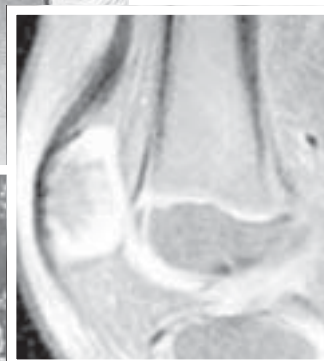




Dr David Lloyd (right) tries out the knee perturbation device on Raine Professor Tom Buchanan



Engineering better knees



by Lindy Brophy

Our bodies have countless systems that protect us from injury, but there does not seem to be one to help prevent the tearing of the anterior cruciate ligament (ACL), the dramatic knee injury we see so often on the sporting field.

Raine Visiting Professor Thomas Buchanan, a biomedical engineer and neuroscientist from the University of Delaware, is working with biomechanist Dr David Lloyd in the School of Human Movement and Exercise Science to find out what happens when the knee is injured in this way.

"We are looking at the reflex response of the knee joint to the outside force," Professor Buchanan said. "If you stretch a ligament, muscles are contracted to counter that. But the response is way too slow to prevent injury when a ligament is being torn."

Dr Lloyd said that from the time the leg contacted the ground a ligament was torn within a tenth of a second, which would happen before the muscles would begin to contract to protect the ligament.

They suspect that the role of this reflex response mechanism is one of learning.

"If a basketballer hurts his knee joint landing in a particular way, the next time he jumps up, he will land in a different way, because he jarred his knee the first time," Professor Buchanan explained.

"But he's not conscious of that change. The neural pathways are too slow to help. But we can artificially perturb the knees to provoke the response and see what happens," he said.

Continued on page 5



University-business relations have traditionally been complex. But they are currently in what I believe is a particularly formative phase.

Not surprisingly, as the relationship becomes more dynamic, multi-faceted and interactive, major issues and problems are arising which universities and business need to address urgently.

In truth, both universities and business are on a learning curve in this new and often intense engagement inside and outside the campus.

Some of the challenges are obvious and ongoing. The history of the CRC program is one of great success for Australian academic research and industry. But we have had to learn how to build, sustain and mature those relationships between the academic, commercial and state sectors. Getting the contracts right, learning to respect the difficult but complementary role of universities and business has been testing but ultimately rewarding.

That has all been recently given a new complexity and intensity as applied research, intellectual property development, spin off companies, venture capital, commercialisation, equity shares and joint ventures have become an everyday feature of the modern university. Working with business is crucial, yet we also have a mission to preserve and propagate fundamental and 'blue skies' research across all the disciplines. Not only are universities charged with this precious role in creating new knowledge but it is plain from studies by the ARC (and the US National Science Foundation) that patents for commercialisation of productions are founded in good basic research.

In short, the relationship benefits from vigorously preserving the traditional role of universities in research, yet also engaging with business at a time when knowledge-based economies are becoming critical. The UWA Innovation Precinct, housing Motorola, is a model of what can be achieved.

New layers of complexity are also emerging in areas beyond research, and which we will need to deal with successfully if the

university-business nexus is really to flourish in the future.

First, universities such as UWA will serve our business community best if we ensure that not only will graduates have a professional capacity of excellence, but also possess the generic attributes of critical analysis, flexible thinking, social awareness and strong personal values.

Being 'job ready' does not mean a purely functional capacity, but rather a suite of key attributes. Before we rush to implement graduate outcomes tests, as some business leaders have advocated, let us analyse what the modern graduate really needs for a global era of change, innovation and cultural challenge. Dialogue not prescription is the key.

Next, there are issues of efficiency, management and governance. These matters are also key to universities, and we are developing cultures of performance appropriate to our sector. Calls to adopt the business mode of governance, for example — with small boards of directors focussed essentially on the bottom line of profit — are inappropriate for our not-for-profit sector. We are, in fact, entrepreneurial in building our mixed budgets and working in a businesslike manner. We should not seek to emulate the corporate governance models of the private sector — we need our own appropriate pathways of change.

Finally, and most fundamentally, both sectors need to remove mythologies of misunderstanding about each other. Several of those issues emerged from the recent *Financial Review Higher Education Summit*. It was a pity that so few CEOs attended along with VCs. The AVCC is now engaged in joint policy work with the Business Council of Australia and I am personally heartened by such discussions and a quickening dialogue with major business leaders. But we need much more of it.

Ultimately, the business of Australia is not just business. The development of a new knowledge economy should be the common goal of business and the universities working in harmony for the good of the nation.

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Look what's happening in the bush, sport!

The dwindling population of many rural areas has seen a lot of country towns lose their pubs, shops and other essential services. But their sporting groups have soldiered on.

Human geographer Matthew Tonts has been studying these groups to see what effect the current declining rural population has on local sporting clubs.

"There has been a lot of research into economic change in rural areas, but almost all of these studies have overlooked sport, which is surprising, given that country people's obsession with sport is well known," Dr Tonts said.

A lecturer in the School of Earth and Geographical Sciences, Dr Tonts has a Healthway Promotion Research Starter Grant for his study. The research is being done in collaboration with Dr Chris Lockhart from the Combined Universities Centre for Rural Health and Dr Neil Drew from UWA's Institute for Regional Development.

Growing up in Narrogin and living in York as an adult, Dr Tonts has first-hand experience of rural sport.

"I used to play for a cricket club just outside Narrogin. To make some money for the club, the outer was planted with hay and I remember at the start of the season having to move the bales off the ground," he said.

"Another club used to run sheep on the cricket ground and we had to sweep the sheep droppings off the pitch before play could start!"

Bigger farms and improved technology mean fewer people are now working on the land. "Less work for them in the country means most young people are moving away to the bigger towns and cities. That leaves rural areas with a smaller and rapidly ageing population."

Assisting Dr Tonts is PhD student Dimity Smith. She is working on a salt lakes project with Professor Ian Eliot, but coming from the northern wheatbelt, where the Healthway study is centred, Dimity was the ideal assistant.

She has helped distribute, collect and analyse a survey in the area on sport. The respondents agreed that the most important aspects of rural sport were community identity and pride, health and fitness, and socialising and communicating.

One of the answers to dwindling numbers in the country may be for clubs to amalgamate. But, as Dimity points out, the closer (geographically) the communities, often the deeper the rivalries.

