on the day after the
Academic pay rise awarded
Australia's
1991

The Federal Government has acted swiftly to fund an academic salary in-
crease worth more than $100 million.

Gabinon announced its decision late last month – on the day after the
Industrial Relations Commission (IRC) handed down a decision granting
Australia's 28,000 academics a long-awaited pay rise.

The decision comes almost two
years after academic unions first
sought increases under the commis-
sion's structural efficiency principle.

The commission awarded increases ranging from 18 to 16 per cent as part
of a new academic award. The in-
creases will be phased in, with about
80 per cent of the rise applying from
23 July and the remainder to be intro-
duced in 12 months.

From 1992, a professor's salary will
increase by about $8000. At the other
end of the scale, tutors will get in-
creases ranging from $4000 to $6000.

However, academic unions have
questioned the Government's figures, which included increments. They say
the overall increase is about nine per-
cent now, with a further 2.5 per cent to
be granted later.

The general secretary of the Feder-
ated Australian University Staff Associa-
tion (FAUSA), Mr Di Zetlin, said the IRC's decision had put academics back
in the game by restoring relativities.

"We are really viewing it as a first
step back. It was a very long time to
wait for one step, given 20 years of de-
cline, but we have got to start some-
where," she said. The Government's
information about the new pay scales had been "fairly seriously misleading".

The general secretary of the Union
of Australian College Academics, Mr
Grahame McCallach, said the decision
was generally a very good one, al-
though the extent of the increase had
been exaggerated.

"I would simply say that the rises
are not as great as claimed by the Gov-
ernment and the employers," he said.

"It is my expectation that we will seek
another 4.5 per cent between now and
the end of the year."

The president of the Staff Associa-
tion of Monash University (a branch of
FAUSA), Dr Frank Burden, said the association was satisfied with the rises
but disappointed at the time it took.

"We are still concerned about the
under-funding of universities, which
affects general working conditions," Dr
Burden said. "Although the Govern-
ment has granted these salary in-
creases, it is still not funding students
at the proper level." He said it was too
soon to predict the effect of the salary
increases on academic morale.

Announcing the Cabinet decision,
the Minister for Higher Education and
Employment Services, Mr Peter Bal-
dwin, claimed salaries would rise up to
20 per cent over time. The full cost of
the decision was estimated at $119 mil-
lion in 1991-2, rising to more than

He hoped the decision would help
to remedy the predicted academic staff
shortfall in Australia. He believed the
salary increases would boost morale
among academics and help alleviate
some of the stresses being felt by the
higher education system.

The new academic pay scales

<table>
<thead>
<tr>
<th>Old rates</th>
<th>New rates</th>
<th>From 23 July 1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>$67,812</td>
<td>$72,000</td>
</tr>
<tr>
<td>Associate</td>
<td>$57,493</td>
<td>$63,000</td>
</tr>
<tr>
<td>Professor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>from $43,984</td>
<td>from $47,500</td>
</tr>
<tr>
<td>Lecturer</td>
<td>to $51,015</td>
<td>to $55,000</td>
</tr>
<tr>
<td>Junior</td>
<td>from $33,163</td>
<td>from $38,500</td>
</tr>
<tr>
<td>Lecturer</td>
<td>to $43,096</td>
<td>to $46,000</td>
</tr>
<tr>
<td>Tutor</td>
<td>from $24,197</td>
<td>from $24,600</td>
</tr>
<tr>
<td></td>
<td>to $32,762</td>
<td>to $36,700</td>
</tr>
</tbody>
</table>

Note: Rates listed are salary ranges. Classifications may change in title.
Mr Russell Gibbs, a part-time PhD student in the Department of Materials Engineering, together with colleagues L. D. McKeeen and B. Gour at BHP's Melbourne Research Laboratories, recently won the prestigious Michael Tenebaum Prize for the best paper presented at the 1990 ISS-AIME conference in Cincinnati, Ohio.

The paper, entitled 'A mathematical model to calculate force, temperature and final properties during the rolling of structural sections', includes parts of Mr Gibbs' PhD work, jointly supervised by Associate Professor Brandon Parker in materials engineering and Dr Alan Browning at BHP.

In a presentation in the main library last month, the Swiss Consul General, Mr Leo Renggli, donated a collection of Swiss books to Monash.

The 33 books are all by Swiss fiction writers, with many prominent writers featuring in the collection. The books are all in German.

Pro Helvetia, the part of the Swiss Government responsible for organising the donation, has donated books to Monash in the past.

The main library already has an established collection and this donation will extend it significantly.

Associate Professor Walter Veit, of the Department of German Studies and Slavic Studies, also donated a microfiche catalogue of the German National Library.

Dr Craig Robert Smith (left) has won the Ciba-Geigy prize for the top final year student in the Faculty of Medicine.

He was presented with the Ciba Collection of medical illustrations by the chemical supply company's representative Mr Jack Hilton (right). They are pictured with one of the collection's volumes with illustrations by Dr Frank Netter.

Dr Smith is also the recipient of the Sophie Davis Memorial Prize for the student who obtains the highest aggregate marks in the MBBS degree with honours. His record includes 15 high distinctions, two distinctions and two credits.

Dr John Miller (right) has been appointed a Monash Professorial Fellow.

He will continue as head of the School of Management of the Faculty of Business.

Dr Miller was Foundation Dean of the David Syme Business School from 1974 to 1981 and recently returned to Monash following appointments as Director of Consumer Affairs, Assistant Director-General, Transport Victoria and as a managing partner and chairman of Pannell Kerr Forster, Chartered Accountants. He completed his PhD at Monash in 1983.

The Monash merger is having effects in the sporting arena as well as in the academic arena. Pictured above is the newly formed Monash University Greens football club, located at the Caulfield campus.

The team, which began its season in April this year with a victory, are playing G grade in the Victorian Amateur Football Association.

The line-up of authors at a recent Monash book launch might have given the impression that publishing was about to experience an education-led recovery.

Four books produced from the School Decision Making and Management Centre, in the Faculty of Education, were launched. They were School Based Decision Making and Management (Palmer Press), edited by Dr Judith Chapman; Democracy and Bureaucracy: Tensions in the Provision of Public Education (Palmer Press), edited by Dr Chapman and Mr Jeffrey Dunstan; Improving the Quality of Australian Schools (ACEB), edited by Dr Chapman, Dr Lawrence Angus, Associate Professor Gerald Burke and Mr Vernon Wilkinson; and Leadership in Catholic Education (Spring Press), edited by Mr John McMahon, Ms Helga Neithart, Dr Chapman and Dr Angus.

The authors are (above, from left) Associate Professor Burke, Mr Dunstan, Dr Chapman, Mr Wilkinson, Ms Neithart and Dr Angus.
Monash wins praise in higher education survey

Monash has been listed among the 'best buys' in Australian undergraduate higher education by an authoritative new survey.

In a new book, *The Independent Monthly Good University Guide*, Monash scores highly in a comparison of Australia's 54 higher education institutions. The university was nominated as one of the country's top nine institutions, rated according to key indicators.

Monash is praised for its "excellent services, both academic and cultural" and is described as "big, expansionary, highly regarded and well reviewed."

