

# Adelaidean

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NEWS FROM THE UNIVERSITY OF ADELAIDE

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Some people collect stamps or bottle tops. Peter Ey (above) collects diarrhoea. David Mussared explains on page four. Photo: Brenton Edwards

## Telstra deal for intelligent network tools

Researchers at the University of Adelaide are developing new mathematics-based tools that will help improve the efficiency and effectiveness of Australia's telecommunications systems.

The research is being conducted by the University's Teletraffic Research Centre (TRC) under a two-year, \$700,000 contract with Telstra.

Telephone systems such as One-3 customer service numbers and mobile phone services operate on so-called "intelligent" networks.

In the case of a pizza delivery service, customers call the One-3 telephone number, which is connected to a database. The database then locates and connects the caller to their nearest pizza outlet.

When calling a mobile phone, the database must first contact the phone's "home" location, which then tracks down exactly where the mobile phone is at its "remote" location.

Because of the complex nature of

these intelligent services it is necessary to design the network to avoid problems, such as set-up time delays, associated with making calls.

One of the new tools being developed by the TRC, called the Intelligent Network Performance Tool (INPT), uses mathematical algorithms to predict possible delays for a given network design.

The INPT is aimed at showing Telstra what kind of problems would occur, both from the customers' and the network's point of view, before a new phone service is added to the network.

Telstra can then take action to alter the structure of the service, preventing teletraffic "congestion" and avoiding delays for its customers.

"This kind of work is becoming ever more critical to telecommunications companies world wide as demand for high-level phone services increases," said the acting head of the TRC, Dr Peter Taylor.

"Telstra has an interest in reducing the amount of time the customer must wait while calls are being connected, as well as having an interest in reducing the stress on its network, so that's where we come in.

"Using the tool, if we discovered that a particular network switch would be grossly over-utilised, Telstra would know that it might need to expand the size of the switch or buy a new one to cope with the increased demand.

"And since many more of these high-level phone services will be put into the network in the near future, Telstra can use our tool to see what kind of effect that's going to have on the system," he said.

Another tool being developed by the TRC will predict and measure the performance of future Asynchronous Transfer Mode (ATM) networks. This could identify "bottlenecks" where congestion is likely to occur in the network.

Dr Taylor said these current pro-

jects, which are at the forefront of world research, were more examples of the close association between the TRC and Telstra's Research Labs in Melbourne.

Since the TRC was established in 1985, Telstra has provided the Centre with close to \$5 million in research funding.

On Wednesday, 11 December, the University of Adelaide's Vice-Chancellor, Professor Mary O'Kane, and the acting Director of Telstra's Research Labs, Dr Hugh Bradlow, officially signed the latest research contract, which is worth \$700,000 to the TRC.

Dr Taylor said he was pleased that Telstra continued to show a strong interest in the TRC and the University of Adelaide.

He said these current research projects would build on the Centre's strengths and expertise, and pave the way for further research into the future of Australia's telecommunications systems.

—David Ellis

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## Review & thank you

1996 has been a year of great changes in this University and in the Higher Education system. In spite of its election promises the Government cut Operating Grants to Universities by 5% over projected funding for 1997-1999. More worryingly, it has refused to deal with a University staff pay claim. If we are to retain the high level of professionalism in our Universities we must pay salaries comparable to those in other sectors. But the story looks grim on several fronts. HECS charges have increased and a new differential HECS system has been introduced. Fees for Australian undergraduates are now firmly in place for 1998 onwards and while this may raise much-needed "replacement" revenue, the issue has yet to be debated thoroughly. It is a great pity that the Review of Higher Education Financing and Policy is to take place after rather than before these changes.

This University has moved quickly to deal with the effects of the Operating Grant cuts but the sad fact is that we will be saying good-bye to many valued staff over the next couple of months. For South Australian Universities there have been other changes following the State Government's revision of our Acts. Our "new" Council will come into operation in March next year. Within the University we saw the introduction this year of the six divisional structure and the appointment of new Heads of Division. There have also been other critical appointments to both Academic and General staff positions and some very exciting Chair appointments in Biochemistry, Commerce, Psychiatry, Anaesthesia, Welding & Joining, Zoology, Sustainable Agricultural Production and Chemical Engineering.

In our core activities of Teaching and Learning and Research we have seen innovative developments and excellent performance. In July the co-ordinated Environmental Degrees were launched; these include Bachelors of Environmental Management, Environmental Science and Environmental Studies offered across several campuses. In another growth area, we saw cross-divisional development of the new Bachelor of Finance, which can be taken in double degree form. Also recently approved is our first Professional Doctorate in Nursing. Research performance has been excellent, with the award of an ARC Special Research Centre for Subatomic Structure of Matter, outstanding performance in the Large Grants, a Special Investigator Award to Rob Saint and Helena Richardson, several ARC Fellowships and a very commendable success rate in NHMRC awards.

We have seen the completion of a range of Capital Projects and the start of others. The Lower Level site development project on North Terrace campus will result in a \$40 million complex for Science, Engineering and Maths. On the Waite Campus we saw the completion and opening of the new Refectory and at Roseworthy the Pig and Poultry Production Unit, a joint venture with SARDI.

We are deep in the process of analysing how we do things. Hard looks at Strategic Planning and External Relations are under way, as is a Review of Senior Management and Administrative Structures by Emeritus Professor David Penington. There have also been changes to this column. It has had three changes of title this year — from Squiggles to Acting Up and now I have found my Voice. I very much appreciate the letters and comments on the column both from inside and outside the University.

All the very best for Christmas and a highly productive 1997.

MARY O'KANE

# GUEST COMMENTARY

## Aspects of Internationalisation

During 1996 much of the reporting in the *Adelaidean* has recorded our increasingly successful processes of internationalisation. Doubtless, in 1997 and beyond, this special dimension of University of Adelaide life will con-

tinue to grow. And so, as one academic year draws to a close and a new year is in the offing, we might make a little time to think about how we are going about this institutionally maturing process and how we might do it even better.

We can all ponder that in our own way. There are so many shades of experience, ways of understanding and of contributing to successful internationalisation that I'm inclined to think that it would simply be too arrogant for any individual to pronounce on the subject.

Personally, I am reminded of my own experiences in internationalisation, first as a student 'consumer', later as a managing academic. I am still learning from these experiences, and I'll take the risk of thinking about them, 'out loud', even in print, on this occasion.

When I was a part-time postgraduate student in Melbourne in the 1960s it was still assumed that for the best research experience in many fields one had to go 'overseas'. Perhaps no-one actually said so, but it was understood that just being in a 'foreign' place was something of an education in itself. And just 'being there' is still one of the first positive attributes of internationalisation. At that time I was lucky in having something of a mentor in the late David Saunders, then a lecturer in architecture at Melbourne, much later the Professor of Architecture here at Adelaide.

Knowing my interests in urban design and planning, David suggested I write to both the University of California at Berkeley, and to the University of Edinburgh. He was aware of what was happening 'overseas' and was highly impressed with both these places. And still today, I expect, it will be the personal recommendation of someone who is well informed which may trigger the first enquiry for a postgraduate place. So keeping key people in strategic places well aware of our specialised postgraduate offerings is another aspect of effective internationalisation.