"I think that if the football teams from different towns were asked to amalgamate, they might decide they'd rather give up the game than play with their old enemies," she said. "I know that's true of the women's hockey clubs in Perenjori and Three Springs."

Continued on page 5



ABOVE: Dr Matthew Tonts and research assistant, Dimity Smith

BELOW: The tennis courts in the now abandoned wheatbelt town of Manmanning were let go as the population declined



Engineering better knees *Continued from page 1*

So the pair, who have collaborated for about ten years, and with Associate Prof Brett Kirk from Mechanical Engineering, are developing a device that will rapidly perturb knee joints. They plan to use the device to better understand these reflexes and hope that their studies will lead to the development of better training and rehabilitation procedures.

Although the ACL injuries we hear most about happen to high profile footballers, Dr Lloyd and Professor Buchanan say that women who play netball and basketball have the highest risk of suffering an injury. A torn ACL, with other knee injuries, are the second most common netball injury (the most common is a sprained ankle). Basketballers, because of the way they twist and land, like netballers, also suffer a high proportion of ACL injuries. Compared to other lower limb injuries, the torn ACL is the most devastating for the person.

"Just the torn ligament is bad enough, but then the injured person has to undergo surgery and, after all that, there is a much higher chance of that person developing osteoarthritis in the knee," Dr Lloyd said.

Both the collaborators have done extensive research into knee osteoarthritis. Professor Buchanan has National Institute of Health (NIH) funding in the United States, and some of Dr Lloyd's research is funded by the National Health and Medical Research Council (NHMRC). Their collaboration at UWA for three months this year is financed by the Raine Medical Foundation.

They will use the knee perturbation rig for studies into loading and stabilisation of the joint that has the potential of developing osteoarthritis. The device has not yet been fine-tuned and the first 'patients' to try it out will be mechanical engineering and human movement students.

Both Professor Buchanan and Dr Lloyd began their professional lives as engineers.

"That's what makes our approach novel," Professor Buchanan said. "We are doing the basic neurophysiological research to see how the central nervous system works but we look at things differently from physiologists. We start at the knee joint and work our way back



up to the spinal cord to meet the biologist!"

Professor Buchanan, who has been doing stroke research from the 'mechanical perspective', said their field of neuromuscular biomechanics tried to integrate the nervous system with the muscles. Dr Lloyd uses a similar approach to study people who suffer from osteoarthritis and also those with cerebral palsy.

"I have had funding, with Associate Professor Tim Ackland and Professor Bruce Elliott, from the Australian Football League, to develop training programs based on the theories we are developing, but our basic theories of how training works are still forming," he said.

"It will be a few years before they are ready for application."

Look what's happening in the bush, sport! *Continued from page 3*

"And if there are not enough people to make up the teams, what are the implications for people's health and fitness? And where is the outlet for their identity and pride?"

Dr Tonts said his early research had found sporting fixtures were critical for networking. "People went to the football not just to watch the game but to talk to each other about new techniques in agriculture, rain, economics, prices, and so on. The footy or the cricket is an alternative to the pub."

He said that country sport also played an important role in reconciliation. For a sports team to succeed (or even simply to fill its player list), groups had to cross cultural boundaries.

Dimity said the economics of rural sport was also an important aspect.



"Everybody follows the football, and with eight home games a year, with families buying food, perhaps petrol, and going to the pub, if there is one, it can have a real impact on the local economy," she said.

Local councils are also faced with the dilemma of maintaining sporting

facilities for dwindling numbers of users. There is also a diminishing number of volunteers to run the sports and coach the teams.

"I think rural sport will survive, because of the determination of the people," Dr Tonts said. "But it will be different."

"A smaller number of younger people means that sport in rural areas will probably lean towards lawn bowls, golf and tennis taking over from cricket and football."

"There will be fewer sports played, and longer distances travelled to play them. Some communities are already considering training a local to be a community development officer to manage sports and reduce pressures on volunteers, but there is no money to do this, so maybe the State Government could help there."

Seamless psychology sessions

Multimedia at the click of a mouse

An innovative new teaching mode has transformed psychology laboratory sessions for first years.

The Tutorial Manager software is at the leading edge of flexible delivery, allowing tutors to deliver a whole range of different media at the touch of a computer mouse.

No more fiddling with overhead projectors, fumbling with video tape recorders or searching for the right electronic file on a computer monitor. No longer will tutors have to turn their backs on their students to see what's displayed on the screen, and the idea of verbally regurgitating the power point slide is a relic of the past.

Professor Stephan Lewandowsky, the School of Psychology's First Year Co-ordinator, initiated the new system three years ago and he has been working with the school's IT support staff to bring it together.

Associate lecturer Martyn Churcher and research officer Dr Craig Clark are part of the Tutorial Manager team.

The software uses a customised version of Microsoft's Web Browser Control and exploits the dual-monitor support in Microsoft Windows to produce a simple but extremely useful system for packaging and co-ordinating the presentation of teaching materials.

The tutor's notes are presented on a monitor facing the tutor, complete with links to digitised teaching materials in any of a wide range of formats. On a second monitor is displayed the information the students see on the screen.

It has taken the team about a year to put together each semester's lab materials in the new system but the work has been worth it.

"A class of students had their first semester labs delivered in this way, then went back to the conventional delivery for the second semester and their evaluation was that it was like night and day!" Professor Lewandowsky said.

"They said the first semester was great but the second semester was like their parents' days at university," he said.

"The tutors can move quickly and easily between Power Point, video and Web pages, experiments and data analysis. We also have an electronic white board, which the tutor can use to answer questions and illustrate points. Then it's simply a quick click and the class is back to the presentation."



Stephan Lewandowsky uses the seamless new system at a Psych 100 lab

He said another of the system's assets is the control over timing in displaying images. "there's none of the old whip a slide onto the projector, then whip it off again. Tutorial Manager can have everything timed perfectly.

"It's also easy to randomise the order of images when we are seeking a result from students, so the results are not dependent on the sequence in which they are shown," he said.

"The tutor doesn't have to turn away from the students to see what is on the screen—it's there on the teacher's monitor."

Professor Lewandowsky said he attended all first year labs while the tutors were getting used to the new system, to ensure they didn't spend the entire lab in front of the monitors, that they moved away and gave their attention to the students.

Psychology 100 has one of the biggest enrolments in the University with 648 students. Tutors present 28 labs a week in Perth, with lab programs also being sent to Albany and Geraldton. "It's the perfect system for delivery to these centres," Dr Clark said.