The university has an exceptionally wide range of courses according to the book's authors, education consultant and commentator Dean Ashenden, and educationalist Sandra Milligan.

"The Clayton campus offers a conventional first degree which has high prestige with less dreary courses than many elsewhere," they write. "Clayton is one of the biggest and busiest campuses in the country, and offers one of the broadest undergraduate programs."

The guide looks at the breadth and depth of undergraduate courses offered and how well the institutions perform in graduate starting salaries, staff to student ratios, research quality and library facilities. The guide compares cut-off scores, opportunities for adults and others without Year 12 scores and student characteristics.

All faculties except Science scored five star ratings for offering courses which were hard to get into (students' scores would need to be in the top 10 per cent). Science scored four stars (scores in the top 20 per cent).

Caulfield and Frankston campuses rated particularly well in graduate starting salaries. On staff to student ratios, the guide says Clayton campus leads, but other campuses still were satisfactory.

"Monash does well on starting salaries and student to staff ratios, and has good student services - everything from a highly regarded housing service to shops and child-care," the guide says.

The university's big research reputation is noted: "Plenty of opportunities to continue on into a research career. Eight per cent of Monash students are doing a higher degree by research. That's higher."

"It has a reputation for being entrepreneurial, and it earns more from overseas fee-paying students than any other Australian university. It attracts a lot of research money from industry, and is very strong on research overall."

The guide says each of the Monash campuses has won high praise from visiting expert review panels in engineering, law, teacher education and accountancy.

"Few, if any, institutions can have emerged so well from the four discipline reviews," it says. "Some discipline reviews have been warm in their praise of Monash, and others have been less critical of Monash courses than of rival programs in the other high status universities."

The guide highlights the disparity between the high status and often low performance of the established universities.

The high-status universities, with their considerable success in research and the best libraries in the country, had generally average or worse student to staff ratios, poor to middling graduate starting salaries and poor student and graduate evaluations.

"The universities which students must want to enter often do a poor job of teaching them," the guide says. "It is hard to avoid the conclusion that the immense resources of these institutions are poured into research at the expense of teaching."

The guide is on sale at the University Bookshop, Clayton campus, other bookshops, or contact Monash Australia on 646 6716.

The Great Australian Science Show last month was dominated by Monash's innovative exhibits, including a walk-in womb, the latest industrial design computer software, computerised teaching programs for doctors and its solar car.

Five faculties - Science, Computing and Information Technology, Medicine, Engineering and Education - participated in the show, which attracted more than 25,000 people to the World Congress Centre during the July school holidays.

Monash presented the show's largest and most diverse exhibition, offering visitors everything from a fitness assessment to their image on computer disc.

The exhibit which attracted the most media and public interest was the walk-in womb developed by the Department of Physiology. More than 8500 people, including the Premier, Mrs Kirner, visited the womb, which featured recordings of fetal and maternal heartbeats and other special effects.

Such was its success that Dr Chris Brown, one of the exhibit's initiators, has received requests from interstate teaching institutions and exhibitors, keen to display the womb at forthcoming shows.

Another exhibit which drew crowds and prompted many questions was a 21st century doctor's surgery presented by the Department of Community Medicine. This exhibit demonstrated the latest in computer-aided learning for medical practitioners.

The simple scientific experiments demonstrated by Faculty of Education students were popular, particularly among younger visitors. Many children (and some parents) vied to work out the correct answer to scientific puzzles using candles, plasticine, balloons and ingenuity.

The inaugural Great Australian Science Show, organised by The Australian Science Network, drew together many of Australia's science-based corporations, research and educational institutions.

The show included an extensive program of lectures and demonstrations by high-calibre speakers, including Monash representatives Professors David de Kreidler, Barry Hart, Robert Porter and Roger Short. Topics ranged from research in reproduction to the properties of water.

Most teaching institutions were represented, including Melbourne University, La Trobe University, Royal Melbourne Institute of Technology, Deakin University, Australian National University and the University of South Queensland. Other exhibitors were BHP, CSIRO, Australian Institute of Marine Science, State Forensic Laboratories, Victoria Police, Energy Victoria, Qantas and OTC Limited.

The Monash exhibition was coordinated by the Communications Department.
Science teaching review finds low job satisfaction

While Australians are being urged to build a clever country, there are still limited opportunities for science teachers to improve the quality of their teaching.

Science teachers feel that their work is held in very low regard and if they had a choice, many of them would not go into science teaching again.

These are some of the findings of a comprehensive review of science teaching in Australia, conducted by the Faculty of Education. The faculty last year was awarded a $180,000 grant from the Commonwealth Department of Employment, Education and Training to develop a strategy for enhancing the professional development opportunities of science teachers.

The Science Education Professional Development Project, based in Monash's Education Faculty, is due to present the Commonwealth Government with its proposals later this month.

Mr Lawrence Ingvarson, Mr John Loughran, of the Faculty of Education, and Mr Warren Fineberg and Ms Jenni Livingston, of the Ministry of Education, conducted interviews throughout Australia with science teachers, representatives of state and territory education systems, and science teacher associations.

The interviews covered areas such as attitudes to work, sense of career, views on what helps and hinders science teachers in their jobs, professional development, and teacher evaluation.

"We found a low morale amongst science teachers," Mr Lawrence Ingvarson said. "Science teachers are not well paid and do not have very attractive career structures."

Other findings were that very few science teachers thought of themselves as scientists, they rarely ever met and interacted with practising scientists in universities, and 90 per cent had had no more than two days of in-service training over the past two years.

Members of the project now are working on ways to improve incentives and rewards for being a classroom teacher and to improve methods of professional development.

"We are trying to make teaching more attractive by saying that teaching needs to be more like a profession in terms of incentives and recognition for quality of practice, and in terms of professional development," Mr Ingvarson said.

"Because of financial problems, the state systems are not putting money into professional development for science teachers - they are doing less and less. The opportunities for science teachers to keep up to date with their science are poor and the opportunities for keeping up to date with changes in teaching methods are also poor."

Project member Mr John Loughran said this has a lot to do with motivation. "It does not appear as though they are expected or encouraged to keep up to date with their field of study, much to the chagrin of the science teachers," he said.

The group is looking at ways to improve the process of becoming an advanced skills teacher. They believe that standards for science teaching need to be set by the science teachers themselves, as in other professions.

"Our strategy is to strengthen the science teacher organisations to make them more like professional associations that set standards and evaluate their member's practice," Mr Ingvarson said.

As well as improving professional development opportunities, teachers needed more rewards and recognition. Award restructuring provided an opportunity for bringing this about.

"As is stands, the only way to get a sense of promotion is by leaving teaching or entering into the administrative side of it. So, paradoxically, the only way of rewarding good teachers is to make them teach less," he said. "We are trying to create a career based on higher status and rewards for being a better classroom teacher."

The group also wants to set up a system in which science teachers are paid to provide information for classroom case studies. This would be a self-funding, ongoing activity of a professional organisation.

Another part of the project has been to develop materials and ideas for teachers to use together to promote learning in the workplace.

"A lot more professional development should also be available in schools. Schools need to break down the isolation of the teachers on the job," Mr Ingvarson said.