Back in the sixties, what happened next in my experience was interesting. Indeed, the outcomes of something which might have been thought of as quite trivial were really consequential. First I wrote to Berkeley, which seemed the most comfortable choice. Climatically, at least.

No reply in a month, so I wrote to Edinburgh. By return of post came a letter which addressed my personal needs specifically and was signed by the professor to whom I had addressed my correspondence. That was really impressive, and by the time a bureaucratic letter from Berkeley arrived a few days later I had made up my mind. The impersonal response from California confirmed for me that I had made the right choice.

There has to be a lesson in good international relations in that experience. I never forgot it, and it has sharpened up my correspondence right through my career. With faxes and e-mail today the competition in timing is closer, but what one has to say and how one says it will still count in much the same way as it did thirty years ago.

That quick personal response from the University of Edinburgh in the 1960s probably scored more than a dozen Australian postgraduates for Edinburgh over the years, as in turn I became a mentor and pointed people in the direction which had served me well. And so the multiplier effect goes on, all as the result of an efficiently despatched and positively helpful letter.

In Edinburgh I quickly learned why the Scots were good at so many aspects of internationalisation. They had to be. The principle exports from Scotland were whisky and people, with which they did very well, but the GNP was well supplemented by earnings from education delivered to the many foreigners. It was not only colonial medicos who had been coming to Edinburgh, Glasgow and the other Scottish centres of higher education over centuries. I found out that many of the new African leaders were Scots educated, and that British educational links and trade ties had become almost congruent with the passage of time. Something for our State in that one, too.

For five years or so, as the deputy director of my Edinburgh University Centre for Planning and Housing in Developing Countries, I was privileged to be taking part in Edinburgh's

by  
**John Brine**  
Architecture

internationalisation effort in a number of ways, not least of which was writing helpful letters by return of post. We worked with postgraduates from about fourteen different countries. Sometimes I felt a little un-Australian when I

realised that my offer of a postgraduate place to a bright student from Indonesia or Fiji was actually pinching a potential candidate from an Australian university.

It was during my experiences in internationalisation at the University of Edinburgh that the local, and national, paper, *The Scotsman*, complained bitterly that 43% (or was it 63%?) of the academics in the University were 'from south of the border'. In fact it was not such a problem to be from a place like the USA or Australia, and a positive plus to be from Iceland or some such remote land.

Spin-offs such as a stronger international community of scholars follow the process of internationalisation in the institution as a whole. In Adelaide, my Faculty has had a good record of participation both by foreign academics and students. Staff have come from countries as far apart as Denmark and Chile, to stay with the University for a year or for a decade. Students have been coming from distant places too. It is great to have them, and local students have their horizons expanded. The richness of human resources internationalisation can bring is considerable.

In recent years I have had the chance to participate from time to time in an English University's growth into a high degree of internationalisation. Watching the School of the Built Environment at De Montfort University, Leicester, come to terms with the new Europe has been interesting. In particular I have been reminded of the importance of culture and language in the processes of good internationalisation.

During the past decade the European community has mounted a series of programs to foster international links within the new Europe. This has made for new opportunities in internationalisation for both academics and students.

The ERASMUS program, funded from Brussels in units of that remarkable European currency, the Ecu, has allowed British Universities, such as De Montfort, to start making remarkable progress first with staff then student exchanges, and next the development of jointly planned and offered courses. The intent is for the greatest possible course credit transfer, student mobility, and for the most effective staff exchanges.

In parallel with this, since the opening up of Eastern Europe, educational entrepreneurship with the former Soviet countries has taken place along with the development of trade. No doubt in order to oil the wheels of commerce, this educational thrust has been well sponsored by the British Government.

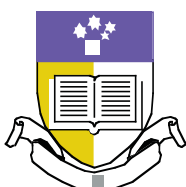
The outcomes from these enterprises are already impressive. Staff and students are getting about like nobody's business, and sometimes credit transfer is being arranged. So far I'm not sure how many courses are actually being shared, but that will happen soon, I expect. Most of all I have been reminded of how important is language and a tolerant cultural understanding in the matter of effective internationalisation.

From the point of view of our region, Europe seems comfortably compact. It certainly is in terms of travel times, and, linguistically, many people appear well prepared for international exchanges. But the new Europeans are having to find their way carefully through the cultural fogs that sometimes blow into the way of good communication. Most of all, they are discovering that good internationalisation takes tolerance and time.

And so, back in our vast region, where we require everyone to speak and write English, we should not fool ourselves into believing that such compulsory linguistic homogeneity will guarantee immediate understanding and allow us to take shortcuts with complex issues of social and intellectual communication. We might do well to keep the current European experience in mind. I suspect that the Europeans are reminding themselves to hasten slowly.

There are many aspects of good internationalisation; they need understanding, and they need applying with consistency, patience and persistence. Above all the process takes time and loads of cultural goodwill.

Make a little time over the Christmas break to think about your own experiences with internationalisation, and we'll all do even better next year.



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# New test to combat Alzheimer's

The University of Adelaide is participating in a new clinical study to help improve the quality of life for the estimated 240,000 Australians affected by Alzheimer's Disease.

The 24-week international study is aimed at investigating a new oral drug for the treatment of the disease. The study will look at both the safety and effectiveness of the new drug, currently known as 202026.

Professor David Jarrett, the University of Adelaide's Professor of Gerontology based at The Queen Elizabeth Hospital, said the trial medication could help to correct a chemical imbalance which was believed to be involved in the formation of new memories.

"Research indicates that people affected by Alzheimer's Disease have a reduced level of a certain chemical in the brain called 'acetylcholine'," Professor Jarrett said.

"If the levels of acetylcholine can be raised to normal again, correcting this imbalance could substantially improve not only the problem-solving ability of sufferers but also their overall quality of life, and indirectly that of their carers."

Alzheimer's Disease is the most common form of progressive dementia in adults, with those over the age of 65 having a one-in-20 chance of developing the disease.

Drug treatments so far approved for Alzheimer's Disease have not yielded outstanding results. Many doctors and patients are often disappointed with the inability to lessen the symptoms of the disease and the unacceptable level of side effects.

However, Professor Jarrett said Australian researchers were playing a major role in international efforts to find a better solution. He said participants for this most recent study were now being sought.

"People who could be diagnosed as having mild to moderate Alzheimer's Disease, who live with a carer who is able to supervise therapy, and who are currently untreated, may be eligible to participate in the study," he said.

"Participants will receive all study-related care and medication at no cost. The monitoring of the patients' mental function will take place on a monthly basis using internationally standardised assessment scales.

"In addition, close attention will be given to how the carers of the trial participants observe changes or side effects, as these are often determinants to the patients' overall quality of life," Professor Jarrett said.

Members of the public interested in the study are urged to call 1800 505 009.

—David Ellis

# Chinese foreign trade officials graduate

A group of 12 Chinese government officials has successfully completed a Graduate Diploma in International Economics at the University of Adelaide.

Each of the officials is involved in some way in the foreign trade decision-making process.

They were chosen by their government to take part in the AusAID-funded training program, which was aimed at improving the officials' international trade policy skills and helping pave the way for China's acceptance into the World Trade Organisation.

The 12-month training program is worth \$400,000 to the University's Centre for International Economic Studies (Department of Economics).

