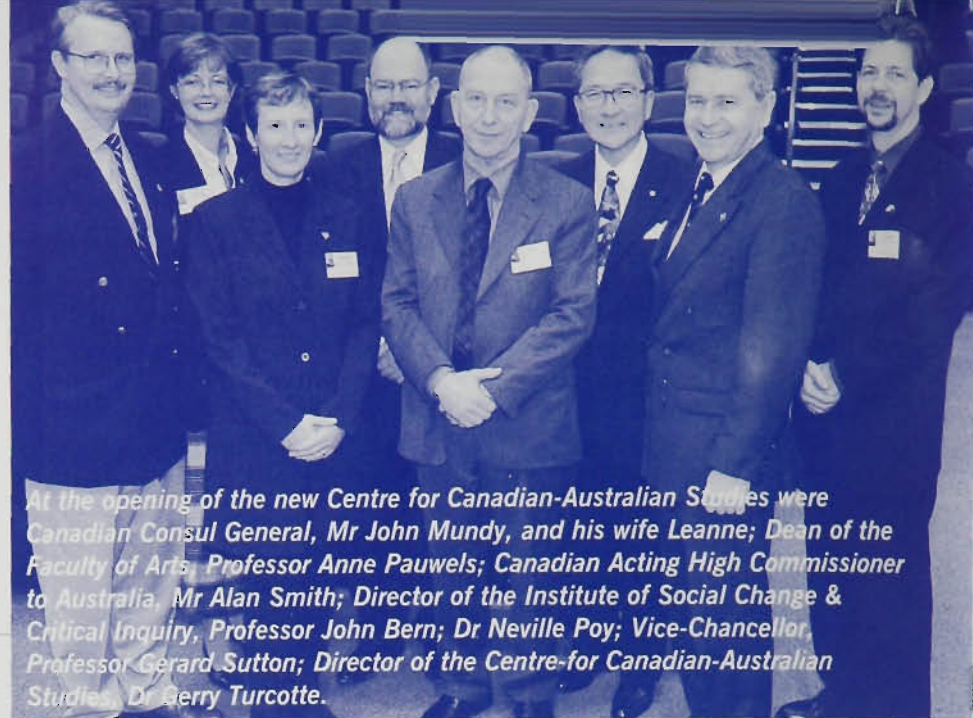
analysing data from real world populations.

His research program focuses on survey methodology, sample survey design and analysis methods for complex social and economic data. It involves collaboration with researchers at universities and statistical agencies in the UK, USA and Australia. He has recently obtained five competitive research grants from the Australian Research Council and was previously a joint chief investigator on a UK Economic and Social Research Council grant.

Professor Steel has strong links with official statistical agencies including a research contract with the Irish Central Statistical Office considering the design of a major quarterly household social survey. Another is the preparation of a report for the UK Office for National Statistics, considered by a UK Parliamentary Committee, on the development of a monthly labour force survey.

He is a member of the methodological advisory committee of the Australian Bureau of Statistics and has recently completed some work for Statistics New Zealand. He is a technical adviser to the Queensland Statistician's Office and the Illawarra Regional Information Service.

**\* Two other recent professorial appointees were Professor Reihaneh Safavi-Naini from the School of Information Technology and Computer Science; and Professor Barry Harper, from the Faculty of Education who is Director of the Digital Media Centre.**



*At the opening of the new Centre for Canadian-Australian Studies were Canadian Consul General, Mr John Mundy, and his wife Leanne; Dean of the Faculty of Arts, Professor Anne Pauwels; Canadian Acting High Commissioner to Australia, Mr Alan Smith; Director of the Institute of Social Change & Critical Inquiry, Professor John Bern; Dr Neville Poy; Vice-Chancellor, Professor Gerard Sutton; Director of the Centre for Canadian-Australian Studies, Dr Gerry Turcotte.*



# Coniston Centre an engineering innovation

**E**ngineers are the focus at the University's new Engineering Innovation and Education Centre at Coniston. The Centre was established to further encourage innovation through research and development.