"Our proposals are trying to help teaching grow as a profession by taking more responsibility in setting standards and introducing systems for evaluating and rewarding good practice."

Learning from sex and liberty

In the book, published this month, Ms Faust examines the differences that determine sexual behaviour, and the origin of these differences.

It explores biological and historical information as well as confronting the opinions of prominent feminists such as de Beauvoir, Greer and Hite.

Ms Faust argues that in their reactive differences, "men and women are different only to the extent that they experience their bodies differently. Research shows that anything that can be said about the female body can also be said about the male body."

Endogenous differences in sexual style and agressive conduct also are crucial in understanding sexual behaviour, she says.

She contends that suffragettes, building on female sexuality, tried to enforce feminine standards on men, but built a cage for women as well. Since that era, women had been the oppressors as well as the oppressed in sexual matters.

Ms Faust wrote her first feminist editorial in 1956 and her first abortion article in 1968. Co-founder of the American Council for Civil Liberties, founder of the Women's Electoral Lobby and briefly president of the Abortion Law Reform Association, she has a long-standing interest in civil rights, reproductive rights and sexuality.


OBITUARY

Professor Bill Walker, a pioneer of educational administration and a former Councillor of Chisholm Institute, died suddenly last month. He was 62.

At the time of his death he was carrying out a review of the structure of management and business at Monash.

He retired in 1989 after 10 years as chief executive and principal of the Australian Management College at Mt Eliza, where executives from private enterprise and the public service undertook intensive study in management. He was professor of education at the University of New England where Professor Walker established his reputation.

He introduced postgraduate external studies, mainly for principals and school administrators, that changed the nature of educational management in Australia. The university became known internationally as a major centre in this field.

Professor Walker was behind the establishment of the Commonwealth Council for Educational Administration at New England. His influence can be seen in areas as diverse as the creation of the ACT school system, establishment of a university in Darwin, security of HSC examinations in NSW, education of nurses, restructuring of the Victorian education ministry after 1980, and appointment of chief executives.

He was a prolific author of books and articles and travelled constantly as a public speaker, commentator and adviser in educational planning, both here and overseas.
Publish and be well read

Help is at hand for aspiring academic authors. They can now apply to the Monash University Publications Committee for assistance in publishing their scholarly works.

The committee receives an annual grant to facilitate publication of works emanating from, or associated with, Monash.

According to committee chairman, Professor David Aspin, this is one of the lesser-known ways for Monash authors to get into print. Despite the relatively small number of grants awarded, the committee has had great success over the past few years.

"We are able to offer very clear and comprehensive advice to authors on how to negotiate with a range of publishers and how to get the best possible public presentation at the cheapest possible cost for their product," Professor Aspin said.

In addition, authors can apply to the committee for financial aid to cover publishing costs. Although there are no limits to the amount the committee can grant an author, most ask for between $1500 and $5000.

Very high quality publications are then produced, generating royalties for the author and income for the university. Professor Aspin said. From these royalties authors repay their initial grant.

"It has been our experience that the costs of universities giving authors loans are set off within about three to four years. After that, in many cases, the authors are well in profit. Because the university's name is associated with the publication, the university continues to get the kudos," he said.

The committee was anxious to give as wide a range of authors as possible the chance to publish. "At the moment I would say that there are sufficient resources available for colleagues across the university so feel that there'd be strong support for even the most remote of publications to receive recognition," he said.

"I would want to encourage authors to realise that this is a way of getting their works into public notice with a basis of financial support as quickly as we can arrange it.

For information or advice about publishing a thesis as a book, contact Mr Charles Lucas, Senior Editor, Publishing and Advertising, ext 73 2560.

Computers link remote GPs

The isolation of general practice is being tackled by a computer-based telecommunications project in the Department of Community Medicine.

The PHOCUS (Primary Health Oriented Computer Users System) project is an alternative method of interaction for GPs isolated by distance or social circumstances.

"A solo GP in Carlton is potentially as isolated as one in a remote area," he said. "Such a practice can be affected by all the same things. Although the system is obviously useful in rural practices, we are not limited to them."

Dr Cesnik said that GPs in rural areas often were cut off from the medical community because they could not attend conferences and share information with colleagues. "This system gives them a way to stay in touch that they would not have otherwise," he said.

The system will give GPs access to teaching materials prepared for them in the department, as well as reviews of medical literature relevant to general practice. GPs may consult colleagues, send electronic mail and nominate interest groups, such as sports medicine. They can also use the system to send faxes or telefaxes.

GPs will be able to pose diagnostic questions and make comments on a group bulletin board.

"They can request information and then come back in a couple of days and have a look to see what response others have given," Dr Cesnik said. They also will have access to the Victorian Institute of Forensic Pathology's mortality on the coronial responsibilities of doctors. In addition, a Community Medicine department proposal to establish interactive teaching packages on the 10 main groups of therapeutic drugs appears likely to receive approval soon.

The 10 GPs taking part in the pilot study until October will act as mentors for new additions to the system. IBM has provided personal computers on loan for the pilot study, as well as financial support. The computer system software for the first 10 machines has been provided by Medinetwork.

The pilots in the study will have the option of buying the PCs at a reduced rate. Dr Cesnik said IBM's strong interest in the project signified its interest in the primary health care area.

A murder in the lab?

by Hazel Edwards

A murder mystery unfolded in the biochemistry laboratory at Clayton campus last month.

For three hours on a Sunday afternoon, 15 murderous amateur actors took over for a dramatic reading of a novel in progress.

The reading was organised by Plotters Anonymous, four authors who have been collaborating for the past year on a manuscript titled "Uncovering the Double Helix".

Readings took place in the dark room, electrolytess room and a music room titled "Uncovering the Double Helix".

The plot revolves around a scientific discovery of commercial significance. After a lab technician is found dead in a photographic darkroom, a series of deaths occur on campus.

Liz Gardener, one of the Plotters Anonymous group, is researching her PhD in the biochemistry department.

She asked the university's permission to hold the reading on location to help provide a scientific atmosphere.

Her co-authors all have links with Monash: Melbourne University lecturer Dr Mervyn Koeccheou is a former French lector, and Barbara Gardiner completed her PhD as a mature-age student. Apart from holding a MEd from Monash. Hazel Edwards, the project's originator, is author of almost 100 books.

Each of the four authors brings different skills to the book. As a professional author of almost 100 books, Hazel is the project's originator.

She says: "Mervyn is the logical thinker, Barbara is our major researcher and word processor and Liz provides the scientific background. Observers are intrigued that four writers can agree."

As a result of the dramatisation, Plotters Anonymous intends rewriting the manuscript. The book is expected to be published next year.
CSIRO-Monash collaborative research grants

The CSIRO-Monash University Committee recently made its selections in the latest round of grants for collaborative research. Overall funding was sustained at the increased level of $200,000, as was the case in the 1990-91 round. The committee considered 47 applications for projects requesting funds of $839,000. The 30 projects approved are listed below.