At the beginning of each laboratory session, any messages for the students that have been emailed to the system are displayed on the screen. This allows the unit co-ordinators to reach all 648 students via a single email message.

From battlefield to

The rich and colourful world of Roman Britain will live again for three weeks in July.

Classics and Ancient History Professor David Kennedy and his PhD student Emmie Lister are leading a tour around Britain, following in the footsteps of the Romans, exploring their villas, towns, baths and military installations.

“For years, students doing my Roman Britain course have asked me when I was going to lead a tour. Now, having Emmie to help me, it’s finally come to fruition,” Professor Kennedy said.

Emmie Lister, recently returned from excavations of the Roman Palace at Fishbourne, England, has organised all the catering and accommodation at University residential colleges.

The tour will leave from Canterbury, start with a tour of its Roman remains, then follow the Roman trail from Richborough near Dover where the invasion started around southern England through Chichester, Winchester and Exeter. Then up to Bath, Chester and Lancaster to Glasgow, and then cross over to Aberdeen, to the site of the most northerly, and famous, battle in Roman Britain, Mons Graupius in AD83 or 84.

“Then we’ll come down the east coast, through Edinburgh, Durham, York and Lincoln. I suppose it could almost be called a Gothic cathedral tour,” Professor Kennedy said.

What sets this tour apart from other guided archaeological tours is Professor Kennedy’s personal experiences at the Roman sites, his depth of knowledge and his contacts at the sites.

“I have been able to arrange for experts at many of the archaeological sites to talk to the group and take them behind the scenes, to make this more of a study tour, rather than just a tourist jaunt,” he said.

“Roman Britain is not just well-explored but it is now big business. The tourist industry has stimulated the development of some striking innovations. There are reconstructed sections of Hadrian’s Wall, reconstructed fort gates, a full scale reconstruction of a Roman bath building and an Iron Age village.”

Professor Kennedy explained that this was not a ‘Disney World’ type of reconstruction. “The work is funded by government and local councils and the people who are doing the work are conducting serious experiments. They want to see how things functioned and how specific building materials and methods really worked,” he said.

“There is a group called the Ermin Street guards who make replicas of military equipment, trying to use exactly the same materials and specifications, to see – for example – just how heavy Roman armour was, how much protection their helmets gave them and how far their spears could be thrown.”

One of this group will guide Professor Kennedy and Emmie Lister’s party — in full battle gear — around the great hill-fort of Maiden Castle.

“I haven’t been to most of these sites, so it will be a great help to me to see them,” Ms Lister said. “It will be worth all the work to organise it.”

MAIN PICTURE: Hadrian’s Wall



Emmie Lister at work at the Roman villa in Fishbourne.

to Bath ... in the steps of the Romans

Amongst other attractions will be dinner in the Pump Room of the Roman baths at Bath, lunch in an Iron Age replica hut and a chance to gaze out over some of the finest scenery in the world ("In Scotland of course!" says Scot Professor Kennedy). The group will also visit leading archaeological collections at the British Museum and the National Museum in Edinburgh, with private guides.

"It's great time to take a tour of Roman Britain because there is such activity at all the sites," Professor Kennedy said.

About 30 people will join the tour. Any proceeds from the tour will be used to fund travel bursaries for students to participate in fieldwork overseas. There are still a few places left — if you are interested, contact Professor Kennedy on 9380 2150 or by e-mail: dkennedy@cyllene.uwa.edu.au



David Kennedy and Emmie Lister's expertise in Roman Britain will enhance the tour



The Lunt Gate



The Ermin Street guards re-enact a Roman battle

Portchester fort



New blood for symbiosis of art and science



The SymbioticA team, early in the program's development

SymbioticA, the University's art in science program, has recently won the approval of the Australia Council.

The Council has awarded one of its four national media residencies to SymbioticA, acknowledging that the facilities provided by the School of Anatomy and Human Biology to artists are unique and the work being undertaken in SymbioticA is of great value for the Australian artistic and general community.

SymbioticA is the only artist-run laboratory in the world that can facilitate artists working in biological art. It has been operating at UWA since 2000 and is enthusiastically supported by both scientists and artists.

The Australia Council's National New Media Artist Residency provides a stipend of \$24,700 for a six month period, to cover an artist's living allowance and materials. Applications for the residency have just closed and SymbioticA expects to appoint an artist very soon to take up what they anticipate will be the first of several residencies.

In the past, SymbioticA has hosted traditional sculptors, sound artists and performance artists. The School of Anatomy and Human Biology has hosted illustrator, painter and sculptor Hans Aarkveld as artist in residence for more than 30 years.

SymbioticA's innovative projects have been exhibited, by invitation, for two consecutive years, at Ars Electronica Festival in Austria.

Established three years ago with funding from the Lotteries Commission of WA and the University, SymbioticA is designed to expose the artist to the culture and practice of science. Resident

artists gain new insights into the inner working of science as well as practical training in tools that are usually reserved only for scientists.

The cross-fertilisation of ideas, skills and knowledge between different artists and scientists is key to the national, local and international standing of SymbioticA.

Dr Stuart Bunt, co-founder and one of two scientific co-directors of the group, has collaborated with artists in his laboratory and believes the junction between arts and science has become a valuable and stimulating area of his academic work.

"Artists provide a critical stimulus, a

viewpoint outside the box," he said.

"They provide new ideas and energy. They also force the reflective scientist to carefully re-examine his or her practice in the light external criticism and to place their work in a new artistic/socio-political context."

Artistic director, Oron Catts, said that residents had been helpful to the program in many different ways. "One international resident helped us develop a life and art course for undergraduate arts students, another brought on board expertise in sound engineering. But we are not looking at the residencies in the terms of how they can help us but in how we can help them," he said.

A golden handshake with a difference

On the eve of his retirement, Professor David Groves (pictured) has achieved a coup for UWA geologists.

He was recently elected as a Fellow of the Academy of Science, in recognition of a career that has significantly advanced the world's scientific knowledge in his field of gold geology.

"I'm pleased for the School," Professor Groves said. "Nobody in our old Department of Geology and Geophysics had ever been recognised by the Academy."

He was the only geologist among 16 of Australia's leading scientists honoured by the Academy this year.

As well as a Professor of economic geology, David Groves is the Director of UWA's Centre for Global Metallogeny.

