

# MONTAGE

NEWS FROM THE CAMPUSES OF MONASH UNIVERSITY

Volume 2 Issue 5

June 1991

## TV degree broadcasts to start next year

University degrees will be offered by television next year for the first time in Australia. A Monash-led consortium has been awarded a \$2 million contract by the Federal Government to provide pilot open learning broadcasts from February.

The ABC will be host broadcaster, providing broadcast time free of charge from 7 to 7.30 am each weekday, and a repeat of all courses on Saturday mornings.

The first year courses for first semester probably will include marketing, Australian studies, psychology and biology. Possible second semester subjects are law, accounting, engineering and humanities.

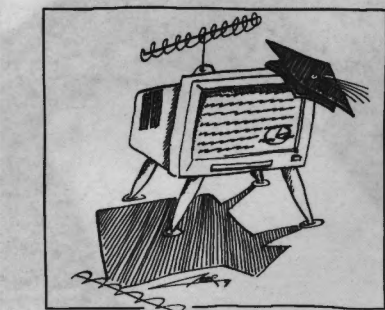
The consortium – Monash, the University of New England and the University of South Australia – was one of eight competitors for the project.

Monash now will invite Deakin University, Griffith University, Wollongong University and the WA Distance Education Consortium to take part. Deakin will be invited to act as the project's evaluator.

Initially, the consortium intends to adapt university-level TV educational programs from the UK, US, Canada and Hong Kong. Australian studies programs will be produced by the ABC.

The overseas material will be augmented by local segments, such as a structured studio tutorial or a relevant interview. Each university in the consortium will provide 13 episodes of TV course material, amounting to 10 units over a full year.

Distance education materials will be provided to students by the universities on a "cost-recovery" basis, ranging from \$50 to \$100 for each subject. Students will cover the same curriculum, to the same standard, as campus-based and distance education students.



Students also may sit a "challenge examination" for a similar cost. Those who pass will be awarded credit for further study in conventional university courses, but not automatic entry.

There will be no prerequisites or entry quotas. Students will not pay into the Higher Education Contribution Scheme (HECS). Project Manager, Mr Gavin Moodie, said the lack of entrance hurdles attracted students to open learning.

"It is an innovative form of education which makes use of new technologies, and also gives us access to a new audience," he said. "A lot of people watch TV and feel they are being informed, but they never take it much further."

"In addition, teaching by TV offers huge potential savings in the cost of delivering education. We could have 1000 students sitting and passing exams for about the same cost as providing 100 new full-time student places."

"This is obviously attractive, given the high level of unmet student demand and record over-enrolments. It could work out to be radically cheaper than traditional forms of education."

"Just as almost everyone can afford to have a phone or a bank account or a car, more people could then afford a university degree – rather than just 11 per cent of the population."

Project Director and Monash Registrar, Mr Tony Pritchard, said the partnership between the universities and the ABC would extend access to university study, and offer opportunities to those who had previously been denied a university education.



Picture: BRIAN CARR

Ms Merete Smith with one of the rare children's books from the exhibition.

## Collectable and classic kids' books uncovered

What do *Aesop's Fables*, *The Comic Adventures of Old Mother Hubbard and Her Dog*, and *Little May and Her Friend Conscience* have in common? They are all children's books written before the 20th century.

These books, together with more recent ones such as *Dot and the Kangaroo* and *Blinky Bill and Nutsy*, are on display in 'Children's Literature 1476-1946' at the Main Library, Clayton campus.

The exhibition shows British and Australian children's books from the Rare Books Collection – in particular material from the Lindsay Shaw Collection of Australian Children's Books. With his donation of about 6000 books, Mr Shaw, a former Secretary of the Faculty of Education, is one of the main benefactors of the Monash University Library.

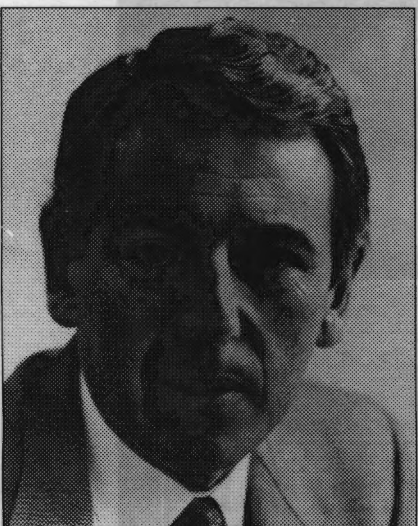
"Apart from Australian children's books, Lindsay Shaw also has donated general Australian literature and an important collection of Walter de la Mare material, also held in the Rare Books Collection," Acting Rare Books Librarian, Ms Merete Smith said.

"His collection contains much more than the obvious children's classics commonly available, including much forgotten or little known material and some with obscure or hidden Australian relevance."

William Caxton, who introduced the art of printing into England, is represented by a modern facsimile of a book on table manners for children, first printed in 1476. The earliest original book in the exhibition is an edition of *Aesop's Fables* from 1518.

The exhibition concentrates on older material, and very little published after World War II is included. Australian material includes books by E. W. Cole, the founder of Cole's Book Arcade in Melbourne, and early editions of works by Ethel and Lilian Turner, Mary Grant Bruce, Ida Rentoul Outhwaite and May Gibbs. Most of the books are illustrated, many in colour.

The exhibition, outside the Rare Books Room, will continue until 28 June.



Mr Tony Pritchard.

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- Curing concrete cancer
- Revealing a mystery gene



# AROUND THE CAMPI

## CLAYTON

Professor Geoffrey Thorburn, Chairman of the Department of Physiology, has been elected Fellow of the Australian Academy of Science.

His election acknowledges his outstanding contribution to the study of reproductive physiology, spanning 35 years and three continents.

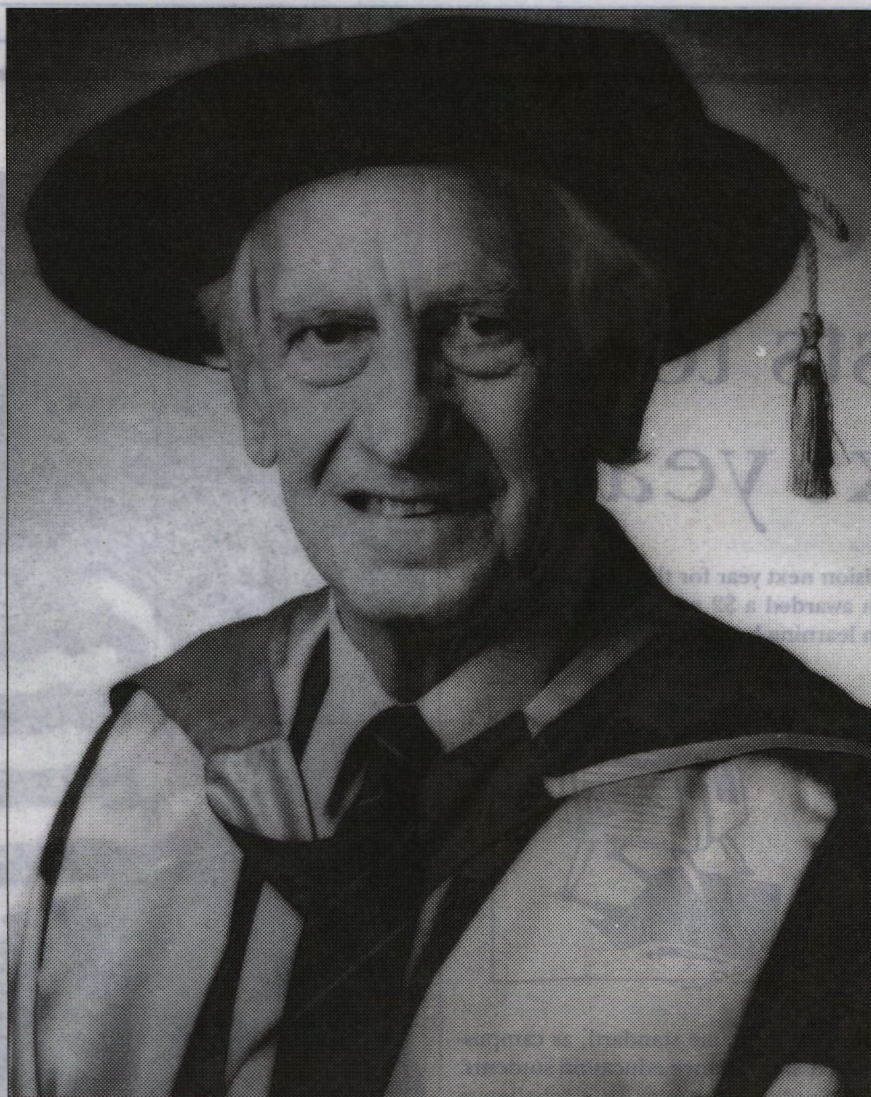
Professor Thorburn's recent research into the potential link between foetal growth, development and parturition has led to a new unifying concept of the initiation of the birth process.

His recent honours include a Commonwealth Senior Medical Research Fellowship at Cambridge University; the Christenson Fellowship at St Catherine's College, Oxford and the Marshall Medal of the United Kingdom's Society for the Study of Fertility.

The inaugural Elizabeth Burchill Prize for Excellence in Australian Studies was awarded to Ms Patricia Major last month at an Australian studies post-graduate seminar held at the Australian Studies Centre.

An annual award of \$500 will be made to the most outstanding student completing the requirements for the MA (Australian Studies), based on results for all enrolled units.

The award is made possible under provisions of the Elizabeth Burchill Fund, established with the broad purpose of encouraging Australian studies. Elizabeth Burchill, a benefactor to the university, is the author of five books about her life and work as a nurse on remote mission stations in outback Australia, New Guinea, Thursday Island and Labrador; and in the Spanish Civil War and the Middle East during World War II.



Emeritus Professor John Legge, the Dean of Arts from 1978 to 1986, last month was awarded an honorary degree of Doctor of Letters by Monash University.

He was presented with the honorary doctorate by the current Dean of Arts, Professor Robert Pargetter, at the faculty's graduation ceremony in the Robert Blackwood Hall on 3 May.

Professor Legge, foundation professor of history at Monash from 1960 to 1977, delivered an occasional address at the graduation.

Monash has been presented with a St John Ambulance First Aid Awareness Award. The award, which recognises the university's commitment to first aid training, was accepted by the Occupational Health and Safety Branch.

The branch has promoted a high level of first aid awareness throughout Monash with a range of first aid courses. From 1988 to 1990 more than 300 staff have been trained in various levels of first aid and now most areas of the university have first aid officers.

"Community awareness of first aid has improved. This has made the response to our courses very encouraging," said Occupational Health Nurse, Sister Maureen Peterson, pictured below with Associate Comptroller Mr John White.

"Monash was chosen for an award because of its lengthy and established commitment to first aid and in recognition of its commitment to improving First Aid awareness within industry and the community," she said.

Other components of first aid training such as heart-lung resuscitation and first aiders' information sessions are also provided by the Occupational Health and Safety Branch. Courses have been run in emergency support, chemical hazards, prevention of health risks to first aiders and treatment of injuries and other disorders.



Publications secretary at *Lot's Wife*, Ms Sandy Guy (above), is travelling to England next month as part of a new staff exchange program.

The program, organised by Career Planning and Development, is a vehicle for strengthening links between Monash and other institutions, as well as giving staff experience in a different workplace.

Ms Guy, the second person from Monash to take part, will be working as an editorial assistant in the Information Office of the University of Bristol for four months. She is exchanging jobs with Ms Genevieve Hawks.

At Bristol, Ms Guy will be working in areas including production and graphic design. "This exchange gives me a unique opportunity to develop both personally and professionally," Ms Guy said.

"Specialising in these particular areas will enhance my knowledge in this field. These skills can then be brought back and applied to my job here at Monash."

## MONTAGE

Montage is published by the Public Affairs Office, first floor, Gallery Building, Monash University, Wellington Road, Clayton.

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Phone (03) 565 2085 Fax (03) 565 2097

Proudly produced by Monash University Publishing and Advertising, room A1.26D, Caulfield campus using Macintosh® desktop publishing equipment.

Montage body text in New Baskerville 9 pt. Research Monash body text in Century Old Style 9 pt.

Imageset by Pageset, 4 Palmer Court, Mount Waverley.

Printed by Syme Media (Inc. in Victoria) 142-144 Frankston-Dandenong Road, Dandenong.

Registered by Australia Post: Publication no. VBG0435.

## CAULFIELD

The Minister for Police and Emergency Services and Minister for Corrections, Mr Mal Sandon, took an anthropology and sociology class at Caulfield campus late last month. The Director of Prisons, Mr John Griffen, attended the class, which is usually taken by senior lecturer Mr Barry Ellem.

Mr Ellem, an official visitor at the Melbourne Remand Centre, teaches a penology subject that focuses on the history of imprisonment, the problems of the modern prison system, penal

## GOLDEN PACIFIC

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Behind Robert Blackwood Hall, 12.15-12.45 pm

Animal House Building 41, 12.45-1 pm

Works and Services, 1-1.15 pm

Engineering, outside Building 35, 1.15-1.45 pm

Biology, outside Building 17, 1.45-2.15 pm

Mathematics and Computer Centre Building 28, 2.15-2.30 pm

Next delivery day Wednesday 19 June.



## Aboriginal student group graduates

One of the largest groups of Aboriginal university students to graduate at the same time received their degrees at Monash last month.

The group consists of six students from the Monash Orientation Scheme for Aborigines (MOSA).

MOSA is the first step towards a university degree for many mature-age Aboriginal students who lack the usual university entry qualifications. Most have studied no further than Year 10, some only as far as primary school.

Established in 1984, MOSA offers bridging programs for entry into arts and science degree courses.

A one-year course prepares students for admission into the faculties of Law, Arts, and Economics Commerce and Management.

A two-year course is offered for entrance into the faculties of Medicine, Science and Engineering.

This year 31 students are enrolled in the bridging programs: 17 in arts and 14 in science.

In seven years, 82 students out of a total of 93 have completed the MOSA program successfully.



The six students are (from left, front) Sonia Smallacombe (BA), Helen Curzon-Siggers (BA), Angela Singh (BEd) and Rita Stewart (BA); (rear) Robin McNamee (BA) and Virginia Robinson (BA).

## Canberra posting for VC's education adviser

Professor Leo West, Adviser to the Vice-Chancellor, has been appointed to a senior education advisory position in Canberra.

His appointment as Counsellor to the National Board of Employment, Education and Training (NBEET), with special responsibility for the Higher Education Council, begins immediately.