<table>
<thead>
<tr>
<th>Chief Investigator</th>
<th>Faculty/Department</th>
<th>Project title</th>
<th>Amount ($) approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr S. Cox</td>
<td>Earth Sciences</td>
<td>Automated analysis of fault surface topography using digital stereo pairs: fracture genesis and appropriate roughness models</td>
<td>8000</td>
</tr>
<tr>
<td>Dr J. Davis</td>
<td>Physics</td>
<td>Study of collapse prone ash eucalypt during drying using non-destructive methods</td>
<td>15,000</td>
</tr>
<tr>
<td>Dr G. Deacon</td>
<td>Chemistry</td>
<td>Activation of carbon-hydrogen bonds by metal complexes</td>
<td>5500</td>
</tr>
<tr>
<td>Mr R. Gani</td>
<td>Mechanical Engineering</td>
<td>Spray cooling of die-casting dies</td>
<td>5000</td>
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<tr>
<td>Professor B. Hart</td>
<td>Water Studies Centre</td>
<td>Solid state nuclear magnetic resonance spectroscopy of dissolved and particulate organic matter</td>
<td>6000</td>
</tr>
<tr>
<td>Professor M. Hearn</td>
<td>Centre for Bioprocess Technology</td>
<td>Fabrication of immobilised enzyme biocatalysts</td>
<td>10,000</td>
</tr>
<tr>
<td>Professor B. Holloway</td>
<td>Genetics and Developmental Biology</td>
<td>Genetics of pseudomonas corrugata strains used for biological control of take-all of wheat</td>
<td>7200</td>
</tr>
<tr>
<td>Dr M. Hooper</td>
<td>Chemistry</td>
<td>A joint CSIRO-Monash study of aromatic hydrocarbon signatures of important sources in the Latrobe region airshed</td>
<td>5000</td>
</tr>
<tr>
<td>Professor W. Jackson</td>
<td>Chemistry</td>
<td>High temperature chemistry of model polycyclic aromatic hydrocarbons and of coal-derived materials</td>
<td>9000</td>
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<tr>
<td>Dr R. King</td>
<td>Pharmacology</td>
<td>Pharmacological studies for the development of novel-acting drugs with potential for treatment of Alzheimer's Dementia</td>
<td>5000</td>
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<tr>
<td>Dr P. Lake</td>
<td>Ecology and Evolutionary Biology</td>
<td>Tropical savanna woodland stream communities: their seasonal dynamics and response to catchment disturbance</td>
<td>5000</td>
</tr>
<tr>
<td>Mr A. Maeder</td>
<td>Computer Science</td>
<td>Automated residue classification for machine wear monitoring</td>
<td>7500</td>
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<tr>
<td>Dr I. McKinnon</td>
<td>Chemistry</td>
<td>Agglomeration of water dispersible controlled release agricultural chemical microspheres into fast dissolving extrudates; with emphasis on reducing case hardening of extrudates</td>
<td>6000</td>
</tr>
<tr>
<td>Acting Professor R. Mein</td>
<td>Civil Engineering</td>
<td>Development of an improved real-time flood forecasting procedure</td>
<td>3600</td>
</tr>
<tr>
<td>Professor W. Melbourne</td>
<td>Mechanical Engineering</td>
<td>Wind load on a curved-roof building</td>
<td>7500</td>
</tr>
<tr>
<td>Professor J. Monaghan</td>
<td>Mathematics</td>
<td>Advanced vortex method algorithms</td>
<td>5000</td>
</tr>
<tr>
<td>Dr B. Muddle</td>
<td>Materials Engineering</td>
<td>Duplex toughening of zirconia-based ternary alloys</td>
<td>5500</td>
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<tr>
<td>Dr K. Murray</td>
<td>Chemistry</td>
<td>Synthesis, properties and applications of novel polymeric electrically conductive composites</td>
<td>6500</td>
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<tr>
<td>Dr J. Peterson</td>
<td>Centre for Geographical Information System</td>
<td>Scope for using the microBRIAN image processing for enhancing and transforming CAT scan digital data for augmenting the success of medical diagnosis</td>
<td>7000</td>
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<tr>
<td>Dr I. Prince</td>
<td>Chemical Engineering</td>
<td>Development of an industrial scale process for the biological production of the mycotoxin phomopsin</td>
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<tr>
<td>Dr B. Roberts</td>
<td>Ecology and Evolutionary Biology</td>
<td>Hormonal control of development in Australian agricultural and domestic pest blowflies</td>
<td>12,000</td>
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<td>Dr J. Sellar</td>
<td>Materials Engineering</td>
<td>New technique for the toughening of electrical ceramics using monoclinic zirconia</td>
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<tr>
<td>Mr J. Sheridan</td>
<td>Mechanical Engineering</td>
<td>Investigation of the stability of separating fluid flows</td>
<td>3500</td>
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<tr>
<td>Dr D. Smyth</td>
<td>Genetics and Developmental Biology</td>
<td>Isolating genes for flowering in Arabidopsis by transposon tagging</td>
<td>8000</td>
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<tr>
<td>Dr T. Sridhar</td>
<td>Chemical Engineering</td>
<td>Catalytic distillation</td>
<td>7000</td>
</tr>
<tr>
<td>Dr Z. Stachurski</td>
<td>Materials Engineering</td>
<td>Toughening mechanism in a two phase (matrix/inclusion) polymer blend: Analysis of stresses around an inclusion by finite element analysis: Relating known strength criteria to the stress states around the inclusion</td>
<td>5000</td>
</tr>
<tr>
<td>Mr K. Stragnell</td>
<td>Microbiology</td>
<td>Development of antigen delivery system for the ovine immune system</td>
<td>6000</td>
</tr>
<tr>
<td>Dr P. Temple-Smith</td>
<td>Anatomy</td>
<td>The molecular basis of sperm maturation-identification, isolation and preliminary characterisation of rabbit epididymal secretory proteins interacting with spermatozoa</td>
<td>3700</td>
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<tr>
<td>Professor G. Thorburn</td>
<td>Physiology</td>
<td>Control of placental and foetal hormones related to the initiation for parturition in sheep</td>
<td>6000</td>
</tr>
<tr>
<td>Dr N. Wreford</td>
<td>Anatomy</td>
<td>Influence of the GnRH agonist Deslorelin on testicular morphology and sperm production in the bull</td>
<td>8500</td>
</tr>
</tbody>
</table>
Australian office buildings and homes consume enormous amounts of energy each year keeping cool in summer and warm in winter. A significant amount of that energy could be saved by special window coatings that reduce transmission of infra-red radiation – heat.

For the past two years, Professor Bruce West’s research group in the Department of Chemistry has been synthesising exotic metal compounds for a new branch of ceramic technology called sol-gel deposition.

Among other things, the sol-gel deposition process can be used to deposit a thin, transparent ceramic film on glass that will selectively exclude heat radiation in summer, and reduce radiant heat loss in winter.

The sol-gel process is a convenient and relatively inexpensive way of depositing thin, homogeneous ceramic coatings on other materials. The substrate is dipped in a solution of metal-organic compounds – called alkoxides – in an organic solvent.