The University has leased 9000 square metres of property, one third of which is under cover, for the use of individuals and companies wishing to work with the University on R&D.

Centre manager, Associate Professor John Montagner describes the Centre as a facility for research that can't be accommodated on campus, and a factory where students can take part in real world projects.

According to Professor Montagner, the facility should be of particular interest to final year engineering undergraduates and to research students.

"If they have a good idea we can find space for them here, assist them with R&D and try to get them funding to develop their projects", he says. The Centre should help capture ideas generated as part of university studies, and develop them to a point where entrepreneurs can test their ideas in the market place.

Professor Montagner says employment trends in the Illawarra are changing from a concentration on big industry towards small to medium companies with specialist markets. At the same time, he suggests the region's talent is being insufficiently exploited, and that the University has a role to play in developing innovative new industries. Since taking over the site, the Engineering Innovation and Education Centre has facilitated the establishment of:

- Australian Superconductors, developing superconducting cables and systems;

- Illawarra Technology Corporation Microwave Research, developing microwave systems for export;
- CRC IMST, machining hard non-ferrous materials using robotic manipulators;
- EmTech Welding Automation Pty Ltd, developing automated pipe welding equipment;
- Truck Dynamic Research, analysing truck chassis and suspension systems.

The University has been contacted by a number of businesses in need of start-up assistance, Professor Montagner said.

One company hopes to provide control systems monitoring equipment for the waste management industry. Another proposal is to establish a glass recycle by-products pilot plant at the Coniston site.

"At present, loads of recycled glass are being rejected by glass manufacturers because of miniscule level of impurities, when, instead of dumping the glass in landfill, it could be used to produce products such as glass bricks or roofing tiles."

In the end, says Professor Montagner, the University is interested in fostering innovation. ●

## \$15 million Shoalhaven Campus officially opened

**T**he Federal Member for Gilmore, Mrs Joanna Gash, officially opened the \$15 million Shoalhaven Campus of the University of Wollongong and Illawarra Institute of Technology at Nowra on 2 June before an estimated crowd of 400 people.

The campus is one component of the South Coast Education Network (SCEN) which also includes education access centres at Batemans Bay and Bega. Both these centres are now in operation with Bega holding its official opening on 21 July. SCEN is a partnership between the University of Wollongong, Illawarra Institute of Technology, NSW Department of Education and Training and local government.

The primary objective of SCEN is to provide regional, economic and social growth on the South Coast through the provision of enhanced education, training, research and development opportunities.

About 400 students have already started their studies at the new Shoalhaven Campus, including those who have transferred from existing campuses at Berry and Nowra which have now been closed. Enrolments have exceeded expectations at the new campus and education access centres.

Situated 4km south-west of the Nowra CBD on a 67ha bushland setting, the new campus has sweeping views to the west of the upper Shoalhaven catchment. The first stage of the campus includes four main buildings linked by a central colonnade.

Dedicated teaching buildings will be used by the University and TAFE and include computer laboratories, general teaching spaces, lecture rooms and office accommodation. UOW and TAFE will also share a library and a general student facilities building which includes a kitchen, dining and recreation areas.

Courses on offer by UOW at the various education centres include: Bachelor of Arts (Community & Environment); Bachelor of Business Administration; Bachelor of Commerce; Bachelor of Engineering; Bachelor of Information & Communication Technology (Business Information Systems); Bachelor of Science (Physics).

The Illawarra Institute of Technology will offer courses in Information Technology, Business and Administration Services including Introductory Computer through to specific Software Package courses, Management, Marketing, Accounting, Office Skills and Business courses. The courses will vary in length and award from short Statement of Attainment courses through to 3-year Advanced Diploma courses. Courses will be offered in both part-time and full-time formats. ●

*In the new library at Shoalhaven are (from left): the Director of the Illawarra Institute of Technology, Mr Barry Peddle; the Federal Member for Gilmore, Mrs Joanna Gash; and the Vice-Chancellor of the University of Wollongong, Professor Gerard Sutton.*





# Information Technology minister opens E-Business Drop-In Centre

**T**he NSW Minister for Information Technology, Mr Kim Yeadon, officially opened the E-Business Drop-In Centre at the University of Wollongong (UOW) on 18 May.