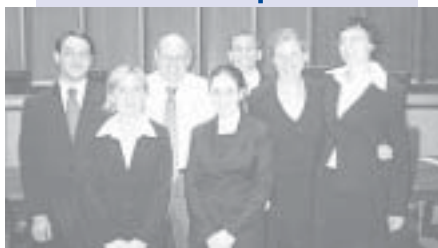
"But the Centre needs a new, younger, industry-based director, to make it more relevant. So I'm stepping aside. I've decided to take early retirement," he said.

"I'll stay working here as long as they'll have me, but I'll be officially retired."

Professor Groves has provided a steady stream of high-quality graduates to the mining industry for more than 25 years. His publications continue to influence the way academic and mining industry personnel understand Earth processes world-wide.



Victory no longer a moot point



Celebrating their victory in Canberra's High Court, before their trip to Washington: Ben Spagnolo, Bronwyn Grieve, Peter Johnston, Imogen Saunders, Andrew Lodder, coach Julie Taylor and Sarah Knuckey

UWA's Law School has always had a proud tradition of high achievement in the world-wide Jessup International Law Moot.

This year, the School's youngest team of law students to compete in the prestigious competition carried off the prize. They beat Russia in the grand final in Washington on April 5, becoming the first UWA team to win the Jessup Cup and the sixth Australian University to win in nearly 30 years.

Law students from almost 100 countries around the world compete in the Jessup Moot, in which students research and argue fictional cases of international law. Over the past nine years, UWA has been represented in the finals in Washington seven times.

Ben Spagnolo was named best oralist in the finals and Imogen Saunders won the title for the qualifying rounds. Ben is the son of Professor Dominic Spagnolo in the School of Surgery and Pathology, and Imogen's parents are also staff members: Dr Amanda Barnard, sub-Dean of Medicine and Dentistry, and Dr Ian Saunders, senior lecturer in the School of Humanities and Cultural Studies.

The other students in the team were Bronwyn Grieve, Adam Lodder and Sarah Knuckey. Senior law lecturer Peter Johnston was their faculty advisor and Julie Taylor, a graduate and member of last year's Jessup Moot team (which also made it to Washington) was their coach.

Fast and reliable



that's our engineering students

If you are ever in a hurry to get a tennis ball into a tube three metres away ... ask these engineering students.

Nick Buters, Matthew Stella, Boyd Crook and Ferdinando Guzzomi (*pictured above*) won the national finals of the Warman Student Design and Build competition, with a pneumatic ram they designed and built under the watchful eye of lecturer Dr Nathan Scott.

Their challenge was to create a device, weighing less than 20 kilograms, that could put a tennis ball into a tube three metres away in the fastest possible time. The device had to fit within a 500mm cube before deployment.

They fine tuned their machine to complete the task in just one second (overall score at the finals came out at two seconds), easily beating runners-up, Auckland University, whose team could only manage 4.1 seconds.

The students' initial device was a vehicle, which won the UWA competition last year. "We saw mostly vehicle-based entrants in the national finals," they said. "But even the best vehicle can't reach speeds comparable to pneumatics.

"Our team explored and developed two very different concepts, testing them for both speed and reliability. The pneumatic extending device was obviously the better choice."

The students said that, at the finals, at the Powerhouse Museum in Sydney, their pneumatic device was initially labelled as unsafe due to its high speed.

"We had to prove to the judges that it was safe, otherwise we wouldn't have

been allowed to compete," said Nick Buters. "We demonstrated that the standard hoses and fittings would withstand the pressure until the valve was opened."

"Another group which entered a similar (non-vehicle) design to ours was unable to hold the device stable as it extended," said Ferdinando Guzzomi. "We overcame this problem by using a glazier suction pad that could lift up to 250kg."

One of the judges commented that the students' entry was the best crafted device he had seen in 15 years of competition.


The students were recently presented with commemorative plaques by the Head of School, Associate Professor Brett Kirk.

At the presentation, Pro Vice-Chancellor (Research and Innovation), Professor Robyn Owens, said she was particularly interested in design, "for all constructions we make in engineering, from the structural to the virtual.

"While 'Seek Wisdom' is the University's motto, one way of achieving it is inscribed on a stone bench near the Reflection Pond.

"Verily, it is by beauty that we come at wisdom, it says, and in this case, it refers to the design element of this project. It is elegant and pleasing to the eye as well as being efficient."

Dr Scott congratulated them on their hard work and said their attention to the problem of reliability was a credit to them and to their University. "I hope this will be just the first of many crowning successes during their careers as designers."



Long-standing long-distance work applauded

Professor Max Kamien presents Jim Flynn with his teaching award, while other members of the School celebrate

A man who shares his name and his love of the outback with the founder of the Royal Flying Doctor Service has been rewarded for his work with medical students.

Dr Jim Flynn thought he would give the RFDS “a go for a year or two” and ended up staying 13 years with the service in the Pilbara. During those years, he has devoted time and energy to teaching medical students on rotation during their fifth and sixth years of study.

Head of the School of Primary, Aboriginal and Rural Health Care, Professor Max Kamien, presented Dr Flynn with an Excellence in Clinical Teaching award on behalf of both the School and the Faculty of Medicine and Dentistry, for “long standing and outstanding service”.

“The medical school could not run its courses without the help of people like Jim. It would fall in a heap!” Professor

Kamien said. “Since the days of the Hippocratic oath, one of the maxims of medicine has been ‘you must teach’ and through people like Jim, that tradition remains.”

Dr Flynn (who is not related to John Flynn who founded the RFDS) in turn paid tribute to the staff of the School. “It’s great to know you have their support when you’re in a remote area.”

He said he was surprised and honoured to have won the award. “Sometimes I would think, as the students climbed on the plane to fly back to Perth, that I had learnt more from them than I had taught them,” he said.

After 13 years of emergencies, regular clinics for Aboriginal communities and long-distance hospital transfers, Dr Flynn left the Pilbara a few weeks ago and is now based at Jandakot, which services the south-west from Carnarvon to Esperance.

“I have loved every minute of it, but now it’s time for a change, for me and my family,” he said.

Helping to develop Singapore’s teacher-researchers

Staff from the Graduate School of Education (GSE) were involved recently in a conference in Singapore showcasing their local students’ Masters Degree research.

The Singapore government is sponsoring a wide variety of education innovations and change including programs to develop schools as thinking and learning institutions and teachers as life long learners.