The Chinese officials fared extremely well during their course, especially considering the brief time they had to adjust to Western economic concepts and life in another country.



Graduating Chinese officials with the Chancellor, Deputy Vice-Chancellor (Academic) and other staff in the garden of the University Club. Photo courtesy of Economics.

Because they had to return to China soon after completing their course, a special Commemoration Ceremony was held at the

University on Monday, 2 December. The success of this year's program has ensured that another group of twelve officials

will come to the University of Adelaide next year for the same training.

—David Ellis

# Guild's 1997 season a classic feast

The University of Adelaide Theatre Guild has announced its 1997 season of on-campus productions.

The company will produce three classic works in 1997, as well as a shorter, more experimental season dedicated to new Australian theatre writing.

The year kicks off in March with Aristophanes' comedy *Lysistrata*, about the women of Greece who refused to make love to their husbands until they stopped fighting silly wars. Acclaimed local director and actor, Peter Dunn (from the Centre for the Performing Arts) will direct *Lysistrata* in his first venture for the Theatre Guild.

June will bring *Hedda Gabler*, Ibsen's classic study of a woman's struggle for independence in a world built by men. This will be

directed by June Barnes, whose previous directing for the Theatre Guild includes productions of *The Bacchae*, *Electra*, *Twelfth Night*, *As You Like It* and *Poor Bitos*.

The final two seasons are in the hands of up-and-coming young Adelaide directors Alyson Brown and Michael Hill. In August, the former will direct *First Time Out 1997*, a feast of "interactive appetisers" celebrating the variety of new Australian writing. Michael Hill winds up the year in October with a fresh contemporary production of *Richard III*, Shakespeare's gripping drama of power and betrayal.

For further information about the season and Theatre Guild membership, contact the Administrator, Christine Schlothe, tel 8303 5999, fax 8303 5019.

Advertisement

## The News IN BRIEF

### 5UV MANAGER HONOURED

5UV Station Manager Dr Jeff Langdon has been made a Life Member of the Community Broadcasting Association of Australia.

Dr Langdon has been involved in community broadcasting since 1979. He ran a community radio station in central Victoria from 1982 to 1985 and was president of the CBAA in 1985. In 1989 he became only the third manager of 5UV. He was again president of the CBAA in 1992/93.

"The next decade for community broadcasting will be one of the most challenging yet," Dr Langdon said. "Changing technology and the increasing need for locally-relevant media will be the big issues as we head into the next century."

### NEW BDS ACCREDITED

The Faculty of Dentistry has received the maximum five year accreditation for its new BDS curriculum from the Australian Dental Council (ADC).

The recently formed Council was conducting its first accreditation round. It identified particular areas of strength in the Adelaide Dental School, including its student-centred teaching focus, the commitment of staff to student welfare and performance, and the range and quality of clinically-based scenarios designed to integrate material presented in different streams of the new curriculum.

Associate Dean (Academic), Professor Grant Townsend, said the Assessment Team noted that students with whom it met were articulate, self-assured and positive towards the new curriculum, and had commented that recent graduates appeared to be well prepared for practice.

"The Team was impressed by the 'close knit' relationship between the Dental School, the Adelaide Dental Hospital and the dental profession, each being supportive of each other," he said.

### ENGINEERING FELLOW

The Head of the Division of Engineering and Mathematical Sciences, Professor John Agnew, has been elected a Fellow of the Australian Academy of Technological Sciences and Engineering.

Professor Agnew is internationally known for his research in coal, oil and gas reaction engineering. He was recognised by the Academy for his distinguished record of achievement in Australian chemical engineering.

### AGRICULTURE DELEGATION

The Chinese Economies Research Centre and the Department of Agricultural Business have recently hosted a delegation from the Chinese Ministry of Agriculture in Beijing.

The delegation, whose primary interest is in animal husbandry, was studying the structure and operation of rural co-operatives in Australia as part of a program aiming to develop new policies for rural co-operatives in China.

Led by Mr Li Huian, Deputy Director of the Department of Rural Co-operatives in the Ministry, the delegation included representatives from nine provinces across the country. Their program in Adelaide was organised by the Department of Agricultural Business.

The visit grew from the extensive research interaction built up with the Ministry of Agriculture by the Chinese Economies Research Centre through ARC and ACIAR grants, and demonstrates the potential for further research and training interaction with China in the agricultural area.

# User-friendly guide to our rainforest plants

Identifying trees and shrubs in Australia's tropical rainforests will soon become as easy as the press of a button, thanks to a new CD-ROM being developed by a research team involving the University of Adelaide.

Adelaide and La Trobe universities joined forces with the CSIRO five years ago to document and catalogue almost 2000 species of Australian tropical trees and shrubs.

That information was initially released in 1993 in the form of three volumes of books and a computer diskette.

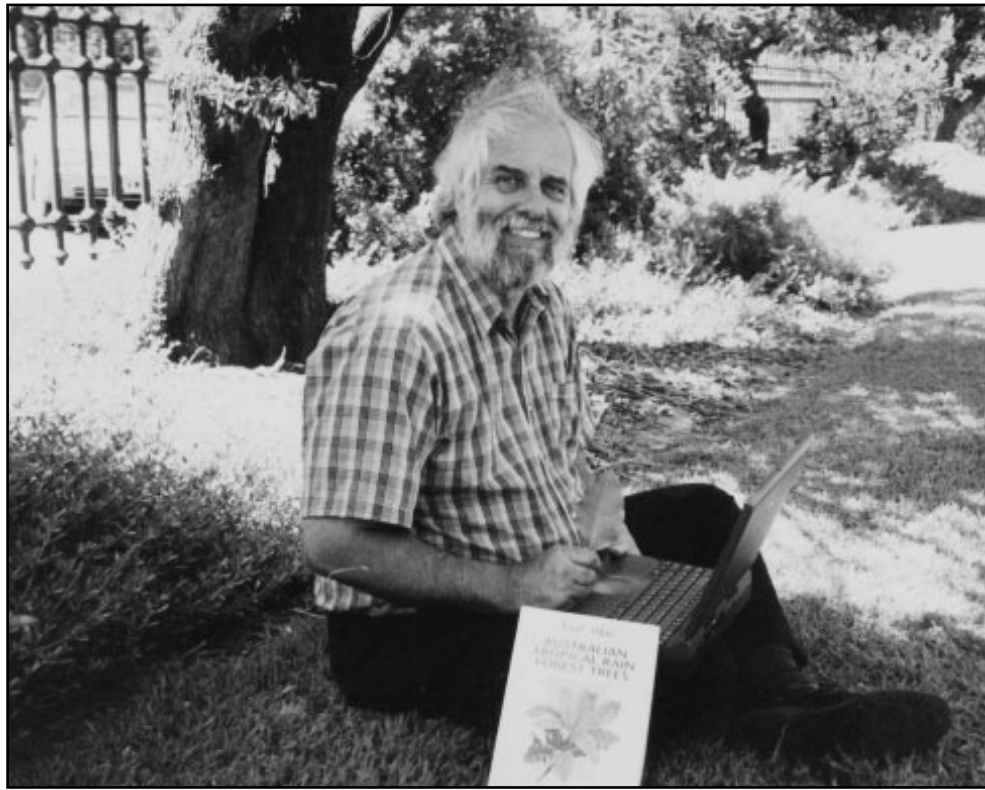
The new CD-ROM is an updated version of that, resulting in the world's largest computer database of tropical rainforest plant species.