UOW's School of Information Technology and Computer Science, in partnership with, BHP-Information Technology, Telstra and the DMW Group has established the centre [www.e-Enabled.com.au](http://www.e-Enabled.com.au). The new initiative aims to explain the benefits and opportunities of working within an e-commerce environment from the Small Medium Enterprises (SME) viewpoint.

E-commerce is a rapidly growing industry and is expected to dominate business growth and strategy over the next 10 to 20 years.

The new Science Centre, opened in May at Fairy Meadow, houses an E-Business Demonstration Centre which has a high speed dedicated link to the new E-Business Drop-In Centre at the University.

Professor Peter Croll, who holds the Foundation Chair of Software Engineering in the School of Information Technology and Computer Science, said SMEs would be crucial to future sustainable economic growth and business development.



Information Technology Minister Kim Yeadon and UOW IT student, Julie Boyle, at the launch of the E-Business Drop-In Centre.

"In this regard they must be encouraged to take advantage of the global move to e-commerce. Initiatives such as the E-Business Drop-In Centre provide effective pathways and will no doubt create substantial new investment and employment opportunities, particularly in the Illawarra Region," he said.

The focus is towards bringing on board SMEs who have reservations regarding the value and costs of adopting e-commerce solutions. The drop-in at your convenience approach plus hands on demonstrations of real applications aims to ensure they are not put off from the start.

The Centre is transportable thus facilitating access to more outlying regional SMEs. A fully equipped mobile unit is planned.

Target industries include SMEs within the Illawarra, Southern Highlands and Shoalhaven regions; and/or SMEs which may be suppliers or customers of major organisations (eg BHP) in the Illawarra Southern Highlands and Shoalhaven regions; and/or SMEs or community representatives in regional areas where either public or private funding has been obtained to conduct a demonstration.

The drop-in centre is staffed by UOW IT honours students who have been trained by experienced BHP-IT personnel in a range of e-commerce business applications. Demonstrations at the centre include simple consumer oriented applications (for example, purchasing/ordering on-line), through to comprehensive business oriented applications (for example, fully integrated supply chain management).

IT honours students have undertaken a number of regional surveys of the adoption of e-commerce by SMEs in the Illawarra and South West Sydney region. The drop-in centre will provide a focal point for establishing and maintaining industrial contacts.

The University's new Industry-based Master courses have specialisations in Electronic Commerce, as do the new Internet Science/Technology degrees at Bachelor and Master level respectively.

SMEs can call to make an appointment to visit the drop-in centre on 1800 805931.

## Robo-farming: a new agricultural future



Associate Professor McKerrow with the landmark navigation robot that could revolutionise farming.

**F**armers may one day be spared mind-numbing and potentially dangerous chores and consumers from chemically-sprayed produce, thanks to robotic advances made by the University of Wollongong (UOW).

Roboticist Phillip McKerrow and his team have borrowed from nature to create a four-wheel-drive robot with the navigational abilities and spatial awareness of bats and birds.

The robot may be the precursor to a new generation of intelligent machinery that could replace farmers in the tasks of harvesting, monitoring crop growth, inspecting fruit and spraying weeds.

UOW's Intelligent Robotics Computer Laboratory, with its RIEF grant partner, the Australian National University (ANU), are trialling their robot in an experimental garden near Canberra.

The machine has successfully performed a variety of landmark navigation experiments, even learning to distinguish different plant varieties.

Associate Professor McKerrow, the coordinator of UOW's Intelligent Systems Research Group, said the project was unique in that it employed frequency modulated ultrasonics.

"Besides Oxford, UOW is the only group in the world using ultrasonics, developed as aids for the blind, in robots," Professor McKerrow said.

"We're using frequency modulated ultrasonics; most other researchers are using time of flight ultrasonics. Frequency modulated is better because it gives better information; the more intelligent the robot, the more it can do."