The GSE teaches its Masters Degrees on site in Singapore to the teaching staff of Chinese High School (CHS), a prestigious private boys’ school. The first cohort of twenty teachers has finished their UWA Masters of Education which includes coursework and a substantial research paper related to the teachers’ own work within their school. A second cohort is presently involved in the program, and a third is to begin in June.

With the sponsorship of the National Institute of Education (NIE), the Chinese High School held a two day conference, in March on the theme of *Evolving a Research Culture Among Teacher Practitioners*. Many of the papers in the conference were Masters papers of the UWA teacher-students from CHS.

The keynote address was given by Dr Lesley Vidovich, a lecturer at the GSE. In her speech, *International Collaboration in Educational Research in an Era of Globalisation*, she stressed the importance of university-school collaboration in a cross-national context as exemplified by the innovative UWA – CHS venture. Professor Paige Porter, Dean of International Relations, gave certificates of completion to all intending graduands during the opening ceremony of the conference.

Personal Passions

A series looking at the
Personal Passions of people on campus ...



It probably wouldn't surprise his colleagues that Russell Candy's sport of choice is one of control.

The Director of Facilities Management runs a well-controlled office and exercises enough control over his passion for orienteering that he is among the top 20 orienteers in his age group in Australia. (His age group is the biggest group in orienteering in the country.)

"Certainly it's about fitness and speed, but you have to control the adrenalin that competition creates, to ensure that you focus your mind on the terrain you're running over and the direction you're taking so you can effectively navigate your way to each control along the route," Russell said.

The orienteering season is about to begin and Russell and his wife will once again be heavily involved in weekly competitions in the national forests around Perth.

Orienteering is a combination of navigation skills and speed. Runners must read a map and use a compass as they run the route (a different one with a different map each week), 'clocking in' at each control along the way.

"The controls these days are sensing devices into which you put your finger, which has a computer chip attached to it. At the end of the competition, you can download all your results: How fast you ran, what your splits were, how you fared in comparison to other competitors.

"In fact, the analysis afterwards is just as important as the race itself. Orienteering is a family sport, and competitors always join their families after the run for a picnic and to relive the route they've just completed," he said.

Russell and his wife Jan competed last year in the orienteering world masters in Bendigo, and in 1996 in Tasmania. Russell represented Australia in the New Zealand Challenge in 1998.

His son and daughter are both hooked too. His daughter Annwen is an orienteering coach at State junior level. His son Gareth has a sports scholarship to develop his orienteering at the Australian Institute of Sport in Canberra.

"Gareth's first taste of orienteering was as a toddler, from a backpack on my father's back," Russell said. "My father was still orienteering at the age of 89.

"There is a level of orienteering for everybody. You can do it as a purely social thing, you can walk the course rather than run it, or you can take the competition seriously. There are always a variety of harder and easier courses to suit your needs. On average, there would be seven events of different complexity available every Sunday in the season."

Russell describes what some people call 'cunning running' as the last of the amateur sports. "I don't think it will ever become an Olympic sport because it's hard to make it a spectator sport. But then, in Scandinavia, where orienteering is huge, there are cameras set up in the forests to capture the thrill of the event."

Some people would call Russell a fitness fanatic, as he spends much of his time off campus running, swimming, cycling or working out in the gym.

But the most important aspect of all this activity is that he enjoys it. If you would like to find out more about orienteering, he is happy to help you. Call him on 9380 2031 or email him at rcandy@admin.uwa.edu.au

If you or your colleagues have another 'life' away from campus, climbing mountains, cooking exotic feasts, sculpting or kite-surfing, please let us know and we can share it with everybody. Email lindy.brophy@uwa.edu.au

THE last word

by Professor Alan Robson Deputy Vice-Chancellor

FIBRE OPTICS *on the bush telegraph*

— flexible learning and regional delivery —

Just four years after the establishment of the UWA Albany Centre and in the first year of its activities in Geraldton, the University has been nationally recognised for excellence in providing regional education through a 2002 Australian Award for University Teaching (AAUT).

The University received the award for its innovative and practical approach to regional program delivery. This is a significant achievement for UWA, not only because it is its first institutional AAUT, but also because it recognises the University as a regional provider of higher education. This will no doubt come as some surprise to some critics who like to describe UWA as 'the university of the western suburbs'.

The Award reinforces what was stated in our response to the Federal Government's *Higher Education at the Crossroads* paper, that UWA serves the people of Western Australia, not just of Perth. Unlike states with large regional populations such as Queensland - and therefore large regional universities - WA is characterised by small pockets of population spread throughout the vastness of the State, causing inequities in access to and participation in higher education.

For example, the participation rate in higher education in the metropolitan area is approximately 52 per 1,000, while in the Albany region it is only 23 per 1,000 and in Geraldton it is lower still. The University seeks to meet the challenge of improving regional participation rates through the Albany Centre and the Geraldton Universities Centre, as well as through UWay, the Transition Support Scheme, the UWA Excellence Awards Programme and UWA Diversity and Merit Awards.

Our commitment is to provide education to regional students that is the equal of that provided to Perth students, even if the teaching takes a different form. There is no difference in

the content or assessment of any unit studied. Thus, UWA employs a 'high tech, high touch' teaching and learning philosophy, combining face-to-face and computer-assisted teaching and learning.

Winning the Award is a clear performance indicator of our objective to improve flexibility in teaching and learning. The cornerstone of the regional model is the iLecture system developed by the Faculty of Arts Multimedia Centre. These digital recordings are both practical and innovative in that they record lectures given in lecture theatres on the Nedlands campus, i.e. there is no need for additional video-conferenced lectures or for distance learning packages to be developed for regional students. This high-tech approach in itself would not be successful if it were not for the 'high touch' tutorials, labs and practical classes that are held at the regional centres.

There has been resistance in some quarters to modifying teaching practices 'for a handful of students in the regions'. Others see the benefits that iLectures and web-based materials bring to large numbers of students on campus. Delivering to the regions is

seen as an opportunity to use on-line teaching and learning tools (such as the Forum or Web CT), to use PowerPoint to better effect, and to move from the blackboard to the document camera.

It will be surprising to some to find out that only six per cent of iLecture 'hits' are from regional students. The remainder are on-campus students, who occasionally or regularly access iLectures for review or due to business trips, illness or physical disability.

The University's regional activities have generated enormous goodwill from State and Federal politicians and funding bodies, who are acutely aware of the needs of rural students and their families. This has helped create an environment in which the University's concerns are heard across a range of issues, not just regional ones, and has generated a substantial amount of capital funding for the regional activities.