The CD-ROM can be used in the field by researchers, park rangers or even tourists on a laptop computer, allowing them to identify a tree or shrub using several key criteria, such as leaf shape and size, bark, fruit, seedlings, flowers, and even the geographical location of the plant.

The computer identikit is the brainchild of La Trobe University botanist Dr Trevor Whiffen and CSIRO researcher Dr Bernie Hyland, and is funded by the Cooperative Research Centre for Tropical Rainforest Ecology and Management.

Dr David Christophel, from the University of Adelaide's Department of Botany, has played a major role in the development of the CD-ROM and the books on which it is based.

His main task has been to provide



David Christophel — rainforest CD-ROM "a pioneering effort". Photo: David Ellis.

the thousands of x-ray images needed to identify the plants' leaves.

"One of the reasons I was brought in on the project was because I'd developed a technique using x-rays which was very quick and non-destructive, but still recorded all the main features of the leaves," Dr Christophel said.

"The books and computer disk we produced three years ago have sold very well, but the computer disk had limitations and it's not very practical to

carry the books around in a rainforest.

"This CD-ROM will allow students, researchers, and others to actually work in the rainforests of northern Australia without having to rely on heavy, printed texts or taxonomists.

"It's a very user-friendly key, and the information will be right at your fingertips. Questions such as what is this plant? how many related plants are there? what is the geographic region? will all be answered, and

answered correctly. So from a student's, researcher's and tour guide's point of view the CD-ROM will be a great tool."

Dr Christophel said the computer key was the only one of its kind in the world.

"There are some small projects that have started to come out around the world on local wildflowers and weeds, but there's no other country in the world that has done a CD-ROM on rainforest trees. This is a truly pioneering effort," he said.

"I believe it's an incredible step forward — the concept of the whole thing will make Australian rainforest studies the premier study in the globe in terms of the systematics of rainforests.

"The researchers who've been studying rainforests in South America have had a head start in terms of the scale of their taxonomic work, because they've been in the field for about 15 years. But they haven't produced anything like this," he said.

Dr Christophel is also working on two other CD-ROM projects — one will be a slightly different version of the current CD-ROM, to be used to teach students at the University of Adelaide, and the other will document the cinnamon family of plants.

The Australian rainforest trees and shrubs CD-Rom is due to be published in Macintosh and PC versions by the end of 1997, with details of rainforest vines expected to be added to it by the year 2000.

—David Ellis

# Charting family tree of common gastric scourge

Some people collect stamps or bottle tops. Peter Ey collects diarrhoea.

It's not a hobby; it's his job. From samples collected from around Australia, and the world, Dr Ey and his University of Adelaide colleagues are helping chart the family tree of a microscopic creature most people would rather forget about — Giardia, the cause of so-called 'traveller's diarrhoea', or giardiasis.

Dr Ey, a biochemist, is collaborating with Associate Professor Graham Mayrhofer, Dr Ross Andrews and student colleagues in the University's Department of Microbiology and Immunology, trying to work out what makes giardia parasites tick.

The University of Adelaide team is combining a new technique for growing giardia in the laboratory with the latest in genetic engineering technology to study the parasites' DNA.

Already they have made at least one important discovery — that the organisms, which look alike, come in many varieties, but that only some seem to infect humans.

Giardia are among the world's commonest causes of gastric upsets. In developing countries typically 20 to 30

per cent of the human population is infected. Many are carriers, and show no symptoms.

Even in developed countries like Australia, up to five per cent of people may be infected, and infections among animals can be as high as 70 or 80 per cent.

Giardiasis has been catapulted into the headlines in recent years because of infections in child care centres, cases among hikers and campers and occasional mass infections in the United States and Europe — usually caused by a breakdown in drinking water treatment.

On its own, giardiasis isn't fatal. It can cause severe diarrhoea, often persisting for weeks or months, and nausea, headaches and fevers.

However, when combined with other infections — such as hookworm — or with malnutrition, giardiasis can stunt growth and reduce an individual's fitness for work, causing major problems in impoverished populations.

Giardia are protozoans; tiny, single-celled microbes, which have swarmed across the Earth for hundreds of millions of years.

Protozoans evolved long before cells started clumping together to form the ancestors

of today's plants and animals, but the tiny creatures still flourish in the modern world — sometimes, like giardia, as highly efficient parasites of much bigger animals.

The Adelaide scientists have found that the small size and apparent similarity of giardia parasites are deceptive. The protozoans are anything but simple.

"Giardia are known to be common in all mammalian hosts worldwide — in humans and domestic pets, livestock, you name it," Dr Ey said.

"They all look similar under a microscope, so it has been assumed they are all one species."

But the Adelaide researchers have discovered that the apparent similarity is only skin deep. They have found that protozoan look-alikes collected from different hosts and different parts of the world are often genetically very different, in some cases as different as mice are from humans.

The team has used this new genetic information to draw up a family tree for giardia, working from the knowledge that the more differences there are between two strains, the more distantly they must be related.

Giardia are passed on through faeces, so knowing which animals may be carrying infectious strains is important for planning public health programs and for water catchment regulations.

Surprisingly, the researchers have found that with one important exception, each strain of giardia prefers a single host.

Parasites isolated from the innards of Northern Territory dogs, for example, are quite different from those infecting their human companions.

Previously it was assumed that humans and dogs could and did easily cross-infect each other, and that such cross-infections helped explain the high levels of giardiasis in outback Aboriginal communities.

The Adelaide researchers have found that while many strains of giardia are host-specific, one common strain infects many other animals as well as humans.

Livestock, for example, can carry either the giardia which infects humans, or their 'own' unique strain, probably harmless to humans.

Such knowledge will help authorities control the spread of the disease.

One major research problem has been that giardia protozoans are difficult to breed using standard laboratory culture techniques. The failure rate of giardia cultures is up to 70 per cent.

Because of this, Dr Ey said, most scientists had studied just those few, rare strains of giardia which survived in culture. This had caused them to greatly underestimate the parasite's natural genetic diversity.

The Adelaide team has had better success in growing giardia strains in young mice instead of in culture. The scientists have collected nearly 200 giardia samples from South Australia and the NT, and on comparing them with samples from Europe and the US have discovered several new strains.

The Adelaide researchers' detailed knowledge of the genetics of giardia may eventually help researchers develop a vaccine against the disease.

In the meantime, Dr Ey said, their insights would help public authorities to plan against giardiasis outbreaks, and to know what they were dealing with whenever one struck.

—David Mussared

## Engineering at the crossroads

Both the role and education of engineers are under significant challenge to change in order to produce engineers equipped to meet Australia's needs and ensure our future economic wellbeing.

That was the thrust of the Robin Memorial Lecture delivered by the Governor of South Australia, His Excellency Sir Eric Neal, in Bonython Hall last month.

"Engineers are being called upon, and will be increasingly called upon, to address and respond to a wide range of community requirements and pressures," Sir Eric said.

Citing a recent review of undergraduate engineering education he drew attention to its finding that "patterns and assumptions that have ruled and proved to be of considerable value over the past 100 years are being found to be out of date, no longer productive, and not infrequently producing counter intuitive consequences."