The sensing system worked similarly to that of echolocation used by bats to create mind maps and track prey.

Ultrasonic waves emitted by the robot are bounced off objects in its immediate environment and returned to onboard-sensors at frequencies that indicate shape, complexity and location. Data are captured with an interface card and

processed by a Macintosh Powerbook, the 'brain' of the robot.

Motion control for determining distance moved and angle turned, based on the time-to-contact principle used by birds, has also been incorporated into the device.

Professor McKerrow hopes to capture enough data from plants as they grow and fruit to enable robots to recognise different plant varieties. The ability to distinguish between plants and weeds, for instance, could mean an end to the potentially harmful practice of blanket spraying.

"Landmark navigation robots could be a boon on big farms where a major problem for farmers is driving tractors between crop rows; they lose concentration and wipe out rows."

However, it would be some time before such applications were realised: "Science fiction films are a long way off where we are right now," Professor McKerrow said.

"Until there are significant applications where robots can be demonstrated to be cheaper and more effective in hot dirty jobs like industry, robotics will be slow to take off."



# Engineering step to aid health of Aboriginal children

**T**he health of Aboriginal children in a Central Australian community will be improved by a unique study conducted by University of Wollongong engineers, according to the Nganampa Health Council (NHC) behind the project.

The first study of the efficiency and design of septic tank systems servicing remote Aboriginal communities was conducted by the University's Geo-Environment Mine Engineering Research Centre over the past five years at a cost of almost \$400,000. A formal final report launch was conducted on 8 May 2000.

The results of the study, funded largely by ATSIC (Aboriginal & Torres Strait Islander Commission), will have implications not only for Aboriginal people, but residents in isolated rural communities throughout Australia and the world, said a spokesman for the Nganampa Health Council (NHC), which commissioned the project.

Mr Paul Pholeros of the NHC said: "Doctors in the region served by the Nganampa Health Council are convinced better construction and design of septic tank systems will bring great improvement to the health of Aboriginal children."

A University of Wollongong environmental engineer involved in the study, Dr H. Dharma Dharmappa, said existing septic systems in Central Australian Aboriginal communities were ineffective as they were designed to meet the needs of city dwellers.



**Left to right: Dr H. Dharma Dharmappa, Project supervisor, University of Wollongong; Mr Richard Phillips, Executive Director, NSW Branch, Institution of Engineers Australia; Mr Kirke Nelson, community worker, Nganampa Health Council; Mr Owen Martin, representative, Pipalyatjara community; Associate Professor Siva Sivakumar, Project co-supervisor, University of Wollongong and Mr Mohsen Khalife, research student, University of Wollongong.**

"Septic systems designed for cities don't work in rural areas. The design and installation is failing, which is unacceptable, as raw sewage poses a serious health threat to humans, especially children."

The University of Wollongong study team, which includes Mr Mohsen Khalife, Dr Dharmappa and Associate Professor Siva Sivakumar, recommends the installation of a new septic tank system tailor-made for isolated rural communities. It will be affordable, require less maintenance and be able to cope with the needs of larger families. The engineers will seek to patent the design.

On behalf of the NHC, Mr Pholeros commended ATSIC for supporting the study and thanked the Pipalyatjara Aboriginal families who allowed waste water from their homes to be monitored and tested by the University of Wollongong engineers and for their support to the project.

"It's important to note that in this year of reconciliation, Aboriginal people have initiated a project that will benefit not only themselves, but people in rural communities throughout Australia and many rural communities throughout the world," Mr Pholeros said.

The Pipalyatjara community is part of the Anangu Pitjantjatjara (AP) Lands in far north west South Australia.

# Creating a new breed of medical scientist

**T**he University of Wollongong (UOW) and TAFE's Sydney Institute (SI) have joined forces to produce some of the most highly trained medical science graduates in Australia.

Students will study for three years at UOW and one year at SI to achieve a Bachelor of Science (Medical Science) degree and a Diploma in Health Science (Pathology Techniques).

Despite the collaboration, students should be aware that the BSc (Medical Science) confers no advantage in gaining entry to a medical program. UOW itself does not have a Faculty of Medicine.