The thickness of the film can be controlled by the rate at which the substrate is withdrawn from the solution, or by altering the viscosity of the solution. The solvent in the layer is then allowed to evaporate. In his office Professor West keeps a glass that will selectively exclude heat from the outside to a layer of metal hydroxide. Heating the material drives off water to form the ceramic layers. The Monash group is involved in producing such windows.

Buildings of the future could have ‘smart’ windows, with their transmission characteristics controlled by an electric current or magnetic field, and show considerable promise as a new storage medium for computer data.

The two-metre tall apparatus used to coat glass by sol-gel deposition.

Professor Bruce West examines a pane of glass coated with a cadmium stannate sol-gel layer. The glass has an amber tinge.

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Seventy kilometres east of Townsville and 76 metres down through the clear waters of the Great Barrier Reef, there is a record of vegetation changes along the Australian coastline during the last glacial period.

Pollen grains preserved in mud from former coastal mangrove swamps have helped Monash scientists to refute a theory that during this period Queensland's tropical rainforests underwent a substantial change in their distribution.

Dr John Grindrod, a palynologist with the Department of Geography, says the fossil pollen spectrum from drill cores obtained by geologists from James Cook University indicate that the prehistoric coastline supported essentially the same vegetation as dry coastal regions today: sclerophyll woodlands with narrow fringing mangrove swamps.

Rainforest pollen is notably absent. Dr Grindrod interprets this as evidence that the rainforests shrank into protected pockets on the ranges that provided enough moisture to keep them alive.

Then, as now, the rainforest was sustained by orographic rain: moist air masses moving in from the oceans cooled as they rose up the seaward slopes of the ranges, causing their moisture to condense and fall as rain.

The only difference was that the air masses had much further to travel. In places the coastal plain was up to 70 km wider than today. The extensive coastal plain would have been quite arid and inhospitable to moisture-loving rainforest species.

Dr Grindrod says fossil pollen from the offshore cores indicates a typical tropical eucalypt woodland, with extensive salt marshes grading into mangrove swamps of fairly low species diversity.

Previous studies by Dr Peter Kershaw, a colleague in the geography department, using pollen cores from crater lakes near Atherton, suggest that rainforest virtually disappeared from the Atherton Tableland, during the glacial period between about 18,000 to 10,000 years ago.

A theory that the rainforest survived by colonising the lowland coastal plain now seems untenable.

Dr Grindrod began his pollen studies while holding a National Research Fellowship during the 1980s; the Fellowship was shared between Monash and James Cook universities. When he took up a full-time lectureship at Monash, the fellowship was taken on by Dr Gabrielle Crowley, who is studying modern pollen assemblages from marine sediments in north Queensland.

The modern cores serve as a reference point for interpreting the fossil pollen spectra in cores obtained offshore in a drilling program undertaken by James Cook University geologists.

Ms Jane Dye, a PhD student in JCU's geology department, who is studying sedimentology processes in the offshore environment, has made her cores available to Dr Grindrod for fossil-pollen analysis.

Dr Grindrod says fossil pollen from Townsville's offshore continental shelf is sparsely distributed and low in species diversity. A gram of core material contains about 3000 pollen grains, typical of modern pollen spectra from the stunted mangrove swamps that grow near Townsville today.

Further north, where the modern coastal environment is more humid because of the proximity of the coastal ranges, the pollen grain count rises to about 100,000 per gram, and species diversity is much higher — more typical of the species-rich and more luxuriant mangrove swamps that fringe the Hinchinbrook Channel between the mainland and Hinchinbrook Island.

Most of the fossil cores provided for pollen analysis by JCU geologists are from the outer reef region; the deepest cores come from about 70 km offshore. By carbon dating organic material from the cores, Dr Grindrod and Ms Dye have been able to establish how the coastline retreated as sea levels rose with the melting of the polar ice caps at the end of the glacial period.

"The sea level we have derived from the cores is in broad agreement with the established sea level record for south-eastern Australia based on information collected at or near the present coastline," Dr Grindrod said.

"It tells us that sea level was about 60 m lower than present about 12,000 years ago, and gradually rose to stabilise at its modern level about 6000 years ago."

"But there are significant discrepancies. For example, our data points from the outer shelf of the reef are about 20 m lower than would be predicted from our knowledge of sea levels."

"There are a lot of studies in the scientific literature to suggest stability of the outer continental shelf during the past 20,000 years or so, but our evidence suggests that it has been warped downwards about 20 m by the weight of overlying seawater."

"This would have implications for the growth rates of coral on the Great Barrier Reef during the same period, because the reef must have grown faster to keep pace with rising sea levels."

The pollen grains from the offshore cores are from a diverse range of mangrove species including Rhizophora, Ceriops, Bruguiera, Avicennia and Sonneratia — genera that grow at various places along the coast today.

One enigmatic presence in Dr Crowley's modern pollen cores from the Hinchinbrook Channel is pollen from southern beech, Nothofagus. Nothofagus is not known to grow in the region — Nothofagus moorei grows more than 1000 km to the south in Lamington National Park, just south of the Queensland border, while about 10 species of Nothofagus occur in the New Guinea Highlands, 1000 km to the north.

The Bioclim program developed by Professor Henry Nix, of the Centre for Resource and Environmental Studies at the Australian National University, predicts on the basis of the present environmental requirements of the genus that Nothofagus should grow at high elevation on Hinchinbrook Island and the adjacent mainland, but no trees have ever been found.

The pollen from the Hinchinbrook channel is unlike anything to have drifted in from New Guinea, and neither winds nor ocean currents travel in the right direction to bring the pollen from northern New Guinea. Its source remains a mystery — it may be telling botanists to look more closely in Queensland's rainforests, to confirm something that the Bioclim program, a piece of software with a remarkable record for such predictions, already knows in its electronic heart of hearts.
Striking drugs from plant roots

A microbe which splices its own genes into the cells of its plant hosts may help to produce therapeutic drugs.

Professor John Hamill is investigating a root-cell culture system which could have applications in the pharmaceutical industry.

The crown gall bacterium *Agrobacterium tumefaciens* has held centre stage in plant molecular biology for more than a decade. In the 1990s its role as a general purpose agent for delivering new genes into plants may come under challenge from its lesser-known cousin, *A. rhizogenes*.

*A. rhizogenes* (Greek: 'root-maker') also performs the biological miracle of splicing its own genes into the cells of its plant hosts, but its genetic surgery produces an effect that is outwardly normal, instead of the plant being disfigured by the rampant cancer-like growth of crown gall tissue.

The most significant change occurs beneath the surface of the soil: infected plants make prolific root growth. The roots are fast growing and highly branched, and there are many more of them.

Professor John Hamill, of the Department of Genetics and Developmental Biology, says the package of genes that *A. rhizogenes* injects into the root cells seem to integrate smoothly into the cell, working under the supervision of the plant's natural genetic mechanisms instead of overriding them.

Professor Hamill, who came to the university this year after working on the bacterium at the AFRC Institute, Norwich, says *A. rhizogenes* offers a window through which the genetic events involved in root development may be viewed. The microbe can be used to introduce new or synthetic mutant genes into plant root cells to perturb or divert natural biochemical pathways.