Sir Eric suggested that if engineering courses were to continue to attract high quality students they needed to offer greater flexibility in the options available to students, more entry and exit points, and closer links with other disciplines, such as law or commerce, to stimulate "more interest in engineering, not less, and to make engineers even more adaptable and useful to the wider community".

The Robin Memorial Lecture honours the contribution to Engineering of Roland Cuthbert Robin, an Adelaide graduate and former Professor of Engineering here.

Sir Eric's address is available in full from the Department of Civil & Environmental Engineering.

# Mainstreaming Aboriginal employment: program aims for change of attitudes

Staff responsible for employment at the University of Adelaide are being urged to consider Aboriginal and Torres Strait Islander people for "mainstream" jobs.

The University is taking part in a program funded by the Department of Employment, Education, Training and Youth Affairs to promote the employment of Aboriginal people.

Adelaide University is the only university in South Australia involved in the program. Its target over the next four years is to achieve a 1.5% representation of Aboriginal employees among staff. Currently there are only about 25 indigenous people employed at the University.

To help achieve the employment target a new Aboriginal Recruitment Officer, Mr Cecil Graham, has been appointed to the University's Personnel Services Branch, continuing the work started by Mr Kevin Khan last year.

Mr Graham has had more than 20 years experience in Aboriginal Affairs, having previously worked with the Australian Electoral Commission promoting ATSIC elections to Aboriginal communities, and with the University of South Australia in the recruitment of Aboriginal students.



Cecil Graham. Photo: David Ellis

Mr Graham sees his new job as a great opportunity to expand on Aboriginal employment within the University of Adelaide.

"My personal feeling is that many non-Aboriginal people in govern-

ment sectors, private companies, and universities have had little or no understanding of Aboriginal and Torres Strait Islander people in an employment sense.

"It's my job to go and talk to Deans of Faculties and people in other areas to encourage them to employ Aboriginal people in jobs for which we know they have the skills.

"I think the University can benefit from this, and it's a positive step for the Aboriginal and Torres Strait Islander people who deserve the chance to use their skills," Mr Graham said.

Part of Mr Graham's work involves running cultural awareness programs for deans and heads of departments, to give them a better understanding of indigenous people. He also encourages Aboriginal people, including high school and TAFE students, to apply for jobs within the University.

Mr Graham said he was trying to promote a change in attitudes on two fronts — changing the attitudes of employers, and those of Aboriginal people.

For more information about the program contact Cecil Graham on (08) 8303 5891.

—David Ellis

## Project tests concrete limits

This concrete beam pictured right has been pushed to its limit at the University of Adelaide as part of an industry-funded research project aimed at preventing the cracking and collapse of structures such as buildings and bridges.

Much of the civil engineering infrastructure throughout the world, and in particular developed countries like Australia, is ageing and deteriorating.

The Department of Civil & Environmental Engineering, sponsored by Queensland-based company Advanced Composite Technology, is developing new methods for strengthening, stiffening and repairing reinforced concrete structures, by bonding plates to their surfaces.

Students David Arrowsmith and Darren Ball (pictured) are examining the resilience of a beam that was fitted with a fibreglass and carbon fibre plate.

Tests have shown the beam can withstand up to 60% more pressure thanks to the strength and durability of the additional plate. As well as increasing the resistance of the beam, the technique is relatively inexpensive.

This research project, part of the Sponsor Program for Undergraduate Research, has many implications for civil engineering world wide and is an excellent example of how the University is working closely with industry to meet the needs of the community.

—David Ellis



Advertisement

## Adelaide wool research in Paris

Professor George Rogers, an Honorary Visiting Research Fellow in the Department of Animal Science, recently presented the John Ebling Memorial Lecture to the European Hair Research Society meeting in Paris.

The lecture commemorates the work of John Ebling, an endocrinologist who made major contributions to basic biological knowledge of hair growth in animals including man.

Professor Rogers was the only Australian at the conference which was attended by dermatologists and biomedical scientists, mainly from Europe and the USA, doing both fun-

damental and applied research into hair growth.

His lecture, "The role of wool research, past and present, in hair research", described some of the research relevant to hair growth and structure that is going on in the Wool Biology Group in the Department of Animal Science at the Waite Institute.

That research is part of Program 5 of the CRC for Premium Quality Wool, located at Waite Campus and, in collaboration with SARDI at Turretfield, is directed to producing transgenic sheep with genetically manipulated wool with altered growth and properties. Professor Rogers is Program Manager for Program 5.

## SMG UPDATE

### ▲ 1997 LOAD AND RELATED ISSUES

SMG has set preliminary target load for areas for next year as best it can given that the University has not yet had a formal response from DEETYA to its Educational Profiles submission. SMG has recently looked again at these targets, in light of SATAC application statistics, and identified those areas where making load targets might be difficult; it has made decisions about where to increase load to compensate in case there is a shortfall. By doing this now, in advance of the selection/admissions round in January, it is hoped that the last-minute load fluctuations that have characterised previous rounds will be avoided.

### ▲ NEW COMMITTEES/WORKING PARTIES

SMG has agreed to the establishment of the following advisory working groups:

- an "Intensive Semester" working group, chaired by the Convener of Academic Board, to explore and examine the issues associated with the introduction of a possible third or intensive semester, probably on a fee-paying basis.

- a "Service Centre" review group, chaired by the Acting DVCR, to look at funding mechanisms for service units, eg, the Statistical Consulting Unit.

### ▲ ECONOMICS AND COMMERCE

SMG has given in-principle endorsement to the separation of the Faculty of Economics and Commerce into two "Schools" or Faculties. Recognising that this cannot be done at this time formally without a Statute change, SMG has agreed that the next step should be preparation of a proposal for implementation on an interim basis, with review mid-1997, before any formal proposal is approved. The "siting" of the Graduate School of Management will be sorted out in the context of the incorporated Adelaide Graduate Business School and associated service agreement between the University and that school.

### ▲ STUDENT LAPTOP COMPUTER SCHEME

SMG has approved a pilot scheme in Mechanical Engineering which is expected eventually to provide each student in the department with his or her own laptop computer. A full description of this scheme was reported recently in the *Adelaidean*.

### ▲ COMMUNICATION COSTS

SMG is grappling with the fact that the University's communication costs — mail, telecommunications and Internet — are all continually increasing and the annual cost of each is considerably more than is budgeted for. SMG has asked for a statement of the relative costs of each form of communication to be prepared, so that it can be disseminated amongst the University community. Other strategies may need to be considered in future to contain these costs.

### ▲ BONUS ENTRY SCHEME

SMG recently reaffirmed its endorsement of Academic Board's recommendations in respect of the Bonus Entry Scheme, which will give high school students undertaking Mathematics II and/or a Language Other Than English a bonus for University entry, with effect from the end of 1999.

### ▲ OTHER MATTERS

Standing items on the SMG agenda include the monthly monitoring of the University's financial position and regular reports from the Lower Level Site Development Steering Group. Other matters that have occupied SMG have been: changes to the University's Purchasing Policy in light of comments by the Auditor-General on the University's current practices; approval of some exemptions to the fee levels for postgraduate coursework courses already set for 1997, but only in isolated instances and for sound reasons; endorsement of the University's Aboriginal Education Strategy for submission to DEETYA as part of the Educational Profiles exercise; approval of increases in some fees and charges in the Student Administration Branch; and endorsement of permanent rules for the award of the University Medal.