A Memorandum of Understanding between the institutions was signed by UOW Pro Vice-Chancellor (Academic), Professor Christine Ewan, and SI Director, Ms Marie Persson, at SI's Ultimo College on 4 July.

The first 10 students enrolled in the four-year Dual Awards Scheme are expected to begin the third-year TAFE component of the course in the next available semester.

Head of the University's Department of Biomedical Science, Dr Mark Brown, said the scheme would benefit students, industry and the institutions involved.

"We are creating a better trained professional: a medical science graduate who will have a thorough understanding of both the theoretical and practical aspects of the medical science areas," Dr Brown said.

"The increasingly sophisticated and highly technical nature of the industry has created a demand for better trained people. This alliance provides the vocational training lacking in traditional biomedical and medical science degrees that has led to a marked drop in enrolments in these courses."

Marie Persson, Director of Sydney Institute, said the partnership with the University of Wollongong was maximising the vocational expertise offered by the Institute.

"The specific training we offer is backed up by top-range facilities,



**UOW Pro Vice-Chancellor (Academic), Professor Christine Ewan, and TAFE Sydney Institute director, Ms Marie Persson, sign the agreement.**

equipment and the industry experience of our specialist staff. We welcome this relationship as a strategic move for the University of Wollongong, Sydney Institute and our students," she said.

The Diploma in Health Science (Pathology Techniques) normally takes two years to complete. It gives students knowledge and practical expertise in histotechnology, microbiology and haematology, essential for employment

in medical research, pathology and other clinical laboratories.

The Bachelor of Science (Medical Science) degree involves the study of anatomy, chemistry, biochemistry and physiology, neuroscience, biology and research methods. It is an excellent first degree for those wishing to enrol in postgraduate studies in teaching and research.



# Scholarships to target rural health crisis

**W**hile the drastic shortage of doctors in rural areas has received widespread public attention little is known of the critical need in such areas for allied health professionals including nurses and psychologists.

The University of Wollongong Rural Health Club is one of five such clubs in universities in NSW which is hoping to address this situation. These clubs are part of a student body called the National Rural Health Network.

The Rural Health Clubs were established as an initiative for health students who are interested in learning what it is like to live and work in the country. The clubs aim to attract country students to universities for education in a health field, and help city students to become aware of the real benefits from working in the country. Initially funded by the Rural Health Support Education and Training Section of the Commonwealth Department of Health and Aged Care, funding from May 2000 to June 2001 will be provided by the NSW Rural Doctors Network.

"Many people do not know that there are scholarships available from various sources, including NSW Health, for students in health areas such as nursing,

clinical psychology and dietetics," according to Ms Kay Kent from UOW's Faculty of Health and Behavioural Sciences.

Ms Kent said there were major problems in the provision of health services to the country. For example, in Bathurst there is reported to be no psychologist available on weekends.

## Bandages & Sutures (B&S) Ball

**U**OW now has representatives on a working party to establish a national data base on scholarships available for students from health disciplines and UOW has plans to establish its own data base. A B&S (in this case, Bandages & Sutures) Ball is to be held on **Friday 29 September** to raise funds for scholarships for students within the Faculty of Health and Behavioural Sciences. Sponsors for the ball are still being sought. For further information contact Kay Kent on (02) 4221 4078.



## Dean of Commerce farewelled

**W**ollongong farewelled its long-standing Dean of Commerce, Professor Gill Palmer, at a function on 25 May.

After eight years at UOW, Professor Palmer accepted a position as Dean of the Faculty of Business and Economics at Monash University in Victoria.

Professor Palmer was appointed Wollongong's Dean of Commerce in October 1995.

She has published eight books on employment relations, industrial relations, human resource management and quality management, and recently chaired a discipline review of research in management in Australia for the Australian Research Council (ARC).

Together with the Australian and New Zealand Academy of Management and other professional institutions, she is organising a three-year ARC special initiative pilot program to raise research in management.