In his new role he will work closely with the Chairman of NBEET, Professor Ian Chubb.

"Together we will be able to provide a university perspective in advice reaching the Minister," he said.

The issue of "quality of education, especially teaching" would be tackled head on in 1992.

Professor West has been at Monash since 1975, initially with the Higher Education Advisory and

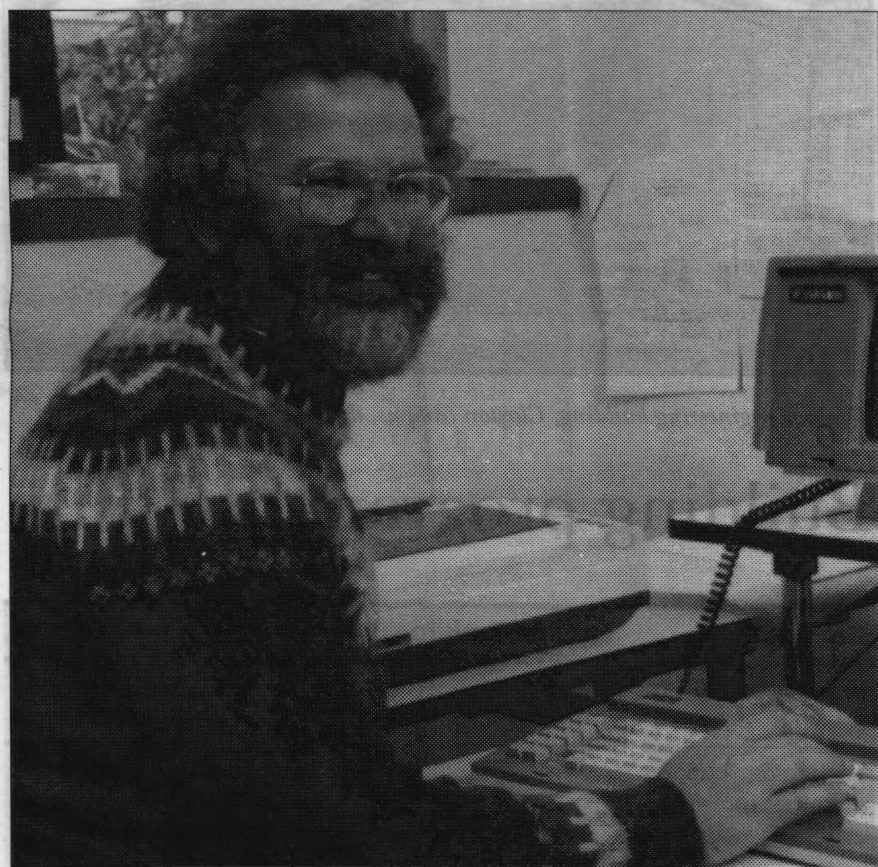
Research Unit (HEARU), and has been the Vice-Chancellor's adviser for the past 18 months.

"The merger at Monash has been easily the most successful of any Victorian university," Professor West said.

Monash was now well placed to take advantage of the next decade's challenges because of the merger and the Vice-Chancellor's policies.

"I'm also particularly grateful for the level of cooperation that I have received from the deans," he said.

At NBEET, Professor West replaces Professor Michael Koder, who has become a Pro Vice-Chancellor at the University of Sydney.



Professor Leo West: quality of teaching to be tackled head on.

## Bus loop for exams

Monash is providing a special bus service to connect the Clayton campus and Caulfield Racecourse during mid-semester exams.

The racecourse is being used as a major exam venue this year on a trial basis. Exams are being held there from 12 to 14, and 17 to 21 June.

The Comptroller, Mr Peter Wade, said the loop was a limited service for students with no other means of transport. "Wherever possible, students should make use of car pooling or public transport," he said.

The direct service to the racecourse will depart from the Clayton campus bus loop at 8.15 am and 1.10 pm on each exam day. Return services will leave the course at 11.30 am, 12.30 pm, 4.15 pm and 5.15 pm.

Drinks and snacks will be on sale outside the exam centre at the racecourse before the morning and afternoon exam sessions.

Catering facilities at the Caulfield campus also will be open, and other food outlets are located in the adjacent Caulfield Plaza shopping centre.

## New magazine launched

A new magazine for Monash alumni, friends and business leaders was launched last month.

The *Monash Quarterly* - a glossy, colour publication - is designed to keep the university's supporters in touch with people and research at Monash.

The first issue includes feature articles on Dr Andrew Prentice's astronomical predictions; Dr Alan Trounson's in vitro work; Professor Margaret Kartomi's thoughts on performing arts; Dr Keith Allan's euphemisms; Dr Colin Hope's Egyptian dig and Ms Greta Bird's approach to multicultural law.

Launching the magazine, Deputy Vice-Chancellor Professor John Hay said the university now had a range of publications which reflected its diversity and excellence.

He said the publications, including *Montage*, *Business Victoria* and *Etcetera*, meant Monash was at last presenting itself appropriately to the wider community.





## Unmet demand increases 40 per cent

Almost 30,000 eligible applicants failed to gain a place at higher education institutions in 1991, according to a survey released by the Australian Vice-Chancellors' Committee (AVCC).

AVCC President, Professor Ken McKinnon, said that between 19,700 and 29,100 were turned away: an increase of more than 40 per cent compared to 1990. In Victoria, 18 per cent of eligible applicants did not win a place.

"The unmet demand increase is despite heavy over-enrolment by higher education institutions, caused in the major part by the Federal Government's dual target policy," he said.

Higher education institutions are required to meet two targets when enrolling students: a commencing student load target and a total student

load target. Places for commencing students cannot be transferred to continuing students, or vice versa, if there is increased demand.

Institutions also face the possibility of reduced funds if one target is not met, even if the other is exceeded. The AVCC wants each institution to allow flexibility in its commencing load target, where institutions meet the total target for any one year.

Professor McKinnon said the AVCC's call for an additional 6000 student places in 1991 seemed "quite conservative" in relation to the overall

unmet demand figure. The Government has provided an additional 4800 places next year.

He said data was collected from tertiary admission centres and institutions, and covered all rounds of offers of places made by the end of April.

"The survey was conservatively based; even the high unmet demand figure of 29,100 is considered by some as being low," he said.

While there were differences between states, the level of unmet demand has increased more for females than males.

Data collected by broad field of study showed lower levels of unmet demand in areas in which there are tighter entry constraints.

"Areas that are not targeted as priority fields by the Government are beginning to experience higher levels of unmet demand as a result of the redeployment of internal resources by institutions," Professor McKinnon said.

The survey showed that the Government's moves to encourage more people to gain better qualifications were working.

The number of people applying for entry based on the completion of the final year of secondary school had increased.

However, the Government could not encourage young people to aspire to a university education and then not provide more places and the infrastructure to support them.

## Deans' role to be strengthened: VC

The role of deans at Monash is to be strengthened, according to the Vice-Chancellor, Professor Mal Logan.

He told the University Council that, from his discussions with some staff, it was clear that the present system of devolution of responsibility at Monash was not operating satisfactorily. It also was clear that in some cases, faculty

boards were not acting as fruitful forums for debate on policy.

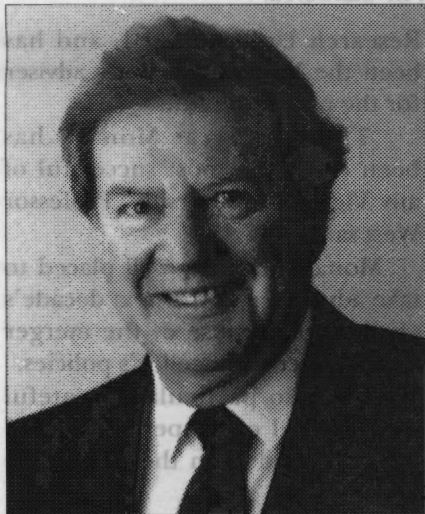
"We have a system whereby deans are in a key position to provide a link between departments, faculties and the central administration," Professor Logan said.

"I want to strengthen the role of deans by giving them more responsibility. It's my impression that they are willing to meet the challenge.

"We deliberately have a very flat administrative structure with only two deputy vice-chancellors, in contrast with a smaller, nearby university which has up to six deputy or pro vice-chancellors.

"Therefore, it is essential that deans assume more responsibility for maintaining the vital communication links between the administration and departments."

Professor Logan also told the council that the two deputy vice-chancellors, Professor Hay and Professor Vaughan, would be attending as many faculty board meetings as possible.



Professor Mal Logan: present system not operating satisfactorily.

## AVCC delays pilot credit transfer project

Australian universities have put on hold plans for a national credit transfer system.

The Australian Vice-Chancellors' Committee (AVCC) Board has instead established a committee to examine what credit transfer arrangements already are in place.

The committee is to report back to the AVCC, although no date has been fixed.

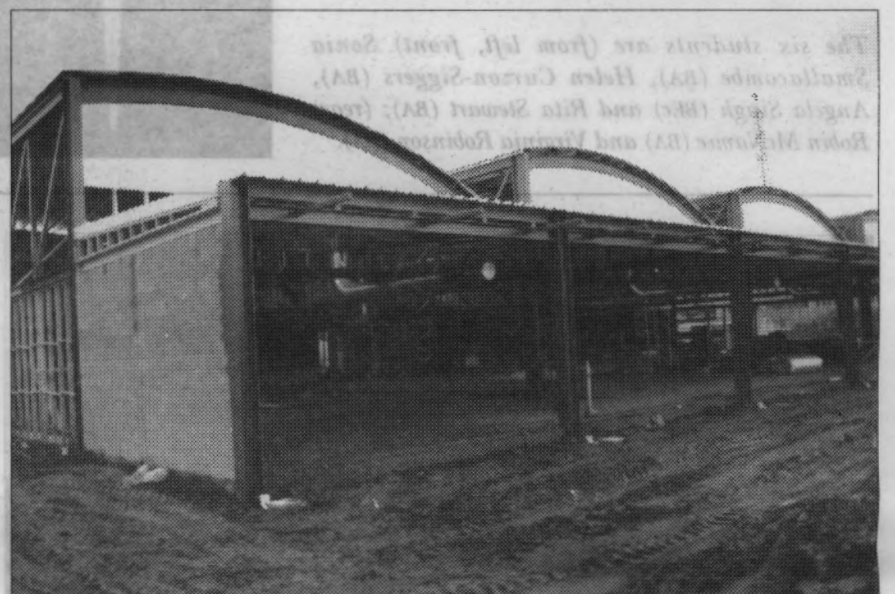
While the AVCC says it remains committed to improving such arrangements, the decision will delay a pilot project which was to have been carried out this year in business and computing science.

Plans for a national credit authority which was to have been operating by 1992 also have been shelved.

The plans were generated by a team led by the Monash Registrar, Mr Tony Pritchard, who said the decision would "slow things down". Mr Pritchard said he would continue talks with other interested parties so the project did not lose its momentum.

A national credit transfer authority would have the power to determine what level of credit a university applicant should receive for previous study undertaken at a university, TAFE college, or in work experience.

Once the authority had assessed the applicant, it would place the student in a higher education institution. The authority is expected eventually to come under the auspices of the AVCC, with the Federal Government lending initial financial support.



The new engineering building, Clayton campus, due to be completed in December.

## Building program progress

Building	Cost (million)	Progress
Engineering building (Clayton)	\$8.2	Due to be completed December 1991
Technology building (Frankston)	\$6.5	Tender let, construction due to start June 1991, due to be completed November 1992
General teaching building and Distance Education Centre (Gippsland)	\$7.75	Tenders now being called
Business (Caulfield)	\$8.47	Master plan now approved by Council. Discussions under way with architect. Tenders expected by December 1991
Computer science and general science building – actually two buildings (including Medicine)	\$8.89	Tenders in August 1991
Library extension	\$7.03	Funds set for 1992: to be brought forward after negotiations with DEET. Planning has begun pending approval.
Student residences		
• Gippsland	\$0.5*	Completed
• Frankston	\$0.5*	Purchasing properties
* amounts to be matched by Monash		

Information supplied by Monash University Council.



## Geographers figure highly in world rankings

The university's department of Geography and Environmental Science has featured prominently in a list of recent international citation counts for human geography.

Two Monash academics (one past, one present) were ranked in the top 10 of those whose work was cited most by their peers between 1984 and 1988.

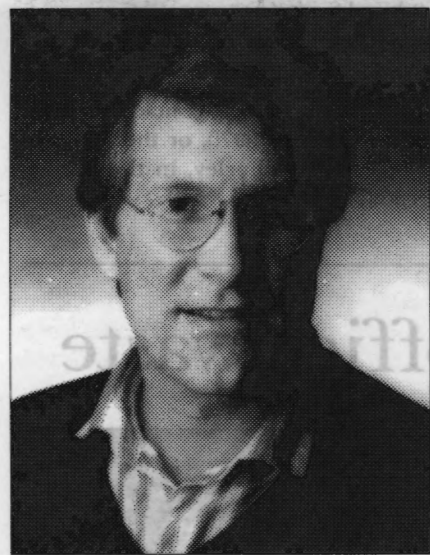
They are Head of the Department of Geography and Environmental Science, Professor Gordon Clark (ranked number eight with 353 citations), and Dr Ron Johnston (number four, 650 citations). Dr Johnston was the department's first PhD and is now a lecturer at Sheffield University.

Citation counts are generally considered to be one of the best indicators of the impact that individual academics have on a discipline and its direction.

The counts were published in a recent issue of *Transactions of British Geographers*. To compile the list, author Andrew Bodman, associate professor of geography at the University of Vermont, drew upon sources which review more than 4500 journals.

According to Bodman's table, Professor Clark, an expert in urban structure, also recorded the greatest rise in ranking of any of the 'master weavers', whose work was cited heavily.

Ranked 43 at the beginning of the 1980s, Professor Clark was cited in 201 more journals in 1984-88 than in 1981-85.



Professor Gordon Clark.



Conductor Warwick Stengards leads the orchestra's string section through a final rehearsal in Robert Blackwood Hall.

## Orchestra looking for more strings to its bow

The new Monash Orchestra made its debut at an examination concert in Robert Blackwood Hall last month.

The orchestra, formed by the Department of Music as part of a new emphasis on music performance at Monash, was conducted by Mr Warwick Stengards.

Mr Stengards, appointed to lead the orchestra for the first semester, said the concert program reflected the orchestra's strengths.

"We hope to attract more string players because at the moment we are a bit light on," he said. "The basic core of the orchestra has about 15 string players, but I would like to expand that to at least 40."