This capability also makes the root-making microbe attractive to the pharmaceutical industry. Isolated root tissue comes from a plant that makes a useful compound under natural conditions, the genes involved in its synthesis may fail to switch on under artificial culture systems because the cell does not achieve maturity.

What genes does *A. rhizogenes* place in plant cells? Professor Hamill says that work overseas has very recently shown that at least one important gene makes the cells sensitive to plant growth hormones called auxins. But instead of overproducing auxins that would result in uncontrolled growth, the gene is responsive to levels of auxin in the root tissue; this natural feedback mechanism ensures that growth is regulated in a way that does not compromise the plant.

Auxins are well known in horticulture. A synthetic auxin such as naphthalene acetic acid (NAA) causes cuttings to develop roots. At a deeper level, auxins switch on genes in coordinated groups, setting in train a developmental sequence that often ends with mature roots. "I'm beginning to study what genes are involved in controlling root differentiation," he said.

"Auxin synthesis genes tend to be a lot of auxin, and the auxin predisposes cells to multiply and form tissues that are sensitive to auxin. This sets up a hormone balance in the plant that favours root development and other banks of genes respond to the order."

"It raises some fascinating questions. Is a shoot a shoot because certain genes are suppressed, or because other genes are switched on? The attraction in studying roots is that they are probably not as complicated as the above-ground organs of the plant. For example, fewer genes are probably required to make a root than to make structures like shoots or flowers."

"Yet despite this simplicity, not enough research has been done on roots. They are the forgotten plant organ."

Professor Hamill notes that plants produce a huge pharmaceutical range of chemicals, including alkaloids that are of interest to drug companies, and thiophenes which may be useful in controlling destructive nematode e.g. worms that attack the roots of crops. "Only about 15 per cent of the world's plants have been looked at for their biosynthetic capacity, yet these have yielded thousands of alkaloids, and new ones are being reported every month," he said. "There is huge potential there - these compounds are known as folk medicines around the world, so that much of the research is focused on plants with known medicinal properties."

"For a long time it was thought that such compounds were simply metabolic end products or waste products. It's now clear they play an important role in the ecology of the plant, defending it against pests."

Professor Hamill said experiments nearly half a century ago had shown that some alkaloids were synthesized in root cells and translocated to other parts of the plant and stored in tissues such as stems and leaves, presumably to deter leaf-eating insects and herbivores. For example, tomato plants grafted onto tobacco rootstocks had been found to produce nicotine throughout their tissues.
A transformed root culture of \textit{Datura}, growing in vitro and containing high levels of the therapeutic drugs \textit{hyoscyamine} and \textit{scopolamine}.

\textbf{Plant genes the key to useful compounds}

Continued from Research Monash 3

Other alkaloids may be produced in roots and sequenced in seeds, making the seeds toxic to would-be predators, while the \textit{Clusiana} tree synthesised the anti-malarial drug quinine in its roots but then translocated it to the bark.

The active principle in the popular herb ginseng is produced in the roots of the ginseng plant, and researchers in two pharmaceutically useful drugs, the seeds toxic to would-be predators, translocated to the leaves: Aborigines harvested these compounds.

These two compounds were closely related; \textit{hyoscyamine} is converted to \textit{scopolamine} by two enzymes as the final steps in the synthesis pathway. Professor Hamill said the gene encoding one of these enzymes had been cloned, and was known to be active only in pericycle cells in roots.

Since pericycle cells were among the specialised cells to differentiate during the formation of roots, the enzyme could serve as a useful marker for studying root development.

Several international groups had transformed root tissues using \textit{A. rhizogenes}, and had achieved expression of genes inserted into the cells. Professor Hamill said the bacterium transferred the genes on a loop of DNA called a plasmid, which seemed to function in the same way as the well known Ti-plasmid of \textit{Agrobacterium tumefaciens}.

Many of the genes on the \textit{A. rhizogenes} plasmid remained unidentified, although some were likely to be common to both bacteria. On present indications, there could be more than a dozen genes, of which three or four were probably involved in controlling root growth.

We can use the plasmid to add foreign genes to the cells, so as we are interested in one of the secondary metabolites, we can try to perturb the synthesis pathway by deliberately altering the expression of the genes in it. Alternatively we can add new genes that perturb its activity in some way - for example, by turning the activity of particular genes up or down and looking to see what effect it has.

Using new techniques for switching off genes, it should be possible to block side-branches in synthetic pathways to cause production of different compounds: Professor Hamill said some compounds with very complex structures arose in competing pathways during the same synthesis process; by blocking one branch of the pathway, it might be possible to produce large amounts of a pharmaceutical compound that was extremely difficult to synthesise by conventional chemistry.

Such compounds, which involved numerous enzymic steps in root cells, would be almost impossible to produce from genetically transformed microorganisms such as yeast or \textit{Escherichia coli} bacteria. It should be simpler to modify pre-existing synthesis pathways in plant root cells.

"But it's still very early and many of the genes must first be isolated. It depends on knowing where the critical control points are in the synthesis pathways, and there's still a long way to go before we know which points to attack."

The nicotine synthesis pathway, for example, is quite short. We have introduced a gene from yeast that increases production of one of the intermediate enzymes, and we have obtained an increase in nicotine production - but it's only modest, about twofold.

"What this tells us is that we need to know more about what regulates these pathways, and why particular compounds end up in particular types of cells. Now that we have the tools to cause over-expression of particular genes, we can try to increase production. If we fail to achieve an increase, it may indicate that the plant has other mechanisms, specific to particular cell types, that prevent this happening."

By learning the plant's own internal rules, we may be able to achieve substantial increases in expression of desirable compounds."

Professor Hamill said the Madagascar periwinkle, \textit{Catharanthus roseus}, provided a good example of the promise of root culture systems with modified synthesis pathways. The leaves and stems of periwinkle were the main source of vincristine and vinblastine, compounds used to treat certain childhood leukemias.

The molecules are very complex, made at high levels in the plant's shoots from the chemical union of two precursor molecules, catharantine and visdoline. Professor Hamill said his former colleagues at Norwich had shown that while catharantine was made in root cultures of Madagascar periwinkle, visdoline was only produced in leaves during photosynthesis.

"If there were only one or two crucial genes pointing, we could envisage modifying them to make them active in roots, so that vincristine and vincristine could be synthesised in a root cultures system."

"You might ask: Why just not just use original plant? The answer is that apart from the promise of being able to manipulate these synthetic pathways, it might also be possible to identify pathways in root cells that could take in a simple precursor compound supplied in the nutrient medium and convert it into something that was more valuable, or too difficult to synthesise."

Professor Hamill said his research group was working with a group at the University of New South Wales to evaluate the commercial potential of another type of cell culture system, called a hybrid tissue system.

This system of cells was transformed by a wild-type strain of \textit{Agrobacterium tumefaciens}, which produced over-expression of enzymes called cytoxins, causing the culture to develop a mass of shoots.

This system could be used commercially to produce biochemical compounds that were produced exclusively in plant shoots.

His group had been doing experiments with mint: the terpenes that gave mint leaves their characteristic flavour were only produced in mature leaf cells.