# Solving the nitrogen dilemma

The dilemma of nitrogen application in Australian vineyards is currently being addressed by one of the world's leading experts on nitrogen metabolism in grapevines. She is Professor Kalliopi Roubelakis-Angelakis from the University of Crete, who has been visiting Australia on an AVCC Felloship.

Professor Angelakis has spent time in the Department of Horticulture, Viticulture and Oenology working with Dr Robyn van Heeswijk. She will also visit other grapegrowing regions and conduct seminars at Adelaide, La Trobe and Charles Sturt universities.

Nitrogen deficiency is one of the main nutritional problems occurring in Australian vineyards. It leads to pale foliage, poor growth and a reduction in both grape yield and quality.

Deficiencies can be overcome by application of nitrogen fertilisers but excessive use of nitrogen can also cause problems by over-stimulation of growth leading to canopy shading and a consequent reduction in grape quality. Additional problems include excess nutrient run-off and pollution of waterways.

Professor Roubelakis-Angelakis has conducted research on various aspects of the metabolism of nitrogen in grapevines using the techniques of biochemistry and tissue culture and, more recently, molecular biology.



Professor Roubelakis-Angelakis. Photo courtesy of Elizabeth Butler.

Earlier this month, as part of the Waite Campus Distinguished Lecturer Series, she gave a seminar which focused on the enzymes required for the assimilation of ammonia, the primary form of inorganic nitrogen involved in synthesis and catabolism of organic nitrogen in plants.

Ammonia is critical for plant growth and development; however, it is also potentially very toxic to

cells. Assimilation of ammonia through enzymic reactions is the only way plants can reduce elevated ammonia levels and avoid this toxicity.

Professor Roubelakis-Angelakis' most recent work has investigated the role of enzyme glutamate dehydrogenase in providing this capacity for plants.

—Elizabeth Butler

## Visitor on DNA mutation quest

A baffling collection of persistently ill small children in London has led immunologist Malcolm Turner on a search to China, Africa and now an Aboriginal community in the Northern Territory.

Professor Turner, a Visiting Senior Research Fellow in the University of Adelaide's Department of Paediatrics, discovered that the sick children had a mutation in the DNA which produces mannose binding lectin — a protein with primitive antibody-like functions.

As a result of this mutation, protein levels were low in these children who suffered recurrent health problems, such as respiratory and middle-ear infections.

He said that affected children were usually between the ages of six months and two years — a period during which an infant's immune system is still immature. Up until the age of about six

months, children are protected by their mother's antibodies but the child's own immune system does not reach maturity until about two years of age.

"Every child goes through a window of vulnerability during this time," he said.

Professor Turner, who is Professor of Molecular Immunology at the Institute of Child Health, University of London, decided to examine whether the mutation occurred in other parts of the world.

Certain members of the Hong Kong Chinese population were found to have low levels of the protein and the same mutation, whereas Gambians in West Africa were found to have low levels of the protein as a result of a different mutation.

"We think the mutation in the UK and China is at least 40,000 years old having occurred in a

population ancestral to both these present day populations," Professor Turner said.

"Aborigines are thought to have come to this continent at least 50,000 years ago. It could be that they came here before the mutation occurred. On the other hand, it might explain why Aboriginal children get a lot of infections."

In collaboration with the Blood Centre in Adelaide, an Aboriginal community in the Northern Territory is being studied.

Initial results show that the three previously known mutations are not present although it is possible that further work will reveal a new kind of mutation.

The collaborative studies will continue after Professor Turner has returned to the UK and will involve other Aboriginal communities that may differ from the initial study group.

—David Washington

## 5UV NEWS

■ 5UV recently won the Tony Staley Award for "Best Innovative Use of New Technology" at the national Community Broadcasting Association's annual conference at the Gold Coast.

The \$3000 award recognises 5UV's live 24-hour broadcast on the internet, which has enabled the station to gather a world-wide audience. Thanks to Camtech, it's one of only two radio stations in Australia broadcasting live on the net.

■ For those who missed the first broadcast of 5UV's program on the 75th anniversary of the

Soroptimists — you have another chance.

Soroptimist International is the world's largest service organisation for women, and its Adelaide club is one of 3000 across the globe.

You can hear the Soroptimists' story by tuning into 5UV (531 on the AM dial) on Friday, 27 December at 6.00pm, or on Saturday, 28 December at 2.00pm.

Or point your internet web browser at <http://www.adelaide.edu.au/5UV/>

Cassettes of the 75th anniversary program are also available for purchase from 5UV. Phone Jane Wilson on (08) 8344 7925.

## Alumni IN BRIEF

### University Scarves

These hand painted, 90cm silk squares were specially commissioned by the Alumni Association and made in Adelaide.

The scarves are in navy and other hues of blue with gold highlighting. Their understated elegance would make them a most suitable gift for Christmas, Graduation and for visitors to the University.

Available now at A\$48.00 (p&h add A\$5.00 for Australia, A\$10.00 overseas). Bankcard/Visa/Mastercard. Cheques or Money Orders payable to The University of Adelaide. Telephone orders call 8303 5800. Fax 8303 5808.

Email [gsauer@registry.adelaide.edu.au](mailto:gsauer@registry.adelaide.edu.au) or [aeccles@registry.adelaide.edu.au](mailto:aeccles@registry.adelaide.edu.au)

### Parking permits

Many Alumni members in Adelaide have after hours University parking permits which allow on campus parking between 4.30pm and 9.15am on weekdays and all day on weekends and public holidays (no parking Christmas Day!).

These permits expire on 31 December 1996 and 1997 permits are now available from the Alumni Office at \$40.00.

A parking infringement is committed when a vehicle is parked whilst displaying an expired permit and infringement notices issued for such offences are not cancelled.

After Hours permits are available to Alumni members over the phone in the same way as membership renewals and you will need to be able to quote your registration number and vehicle type.

# A Portrait of Dr John Bray

The John Bray Law Chapter of the Alumni Association together with The University of Adelaide Foundation and the Libraries Board of South Australia is publishing a collection of essays commemorating the life and work of the late Dr John Bray.

During his distinguished career Dr Bray held office as Chief Justice of the Supreme Court of South Australia and Chancellor of The University of Adelaide. His knowledge and appreciation of the classics and the law were legendary and he had a significant influence on the development of public libraries and other cultural and educational institutions

in South Australia.

Edited by Professor Wilfrid Prest, the volume includes contributions by Dame Roma Mitchell, Justice Michael Kirby, Andrew Ligertwood, Jean P Whyte, Peter Ward, Arthur Rogerson, Brian Medlin, Andrew Taylor and Michael Abbott QC.

The volume will be available in hard (A\$45) and soft (A\$25) covers and pre-publication orders are now being accepted. Price includes postage and packing. Call the Alumni Office on 08 or 61 8 8303 5800 (fax 08 or 61 8 8303 5808) to order or for an order form. Publication expected in March 1997.



Former Chancellor Dr John Bray — to be honoured in commemorative volume.

## Thank you to all

A most sincere thank you is extended to members of the Alumni Association and members of the University community who have supported the Association through membership and though attendance at the various Alumni activities and events in 1996.