"However, we have more wind instrumentalists than we can use so we are catering for the extra musicians with separate ensembles."

The combined group, totalling more than 60 players, will be used as much as possible.

"I think it will take some time to build up - you don't just click your fingers and find an orchestra - but I am very

pleased with the players that we have. They all have worked very hard," Mr Stengards said.

The concert program included Mussorgsky's *Capriccio* for the brass quartet, Gounod's *Petite Symphonie* for the wind ensemble, Davis' *Bossa Novacaine* snare drum quartet for the percussion ensemble, and Haydn's *Symphony No 104 in D 'London'* for the full orchestra.

From second semester, the orchestra will be led by renowned US conductor Mr Gene Young, formerly of the Peabody Conservatorium, Baltimore.

He has conducted at Carnegie Hall and the Kennedy Centre, and has had wide experience in university and conservatory of music orchestras.

Students can gain credit towards their degrees through participation in the orchestra. Credit will be awarded on every campus, in all faculties.

String players, in particular, are invited to contact the Department of Music on extn 75 3230.

## New centre to promote religion, society studies

The comparative study of religion and theology is available for the first time at Monash with the establishment of a new centre.

Organised along similar lines to other specialist centres in the Faculty of Arts, the Centre for Studies in Religion and Theology aims to promote scholarship on a non-denominational and comparative basis.

As an interdisciplinary centre, it hopes to provide insights into the understanding of human society, the arts, literature, music and history.

It offers undergraduate minor and major sequences in religious studies as well as an honours program and postgraduate degrees by research in religion and theology.

"Centres focusing on religious studies are not new to Australian universities," the centre's director, Associate Professor Gary Bouma, said.

"However, this one is unique in taking a deliberately Australian focus, and by making theology - Christian and that of other religions - a subject of study."

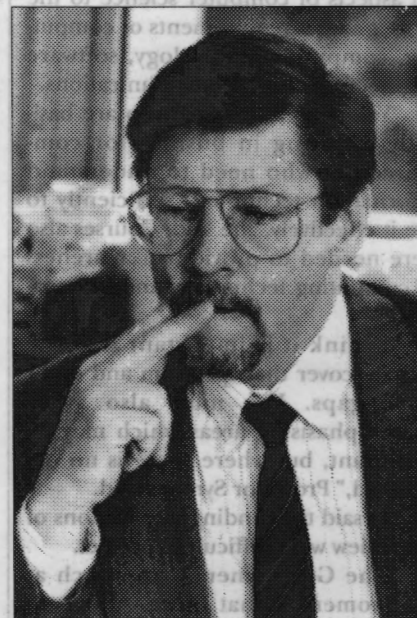
Professor Bouma said that Monash was not getting into the business of training clerics. "The two things that we are doing is a careful postgraduate analysis of theology and a focus on religion in Australian society," he said.

The Dean of the Faculty of Arts, Professor Pargetter, added: "The separation between arts and theology has been a relatively recent and unfortunate development in universities. It is impossible to understand the history and development of Western thought and life without an understanding of its religious life and thought."

The centre seeks to coordinate existing resources at Monash and to build intellectual, teaching and research links with the Melbourne College of Divinity (MCD).

It will assist Monash students who wish to take MCD subjects in such areas as biblical studies, theology and church history as part of their BA course.

In addition, Monash and the MCD are in the final stages of securing approval to offer a joint Monash BA and MCD bachelor of theology degree. This four year program formalises a cooperative arrangement that has existed since 1989.



Associate Professor Gary Bouma: Monash is not in the business of training clerics.



## Computing studies change to be examined

A review of computing studies and information sciences throughout Australia – starting with Monash – is under way to assess the effects of rapid changes in technology on the current curriculum.

The Federal Government review, through the Department of Employment, Education and Training, aims to identify emerging trends, good practices, and which universities are teaching the disciplines well.

The review committee began its investigations in April. Among its seven members is Professor Fred Symons, of the Department of Electrical and Computer Systems Engineering.

He said that given the wide scope of the review committee's guidelines it was too early to predict what effect the review would have at Monash.

"It has been identified as important to look at the changing technology and the changing needs of the community and industry, and then to see how the courses need to be realigned in some way to produce what is really needed," Professor Symons said.

"Therefore, we will probably come out with some fairly general conclusions about what sort of emphasis should be placed.



Professor Fred Symons.

"It is going to be important for Monash, especially since the merger, to cover the total spectrum of requirements."

He said this ranged from theoretical aspects of computer science to the more general requirements of computing, computing technology, software engineering and telecommunications.

"You also have those who are basically majoring in business or commerce but who need to understand information technology sufficiently to use it effectively," he said. Courses also were needed to provide an awareness of computing technology and its capabilities.

"I think it is important that the courses cover that spectrum and don't leave gaps. You must also avoid overemphasising areas which may be important, but where there is no big demand," Professor Symons said.

He said the funding implications of the review were difficult to predict.

"The Government's approach at the moment is that there will be no new money. So it is a question of priorities and relative funding levels, and that starts to become a very complex issue," he said.

## University innovation featured at science and technology show

Five Monash faculties will present a glimpse of the future at the Great Australian Science Show.

The show, at the World Congress Centre from 10-14 July, will bring together many of Australia's major universities, research organisations, technologists, private companies and corporations.

They will present a program of lectures and demonstrations, as well as more than 100 exhibits and displays covering developments in Australian science, technology and product innovation.

The Monash stand, one of the largest, will feature displays from the faculties of Science, Engineering, Computing and Information Technology, Medicine and Education.

The stand includes a walk-in womb complete with sound effects, which is being developed by the Department of Physiology, and a flow injection analysis working display by the Water Studies Centre for the Faculty of Science.

A computer-controlled robotic arm will be displayed by the Faculty of Computing and Information Technology. Students will be invited to write a software program to make the arm perform a series of balancing acts with a golf ball.

The SOLution solar car, which competed in the World Solar Challenge race from Darwin to Adelaide in December last year, also will be on show.

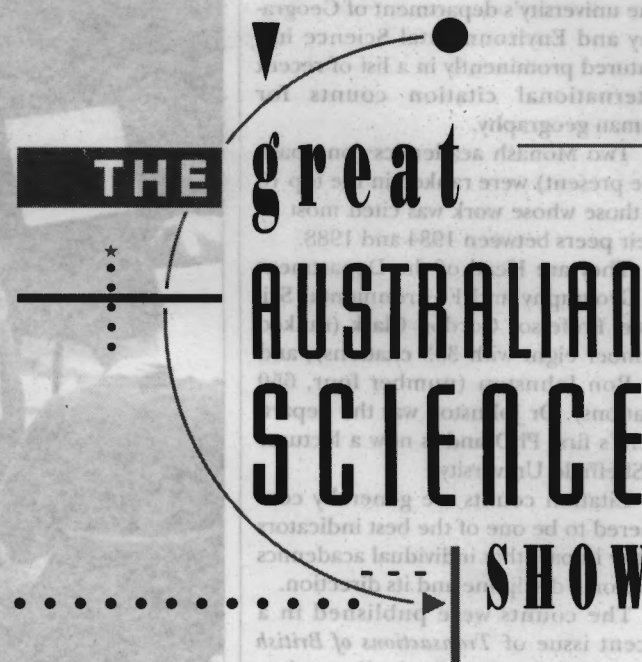
The show already has attracted the attention of the *Beyond 2000* television series, which will film major attractions before the official opening.

As well as displays, the show will feature a lecture series covering topics such as human health and fitness, biology and the marine world, the global environment, energy, and outer space.

Monash is well represented with guest speakers. Professor David de Kretser will talk on research in reproduction; Dr Barry Hart will explain how water works; Professor Robert Porter will discuss the role of Australia's medical scientists; and Professor Roger Short will speak on population growth.

The organisers, the Australian Science Network, expect more than 50,000 people will attend the show. "It aims to present information in an educational, entertaining and highly accessible manner," one of the organisers, Mr Michael Pickford, said.

Some of the topics to be covered include 'Catching crooks with science: famous forensic cases', 'Is masticating a health hazard?', 'Toxins & toxic chemicals in food additives'



and 'Saving the world – contributions by Australian medical scientists'.

A special VCE day will be held on 11 July to give students an opportunity to hear Australia's leading scientists and technologists speak about their work and its application to the VCE science study program.

Exhibitors and participants include CSIRO, BHP Research, Queenscliff Marine Science Laboratory, State Forensic Laboratory, Victoria Police, Orbital Engine Company, Alternative Technology Association, ICI Travelling Science Show, Australian Institute of Medical Research, Royal Australian Chemical Institute, Accident Research Institute and Australian Institute of Agricultural Scientists.

The show is sponsored by VicHealth (Life. Be In It) and the Ferntree Computer Corporation.

For further information and bookings, contact the Australian Science Network on (059) 89 0970, or the Monash stand coordinator, Ms Susanne Hatherley, in the Public Affairs Office on extn 75 3087.

## SWAG team takes aim at office waste

This Caulfield campus team has a 'SWAG' of good ideas to make Monash offices greener.

The SWAG (Sustainable Work Action Group) team, led by Ms Kath Ralston, author of *Working Greener*, has initiated projects aimed at reducing office waste.

Ms Ralston, of the School of Management, said she would be happy to help others establish such groups in their faculties or departments.

SWAG suggestions include reducing A4 memos to A5 and photocopying two memos per A4 page, double-sided photocopying, and converting outdated letterhead into scrap-paper telephone pads.

Other ideas are locating paper recycling bins next to photocopiers, using recycled photocopying paper, turning off lights in empty offices, keeping regular circulars in a central file instead of sending a copy to each person, and reusing envelopes for internal mail.

Academic staff have even been asked to clean out their desk drawers and return unused pens, rulers and erasers to the stationery store for reuse.

However, response is not always enthusiastic. "Some people are set in their ways and would rather dump a



The Sustainable Work Action Group (SWAG), led by Ms Kath Ralston (centre): trying to change wasteful office practices.

piece of paper in a rubbish bin than a recycle bin," Ms Ralston said.

"But slowly the three Rs – recycle, reuse and reduce – are infiltrating the campus."

The group includes Patti Guerin and Jeffrey Bainbridge, Faculty of Business administration office; Noela McKenzie and Barbara Cunningham, School of Accounting; Steve Caswell and Deanne Gilbert, School of Banking

and Finance; Jo McLean, Jane Martyr and Jennie Haynes, School of Management; Cassie Goffin and Jacquie Piggott, School of Marketing; and Wendy O'Brien, Technology Services.

For more information contact Ms Ralston extn 73 2031.

For a report on the national *Plastics and the environment* forum organised by Monash's business and consulting arm, Montech, turn to page 10.



# RESEARCH

## MONASH

### Sending coals to Newcastle

*Almost 20 years ago, Professor Owen Potter invented a method of burning brown coal more efficiently, and cutting its greenhouse gas emissions. The technology is now being commercialised, but the benefits are going offshore.*

Seeing one's life work taken up and commercialised by industry should be one of the highlights of a scientist's career. In the near future a \$30 million coal-drying plant will be built in the Latrobe Valley, exploiting a technology invented at Monash nearly 20 years ago by Professor Owen Potter of the Department of Chemical Engineering.

However, his satisfaction is tempered by the failure of the State Electricity Commission of Victoria and research funding bodies to support the technology, and of Australian companies to invest in it. The consequent delays in commercialising the system will cost Australia and Monash millions of dollars in foregone royalties, he says.

Professor Potter believes the great tragedy is that Australia has lost the opportunity to add value to one of its most abundant resources, brown coal. And worse, it must now pay to exploit a process that one of its own engineers developed.

Professor Potter was unable to get research grants from any of the former National Research Development and Demonstration Programs to develop the system, or get the SECV to invest in a pilot plant. His scientific contribution to the project has received considerable acknowledgment abroad, but none in Australia.

Now, in a classic coals-to-Newcastle story, the plant to be constructed by the Germany-based Lurgi company will supply dried coal for start-up and shut-down to power stations operated by the SECV.

The process – when applied to all of the coal fired in a power station – is expected to lift efficiency from 29 per cent to 35 per cent, and provide a 15 to 20 per cent decrease in emissions of the greenhouse gas, carbon dioxide. If the SECV was to dry all brown coal burned in Victoria's power stations

using the process, it would save an estimated \$300 million in mining and power generation costs each year, and substantially reduce greenhouse emissions.

Head of Chemical Engineering, Professor Frank Lawson, says that when the university began developing the Potter process on a pilot scale in the early 1980s, the greenhouse effect was not an issue.

Brown coal is abundant in Victoria, and the SECV was not particularly concerned about a possible 20 per cent improvement in generating efficiency, given the capital costs that would be involved in construction. As recently as two years ago – with greenhouse emissions now a major political and environmental issue – the SECV listed steam drying as one of four research areas.

But apparently it was advised to wait while East Germany developed and demonstrated the feasibility of a commercial plant.

The world's first pilot plant was constructed in the East German city of Zeithain 12 years ago, following the publication of a scientific paper by Professor Potter.

While developments – including a larger pilot plant at Borna – were proceeding in East Germany, Professor Potter was attempting, unsuccessfully, to persuade the SECV to take up the technique and commercialise it, with the prospect of establishing Australia at the forefront of the technology.



Professor Owen Potter: "My own experience with innovation is that no-one in Australia will support it ..."

Monash University filed patents for the Potter system in a number of Western countries in 1979, but not in Eastern Bloc countries because of the difficulties experienced by Western inventors in obtaining protection. Reunification of East and West Germany has meant the West German patent now applies.

However, the patent was lodged more than 10 years ago and the period of patent protection is only 17 years in Australia and 20 years in Germany. So royalties will be paid only on the plants built within the remaining period.

The German Rheinbraun coal-mining company has seen the potential of the Potter process and Lurgi now is building a full-scale plant for evaluation. If it performs as expected, the company probably will build more plants soon.

Last year Professor Potter received the Chemeca Medal for his contributions to chemical engineering. In his Chemeca Medal Lecture, he urged Australia to develop new industries around mineral processing.

"We should see to it that Australians know more about processing Australian raw materials than anyone else, and support innovation, particularly in this area," he said. "Australian resources do not excuse Australians from resourcefulness."

"My own experience with innovation is that no-one in Australia will support it, not even government bodies developed for this purpose. This situation must be changed."

Professor Potter now hopes that his process eventually will be applied to

dry all brown coal burned in Victoria's power stations.