I would like to once again congratulate all of the staff involved - from unit co-ordinators to staff in the mailroom - for their contribution and efforts in enabling the University to win this award, and for embracing flexibility in teaching and learning and in administrative, library and technical services.



Research Grants & Contracts

UWA RESEARCH GRANTS SCHEME

Dr Mostafa Ismail, COFS: 'Development of a facility for measuring wave velocities in geological materials' — \$16,120 (2003).

A/Prof Barry Lehane, Civil and Resource Engineering: 'Strain and deformation patterns in sand beneath shallow foundations subjected to combined loading' — \$8500 (2003).

Prof Robyn Owens and **Dr Amitava Datta**, Computer Science and Software Engineering: 'Learning Australian sign language using real-time 3D graphics: translating English to Auslan' — \$10,000 (2003).

Dr Gordon Royle, (right) Computer Science and Software Engineering: 'Algorithmic study of network reliability' — \$12,320 (2003).



A/Prof Thomas Braunl, Electrical, Electronic and Computer Engineering: 'Evolving a controller for bipedal locomotion' — \$14,000 (2003).

Mr Jason Antenucci, Water Research: 'The response of phytoplankton to artificial deoxygenation in a drinking water supply' — \$11,485 (2003).

Dr Stephane Pesant, Water Research: 'Diatoms of the southern ocean: impacts on climate change and fisheries' — \$18,500 (2003).



A/Prof James Chisholm, (left) Anatomy and Human Biology: 'The evolutionary ecology of low birth weight' — \$15,000 (2003).

Prof Arunasalam Dharmarajan (right), **A/Prof Brendan Waddell** and **Dr Adrian Charles**, Anatomy and Human Biology: 'Expression of novel apoptosis-related genes in the human placenta' — \$13,246 (2003).



Dr Catriona Lloyd, Anatomy and Human Biology: 'Interactions between the cytoskeleton, extracellular matrix, sarcomere assembly and myoblast fusion during primary skeletal muscle differentiation' — \$12,000 (2003).

Mr Peter Mark, Anatomy and Human Biology: 'P-glycoprotein as a potential new player in the placental glucocorticoid barrier: decreasing fetal growth inhibition by glucocorticoids' — \$16,000 (2003).

Eurasian Participants Needed

For Face Perception Study at UWA



Here in the Facelab, in the School of Psychology, we are investigating perceptions of facial attractiveness. In order to complete our study we are looking for participants between the ages of 18 and 30 who have one Asian and one Caucasian/European parent. We require just ten minutes of your time to come in and have a photo taken. Your individual photo will not be used in experiments or shown to other people (unless you give us permission to do so), but rather will be morphed together with other same sex faces of the same ethnic background to make an "average" Eurasian face. You will receive a small participation payment.

Interested in helping us out?

Call Marianne on 9380 3573 or email marianne@psy.uwa.edu.au

A/Prof Paul McMenamin, Anatomy and Human Biology: 'Distribution, immunophenotype, ontogeny and antigen trapping by dendritic cells in the normal rodent meninges and choroid plexus' — \$15,000 (2003).

Ms Katherine Sanders, Anatomy and Human Biology: 'The influence of social support and personality traits on women's experience of stress during assisted reproductive technology' — \$15,631 (2003).

Dr Jason White, Anatomy and Human Biology: 'Effect of leukaemia inhibitory factor on myogenic cell survival' — \$12,000 (2003).

A/Prof Paul Attwood, Biomedical and Chemical Sciences: 'Structure-function relationships in biotin-dependent enzymes, using pyruvate carboxylase as a model, as determined by x-ray crystallography and protein engineering' — \$15,000 (2003).

Dr Barbara Chang and **Dr David Sutton**, Biomedical and Chemical Sciences: 'Characterisation of bacteriophages of vibrio harveyi and their use as biocontrol agents in aquaculture' — \$11,000 (2003).

Mr Mark Cregan, **Mr Leon Mitoulas** and **Dr Jacqueline Kent**, Biomedical and Chemical Sciences: 'Secretory epithelial cells in milk as a determinant of the physiology of milk synthesis in lactating women' — \$12,000 (2003).

A/Prof Alan Everett, Biomedical and Chemical Sciences: 'Synaptic depression at the neuromuscular junction' — \$10,562 (2003).

A/Prof Michael Guppy, Biomedical and Chemical Sciences: 'Investigations of hypoxia, metabolism and HIF expression in human cancer cells' — \$10,000 (2003).



Dr Livia Hool, (left) Biomedical and Chemical Sciences: 'Insulin-like growth factor-I and Ca²⁺ handling in transgenic mice over-expressing the cardiac specific isoform' — \$19,538 (2003).

Dr George Koutsantonis, Biomedical and Chemical Sciences: 'Polymers by clean catalysis' — \$12,927 (2003).

Mr Alec Redwood and **Mr Lee Smith**, Biomedical and Chemical Sciences: 'Construction and characterisation of an infectious bacterial artificial chromosome clone of rat cytomegalovirus' — \$12,000 (2003).

Research Grants & Contracts will feature in each issue of the UWAnews. Any queries about the research grants published in this issue should be directed to the Research Grants Office, ext. 3702.

Continued on back page



CAMPUSDiary

21 April - 4 May

Wednesday 23 April

ENVIRONMENTAL DYNAMICS SEMINAR

'Mythical challenges or mythical information superhighway?', Dr John Siliquini, WATRI. 4pm, Blakers Lecture Room, Ground Floor, Mathematics Building.

Monday 28 April

PLANT BIOLOGY SEMINAR

'Coppicing mallee eucalypts: useful as a solution to dryland salinity?' Dan Wildy. 4pm, Agricultural Lecture Theatre.

Tuesday 29 April

PSYCHOLOGY COLLOQUIUM

'Anxiety vulnerability and attentional bias retraining: past findings, present status and future applications', Lynlee Campbell, School of Psychology. 11am, Room 2.33, North Block, Psychology Building.

CHEMISTRY SEMINAR

'Characterisation of alkaliphilic micro-organisms in industrial waste streams', Amanda Tilbury. 5.15pm, Simmonds Lecture Theatre.