Professor Hamill's research group is looking for expressions of interest from companies that might be interested in sponsoring research into the development of commercial root culture or shoot termination cell culture systems.
A taste of uni life for secondary students

After most Monash students had packed up their books at the end of last semester, more than 250 Year 11 students converged on the university for their first experience of tertiary education.

The students, representing public and private schools from all over Victoria, took part in a three-day live-in course based at the Halls of Residence.

The Junior University Program (Science/Engineering), which is run by the Course and Career Centre, aims to give students incentive and motivation to continue their studies at university level, and to broaden awareness of the available course and career opportunities.

The focus of the program was on science, engineering and technology, and included visits to these faculties.

As well as the academic program, the students participated in a host of extracurricular activities. "The social aspect of the program is as important as the educational one," Ms Martin said.

Current Monash undergraduates act as hosts to the students. Students are encouraged to participate in all sessions from lectures, practical sessions, course information sessions and social activities.

These residential programs had proved to be a beneficial orientation to tertiary life and provided participants with a chance to meet with other students from all over Victoria, Ms Martin said. Feedback from students attending past programs had been consistently positive.

"Many students have an idea of what they want to study. A common response was that the program helped them decide and also gave them an idea of what university life was like," Ms Martin said.

Student comments about the program included:

"I gained a knowledge about courses and careers that has given me guidance. I feel much more confident in career decisions. I previously felt lost," Bianca, Wesley College.

"The student hosts gave me valuable insight into Monash from their point of view," Mark, Ashwood Secondary College.

"I met lots of different students with similar career interests as my own," Andrew, Oberon High.

"The program seems to take some of the pressure off and makes university seem fun. It also reinforces how competitive entry is and the hard work necessary to get in and do well," Genevieve, Star of the Sea College.

"It was better than I expected because I had some choice in what I wanted to do during the program," Rachel, Shepparton High School.

The Science/Engineering Junior University Program is in its second year. A general junior university program, which has been running for six years, will be held in December.
Rhodes scholarships
Australians aged between 19 and 25 years who hold a bachelor’s degree are invited to apply for the Rhodes scholarship. The scholarship supports further studies and research at Oxford University. 31 August.

Fulbright awards
The Australian-American Educational Foundation has advertised the Fulbright program for 1992. Under next year’s program, undergraduates and PhD holders in the visual and performing arts can apply for the postgraduate student award. The beneficiary will receive an allowance of $15,000 a year and travel expenses. The allowance for the postdoctoral fellow, for which PhD holders are eligible, is $16,500 pa. Professionals in business administration and industrial relations are eligible for the professional scholarship consisting of a stipend of $3250 pm and a travelling allowance. 30 September.

Japanese language program
Keio University, Japan, is launching an Australian student Scholarship for a Japanese language program. Undergraduates in final year or graduates with experience in the study of Japanese are eligible for a 12 month period as Japanese language. The scholarship covers admission and tuition fees and comprises a book allowance. 30 September.

Lionel Murphy postgraduate scholarships
The Lionel Murphy Foundation will provide a number of Australian and overseas postgraduate scholarships for Australian graduates undertaking higher degrees in science and law. The annual award for study in an Australian university is $12,500, and for study abroad (one year only) $25,000. 20 October.

Shell postgraduate scholarship
Undergraduates with honours in the field of science, engineering, computer science or economics may apply for the Shell postgraduate scholarship. A stipend of $20,000 pa is payable to the beneficiary over a period of two to three years. 1 November.

Trinity college scholarship
Men and women pursuing postgraduate studies at the University of Toronto, Canada, may apply for the Trinity College scholarship. This scholarship offers a cash award or assistance in the form of teaching. 1 February 1992.

Evan Lewis-Thomas law studentship
Evan Lewis-Thomas Law studentships to undertake advanced courses in law. The scholarships tenable for some eight weeks in summer consists of a personal allowance of $325 pw, rent and travel allowances. 15 August.

ANU vacation scholarships
The Australian National University offers a number of vacation scholarships in its Institute of Advanced Studies. The scholarships are generally tenable for eight to 12 weeks between December and February and cover travel expenses to Canberra, accommodation and a living allowance of $1100 a week (tax free). 15 August.

Australian Development Cooperation Scholarship Scheme
The Australian Vice-Chancellors’ Committee has announced the establishment of a special one-off AIDB scholarship scheme for 1992 to support overseas students from developing countries wishing to study in Australian universities. Preference will be given to applicants enrolled or enrolling in environmental studies, population planning, poverty alleviation or export of Australian educational services. The award will help beneficiaries with tuition fees. 25 October.

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

Research grants

Rehnitis Pigmentosa Association
The Association invites applications for high quality research related to Retinitis Pigmentosa (RP). Funds could be directed to research (either clinical or scientific) relevant to RP, seed monies to establish RP eye research or PhD students, overseas studies or exchange. Intending applicants should note that welfare services and aids may not be funded. 8 August.

Australian Academy of Science – scientific exchanges with Japan
The Australian Academy of Science invites applications from Australian scientists who wish to participate in an exchange program with the Japan Society for the Promotion of Science between 1 January 1992 and 30 June 1993. Proposals in any field of natural science, basic and applied, including mathematics and engineering science, will be considered. Short-term (3-6 weeks) and long-term (6-12 months) visits are available.

Visiting fellowships
In 1992-93, visiting fellowships will be offered to experts from relevant countries under the following schemes: Commonwealth scholarship and fellowship plan, Australian-European awards program, and the Australian-Greek awards. The fellowships enable visitors with international reputations to meet Australians working in the same fields for up to three months. 23 August.

For further information, contact the Office for Research on extn 75 5162 or 75 5134. Applications must be lodged by the date specified.

GRANTS & SCHOLARSHIPS

Scholarships and fellowships

Pig Research & Development Corporation award
Undergraduates, holder of honours degree or master's in agricultural sciences, may apply for the award offered by the Pig Research and Development Corporation. The award is tenable in the field of agriculture at La Trobe University and consists of a stipend of $17,407 pa. 9 August.

Country Women's Association scholarship
The Country Women's Association of Victoria is offering a scholarship to Victorian graduates who wish to study for a higher degree in any Australian university in the field of environmental sciences. 31 August.

Harkness fellowships
Australian citizens of exceptional ability, aged between 21 and 36 years are invited to apply for the 1992 Harkness fellowships. The beneficiary must undertake study for one or two years in an American institution, and living and travelling expenses will be covered by the award. 31 August.

Rhodes scholarships
Australians aged between 19 and 25 years who hold a bachelor's degree are invited to apply for the Rhodes scholarship. The scholarship supports further studies and research at Oxford University. 2 September.

Visiting scholarships for Commonwealth experts
The Federal Government is offering a number of schemes to help exchanges between Commonwealth or European experts and Australian academics. Submissions are invited from education institutions for the nomination of eminent scholars who will be visiting Australia between July 1992 and June 1993. 6 September.

CSIRO vacation scholarships
CSIRO Division of Oceanography at Hobart is inviting applications from undergraduates in their final year for a number of vacation scholarships. The scholarships are tenable for some eight weeks in summer consists of a personal allowance of $325 pw, rent and travel allowances. 15 August.