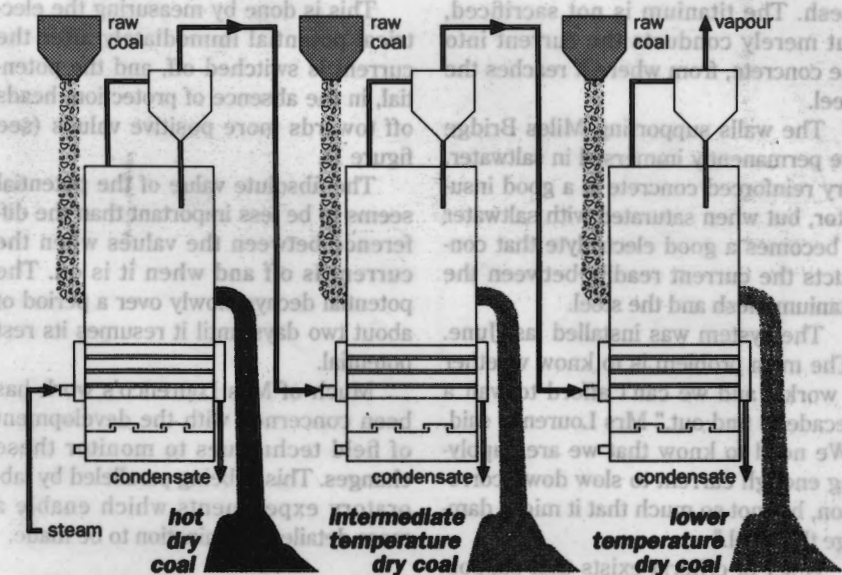
But he wants the SECV to take up other innovations, particularly in boiler design, that he sees as being essential to obtain maximum efficiency from the state's power stations.

If these innovations are adopted, they could have far-reaching implications for Victoria's energy industry; even to the point of removing impediments to developing renewable energy resources.

Victorian brown coal, like brown coals elsewhere in the world, typically contains up to 70 per cent water by weight. Much of the energy available in the coal is expended on driving off this water, instead of generating heat for the production of electricity. (Next issue will include an article about Peter Johnston's PhD study on enhancing the calorific value of coal.)

As a consequence, it takes four kilograms of brown coal to generate the same amount of electricity as a kilogram of black coal, resulting in much higher emissions of greenhouse gases and other contaminants. The fact that most of the coal's weight is actually water makes it uneconomic to transport over any distance, so it must be burned where it is mined.

Because brown coal burns reluctantly, the SECV faces serious problems in matching its generating capacity to widely fluctuating diurnal demand. Consumption is highest by day but falls dramatically at night.



The Potter process recycles much of the heat energy generated by evaporating water from an initial batch of brown coal.

Continued on Research Monash 4



# Curing concrete cancer

**Concrete cancer – corrosion in reinforced concrete structures – costs about \$200 million each year to remedy. Research student Zita Lourenco is refining the “black art” of cathodic protection to prevent even larger repair bills.**

Since the middle of the 20th century, reinforced concrete has been a preferred structural material for office towers, shopping centres, bridges, freeway overpasses and even water storage tanks.

Steel-reinforced concrete is strong and offers significant economies because the materials are relatively cheap, easy to work with and facilitate rapid construction. But with the revolution now four decades old, doubts have emerged about the durability of some reinforced concrete structures.

The term “concrete cancer” has been applied to the phenomenon of corrosion of the reinforcement in such structures. Its most visible symptoms include ugly rust stains and unsightly holes and gaps where chunks of concrete have broken off unpredictably from overhanging structures and building interiors.

In South Australia, an expert estimate suggests the repair and maintenance of urban infrastructure already in place could absorb the State's entire construction budget by 2010. Yet the problem is largely ignored by governments.

“Nobody listens because rust is not exactly glamorous to the general public,” Acting Professor Brian Cherry of the Faculty of Engineering said.

A huge public service office completed only in the late 1970s already is showing signs of corrosion, leading to copious leakages during heavy rainfall. Near Melbourne, a big concrete water storage tank threatened to rupture and inundate nearby property until it was repaired several years ago.

Dr Cherry says the problem is not confined to Australia; it is endemic to virtually all developed nations. In Hong Kong some years ago, for example, one of the tall chimneys of the Tsingyi power station was dangerously corroded and, if not repaired in time, could have collapsed. If the power station were to have gone offline, it would have effectively closed down Kowloon.

The problem often lies in the way the concrete is mixed during construction. “Good steel in good concrete doesn't rust. The fact that corrosion does take place is often a result of poor site practices and hasty building techniques,” Dr Cherry said.

“Until the 1970s, people actually added chlorides to accelerate the setting of concrete; the practice has been banned. And to make the concrete pour more easily, they added extra water to the mix. A high water-cement ratio is disastrous for reinforced concrete.”

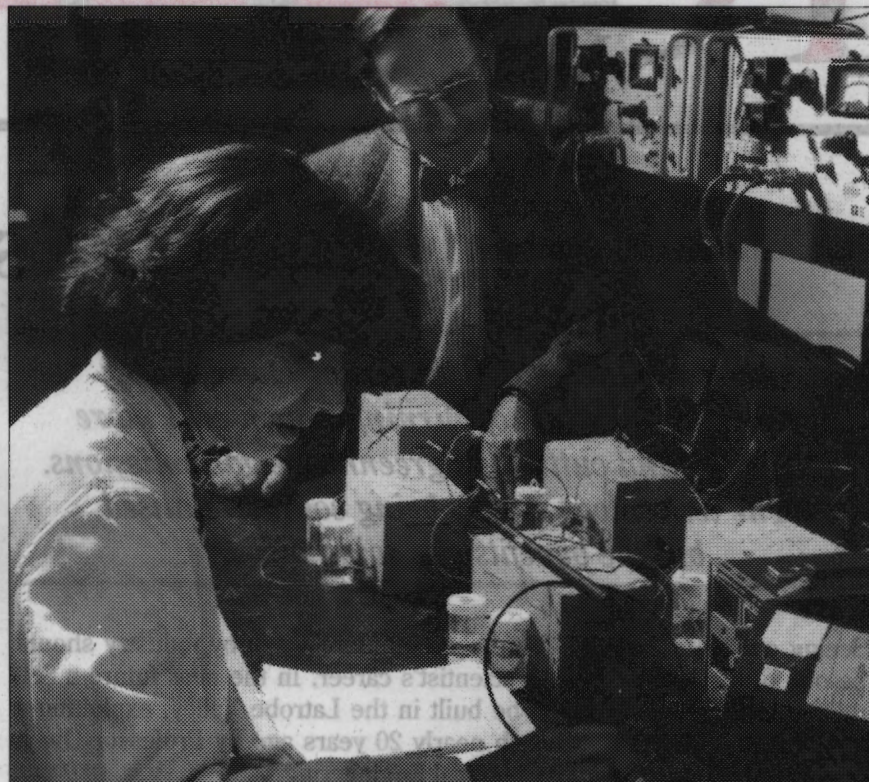
If corrosion is detected and treated in time, it can be arrested. Yet the techniques for arresting corrosion are still something of a black art. Variation in the chemistry of the concrete, and in the environmental conditions, may demand tailor-made solutions.

Dr Cherry is supervising a project by PhD student Mrs Zita Lourenco, who is attempting to develop a model that will define more precisely the conditions that must be achieved in reinforced concrete to prevent or arrest corrosion, thus removing the guesswork from remedial measures.

Mrs Lourenco says that embedded steel is normally protected by the high pH (alkalinity) of the concrete. The corrosion is due to external agents, such as carbon dioxide diffusing into the concrete from the atmosphere and forming carbonic acid when it mixes with water. By lowering the pH of the concrete, conditions conducive to corrosion are created.

Highly corrosive chlorides, deliberately added to the concrete, or absorbed from salt-laden seawater or sea air, can cause very rapid decline in the strength of the reinforcing steel.

Beneath Miles Bridge, a reinforced concrete structure over Kananook Creek on the busy Nepean Highway,



**Dr Brian Cherry with Mrs Zita Lourenco, measuring chloride content by an electrical method in laboratory-sized reinforced concrete blocks.**

Mrs Lourenco is conducting a field experiment which will help refine the model she is developing for cathodic protection of reinforced steel structures.

A private company, Remedial Concrete Engineering, pays Mrs Lourenco's salary during her full-time studies and supports the research. The work on Miles Bridge is carried out in cooperation with Vic Roads.

Cathodic protection is not a new concept. The most venerable of modern roofing materials, galvanised iron, exploits the cathodic properties of zinc to protect the underlying iron. Large slabs of zinc are attached to offshore oil platforms and drilling rigs to protect their steel infrastructure against corrosive seawater.

Iron, the main component of steel, corrodes by donating electrons to oxygen. In simple terms, it reacts with oxygen, producing rust. Zinc gives up its electrons more readily, so when a zinc cathode is attached to the steel, it dissolves instead of the steel. The zinc cathode is sacrificed to preserve the steel; as it corrodes, it donates electrons via a weak electric current that flows between the zinc and the steel.

Mrs Lourenco says the same result can be achieved with an ‘impressed current’ system: an apparatus that trickles electrical current into the steel in the form of a direct current (DC) passing through an anode such as titanium mesh. The titanium is not sacrificed, but merely conducts the current into the concrete, from where it reaches the steel.

The walls supporting Miles Bridge are permanently immersed in saltwater. Dry reinforced concrete is a good insulator, but when saturated with saltwater it becomes a good electrolyte that conducts the current readily between the titanium mesh and the steel.

The system was installed last June. “The main problem is to know whether it works, and we can't afford to wait a decade to find out,” Mrs Lourenco said. “We need to know that we are supplying enough current to slow down corrosion, but not so much that it might damage the steel.”

A set of criteria exists that supposedly describe how the steel responds to the impressed DC current, but Mrs

Lourenco says these criteria are little more than arbitrary values, often borrowed from other fields, such as the cathodic protection of steel pipelines and offshore drill rigs.

The theoretical basis of these criteria was not well founded, even for the original application, so it is of even more dubious relevance when applied to reinforced concrete buildings and bridges.

Mrs Lourenco is attempting to bring some solid science to the subject, so that the values chosen for any reinforced structure can be optimised. At Miles Bridge she has drilled into the concrete to place reference electrodes close to the steel reinforcement.

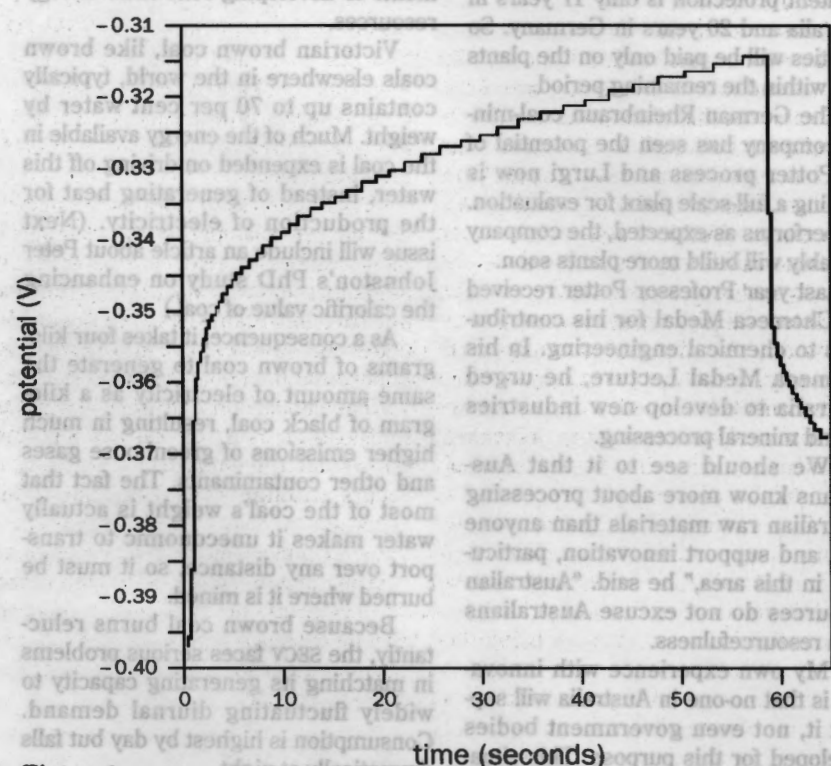
These reference electrodes allow the electrical potential of the steel to be measured in situ. The titanium mesh anode is secured to the concrete, and the concrete itself acts as an electrolyte to conduct the impressed current to the embedded steel, and the potential of the steel is changed in the negative direction.

Whilst it is necessary to measure the potential of the steel while the current is flowing to determine whether the cathodic protection is working, it is equally important to know whether the action of the cathodic protection has changed the system to such an extent that corrosion would be stopped – albeit temporarily – in the natural state (that is, without any current flowing).

This is done by measuring the electrical potential immediately after the current is switched off, and the potential, in the absence of protection, heads off towards more positive values (see figure 1).

The absolute value of the potential seems to be less important than the difference between the values when the current is off and when it is on. The potential decays slowly over a period of about two days until it resumes its rest potential.

Much of Mrs Lourenco's work has been concerned with the development of field techniques to monitor these changes. This is being paralleled by laboratory experiments which enable a more detailed examination to be made.



**Figure 1.**

*Continued on Research Monash 4*



# Revealing a mystery gene

*Pre-eclampsia, a disease which affects one in every hundred women during their first pregnancy, probably is caused by a defective gene.*

*Its identity remains a mystery, but Dr Shaun Brennecke is part of a team which has narrowed down the continuing search.*

Our mothers and grandmothers mistakenly called pre-eclampsia "pregnancy toxemia", believing a mystery toxin in the bloodstream caused the disease that killed pregnant women and their babies with such frequency.

With modern medical practice, deaths are very rare. It is now known that pre-eclampsia is not caused by a toxin, but its real cause remains unclear. So many explanations have been advanced that, among scientists, it has acquired a third name, "the disease of theories".

About one woman in 100 develops full-blown pre-eclampsia during her first pregnancy. The symptoms include high blood pressure, abnormal levels of protein in the urine and generalised swelling of tissues.

In the advanced stages of the disease, a pregnant woman can suffer convulsions and visual hallucinations, including the flashing lights that the Greeks called "eclampsia".

Dr Shaun Brennecke, senior lecturer in Monash's obstetrics and gynaecology department, and clinical director of the perinatal unit at Monash Medical Centre, says obstetricians today are skilled at recognising the early symptoms and intervene by bringing on the birth prematurely.

The disease disappears rapidly after the baby is born, and rarely recurs in subsequent pregnancies.