Your support of the Association and the University in particular is very much appreciated.

The President, Mr Bill Scammell, the Chair Dr Harry Medlin and the Trustees of the Alumni Association wish you a safe and happy Christmas and New Year as do the staff of the Alumni Office — Adrienne Eccles, Julie Vozzo, Kinga Gnadiak and Geoff Sauer. We look forward to seeing you in 1997.

### Membership Renewals

Membership renewal notices have been sent out recently. Your past support is very much appreciated and the Association and the University look forward to your continuing support.

Membership can be renewed over the phone calling Julie Vozzo on 8303 5800 or Kinga Gnadiak on 8303 4275 and quoting your Bankcard, Visa or Mastercard number.

### Alumni Office Closure

As in previous years the Alumni Office will be closed from 25 December 1996 until 3 January 1997 (inclusive).

# The Changing Face of Child Care at Adelaide University

Over its short life, historically speaking, child care has evolved into a respected, professionally recognised industry, with a national benchmark of quality in the field of care and education for pre-schoolers.

The Observatory Child Care Centre is operated by University of Adelaide Child Care Services Inc. It is located in the grounds of the University's North Terrace Campus.

The Centre has recently been through the accreditation process and has gained the highest level possible in the 52 standards, which examine the interactions, management, health, safety, nutrition, programs, and other aspects of this complex field.

The Centre is proud of its achievements. Its Board of Management, the Parent Advisory Group, and the recently appointed Director, Robyn Moore, are looking forward to an increase in physical space and numbers of children from the New Year.

From 6 January, 1997 the Johnson Building will open as part of the Observatory Centre, which will enable the Observatory to cater for higher numbers of children under

three. The Johnson Building will provide high quality accommodation for children between three and five years of age.

The Observatory will be refurbished so that the Centre does not have to turn away families with babies and toddlers due to lack of space, as has happened in previous years.

"We are here to meet the need of the student parents and staff as a priority of the commitment that the University has made to women and children," Robyn Moore says.

"Without this high quality of child care — on campus for convenience — women cannot further their study or access to work.

"I see that when child care is needed, it must be affordable, accessible and used by the parents with confidence that their child is getting the best possible care."

Ms Moore — who is the parent of five children and grandmother of one (attending the centre on a casual basis) — says that this is a challenging time for community-based centres, which must ensure that they are managed in an efficient way without impact-

ing on the care given to the children.

She is currently working the Observatory through changes which include the loss of operational subsidy from July 1997. Fee increases may be necessary, but will be kept as low as possible, Ms Moore said.

"Our commitment to the social justice issues around women and children has never been greater. Child care is a right, not an added-on afterthought," she says.

The Observatory Centre also caters for non-University members of the community, and provides full-day and half-day care on a permanent and part-time basis.

It is also able to assist those who need occasional care, emergency care, vacation care (for children up to 9 years of age), and interstate, country or overseas visitors for short or longer periods.

"We are a culturally diverse centre, with an experienced staff team," Robyn Moore said.

"This is an exciting time, with the extension to our service, and we welcome visitors and those interested in using our facilities."



Robyn Moore and some of her charges at the Observatory Child Care Centre. Photo: David Ellis

• Robyn Moore and administrative assistant Helen Brougham can be reached on 8303 5429, or faxed on 8303 4404, or through Ms Moore's mobile (0414 825 316).

• The University also provides child care facilities at the Waite Campus Child Care Centre (enquiries to Ms Kaarin Wilkinson, Director, tel 8303 6560), and at Roseworthy Campus Child Care Centre (enquiries to Ms Glenys Yap, Director, tel 8303 7895).

# Project adapts Australian beef to Korean taste

The taste and texture of Australian beef will be "tailor-made" for Korean palates in a new \$350,000 South Australian research project.

The collaborative project, funded by the Australian Research Council and Elders Ltd for the next three years, will allow researchers to investigate the genetics of fat metabolism and produce cattle that meets Korean and other specific market requirements.

Researchers from the Waite Campus, SA Research and Development Institute (SARDI) and Primary Industries SA (PISA) will compare the fatty acid composition of the Korean cattle breed, Hahnwoo, with a wide variety of Australian cattle breeds.

The aim is to determine which Australian breeds can meet Korean beef cattle market requirements, so that future breeding programs will match consumer tastes and increase export market share — benefiting cattle producers, feedlots and meat processors.

Cattle from PISA's Struan Research Centre at Naracoorte and the University's Martindale Holdings property at Mintaro will be utilised for this work. These cattle represent the widest range of *Bos taurus* breeds available for experimentation in the world.

Program Leader Dr Wayne Pitchford, from the University's Department of Animal Science, says the project is a terrific opportunity for joint work between several of the leading agricultural and research institutions in the State.

"This project will greatly increase our knowledge of the genetic basis of carcass quality traits in beef cattle through strong collaboration with research staff who are expert in animal genetics and production," Dr Pitchford said.

"The grant complements the JS Davies Gene Mapping project and the Southern Crossbreeding project which operates in collaboration with PISA and SARDI.

It is also the start of a long-term relationship with Elders, which is an innovative company leading the way in agriculture today."

Mr Greg Hunt, General Manager Agency Operations for Elders, is very enthusiastic about the project.

"Success with this initiative will allow Australian producers to capture premium niche markets in Korea," he said. "The deregulation across the Korean meat industry combined with an increase in their standard of living will result in increased levels of meat



L to R: Dr Wayne Pitchford and Dr Brian Siebert from the Department of Animal Science. Research will assist production of beef for specific market requirements. Photo courtesy of Elizabeth Butler

consumption, particularly at the premium end of the market.

"Elders has been working with Korean partners for around twelve

months to secure market opportunities in Korea for Australian producers to link into," Mr Hunt said.

—Elizabeth Butler

## ACCOMMODATION

**ADELAIDE:** SE corner, close to transport, shops, university, fully furn row house, 2 br, 2 bathrooms, sitting, family rm/kitchen, air cond, garden. Suit visiting academic. Available late March - early July. Ph 8223 6398 or email: wrprest@arts.adelaide.edu.au

**ADELAIDE:** Modern townhouse to share. All mod cons, excellent location, avail from 22 December. \$80 pw + exp. Ph 8224 0030.

**GLEN OSMOND:** 3 br, fully furn house. Close to good schools, walking distance to Waite campus. 2 bus routes to city & near circle line route. No pets. Assistance given with gardening. Avail February 97. \$200 pw + bond. Ph 8379 4869.

**GRANGE:** Esplanade - 2/3 br half house for rent. Private backyard, garage. Avail 19 January. \$210 & \$170 each. Ph 8302 4592 (leave message).

**HIGHGATE:** 1 br unit close to Waite, 3kms to city. Quiet, tree-lined street. Carport, telephone, fully furn, b-in robe, small garden. \$82 pw + bond. Ph 8271 3386.

**LOWER MITCHAM:** 3 br bungalow style house, optional fully furn/equipped, 5 min walk to Mitcham station and shopping centre. Suit visiting academic and family in first semester; avail February - July 97. \$190 pw. Ph 8201 3221 or 8201 3522 or email: christine.steele@flinders.edu.au

**MARDEN:** Female wanted to share clean, friendly and spacious, 3 br home. Excellent location, close to city, minutes from shops and buses. \$40 pw + exp. Ph Wayne 8365 7580.