Wednesday 30 April

ENVIRONMENTAL DYNAMICS SEMINAR

'Subterranean estuaries as biodiversity hotspots: anchialine systems in northwestern Australia', Dr W. F. Humphreys, Senior Curator, Biogeo-graphy, Ecology and Biospeleology, Terrestrial Invertebrate Zoology, Western Australian Museum. 4pm, Blakers Lecture Room, Ground Floor, Mathematics Building.

PERTH MEDIEVAL AND RENAISSANCE GROUP TALK

'The visual autobiographic in Sucling's works: a reading of Van Dyck's portrait', Dr Belinda Tiffen. 7.30pm, Ground Floor Staff Common Room (G14), Arts Building.

GEOGRAPHY SEMINAR

'Aboriginal burning in the southwest of Western Australia', Dr Sylvia Hallam. 12noon, Geography Lecture Theatre 1 (Ground Floor).

Thursday 1 May

FREE LUNCHTIME CONCERT

'Graduate Magic III. Recent graduates Erin Chen and Stephanie Dean demonstrate their performance flair in a recital including the Sonata in D minor by Brahms. 1.10pm, Octagon Theatre.

Friday 2 May

MICROBIOLOGY SEMINAR

'Chemistry school seminar', Prof Sue Berners-Price. 1pm, Simmonds Lecture Theatre.

Saturday 3 May

UNIVERSITY MUSIC SOCIETY: CELEBRATION

Enigma, performed by the University Orchestra, with Allan Meyer on clarinet and Peter Taplin conducting. *Enigma Variations* is one of Elgar's best-loved works, a majestic orchestral showpiece. Book through BOCS outlets on 9484 1133 or call the Octagon Theatre on 9380 2440.



Please supply Campus Diary entries to Joanna Thompson by April 23 for the May 5 issue.

Telephone: 9380 3029

Facsimile: 9380 1162

Email: joanna.thompson@uwa.edu.au

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Women's Fellowship 2003

What is it?

The Edith Cowan Western Australian Women's Fellowship provides up to \$25,000 for interstate or overseas travel for work or study in a field that will help to improve the well-being of women and their communities in Western Australia.



Who can apply?

People from all backgrounds are encouraged to apply including indigenous women, women with disabilities, women from culturally and linguistically diverse backgrounds and women of all ages. The fellowship cannot be used to obtain academic qualifications nor are they a prerequisite for application.

Contact us

For more information, criteria and guidelines please contact:

Office for Women's Policy

Telephone: 9264 1900

Freecall: 1800 199 174

(TTY is available on these numbers)

Facsimile: 9264 1925

Email: wpo@dcd.wa.gov.au

Website: www.wa.gov.au/wpdo

Application forms are available from the website.



Applications close
5pm on Friday 30 May 2003



Department for Community Development

Government of Western Australia

Office for Women's Policy



CENTRE FOR Microscopy and Microanalysis

Courses June 2003

SCANNING ELECTRON MICROSCOPY (SEM) June 9 - 10*

A basic introduction to scanning electron microscopy, digital imaging and sample requirements for SEM.

MATERIALS OPTICAL MICROSCOPY (MOM) June 12 - 13

The theory and application of optical microscopy in materials science will be discussed.

VARIABLE PRESSURE SCANNING ELECTRON MICROSCOPY (VPSEM)^ June 12 - 13

The special characteristics of the VPSEM will be covered with emphasis on control of temperature and pressure of the sample chamber. The benefits of the VPSEM will be explored on a range of moist and/or uncoated specimens of a physical and biological nature.

TRANSMISSION ELECTRON MICROSCOPY (TEM)

June 16 - 17*

An introduction to the capabilities of transmission electron microscopy and basic level practical training in the operation of a microscope.

MATERIALS TEM (MTEM)^ June 19 - 20

The application of TEM in materials science, including electron diffraction, diffraction contrast in images, high resolution electron microscopy, and sample preparation methods.

ELECTRON MICROPROBE ANALYSIS (EMPA)^ June 23 - 25

An introductory course in microanalysis of bulk and thin film samples. The program covers general theory and principles of operation of energy dispersive X-ray detectors and X-ray data correction procedures. Basic wavelength dispersive X-ray analysis will also be covered.

BIOLOGICAL TEM (BTEM)^ June 23 - 24

This course covers both theory and 'hands-on' practical training for specimen preparation, ultramicrotomy, and TEM operation for biological applications.

CRYO-ELECTRON MICROSCOPY (CRYO-EM)^ June 26 - 27

The preparation of cryo samples and analysis using SEM will be covered.

CONFOCAL/OPTICAL MICROSCOPY (CONFOCAL/OM) June 30 - July 1*

This course covers the general principles and applications of confocal and light microscopy and includes bright field, phase and Normaski interference, polarizing and fluorescence microscopy.

ENERGY-FILTERED TEM AND EELS (EFTEM)^ June 30 - July 1

The use of a Gatan Image Filter for energy-filtered TEM and electron energy-loss spectroscopy will be covered, including theory and applications in materials science and biology.

DIGITAL IMAGE MANIPULATION & STORAGE (DIMS) July 3 - 4

The course is an introduction to digital imaging, including image printing, transfer and storage. A variety of image manipulation software will be considered.

There is no cost to UWA or Curtin students and staff

*may have additional labs outside of these dates

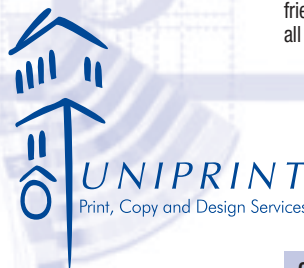
^Prerequisites apply

This is a summary only. Please check website for conditions or

Phone: 9380 2770 Fax: 9380 1087

email: admin@cmm.uwa.edu.au web: http://

cmm.uwa.edu.au



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Australian-Canadian academic interaction strengthened as UWA celebrates

ALL CANADA DAY

The University of Western Australia's links with Canada will be strengthened on Thursday 1 May as representatives from the Canadian High Commission visit the University to celebrate *All Canada Day*.

The events of the day aim to provide information about Canadian Studies Grants for Australian research projects, and study and exchange opportunities for students in Canada.

The day will include four main events:

- 1 a seminar for UWA academics to discuss research funding opportunities via the Canadian Studies Grants for collaborative research and exchange visits;
- 2 a seminar for UWA undergraduate students interested in studying in Canada at one of the University's Canadian exchange partners, including McGill University, Queen's University, the University of British Columbia and Simon Fraser University;
- 3 an information booth, open from 10am to 3pm near the refectory in the student Guild, to provide information about studying and living in Canada; and
- 4 a morning tea for senior members of the University community hosted by Canadian Deputy High Commissioner, Gaston Barban.