Dr Brennecke says it was this pattern of rapid recovery, and the rarity of recurrence after the first pregnancy, which clued medical researchers into

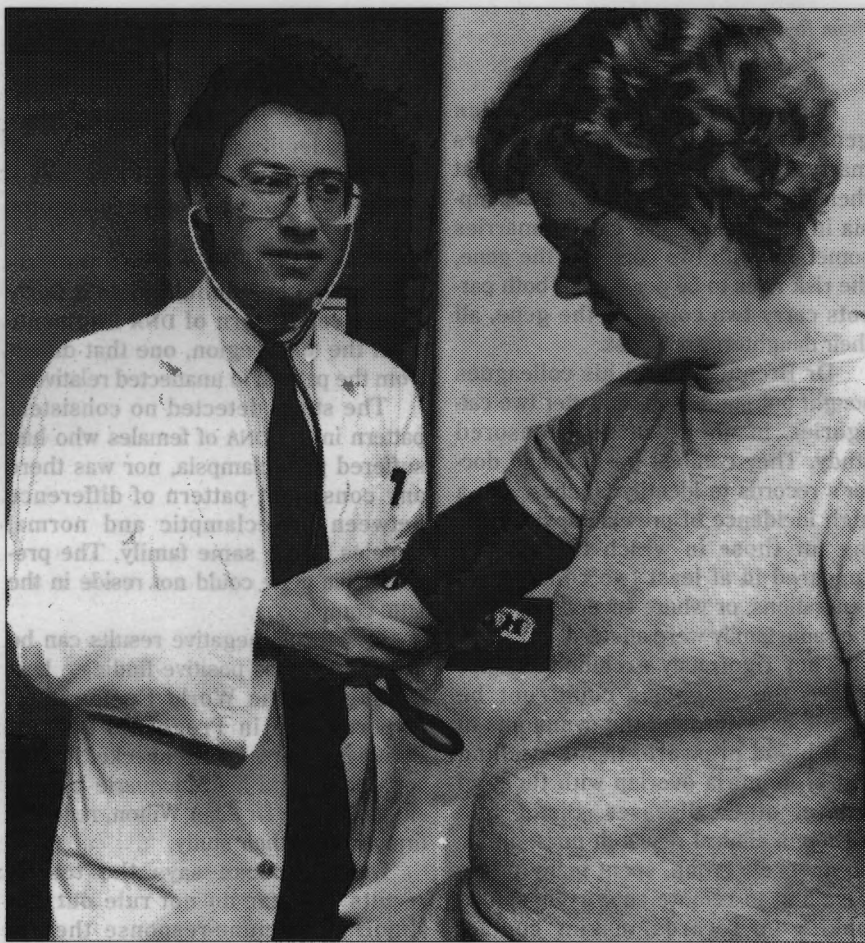
the possibility that pre-eclampsia might be caused by an abnormal immune response, possibly triggered by a defective gene in the mother.

In 1986 Professor Des Cooper, of the School of Biological Sciences at Sydney's Macquarie University, and an American colleague, Professor Leon Chesley of New York State University, published a pedigree study in the 'British Journal of Obstetrics and Gynaecology'. It implicates a single, recessive maternal gene as the cause of pre-eclampsia.

The study involved just over 600 women - the sisters, daughters, granddaughters and daughters-in-law of women who had suffered pre-eclampsia. After that report, Dr Brennecke initiated a joint study with Professor Cooper to search for the gene defect responsible for pre-eclampsia.

Although the genetic basis of the disease now seems confirmed, the identity of the defective gene remains a mystery. Finding it among the three billion letters of the human DNA code will be an awesome task, but geneticists and molecular biologists have some important clues to go on.

From the moment of conception, and for 40 weeks thereafter, a foetus represents a foreign presence in a woman's body. Paradoxically, the



Dr Shaun Brennecke examines a patient at Monash Medical Centre.

mother's immune system does not mount an attack. Scientists believe it initially recognises the foetus as foreign, but then tolerates it.

Dr Brennecke says the process of recognition and induction of tolerance must occur where the mother's tissues interface with those of her baby - at the junction between the placenta and the wall of the womb.

The placenta is foetal tissue. Significantly, when it is expelled from the womb at birth, the symptoms of pre-eclampsia rapidly resolve themselves. Dr Brennecke says this points to pre-eclampsia being triggered by a partial failure of the response that allows the maternal immune system to tolerate the baby's presence in her body.

The fact that the mother rarely suffers pre-eclampsia in subsequent pregnancies also accords with the pattern of an immune system response. When the immune system first encounters an invader, it is fairly slow to mount a response. Any subsequent encounter produces a much more rapid and focused response; this response seems to defuse recurrence of pre-eclampsia.

Pre-eclampsia normally occurs in the second half of pregnancy, but there is a rare, specific circumstance when it develops much earlier. Sometimes an error occurs during fertilisation and the fertilised egg, instead of developing into an embryo, produces a shapeless mass of tissue called a hydatidiform mole - a grossly malformed placenta.

Interestingly, recent research suggests that the placenta is constructed primarily by paternal genes; since many of its constituent proteins are foreign to the maternal immune system, it invokes a strong response that seems essential for induction of tolerance.

Why should a hydatidiform mole bring on pre-eclampsia much earlier than a normal embryo? Nobody knows, but it is yet another signpost pointing to a defective immune response being the trigger.

The immune system is headquartered on human chromosome six, and consists of a large cluster of genes called the major histocompatibility com-

plex (MHC), which mediate the accept-or-reject response that determines the success or failure of organ-transplant operations.

It was a logical place to search, but as it turned out, a wrong one. Dr Brennecke and Professor Cooper, working with a Macquarie University molecular biologist, have shown in a study published recently in *The Lancet* that pre-eclampsia almost certainly is not triggered by any MHC gene.

They based their conclusions on data from a comprehensive study of inheritance patterns for the pre-eclampsia gene in 10 Australian families, sponsored by the National Health and Medical Research Council.

Pre-eclampsia appears to be a recessive gene disease. A woman must inherit two copies of the gene, one from each parent, to be susceptible.

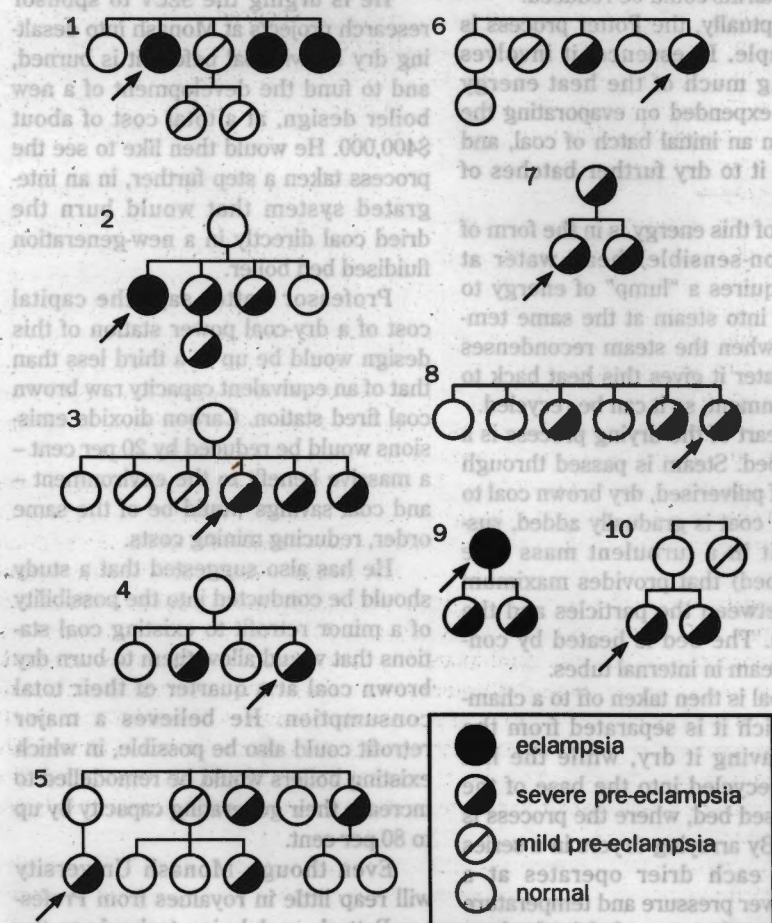
Individuals with only one copy of the gene (termed carriers) are not at risk. The disease is so common that Dr Brennecke believes as many as one person in four must have a single copy of the gene (a figure that includes males). Mendel's laws of inheritance predict that one male and female in every 64 individuals will inherit two copies of the gene; females in this category are very likely to suffer pre-eclampsia in their first pregnancy.

This figure is so high as to suggest that the pre-eclampsia gene is actually a minor variant of some normal gene. It fulfils its role quite adequately throughout life, but manifests a darker side under the stresses that first pregnancy imposes on the female immune system.

The conclusion that the pre-eclampsia is caused by a "normal" gene is supported by the fact that the disease occurs at roughly the same rate in all races and cultures.

With pre-eclampsia now recognised as being of genetic origin, it usurps cystic fibrosis as the most common of all genetic diseases. Cystic fibrosis occurs in one person in 1600, and one person in 20 is a carrier.

Continued on Research Monash 4



Ten families on which the pre-eclampsia analysis was based, showing disease state. Arrows indicate index cases. Only women who have reproduced, and whose disease state was determined, were included.



# Risks to mothers and babies reduced

From Research Monash 3

The mathematics of Mendelian genetics predicts that if two carriers marry, there is a 25 per cent risk that their daughters will suffer pre-eclampsia in pregnancy. If a carrier marries somebody with two copies of the gene, the risk rises to 50 per cent; if both parents carry two copies of the gene, all their daughters are at risk.

Dr Brennecke and his colleagues sought out families in the latter two categories in their NHMRC-sponsored study. They combed hospital and doctor's records to identify families with a high incidence of pre-eclampsia, looking for those in which the disease appeared in at least two consecutive generations, or where several sisters in the same family were affected.

They rigorously excluded families where the diagnosis could not be definitely confirmed: the symptoms of high blood pressure, tissue-swelling and proteinuria overlap with those of several other diseases. Sister Sue Bishop, a clinical research nurse in Dr Brennecke's group, spent many hours travelling to remote country hospitals looking for records, making contact with families and taking blood samples.

The technique used to search for the pre-eclampsia gene is called linkage analysis, now a standard tool in pedigree studies. Essentially, it involves extracting DNA from white blood cells

and cutting it into fragments with DNA-cleaving enzymes.

The enzymes create millions of fragments of DNA, so special techniques are used to identify fragments within and near known genes – in this case, genes in the MHC complex on chromosome six.

Sisters or relatives with the pre-eclampsia gene should yield a fairly consistent pattern of DNA fragments from the MHC region, one that differs from the pattern in unaffected relatives.

The study detected no consistent pattern in the DNA of females who had suffered pre-eclampsia, nor was there any consistent pattern of difference between pre-eclamptic and normal females in the same family. The pre-eclampsia gene could not reside in the MHC complex.

In science, negative results can be as significant as positive findings. Last October, at the World Congress on Hypertension in Pregnancy held at Perugia in Italy, Dr Brennecke, Professor Cooper and his Macquarie University colleague Dr Alan Wilton, received first prize for their study.

Dr Brennecke says the team's results thus far do not rule out the abnormal immune-response theory. Many other genes on chromosomes other than chromosome six contribute to the immune response, so the search must now be broadened.

The gene may be hidden somewhere in one of the other 20 chromo-

mal "haystacks" of the human genome. However, some of the diverse symptoms of pre-eclampsia may offer clues that could narrow the search.

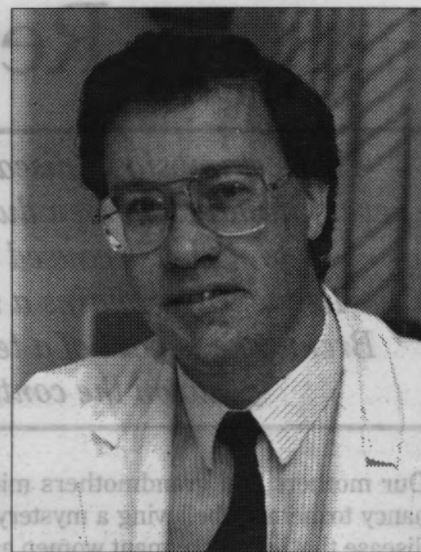
Dr Brennecke and his coworkers hope that by studying genes that contribute to symptoms like hypertension, proteinuria and oedema, they may be able track back upstream through the cascade of events that characterise the course of the disease, studying the genes involved to identify the single gene that triggers pre-eclampsia.

The increase in blood pressure that occurs in pre-eclampsia might offer important clues.

Blood pressure increases when blood vessels contract; reduced blood flow means poorer oxygenation of tissues and reduced oxygen and nutrient supply to the growing embryo, retarding its growth. Allowing for the fact that births are often deliberately induced earlier in pre-eclamptic pregnancies to avoid life-threatening symptoms, pre-eclamptic babies tend to be smaller and weaker at a comparable stage of development.

Poor oxygen supply can cause liver and brain damage in the mother – the flashing lights of eclampsia are a symptom of oxygen deprivation in the brain.

Several different hormones interact to regulate blood pressure. Thromboxane and endothelin constrict blood vessels, while prostacyclin and endothelium-derived relaxing factor relax them.



Dr Shaun Brennecke.

Studies of levels of these hormones in normal and pre-eclamptic women may make it possible to identify a specific problem; for example, an excess of vasoconstrictive hormones or a deficiency of vasodilatory hormones.

By looking for factors that increase or decrease activity in the genes for these hormones, researchers may be able to home in on the gene that triggers the problem.

In the meantime, Dr Brennecke says, modern obstetric practices including early diagnosis and intervention in pre-eclamptic pregnancies have greatly reduced the risk to mothers and their babies.

Where deaths were once very common, they are now very rare.

## Reinforcing concrete's durability

From Research Monash 2

The twin evils which beset the steel in reinforced concrete are chloride ions (usually carried by the wind from over the sea) and carbon dioxide from the air. Corrosion begins when carbonic acid, derived from the carbon dioxide, creates a region of comparative acidity around the steel in which chloride ions can do their deadly work.

One effect of cathodic protection is to recreate the alkaline region immediately adjacent to the steel. Corrosive chloride ions also may be transported away from the metal.

Once this has occurred, and the optimal alkaline environment of the original concrete has been established, different criteria may need to be applied to maintain the structure under the new conditions. This is unknown territory, and will demand further research.