**MORPHETT VALE:** Female wanted to share unit. Unfurn room avail with wardrobe, close to transport. \$60 pw + exp. Ph Sheree 8382 4146.

**NORTH ADELAIDE:** 1 br flat, pool, garden. \$110 pw (incl gas & elec). Ph 8267 1081.

**NORTH ADELAIDE:** 2 br, fully furn flat, large drawing rm, separate dining rm, pool, garden. \$280 pw (incl gas & elec). Ph 8267 1081.

**NORTH ADELAIDE:** 2 br, bluestone cottage, excellent location, air cond. \$220 pw (reference required). Ph 8267 5192.

**NORWOOD:** 2 br unit, avail October 97 - June 98. Rent approx \$90 pw. Ph Greg 8204 1537.

**NORWOOD:** 3 br house, fully furn, equipped with crockery, cutlery, etc. Between The Parade & Kensington Rd. Close to shops, schools, 2 bus routes to North Tce (10 mins). Avail mid January to mid July 97. Ph K Baines 8303 5946 (w) or 8364 2114 (h) or email: kbaines@aelmg.adelaide.edu.au

**TORRENS PARK:** 2 br unit with garage, pleasant surroundings. \$100 pw. Ph Mr Carter 8272 1780.

**WANTED:** 3 to 4 br Furn Hse with easy access to the Womens' and Childrens'. Required for doctor, wife

## Adelaidean

### CLASSIFIED

and four children, mid Feb to Aug 1997. Contact rnairen@globalnet.co.uk or c/o Dept Pathology, Womens' and Childrens' Hospital.

**WANTED:** Senior academic and wife require fully furn flat/house/townhouse (2 br) from early July to end of November (or December, if necessary). Reply to: Richard Hill, Dept of Maths, Michigan State University, E. Lansing, MI 48824 USA, tel (517) 882 6066, email: hill@math.msu.edu

### FOR SALE

**BED:** Space saver single bed and cupboard. Bed bolts to top of cupboard. Green-stained timber and ply, louvre doors on cupboard. \$80. Ph Sue 8303 4015.

**BEDS/MATTRESSES:** Brand new, very cheap. Ph Tina 8379 1910.

**BIKE:** Girl's, suit 6-10 year old, white tyres and trim, mauve frame, good condition, \$80. Ph Sue 8303 4015.

**BOAT:** International Cadet, fibreglass dinghy, excellent condition, custom-made trailer, full set of sails. Suit 12-18 yrs. \$1,000. Ph Sue 8303 3012.

**COMPUTER:** P686-120+, 15" monitor, 850Mb HD, Windows 95 CD, 16 Mb RAM, Pioneer 4X CD-ROM drive, SB AWE 32 sound card. \$1,500. Ph Michael 8290 6224.

**HOUSE - CRAFTERS:** 5 mins to freeway. 32 sq umr, 3 br, ensuite to master, walk-in dress, built-ins, huge rumpus, galley kitchen, twin garage, near 1/2 acre, solid brick, no cracks due to expansion in wall/keyway design, masterbuilt, rake ceilings, solar hot water, walking distance to Mt Barker golf course, Heysen Trail, mins to facilities. \$175,000 (assistance with finance if required). Ph John Brinkman 8332 7064 or 0414 833 2706.

**HOUSE - MACCLESFIELD:** 4 br home with ensuite, dining and family rooms, tennis court, in-ground pool, paddocks and pony shed on 2.5 acres. Very peaceful surroundings. \$209,000 (neg). Ph John 8340 2482.

**HOUSE - MODBURY NTH:** 3 br, close to O-Bahn, school, hospital, TTP. (Currently rented at \$155 pw - same tenants for 3 yrs, who wish to stay if possible). \$96,000ono. Ph 8265 4028.

**MICROSCOPE:** Steinberg, 1,000 magnification, wooden carrying case, pre-war model, pristine condition. \$350 (reputable valuer's recommendation). Ph Clare 8384 6764.

**MISC:** Full size medical skeleton, \$900 ono. McCulloch petrol blower vac, \$150. Weber bbq, \$100. McCulloch petrol weed eater, \$175. Vertical grill, \$40. Elna ironing press, \$150. Ph 8391 2693 (after 7pm).

**MISC:** Windsurfer with 2 sails, \$375. Curtain rails (draw strings) from 1.5m to 4m in length, \$65 (the lot - 6). Ladies conventional bicycle, \$90. Gents semi-racer, \$90. Ph 8302 2351 or 8235 9496 (ah).

**PERSIAN RUGS:** (4) 2 x Tabriz, 1.02x1.56m, medallion, green, rust, blue and red, \$1,300 each. 2 x Kashan, 1.36x2.19m, red and blue. \$2000 each. All offers considered. Ph 8239 0436.

**PIANO:** Alex Steinbach, Victoriana style, hardly used. \$2,800 ono. Ph 8332 3037.

**VACUUM CLEANER:** Sanyo 850W, brand new - still in box (unwanted gift). \$89 ono. Ph 8293 0436.

**VIDEO CAMERA:** JVC GR45 single owner, excellent condition. Extras incl compact carry case, spare battery, Lomex AF video telephoto 2.0x hi-resolution lens. \$1,000. Ph Graeme 8373 4123 (ah).

**VW BEETLE:** 1966, blue, runs well, good cond, 7 mths reg. UDC 190. \$2,100 ono. Ph 8264 9480 (ah).

### DEPARTMENTAL

**EQUIPMENT:** 1 flat bed Mayford Lathe. 1 Comet 3 oxy welder. 1 CIG Transarc junior arc welder. Tenders in a sealed envelope marked "Equipment" to Terry Williamson, Architecture by Friday 20 December 1996.

**FORD FESTIVA:** 1994, bright aqua, manual, air cond, power steer, immobiliser, VOC 436,

19,000km. Inspection by arrangement with Lisa Pettit, 8303 5174. Tenders in a sealed envelope marked Ford Festiva to Patricia Cree, Director, Public Relations & Marketing by Monday 23 December 1996. No tender necessarily accepted.

**IBM PCs:** 486 and 386 computers. Further details and tender forms available from <http://www.eleceng.adelaide.edu.au>, the Electrical & Electronic Engineering Office or David Bowler, 8303 4706. Tenders close 4.30pm Tues. 17 December 1996.

**MITSUBISHI:** NK Pajero GLX, 1994, wagon, silver, VPC 568, 60,000km, manual, air cond, bull bar, cargo barrier, towbar. Ph Chris Grivell, 8303 3259. Tenders in a sealed envelope marked Tender No W187 to the Purchasing Manager, Waite Campus by Friday 20 December 1996.

### MISCELLANEOUS

**EXCITING OFFERS:** Movie tickets - any time, any session, Hoyts/Greater Union/Wallis - \$6.95 ea. Uni-dial phone cards. Lab coats - \$10. Available from Students' Association, George Murray Building.

**LAMINATING:** ETU Waite offers laminating services. A4 - \$2.50, A3 - \$4.50. Drop off in the morning and pick up after 4.30pm, same day. Ph 8303 7209.

### WANTED

**WORK:** Garden or household jobs. \$8 per hr. Ph Sarah 8359 0427.