The Canadian High Commission is delighted to partner with UWA to make All Canada Day possible and looks forward to this opportunity to bolster Australian interest in Canadian study. Please mark your calendars in anticipation of this event.



**Contact: Tony McKittrick, Manager,
Academic Relations and Canadian Education Centre,
Canadian High Commission,
Commonwealth Ave, Canberra ACT 2600**

Tel: (02) 6270 4050 Fax: (02) 6270 4083

email: tony.mckittrick@dfait-maeci.gc.ca

Research Grants & Contracts

Continued from front page

Dr Sandra Saunders, Earth and Geographical Sciences and Biomedical and Chemical Sciences: 'A current assessment of photochemical oxidant formation from aromatic precursors determined in the Perth airshed' — \$9430 (2003).

AUSTRALIAN RESEARCH COUNCIL: DISCOVERY PROJECTS

Ms Elena Pasternak, Civil and Resource Engineering: 'Rotational degrees of freedom in modelling of materials with intrinsic length scale' — \$245,000 (2003-05).

Dr Jaroslaw Antoszewski and **Dr Charles Musca**, Electrical, Electronic and Computer Engineering: 'New generation of hyperspectral infrared photon detectors' — \$290,000 (2003-05).



A/Prof Brett Nener (left), **Ms Giacinta Parish** and **Prof U. K. Mishra**, Electrical, Electronic and Computer Engineering: 'Charge and interface properties of novel gallium nitride transistor structures

for application in low-noise high-frequency electronics' — \$261,000 (2003-05).

A/Prof Victor Sreeram, Electrical, Electronic and Computer Engineering: 'Model reduction techniques for control, communication, and circuits' — \$172,536 (2003-05).

Dr Cai-Heng Li, Mathematics and Statistics: 'Symmetrical graphs, generalised polygons and expanders' — \$589,275 (2003-07).

A/Prof Xiao Zhi Hu, Mechanical Engineering: 'Boundary effects on bridging-stress/crack-opening relationship and specific fracture energy' — \$178,000 (2003-05).

Mr David Reynolds, Water Research: 'Influence of fracture network topology on fluid flow in the subsurface' — \$146,000 (2003-05).

Prof Jorg Imberger and **Prof Gregory Ivey**, Water Research: 'Internal wave energetics, mixing and transport in lakes' — \$510,000 (2003-07)

Dr Jishan Liu and **Prof Barry Brady**, Oil and Gas Engineering and Faculty of Engineering, Computing and Mathematics: 'Investigation of coupled processes during underground coal gasification' — \$229,000 (2003-05).

Classifieds

FOR RENT

CRAWLEY. Furnished accommodation, available from early April 2003. Ideal for visiting academics, short and long term. Two-bedroom self-contained apartment in Fairway, next to UWA. Fully furnished and fitted out (including linen). Air-conditioning, heating, TV, telephone; undercover parking. Short walk to shopping centre, transport, restaurants, tavern, cinema, Swan River and Kings Park (bushland and recreational facilities). Email: crawley-apartment@iinet.net.au, web address: www.goodstay.com/perthapartment; Telephone: 9386 2367; Mobile: 0418 914 204. \$375 per week; lower rates for long duration (six months or more); telephone charges extra.

Redundant Equipment for Sale

ITEM	PRICE	AGE	COND.	DEPT.	CONTACT
6 x Macintosh Computers 7200 and 5400 series	Offers	4	3		Muriel ext. 2128
1 x Macintosh PB1400 cs/166	Offers	5	3		Muriel ext. 2128
15 x Silicon Graphics Indy, 1.2Gb/196Mb/17"	\$150 ono	7 - 8	2		Romanext. 3379
5 x Silicon Graphics O2 2Gb/17"	\$200 ono	5 - 6	2		Roman ext.3379
7 x 100 digital PC 3000 P-166 32MB 2GB 15" monitor	Offers	—	3	Library	bids@library.uwa.edu.au
4 x 201 digital PC 3000 P-200 32MB 2GB 15" monitor	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 300 digital PC 5000 P-266 128MB 2GB 17" monitor	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 400 Satellite Pro 400CDT Power, Cdrom Floppy Drive	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 500 Satellite Pro 430CDT CdRom Floppy Drive No Power Cable and Bag	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 600 Server 1000 PII 300 256MB 8GB Tape Drive CdRom 15" monitor	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 700 Venturis FX 5150 P-150 24MB 1.2BG 15" monitor	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 800 Digital PC 3000 P-200 32MB 1GB 15" monitor	Offers	—	3	Library	bids@library.uwa.edu.au
7 x 900 Intermec 9510 Barcode reader for dumb terminal	Offers	—	3	Library	bids@library.uwa.edu.au
9 x 1000 Welch Allyn CCD Scanner for dumb terminal	Offers	—	3	Library	bids@library.uwa.edu.au
11 x 1100 Intermec 9710 Barcode reader for PC	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 1200 Epson EMP5000 Data Projector	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 1300 Avtek Mega Plus Fax	Offers	—	3	Library	bids@library.uwa.edu.au
1x 1400 Scanjet 6100C Lamp may need replacing	Offers	—	3	Library	bids@library.uwa.edu.au
4 x 1500 Intermec 1545 Laser Barcode reader for dumb terminal	Offers	—	3	Library	bids@library.uwa.edu.au
7 x 1600 HP Deskjet 400	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 1700 HP Deskjet 400 No Power Cable	Offers	—	3	Library	bids@library.uwa.edu.au
1 x 1800 Satellite Pro 490CDT Cdrom Floppy Drive Power Cable and Bag	Offers	—	3	Library	bids@library.uwa.edu.au
Apple Laser Writer 12/640 plus (with duplexing unit)	\$200 ono	5	2	Asian Stud.	2080

Bids should be accepted by Monday 6 May with schools to have first option

Schools are reminded that all University equipment available for sale must be advertised in the **UWAnews**. Receipts should be PeopleSoft account coded 490 (computing with barcode), 491 (non-computing with barcode) or 493 (items with no barcode). If equipment has an existing barcode please contact extension 3618/2546 for details.

CONDITION refers to the general condition of item (1 = as new; 2 = good; 3 = serviceable; 4 = unserviceable). AGE refers to the nearest year.