According to Dr Cherry, repairing corroded structures in Australia already costs about \$200 million per year. Building owners and authorities responsible for maintaining infrastructure are beginning to pay more attention to cathodic protection as a means of minimising maintenance and prolonging the life of reinforced concrete structures.

"In other fields people have found that cathodic protection vastly reduces the number of failures, but doesn't stop them completely. If we can develop optimal criteria through research, we could stop failures completely," he said.

## Efficiency lifted, emissions cut

From Research Monash 1

Power stations need the capacity to turn down their boilers, but raw brown coal boilers may experience "flame-outs" and run the risk of an explosion if a large turn-down is sought.

To shift demand from daytime to night-time, the SECV has adopted an off-peak tariff system, making it attractive for consumers to use electricity at night for specialised purposes as water and stored-energy space heating.

The high day tariffs, and lack of access to night tariffs, has impeded the commercialisation of renewable-energy devices like solar water and space heaters and heat pumps, which need electrical boosting in colder months.

### POTTER PROCESS

	\$/kW
Savings on boiler	
1840* - 984 =	856
Less cost of dryers =	-200
Plus savings on coal not required =	110
Total =	766

For example, the potential saving on a 4000 MW power station = \$3.06 billion

\* Driffield

Professor Potter points out that if Victoria's power stations were burning dry coal, there would be no problem turning down their boiler fires at night, and the sharp disparity between day and night tariffs could be reduced.

Conceptually, the Potter process is fairly simple. In essence, it involves recovering much of the heat energy originally expended on evaporating the water from an initial batch of coal, and recycling it to dry further batches of coal.

Some of this energy is in the form of latent (non-sensible) heat: water at 100° C requires a "lump" of energy to convert it into steam at the same temperature; when the steam recondenses to form water it gives this heat back to the environment, so it can be recycled.

The heart of the drying process is a fluidised bed. Steam is passed through this bed of pulverised, dry brown coal to which wet coal is gradually added, suspending it in a turbulent mass (the fluidised bed) that provides maximum contact between the particles and the hot steam. The bed is heated by condensing steam in internal tubes.

The coal is then taken off to a chamber in which it is separated from the steam, leaving it dry, while the hot steam is recycled into the base of the next fluidised bed, where the process is repeated. By arraying dryers in a series in which each drier operates at a slightly lower pressure and temperature than the one that preceded it, the heat can be recycled many times.

According to Professor Potter, the dried coal product of the new Lurgi plant may experience problems with boiler-tube fouling because of the high salt content of Victoria's brown coal.

A coating of salt builds up on the tubes, and must be dislodged manually by a special lance to ensure that there is maximum heat transfer between the flame and the tube.

He is urging the SECV to sponsor research projects at Monash into desalting dry brown coal before it is burned, and to fund the development of a new boiler design, at a total cost of about \$400,000. He would then like to see the process taken a step further, in an integrated system that would burn the dried coal directly in a new-generation fluidised bed boiler.

Professor Potter says the capital cost of a dry-coal power station of this design would be up to a third less than that of an equivalent capacity raw brown coal fired station. Carbon dioxide emissions would be reduced by 20 per cent – a massive benefit to the environment – and coal savings would be of the same order, reducing mining costs.

He has also suggested that a study should be conducted into the possibility of a minor retrofit to existing coal stations that would allow them to burn dry brown coal at a quarter of their total consumption. He believes a major retrofit could also be possible, in which existing boilers would be remodelled to increase their generating capacity by up to 80 per cent.

Even though Monash University will reap little in royalties from Professor Potter's coal-drying technology, the benefits to Victoria will be massive – as is clear from the potential reduction of 15 to 20 per cent in the cost of generating electricity. The question is whether Australian enterprise is prepared to take the lead.



## Changing minds and changing the law

**Noted law reformer Professor Marcia Neave has been appointed to a personal chair in the Faculty of Law. Her work over the past decade has led to improvements in the legal rights of women, prostitutes, road accident victims and people in de facto relationships.**

While most people would call it eclectic, Monash's new professor of law describes her contribution to law reform as being "all over the place".

Geographically speaking, Professor Marcia Neave, an expert on property and family law, is half correct. In terms of categories, however, she is truly accurate.

Her ground breaking work on the New South Wales and Victorian law reform commissions has helped to improve the position of a multitude of people – particularly women – in both states, including those in de facto relationships, prostitutes, and the victims of road accidents.

Her inspiration is elementary. "I like to identify what's wrong and then seek to do something about it," she said.

Professor Neave's interest in law reform began in 1982, when she was appointed research director for the New South Wales Law Reform Commission. Over the next two years she played an instrumental role in changing the state's laws relating to wills and de facto relationships.

Law reform, says Professor Neave, is a slow process. "It's a matter of changing people's minds. It can be extremely slow in some areas, but in others the pace of change can be remarkable," she said.

"For instance, the de facto relationship legislation is unique, not only in Australia but also the world. In NSW, people can now go to court and have property allocated after the relationship has been dissolved, whereas before a de facto partner who had contributed indirectly to their partner's property for many years had difficulty in claiming an interest in that property.

"But now the law takes into account contributions of all kinds, such as those made by women taking care of children."

The reforms were copied to some extent by Victoria, but here they apply mainly to real property. In NSW they go further. For example, as a result of the reform there, de facto partners can also claim maintenance.

In 1985, Professor Neave, then a reader at Melbourne University, was appointed by the Victorian Government to head an inquiry into prostitution in the state. Her far-reaching recommendations were accepted by the Government, but later were amended in the Upper House.

"The new laws turned out to be a bit of a dog's breakfast that retained existing legislation and combined it with some of my recommendations. In its



Professor Marcia Neave: "It's a matter of changing people's minds."

final form, the legislation decriminalised prostitution in brothels with town planning permits. This means that some prostitution is legal, but some women continue to work illegally," she said.

Professor Neave's interest in how the law responds to women's work continues. At present she is interested in how it relates to women in the home, the sexual division of labour, and how women are treated in the paid workforce.

**"I like to identify what's wrong and then seek to do something about it"**

"The restructuring of the labour force is not taking into account the position of women, who make up a large section of the part-time workforce," she said. "Award restructuring is also relevant to them, but then so is just about every area of law, such as social security, labour law, torts and family law.

"So far, however, politicians have ignored male-female work patterns. In fact, they treat the workforce as if it were one homogeneous mass.

"About 50 per cent of those women with children are now in the workforce. That's a very large section of the working population with special needs."

Apart from teaching at Monash, Professor Neave applies her legal expertise to a range of reform bodies; among them the Victorian Law Reform Commission where she is involved in references including sexual offences and equal opportunity.

As a result of her work on the prostitution inquiry, Professor Neave was appointed to the Australian National Committee on AIDS. This body advises the Federal Minister for Health on issues relating to AIDS, such as the availability of new drugs, public health, and confidentiality.

"Unlike other disciplines, lawyers are generalists. Legal education prepares them for policy work and for instigating social reform," Professor Neave said.

That instruction also benefits the teachers.

"I very much enjoy teaching, the process of introducing students to the law and giving them the feeling for the subject; of making them aware of the interaction between law and social policy," she said.

Professor Neave is the first scholar to be appointed to a personal chair in the Law Faculty. She was formerly John Bray Professor of Law at the University of Adelaide.

## Getting the gist on executive computers

Senior business managers will be able to assess the latest developments in executive information systems (EIS) at a fair organised by the Department of Information Systems later this month.

At the EIS Fair at the World Congress Centre on 21 June, leading consultants and manufacturers will display their products and be available for consultation.

EIS has been identified as a major growth area in the commercial infor-

mation systems market. Basically, the systems provide senior management with information to make decisions more effectively. EIS can identify critical areas and help the manager monitor developments.

"The department believes EIS is an important information systems development," Ms Jessica Pereira, lecturer in EIS at Caulfield campus, said. "We have recently introduced an EIS subject into our Bachelor of Computing (Honours)

and Master of Computing by coursework."

Ms Pereira said the subject had been supported at Monash by the use of two EIS products: Holos from Holos Management Systems, and Commander from Comshare.

These companies had provided a substantial discount on their software, and their products supported the practical side of the EIS concepts being studied, she said.

"The department is organising seminars, events and short courses in the professional information systems area," Ms Pereira said.

"In addition, research projects are underway into EIS. We aim to contribute to the general debate on EIS by providing, as objectively as possible, information about system usage, success and failure, and different development approaches. The EIS fair is one way we can do this."

For more information about the fair, or registration, phone Ms Pereira on 73 2011, or fax 73 2745.



# GRANTS & SCHOLARSHIPS



## Research grants

### ARC International Reciprocal Fellowships

The Australian Research Council, in conjunction with the Alexander von Humboldt Foundation, has established an exchange scheme to fund three researchers of international standing and up to two young researchers who are undertaking basic or applied research projects in the humanities, social sciences, natural sciences or engineering. The ARC invites nominations of German candidates for the awards. 14 June.

### Scientific Exchanges with the UK

The Australian Academy of Science and the Australian Academy of Technological Sciences and Engineering offer an exchange program with the Royal Society of London. Proposals in any field of basic and applied science, including mathematics and engineering, will be considered. Australian citizens and permanent residents who have undertaken postdoctoral work are invited to apply. 14 June.

### Anti-Cancer Council of Victoria

The Anti-Cancer Council welcomes applications from individuals or research teams in clinical, medical or scientific fields for grants to support research projects in all aspects of can-

cer. All applicants can apply for funding for one, two or three years. 7 June.

### Alfred Hospital Postdoctoral Research Fellowship

Graduates who hold a PhD or equivalent in medicine, science, nursing or allied health are invited to apply for research awards to conduct a research program within a department of The Alfred Group of Hospitals. Research may be undertaken in any field, discipline or area, but specific grants are available for research into heart disease, leukaemia, neurology, bone marrow transplantation, radiotherapy and blindness. 12 June.

### DITAC National Teaching Company Scheme

The aim of the DITAC National Teaching Company Scheme is to enhance international competitiveness of Australian industry by developing new and longer term relationships between tertiary institutions or public sector research agencies and companies in the manufacturing and services sectors. Applicants should submit a joint application for support up to \$50,000 for a minimum of two years. 14 June.

### Australian Tobacco Research Foundation

Applications are invited to support research into the relationship between tobacco smoking and health and disease in its widest contexts. Grants for research may be used to provide salaries for graduates, technical assistance or for the purchase of equipment and supplies. Grants will be made initially for one to three years to support a specific program of basic, medical or clinical research. 14 June.

### Apex Foundation for Autism

The Foundation sponsors research into the incidence, causes, diagnosis and treatment of autistic children, and the principles and behaviour of children diagnosed as autistic, psychotic or schizophrenic. Projects concerned with the health, welfare, social education and recreational requirements of autistic children will be considered. 14 June.

### Arthritis Foundation of Australia

The Foundation invites applications for new or continuing short-term rheumatology research and educational projects under the following categories: Special project grants, Foundation grants-in-aid, National Australia Bank research grant, and the Victorian Ladies Bowl Associate Research Grant. 14 June.

### The William Buckland Foundation

The William Buckland Foundation makes selective grants to support well-conceived projects which provide benefits of lasting significance to the community and contribute towards the

enhancement of life by addressing issues as access to health and education services.

### Clive and Vera Ramaciotti Foundations

Applications are invited for grants from institutions undertaking specific projects in medical research and from individuals conducting medical research within a university, public hospital or other appropriate institution.

The foundations promote work of quality in research particularly in new fields. Projects of special merit in the field of education in medicine also may be considered. 14 June.

### The Hugh D. T. Williamson Foundation

The foundation will provide funding for one year and priority will be given to proposals that will serve a broad sector of the community, propose practical approaches to specific community problems and have a strong element of self-help. 14 June.

For further information, application forms and guidelines, contact the Office for Research, extn 75 3085 or 75 5134. Applications must be lodged by the date specified.



## Scholarships and fellowships

graduate level in an Australian institution. These are 'fees only' awards - scholarship tenure is three and two years for PhD and Masters respectively. Graduates from the countries participating in the Equity and Merit Scheme are not eligible to apply. 27 September.

### Australian Tobacco Research

The Australian Tobacco Research Foundation is funding a year's research (at NHMRC rates) for full-time graduates conducting research into health issues related to smoking. 30 June.

### Special Overseas Postgraduate Fund

About 60 scholarships will be offered in 1992 to qualified overseas students wishing to undertake research at a postgraduate level in an Australian institution. These are 'fees only' awards - scholarship tenure is three, two and one year for PhD, masters and postgraduate diploma studies respectively. Graduates from the countries participating in the Equity and Merit Scheme are not eligible to apply. 27 September.

### Traineeships for high fliers

The Market Research Society of Australia is offering to train graduates in market research for 10 months at a rate of \$18,400 for the duration of the on-the-job training. For further information, telephone 499 2679. 30 August.

The Queensland Treasury Corporation is looking for high achievers in the field of economics, law, management and computing. For further information, telephone (07) 224 5338.

### French Awards

The French Government is offering several fellowships to Australian scientists who wish to visit France for three to six months to further their research. Knowledge of French is a prerequisite. 15 June.

For further information contact the Higher Degrees and Scholarships Section on extn 75 3009.

### The Benians Fellowships

The Council of St John's College, Cambridge, invites applications for the Benians Fellowships for the academic year 1992-93.

Scholars on leave may apply for the award, which is tenable for one or three years. The recipient will receive an honorarium of £1250 a year and free lodging. 1 September.

### Australian Academy of Science Exchanges

The Australian Academy of Science offers several postgraduate and postdoctoral awards to encourage international exchanges and collaboration between scientists. The various awards consist of a monthly living allowance, air fares and travel expenses within the countries of destination, China, France, Japan and the UK.

### Macleay/Maclay Centenary

The historic collection of the Macleay Museum, University of Sydney, will be opened to the winner of the Macleay/Maclay Centenary Fellowship. The graduate, who should have an interest in zoology and anthropology, will be required to give lectures to the university's students. The award is tenable for between three and six months and consists of an allowance of \$20,000 a year (pro rata). 31 July.

### Overseas Postgraduate Research Scholarship

Some 300 scholarships will be offered in 1992 to qualified overseas students wishing to undertake research at a post-

## WANT TO ADVERTISE?

Have you ever wondered how to advertise a course or event? Monash now has an advertising office to arrange the booking and creative design for all promotional advertising.

Earlier this year, Monash signed an agreement with advertising agency Austin Knight to handle all the university's advertising. All recruitment advertising is placed through the Human Resource Services office, and the Communication Department's Advertising Office books and verifies the arrangements for all promotional advertising.