During her time at Wollongong, she was head of the Department of Management and foundation director of the Key Centre of Strategic Management at the Queensland University of Technology.

Before emigrating to Australia in 1984, she worked at the City University Business School in London, was a senior industrial relations officer with the British Commission on Industrial Relations and a senior research officer at the London School of Economics.

A painting by Dr Diana Wood-Conroy, of UOW's Faculty of Creative Arts, was her surprise farewell gift.

UOW's new Dean of Commerce is Professor Rob Castle.

*Professor Gill Palmer with her farewell gift.*

### ASIaweek SURVEY RANKS WOLLONGONG IN TOP 10 AUSTRALIAN UNIVERSITIES

*Continued from p.1*

selectivity, faculty resources and research output) as well as peer assessment.

UOW, which entered the survey for the first time last year, improved its position in virtually all the listed categories in the latest survey.

This year's rankings are the fourth by the Hong Kong-based publication and the only rankings of their kind in the region. Institutions are split into Multi-Disciplinary Schools (which included UOW) and Science and Technology Schools.

The University has already been named as Australia's University of the Year for 1999-2000 for its Outstanding Research and Development Partnerships.



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# Reinventing the sleeping bag

**E**ngineering Design and Innovation students David Duffield, Justin Fung and Benjamin Herman have become a hit with their solution for keeping the cold out on lonely winter nights – a wearable sleeping bag.

The design came complete with legs, arm access 'ports', a zipped fly and velcro attachments for ugg boots.

The engineering students overcame a field of 153 competitors to take first place in the grand final of the Faculty of Engineering Creative Design Competition on 23 June.

They were a hit with judges Paul van den Haspel, a BHP Senior Mechanical Engineer, and Bob Glynn, a superintendent with BHP Materials Engineering and Fabrication.

Competition organiser, Associate Professor Peter Wypych, said the standard of entries submitted was exceptional.

"We had five judging categories this year, all of which were sponsored and judged by professional and academic engineering groups, such as the Illawarra/Sutherland Regional Group of the Institution of Engineers, Australia; PHD Engineering Pty Ltd; BHP Integrated Steel; and the University's Faculty of Engineering," he said.

"The 13 weeks of hard work put into the projects by the students really showed and the winning entries were nothing short of innovative."

Now in its second decade, the Creative Design Competition aims to exercise the creative thinking



*Benjamin Herman models the sleeping bag he designed with fellow student David Duffield (centre back). The students are pictured with competition judges Bob Glynn and Paul van den Haspel, of BHP.*

and engineering talents of first year Design and Innovation students, by challenging teams to create engineering solutions to some of the more ineffective and frustrating aspects of every day living.

Previous winning projects have ranged from pressurised portable bush showers to perfect walking frames and the Hang it All hanger.

This year's grand final entries were just as creative, with runner-up projects including a wall-crawling bookshelf, vertically-directed laser beam, a smart anti-theft device for cars and a control system that

automatically raises and lowers bumper bars for ten-pin bowling.

Professor Wypych commended all students involved for their engineering innovation and expressed gratitude for the continuing support of the competition's sponsors.

"The financial and professional support contributed by the competition's sponsors plays a vital role in allowing this competition to run and it is gratefully acknowledged by both students and organisers," he said.

# The Write Stuff to revive child literacy

**T**eachers and experts in child literacy from across Australia discussed strategies to improve writing skills in the computer age at a conference at the University recently.

Speakers included Australian children's author and academic, Dr Mem Fox, of Possum Magic fame, who suggested radical surgery be performed on the

current writing curriculum; and Dr Ilana Snyder, of Monash University, who discussed the importance of technoliteracy.

Senior curriculum advisers of the NSW Department of Education and Training (DET), and the University of Wollongong's internationally-renowned education innovator, Associate Professor

Brian Cambourne, also addressed the 200 teachers and educators in attendance.

Conference convener, Dr Jan Turbill, of the Centre for Language Education, University of Wollongong (CLEUW), said literacy levels were not increasing at a rate needed for the technological age.