To place a promotional ad, departments must complete an Authority to Book Advertisement form (available from the Advertising Office in numbered books) and then send it to the office through the internal mail or by fax (extn 73 2729) along with the text for the advertisement.

That's all there is to it. When the invoices are received, the Advertising Office will check the costs and placings, pass the invoice to Accounts Payable for processing and send a copy to the department for its records. Austin Knight can also be instructed to provide designs and even write the ads.

Direct advertising inquiries to Advertising Officer Ms Adrienne Dooley on extn 73 2379. Or use the university's electronic mail system: [adrienne@publications.ccc.monash.edu.au](mailto:adrienne@publications.ccc.monash.edu.au)





## Gippsland's first grads since merger

More than 700 students from the Gippsland campus graduated last month with Monash awards.

It was the first graduation at Monash University College Gippsland since the merger.

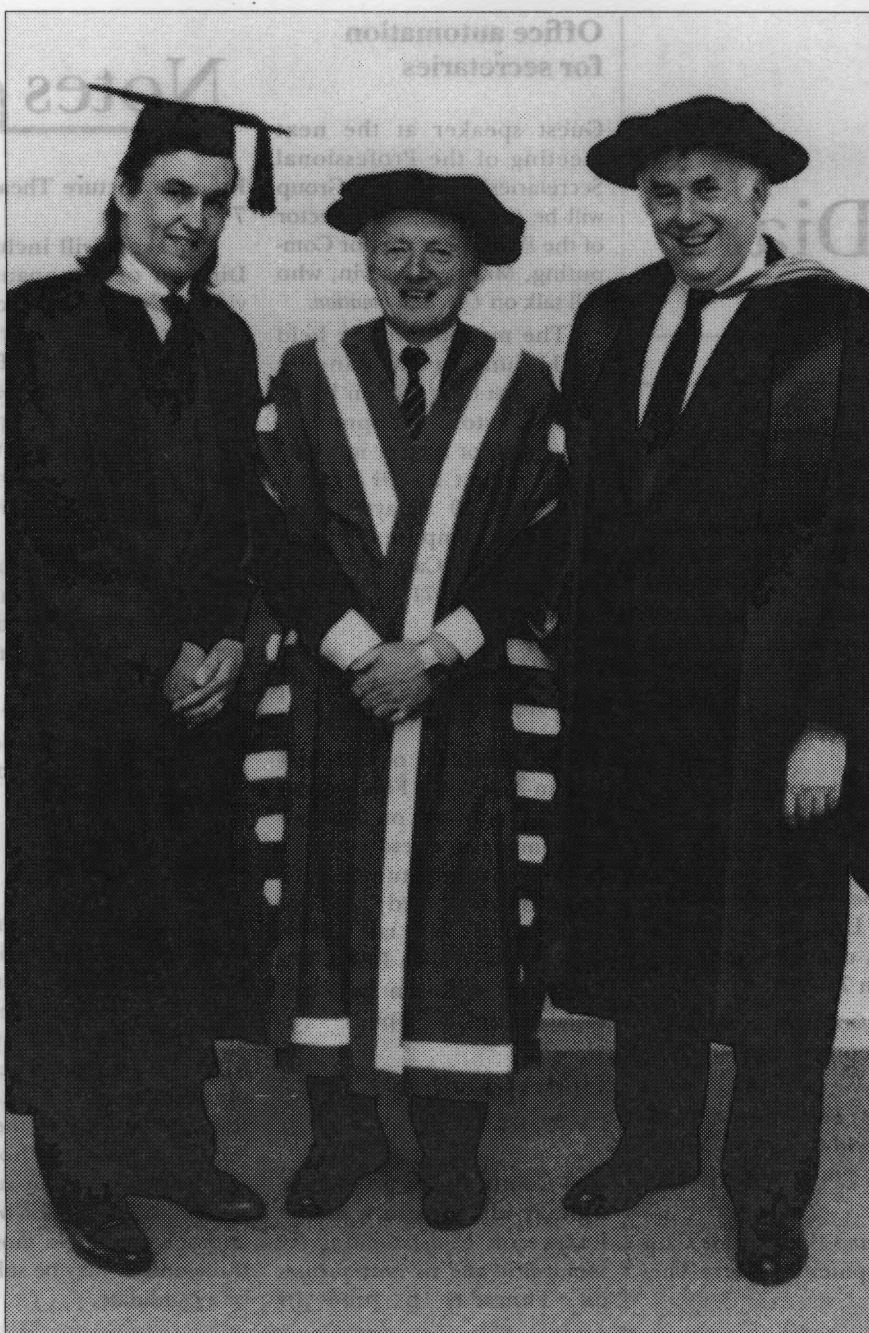
Two graduation ceremonies at the college on 18 May were attended by more than 2000 friends and family members of the 726 graduating students.

To mark the occasion the Chancellor of Monash, Sir George Lush, presided. In addition, Vice-Chancellor Professor Mal Logan and other senior academics attended.

Keynote speaker at the morning ceremony was the Bishop of Sale, Jeremiah Coffey. Chairman of the Australian Securities Commission, Mr A. Hartnell, was keynote speaker at the afternoon ceremony.

A former student of Monash University College Gippsland, Mr Ricky Iverson, returned to Gippsland from the US to receive his Masters degree at the graduation.

Mr Iverson is completing his Doctor of Philosophy in Sociology at the University of Iowa. He completed his Masters at MUCG in the School of Social Sciences.



Mr Ricky Iverson (left), who returned to Gippsland from the US to receive his Masters degree, with Chief Executive of MUCG, Professor Tom Kennedy (centre) and Head of Social Sciences, Professor Peter Harwood.

## Nursing degrees

Nursing graduates were presented with Monash degrees for the first time at a graduation ceremony at Frankston campus last month.

At the ceremony in the George Jenkins Theatre, 108 candidates were awarded Diplomas of Applied Science (Nursing).

Executive Director of the Royal College of Nursing, Miss June Cochrane, delivered the graduation speech. She said the past 10 years had been the most challenging and exciting in the history of nursing in this country.

"The united efforts of nurses throughout Australia finally achieved the decision to transfer preregistration nursing programs from hospitals to the higher education sector," Miss Cochrane said.

"We have also seen the introduction of higher degrees in the discipline of nursing, a significant expansion in the area of nursing research, the establishment of a professional career structure which gives due recognition to the value of the clinical nurse practitioner, and the unification of the major nursing unions," she said.

In 1981 there were only six colleges of advanced education providing preregistration nursing courses; now there were 45. Degree programs for registered nurses were not introduced until the late 1970s, but today they also numbered 45.

One target yet to be achieved was the progressive introduction of preregistration programs leading to the award of a Bachelor of Nursing, to replace the current diploma programs.

## Prize winners from engineering faculty



### Electrical and computer systems' top students

1990 prize winners from the Department of Electrical and Computer Systems Engineering are pictured following the April graduation ceremony.

Department staff, prize winners and supporters pictured (left to right) are Mr Nick Antonopoulos (IBM), Professor Bill Bonwick, Professor Fred Symons, Mr Jamie Chard, Professor Bill Brown, Mrs Ellis Brover, private donors Marion and Bill Beard, Mr Marc Gustini, Associate Professor Ed Cherry, Mr Neville Dove (Philips), and Mr Robert Wilson (Wilson Transformers).

Mr Brover was the top fourth year student, winner of The Institution of Engineers Award, and the Ian Langlands Medal as the faculty's top student; Mr Chard was the top third year student and winner of the Jack Wilson Prize; Mr Gustini won the Graham Beard Third Year Prize.



### Civil engineering class of 1990

Pictured above, at the Department of Civil Engineering's 1990 prize giving ceremony, are department staff, prize winners and presenters.

They are (back row, from left) Mr David Bell, Mr Timothy Chamberlain, Mr Lindsay White; (middle row) Mr Mark Whelan (Scott & Furphy), Mr Moten Buur-Jensen, Mr Andris Eimanis, Dr Tony Richardson (Melbourne University), Mr Frank Winston, Mr Andrew Simpson, Mr Ron Thyer (The Institution of Engineers), Mr Mark Waddell, Mr Peter Haworth (Ove Arup & Partners), Mr J.

Sharkey, Dr Jack Morgan (Golder Associates), and Mr Tom Fricke (Gutteridge Haskins & Davey); (front row) Mr Christopher Kendall, Ms Melanie Boyd, Mr Ian Eadie, Mr Andrew Boundy, Professor Eric Laurenson, Dr Don Kinder (Sly & Weigall), Mr Robert Nestic, and Mr Andrew Western.

Mr Western was the department's top graduate and the top water engineering student.

Mr White won the Fred Green Memorial Prize for proficiency to the end of third year.





## Diary

### JUNE

**6 Ecology and Evolutionary Biology Seminar** *Timing of foraging trips by Adelie penguins: Biological indicators or biological clocks?*, by Dr Lloyd David, University of Otago. S8. 1 pm.

**Monash in the City Lecture** *Landmarks in the European novel: Franz Kafka's 'The Trial'*, by Dr Silke Hesse. Suite 3, Sir John Monash Business Centre. 6-7.15 pm. Presented by the Centre for Comparative Literature and the Centre for European Studies.

**Honours and Postgraduate Research Seminars** *Music among the Khmer and Lao communities in Melbourne*, by Randall Bouchier. Presented by the Department of Music. Seminar room S807, Menzies Building. 9.30-11 am.

**7 Accounting and Finance Seminar** *Put-call parity in Australia: Review, reinterpretation and additional evidence*, by Professor Robert Brown and Mr Stephen Easton. Room 954, Menzies Building. 2.15 pm.

**14 Migrant and Intercultural Studies Seminar** *Racial harassment*. Moot Court (LI), Faculty of Law, Ground Floor. 9 am - 5.15 pm. For further information, contact Radha Rasmussen, extn 75 2958 or Sonja Mueller, extn 75 3267.

**18 Free Lunchtime Talks** *Freedom of Information*, by Mrs Janice Dunn. Presented by Staff Development. Gallery Theatre. 1-2 pm.

**21 Executive Information Systems (EIS) Fair** Presented by the Department of Information Systems. World Congress Centre. 10 am - 4 pm. For further information, contact Ms Jessica Pereira, extn 73 2011.

**25 Free Lunchtime Talks** *Diet, Health and Work*, by Ms Cath Collins. Presented by Staff Development. Gallery Theatre. 1-2 pm.

## Office automation for secretaries

Guest speaker at the next meeting of the Professional Secretaries' Networking Group will be the Executive Director of the Pearcey Centre for Computing, Mrs Pearl Levin, who will talk on *Office automation*.

The meeting will be held on 11 June in the Banquet Room, first floor, Union Building, Clayton campus, at 12.45 pm. For further information, contact Ms Di Barker, extn 75 4110 (Clayton and Frankston campuses) or Mrs Val Grinblat (Caulfield campus), extn 73 2071, by 7 June.

## Postgraduate study in the USA

A representative of the Australian-American Foundation (Canberra) will be on the Clayton campus on Tuesday 30 July to talk on opportunities for postgraduate study in the United States. The talk will be held in the Union Building's Conference Room between 11.30 am and 12.30 pm.

## Understanding menopause

The Centre for Reproductive Biology will present a public lecture on *Understanding the menopause and its consequences* on Thursday 6 June in

## Notes

Rotunda Lecture Theatre 1 at 7 pm.

Speakers will include the Director of Menopausal Services at Monash Medical Centre, Dr Elizabeth Farrell; the Director of Prince Henry's Institute of Medical Research, Professor Henry Burger, and the Director of the Institute of Reproduction and Development, Professor David de Kretser.

The lecture will provide an opportunity for members of the audience to question the experts and air concerns in an open forum.

The cost is \$15. For further information and bookings, contact Ms Rebecca Lodge on extn 75 2765.

## Prize for poetry

The Monash University Prize for Poetry, established in 1963, is awarded annually for the best poem by an undergraduate. The value of the prize is \$150. Entries must be typed, no more than 150 lines, and the original work of the candidate. Each entry should be submitted under a nom de plume and must not bear the author's name. No more than three entries may be submitted by a candidate.

Each entry should be attached to an envelope containing the candidate's name, address and student number.

Entries should be lodged with the Registrar's Office by 5 pm on 1 October.

## Pharmacology symposium

An international symposium in honour of Professor A. Boura, Foundation Professor and Chairman of the Department of Pharmacology (1975-1990), will be held at Monash on 28 June.

The symposium, entitled *Academic and industrial pharmacology: Past, present and future philosophies for novel drug discovery*, will run from 9.30 am to 5 pm in medical lecture theatre M3.

For further information, contact Dr J. Olley, extn 75 5752 or Mrs M. Rechman, extn 75 4864.

## Accommodation

**Brighton:** Person wanted to share delightful, furnished, two bedroom, older style flat with 41 year old woman, retired secondary school teacher. Garden, library and office space. Fifty metres walk from swimming beach. No pets. \$70 per week, \$80 with garage, share expenses. Phone 592 4416.

## Forum urges plastics recycling

The future of plastics in Australia was the focus of a national forum entitled *Plastics and the environment*, held at the World Congress Centre last month.

Held to discuss the viability of plastics recycling in Australia, it brought together many of the major players in the plastics debate.

The forum was organised by Monash's business and consulting arm, Montech.

More than 200 manufacturers, researchers, conservationists, local councils, recyclers and members of the public aired their differences and made recommendations about the efficient use, reuse and disposal of plastics.

Delegates took part in a series of syndicates covering topics including thin-film packaging, rigid containers, trade waste, foamed plastics and consumer durables.

Organisers said the exchange of ideas signalled the beginning of more cooperation between groups with opposing views. Plans for a

working party to act on the recommendations are under way, and members will be appointed soon.

The opening address was given by Australia's Ambassador for the Environment, Sir Ninian Stephen.

At the forum dinner, more than 100 delegates heard an address by the Advocate for the Commission for the Future, Dr Peter Ellyard.

Other speakers included the Federal Minister for the

Arts, Sport and the Environment, Ms Ros Kelly; the director of the Australian Conservation Foundation, Mr Phillip Toyne; and the chief executive officer of the CSIRO, Dr John Stocker.

Major sponsors of the forum included CSIRO, Plastics Industry Association, ICI Plastics, Australasian Corrosion Centre, Centre for Advanced Materials Technology and Monash.



To mark German Week last month, the German Vice-Consul General, Janina Low (third from left, centre), visited the Department of German Studies to present prizes to various students. Karla Bastomsky (bottom, left) won the Goethe prize for the best student in first year. The presentation was also attended by Professor Veit from the department (far left, centre) and the Dean of Arts, Professor Pargetter (back row).

## Training business better

The Sir John Monash Business Centre wants to strengthen connections with its namesake university.

A joint venture between Monash and the Council of Adult Education, the centre on the fifth floor, 253 Flinders Lane, Melbourne, has rooms and suites to suit casual meetings or large conferences, from six to 180 people.

"Monash doesn't make use of the centre as much as it could," said manager Ms Judy Newbold. "Up until now it has been used mostly as a venue, but we also provide a range of training courses and consultancy support."

"We already have established two integrated programs for supervisors and middle-level managers. In addition, we run general courses such as time management."

Monash's Graduate School of Management used the centre as its permanent city office for the Master of Business Administration course.

Ms Newbold said the centre had a unique approach to training programs, based on an analysis of each organisation's needs.

"We then provide them with the necessary training to address the skills we have identified," she said.

"What happens with many training courses is that people attend for a few hours, and then they go back to their workplace and do nothing differently. We want to get people to use what they have learned."

She said the centre's courses combined training sessions with individual projects, designed to help participants apply their new skills. Training courses promoted a team spirit and gave participants a greater understanding of their organisation. The centre is currently running training programs for the SEC.

Facilities at the centre include a conference room, lecture theatre, syndicate rooms and a board room suite - all with audio and video equipment. Food and beverage catering can be provided, as well as office support and professional services.

For more information about training programs or bookings, contact the centre on 655 3100.



# Exploring the landscape through a series

Artists who have explored themes and concepts through a series of works are featured in a new exhibition at the Monash University Gallery.

'Prints, series and drawings from the Monash University Collection' will be at the gallery until 14 June.

The exhibition also includes a sound sculpture by Monash's musician in residence, Mr Ernie Althoff. His sculpture in the Russell Drysdale Gallery combines motorised parts, bamboo and bells.

The late Fred Williams is represented by a folio of 12 lithographic prints, based on the landscape of the Werribee Gorge and surrounding areas. This set was bought by the gallery in 1978, four years before the artist's death.

They are fine graphic examples of Williams' personal vision, developed through his investigation of the landscape's rugged and varied terrain.

Udo Sellbach's series 'The target is man' has a rare public showing at the exhibition. This series of etchings and aquatints was done especially for

Monash and has hung in the Department of Psychology for many years.

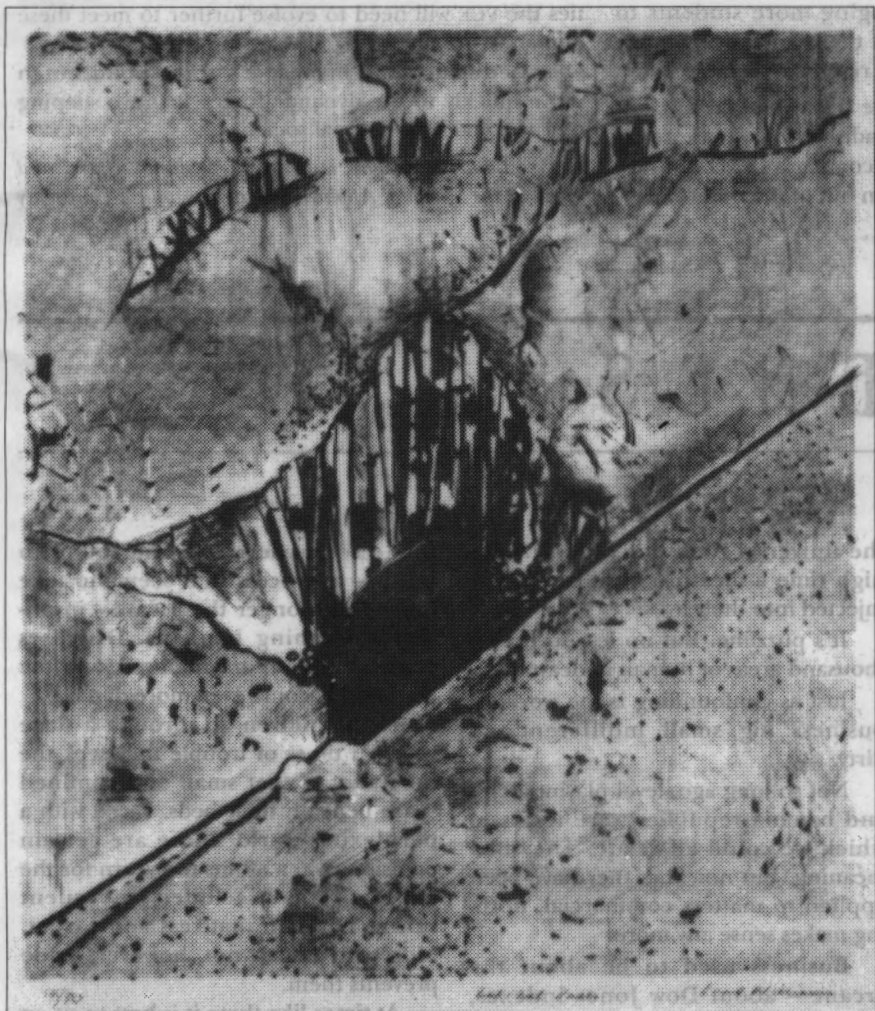
Born in Cologne, Germany, in 1927, Sellbach's childhood experiences during World War II inspired this series on the horrors of war.

Other series in the exhibition include Melbourne artist Maggie May's suite 'Tidal Zone', which expresses her response to land and sea; Bea Maddock's 'Hanging tracks' and Graeme Peeble's 'The Death of Damians I-V', a collection of rich, tonal aquatints and etchings.

Marianne Baillieu's abstract drawings 'Alleluia' and 'Where are you?' deal with her exploration of the landscape and the inner realm of the senses.

Ludwig Hirschfeld Mack was a foundation member and former teacher with the Bauhaus in Germany. His small abstract compositions are a result of experiments with colour theory as it relates to music.

From the exhibition are Fred Williams' lithographic prints of Lal Lal Falls (right) and Werribee Gorge (below).



## Exclusive opera season

The Victoria State Opera's 1991 regional touring production of Mozart's 'Cosi fan tutte' will have its only Melbourne season at the Alexander Theatre.

Only a few seats remain for performances on 11, 13 and 15 June. The VSO, a centre of Monash University, last year presented 'The Barber of Seville' at the theatre. Both its performances were sold out.

The VSO's production of 'Cosi fan tutte', in association with the Victorian Arts Council, celebrates the bicentenary of Mozart's death and will tour regional centres this month.

The production will feature the VSO's 1991 Young Artists as soloists, and the Rantos Collegium Orchestra,

conducted by VSO musical director, Mr Richard Divall.

The comic opera tells of the loyalties and intrigues of love, and of a wager between two young officers and their friend to prove their fiancées' fidelity.

"For regular opera patrons, the Monash season will be a rare opportunity to see the excellence of the VSO's young artists," Manager of the Alexander Theatre, Mr Phil A'Vard, said. "For those who would not normally be drawn to city productions, the season could provide many with their first ever opera experience."

Tickets cost \$33.90 for adults and \$26.90 for concession. For bookings contact the Alexander Theatre on extn 75 3992.

## Australian writer on campus soon for Paris studio sojourn

Marion Halligan, a full-time writer who lives in Canberra, was in the Department of English for a one-week residency last month.

She is pictured at right with a display of her books in the Clayton campus bookshop.

The residency was the first event in the 1991 Writers-on-Campus program, funded by the Literature Board of the Australia Council, the Vera Moore Fund and the Faculty of Arts.

During the week, Ms Halligan read from her own work and conducted a fiction writing workshop. She also was

available for consultation about aspects of writing.

She has worked as a freelance journalist and as a reviewer for the *Canberra Times* and ABC Radio.

Ms Halligan has published two collections of short stories, *The Hanged Man in the Garden* and *The Living Hot-house*, and two novels, *Self-Possession*, and *Spidercup*.

Recently she won the 1990 Pascall Award for a body of work on literary criticism and will soon be working in Paris, occupying the Australia Council studio.





**T**HE PAST DECADE has been one of turmoil in education, resulting in worthwhile initiatives such as the introduction of the Victorian Certificate of Education (VCE) and the setting up of senior secondary colleges.

The conclusions of the Kirby and Blackburn reports are being put into place with a range of integrated youth and education policies and reforms.

But these changes can be traced directly to the problems of the early 1980s. The demands of the 1990s will require new directions; it is not enough to rest on the achievements so far.

We must remember that education has a time lag of six to 10 years in responding to shifts in society and the economy. We can no longer afford the time it takes for education to catch up to changes in the economy and society.

The new VCE is essentially based on the needs of the 1980s, so we should now start the process of tailoring it to the demands of 1990s. I believe The VCE is conceptually correct, but in its implementation there is a need for major adjustment.

There already has been significant input from the wider tertiary education community: some constructive and some, I suspect, based on other political agendas.

Many of the suggestions have been addressed by the Victorian Curriculum Advisory Board, including improved mechanisms for tertiary selection and the incorporation of external assessment.

Some of the responses within tertiary education have been based on a concern that an easy system of selecting students for tertiary education must be maintained. However, sometimes these concerns have been based purely on elitist goals. Many established universities have sought to maintain their reputations by judging the quality of their student intake on an Anderson Score.

There is a strong case for the worth of a university to be assessed by the value it adds to a student's life.

How long will we continue to allow examinations for school leavers to be the arbitrator of social worth



by Barry Dunstan

and status? When will we, as a community, look at education's outcomes from our tertiary institutions on the record of graduate employment?

Nevertheless, the conceptual framework of a more vital education system is in place and now we must consider the emerging issues. Firstly, we have been successful in encouraging more students to complete year 11 and 12, but there are still too many who are not prepared for the rigours of further study.

Historically, students have been allowed to coast along in junior secondary grades and if we are really going to have a chance at becoming a clever country this attitude needs to be blown out of the water.

The development of secondary school clusters which provides an effective link between the junior secondary and the senior campuses must be consolidated by allowing greater integration with primary schools.

Australia will increasingly become part of the Asian Pacific region. By the year 2030, 12 per cent of our population will have an Asian background. Our major trading activity will be directed towards South-East Asia.

Therefore, primary and secondary schools and tertiary institutions will need to establish an even higher priority for the study of Asian languages and cultures. Australia – through banking deregulation and tariff reforms – will become a part of a global business economy. To survive, we must sell; to sell, we must have products other countries wish to buy.

The pressure on education to produce highly educated and skilled graduates, who have the capacity to be retrained and to shift to new areas of employment, will become even more intense.

Schools have to play their part in creating a more productive culture. As part of this shake-out, our society will be driven by market forces, and an entrepreneurial approach will become a more dominant feature of education.

Through the use of new technologies, education and training have the potential to become global. Stand-alone schools must be aware that the new interactive, computer-based technologies can provide specialist programs for Victorian, Australian and world-wide audiences.

The two-year VCE was a creature of the social and economic problems of the early 1980s. As we face a new decade of social change and economic difficulties the VCE will need to evolve further to meet these demands.

As educators we must learn to respond much more quickly to the dynamic forces that are shaping our national and regional societies.

*Professor Barry Dunstan is Dean of Academic Affairs and Head of the School of Applied Science at Monash University*

## DIOGENES



**I**N AN INTERVIEW filmed in the out-back a couple of years ago, that well-known interpreter of the human condition, Michael Leunig, spoke for all of us who were born wide-eyed in amazement.

"If bewilderment were a crime," the cartoonist said, "I'd be in big trouble."

The bewildered's lot is not an easy one. We are driven constantly around the bend by the two great imponderables, 'why?' and 'how?'. Trouble is, they always refuse to offer a lift back.

Is it little wonder then that we always seem to be gazing blankly into the distance while everyone else carries on as if they had more than just an inkling?

Sometimes it seems the machinations of life were designed by some

cruel architect simply to flummox us. If incredulity were indeed a punishable offence, our prisons would be overflowing.

Poking around in the dark corners of someone else's mind or trying to second-guess a bureaucracy is akin to being let loose blindfolded in the middle of a maze. It's a hopeless task.

One of our top-ranking enigmas is the seesawing popularity of organised religion. It's odd (isn't everything?), but peculiar things happen when people get the scent of an afterlife in their nostrils.

The attraction of something more mod-conned than Planet Earth in its 1991st year of spiritual renovation has always been powerful. But when once pious atheists – the kind who always thought that the Stations of the Cross had something to do with Sydney's transport system – begin to slouch anonymously into the back row at church, you know something's up.

Before you can say "There are no atheists in foxholes", they have stormed the confessional.

Why the urgent need for a here-after? Do non-believers suddenly glimpse their mortality in the mirror one morning, decide that the temporal world is nothing to get worked up about, and that they might as well book a ticket for the next stop on this cosmic journey, just in case?

Or is it abject fear? The awful realisation that their allotted three score and ten is just a microscopic blip on

the universal time line, and that it's high time a measure of meaning was injected into their lives.

It's puzzling. But no less so than a thousand areas of human endeavour.

Just as confounding is the world of business: big, small, indifferent and dirty.

Not so long ago, level playing fields and banana republics were terms to which we could all relate. They had meaning. But now that they have been applied to matters commercial, nothing makes sense any more.

Business used to be about the arcane – about Dow Jones indexes, FT100s, unfathomable movements on the stock market, takeovers. Never mind, said the bewildered, someone obviously understands.

But two things have become patently clear. First, no one understands, and second, as business continues to prey on everyday language, there is an expectation that we all should comprehend – worse still, appreciate – what the terminology in its new guise actually means.

When the truth is (typical of the bewildered), we do not have the slightest notion. About anything.

As state and federal parliaments conduct their latest leadership chook raffle, the confused see a TV parade of sunlamped faces that offer little more than the promise of even bigger smiles on the next news bulletin.

Trust has become a valuable commodity. Just when you think you have

found somewhere safe and sound to put it – a process that seems to take longer and longer these days – invariably something happens. Disguises come off, gloves are removed, and the confused become even more dazed.

Most children go through a stage when in times of trouble they seek the sanctuary of that small and confined space beneath their beds. Faced with a perplexing world, there are certain occasions when adults too yearn for the peace of that secluded and silent refuge between mattress and carpet. More often than not, however, pride prevents them.

At times like these it is best to sit on a quiet step somewhere and repeat the mantra of the terminally amazed: "I don't believe it!", "Well, I never!", "How on earth?" and "Oh my God!" (of American origin, but astonishment knows no borders).