"We are losing children between the ages of 10 and 14 because there are just too many competing interests out there; too many things they would rather be doing than reading and writing and studying," Dr Turbill said.

Teachers needed better support and training in new technologies to ensure computers were used as literacy-enhancing tools, rather than cut-and-paste text shortcuts in project preparation.

Dr Turbill said more emphasis was needed on 'crafting' writing to hone meaning, rather than teaching writing as a formulaic recipe with emphasis on grammar and style.

The biennial literacy conference was the third co-hosted by CLEUW and the Wollongong District Office of the (DET).



*Pictured from left in the University's Hope Theatre are children's author Dr Mem Fox, Associate Professor Brian Cambourne and Dr Jan Turbill.*



# Composer writes for US youth symphony

**A** leading US youth symphony has commissioned UOW academic, Dr Houston Dunleavy, to compose a musical work for its Australian tour.

The piece, Remembrances, will be performed by the Cleveland Youth Wind Symphony which gave a free concert at the University recently.

The group was joined on stage by young musicians from the Illawarra Grammar School, Figtree High School and the Wollongong Conservatorium of Music.

Dr Dunleavy, a conductor, composer, lecturer and Coordinator of Composition for the University's Faculty of Creative Arts, said Remembrances was based on the military bugles The Last Post and Taps.

"The idea for the piece came to me on Anzac Day 1999. It is a tribute to Australian and American soldiers who didn't make it back from the wars they went off to," he said.

"The piece tries to imitate some of the characteristics of memory, with surging waves and the sometimes overwhelming nature of powerful recall."

Dr Dunleavy said the rhythmic patterns employed in the piece were reminiscent of the cyclic manner and forms used by the Yolgnu people of northern Australia.

The Cleveland Youth Wind Symphony, comprising outstanding high school woodwind, brass and percussion musicians from North East Ohio, is in Australia to perform at the Cairns leg of the Olympic Torch Relay.

The group is led by the renowned American music educator and conductor, Mr Gary Ciepluch, who was described recently by Band magazine as a 'star among band directors'.

*UOW composer Dr Houston Dunleavy (right) with Cleveland Youth Wind Symphony conductor, Mr Gary Ciepluch, at rehearsals.*

## Rare honour for Wollongong's World University Games Australian team leader

**U**niversity of Wollongong sports administrator Paul Manning has, for a second consecutive time, been elected Chef de Mission of Australia's World University Games team.

The prestigious 'Chief of Mission' appointment, made by the Australian Universities Sports Federation, is the extra curricula position most coveted by Australian university sports administrators.

It's the first time in almost 20 years that an Australian team leader has been chosen to head a second successive Games team.

Mr Manning, the Executive Director of the University's Recreation and Aquatic Centre, made his debut as

Chef de Mission at the 1999 World University Games in Majorca, Spain. He is now preparing to lead a team of 150 Australian athletes, doctors, coaches and masseuses at the August 2001 Games in Beijing, China.

"With sponsorship and uniforms already taken care of, I can concentrate on building the best team possible," Mr Manning said.

"I'll be talking to the Michael Klims and the Grant Hacketts, who are at university, and convincing their managers to schedule the Games into their 2001 training programs," Mr Manning said.

Australian Olympic swimmer Chris Fydler and pole vaulter Emma George

have competed in past World University Games.

"A total of 6,000 athletes from 160 countries will take part in the Games, which has a pedigree of many times the number of world records set than do the Commonwealth Games," Mr Manning said.

"It attracts the best in the world because places like the US have over 80 per cent of their Olympic-level athletes at University. Unfortunately, Australia suffers from having fewer than 50 per cent of its top athletes at university."

Mr Manning this year celebrated 16 years as head of the University's Recreation and Aquatic Centre.

## Engineering's elite athlete

**P**ostgraduate Materials Engineering student, Gaye Kolsky, captained Australia's women's indoor hockey team to victory in an international tournament in South Africa earlier this year.

Gaye was the top scorer and player in the tournament.

The team was coached by Mechanical Engineering's Ian Frew, who is an outstanding player in Australia's men's indoor hockey team.