The Sir Robert Menzies allied health award
The Sir Robert Menzies Memorial Foundation is offering a scholarship for graduates in allied health sciences who have a project that would prove valuable to this particular field of study. The award, tenable for two years, includes a stipend of $18,000 pa, tax free. 20 September.

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Trens & SCHOLARSHIPS

THINKING OF ADVERTISING?

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 Communications Department’s Advertising Office books and verifies the arrangements for all promotional advertising.

To place a promotional advertisement, 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 Adrianne Dooley on extn 73 2379. Or use the university's electronic mail system: adrianne@publications.ccm.monash.edu.au

MONASH UNIVERSITY
High country holiday

The Victorian high country is to be the scene of a unique holiday program for 15 intellectually and physically disabled people from the Frankston area. The four-day holiday in October is being organised by the Caroline Chisholm School of Nursing and the Department of Community Medicine.

"Universities should serve the community in which they function, as well as promote cooperation between the various health disciplines," lecturer in Developmental Disability at the School of Nursing, Ms Sue Elsom, said.

Bruce Cochrane, Amrik Sohal, Tom Kennedy, Professor Mal Logan look on.

Diplomats to study politics

Nine Indonesian foreign affairs officials have arrived at Monash to begin an intensive English language training course.

It is the first group to take part in a Department of Politics pilot program in which Indonesian diplomats undertake studies leading to a Diploma and Master of Arts degree specialising in International Relations. The program, run with the Australian International Development Assistance Bureau and the Indonesian Department of Foreign Affairs, begins in June.

In addition to the English training, students will take politics subjects as a bridging course to the program.

A major research and development facility for computer software will be opened recently at the Monash Science and Technology Park by the Minister for Industry, Technology and Commerce, Senator John Button.

The Australian Centre for Unilsy Software (ACUS), at Blackburn Road, Clayton, is the park's biggest tenant. It employs 70 people and this year has a research and development budget of $8 million.

Under a Partnership for Development between Unilsy and the Federal Government, the Monash ACUS expects to outlay $25 million over the next three years to develop export-oriented technologies.

Senator Button said the technical skills of ACUS staff would be complemented by Monash's expertise. "I hope we will see more firms committing to this form of science association with our leading universities," he said.

Unilsy manufactures information systems and defence systems in 100 countries. At the park, ACUS will work on the Canberra health care system, an open systems security product and a software development tool.

Software centre targets growing export markets

The following is a selection of Monash print media cuttings over the past month:

1. July The Dandenong Journal - Dr Kevin O'Connor, Geophysics and Environmental Science: Melbourne getting raw deal on airport funds, says report.
2. July The Age - Dr Eve Fesl, Koori Research Centre: Role models for Koont women.
3. July The Age - Dr Bruce Knox, History: Pride in our system a sign of maturity.
4. July The Dandenong Journal - Professor Amrik Sohal, Manufacturing Management: Exec naas.
5. July The Age - Dr Peter Vincent, Accident Research Centre: Safer but still no respect.
6. July The Dandenong Journal - Professor Amrik Sohal, Manufacturing Management: Exec naas.
7. July The Age - Mr Bruce Knox, History: Pride in our system a sign of maturity.
8. July The Dandenong Journal - Dr Peter Vincent, Accident Research Centre: Safer but still no respect.
9. July The Age - Dr Peter Vincent, Accident Research Centre: Safer but still no respect.
10. July The Age - Dr Chris Browne, Business: Glue may put people at risk.
11. July The Age - Dr Chris Browne, Business: Glue may put people at risk.
12. July The Age - Dr Chris Browne, Business: Glue may put people at risk.
13. July The Age - Dr Chris Browne, Business: Glue may put people at risk.
14. July The Age - Dr Chris Browne, Business: Glue may put people at risk.
15. July The Age - Dr Chris Browne, Business: Glue may put people at risk.
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Press cuttings may be perused at the Public Affairs Office, first floor, Gallery Building, Clayton campus.
NOTES AND DIARY

Diary

AUGUST

3 Evening Concert National Boy's Choir in concert, conducted by Peter Casey and Philip Carroty. Robert Blackwood Hall, 8 pm.
4 Lunchtime Concert Monash University Orchestra, conducted by Richard Green. Robert Blackwood Hall. 12.1-1 pm. Shushusha Music, 1-1.30 pm. Ensemble performances of Western Music, 1.30-2 pm. Orchestral Concert, 2-5 pm.
5 Evening Concert Echo in Counterpoint. Robert Blackwood Hall. 7.30 pm.
6 History and Philosophy of Science Lecture "Method and the Journal". Scientists in popular conservation disputes, by Dr Libby Robin, University of Melbourne, Senior Common Room, Monash Medical Centre. 7-9.30 pm.
7 National Centre for Australian Studies Research Seminars Cinema in Victoria, by Professor George Ivanoff. NCAS Meeting Room. 9-11.30 am.
8 Religious Centre Lunchtime Concert Featuring: Robert Blackwood Hall. 8 pm.
9 Linguistics Seminar Code switching among Turkic, by Dr Henrik Boeschoten. NCAS Meeting Room. 11.15 am.
10 Music and Ecology and Evolutionary Biology Seminar Signal transduction in plants, by Professor Roger Parish, La Trobe University. 1 pm.
11 Annual Indonesian Lecture Series Development project consultation, by Dr Glenn Chandler, Mr Donald Moffat, and Dr Susan Blackburn. 7.30 pm.
12 History and Philosophy of Science Lecture Series "Ecology and Evolutionary Biology Seminar Signal transduction in plants, by Professor Roger Parish, La Trobe University. 1 pm.
13 Ethos: A mathematics educator's view of VCE mathematics, by Dr Henrik Boeschoten. NCAS Meeting Room. 11.15 am.
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September

3 History and Philosophy of Science Lecture Series "The Rev. Mr Julian Tennant Woods — A Pioneer on a Tightrope". By Dr Peter Corcoran. Senior Common Room, Monash Medical Centre. 8.15 pm.
4 Music and Ecology and Evolutionary Biology Seminar "Signal transduction in plants, by Professor Roger Parish, La Trobe University. 1 pm.
5 Southeast Asian Studies Seminar Islam, politics and society in Indonesia, by Ahrabraham Wadh. Room 515, Menzies Building. 11.15 am.

Notes

Parent teacher education courses

The Monash Parent Teacher Education Centre Association is running two six-week courses in the coming months. Becoming a cooperative family will be held on 14, 21, 28 August and 4, 11, 18 September from 7.45 to 10 pm. This course will run again on 16, 23, 30 October and 6, 13, 20 November at the same times.

The second course entitled Becoming a Cooperative Family will be held on 14, 21, 28 August and 4, 11, 18 September from 7.45 to 10.15 pm. This course will also run again on 16, 23, 30 October and 6, 13, 20 November. For further information on either course, contact Ms Val Foster on ext 75 2889.

Music practice at Religious Centre

Monash staff and students are invited to use the Ronald Sharp organ in the Religious Centre for music practice. The organ is available to musicians who are preparing for examinations or who wish to maintain a standard of proficiency at the keyboard. For further information about fees for practice and bookings, contact the Chaplaincy Office on ext 75 3160.

Fitness at Frankston

Aerobics at the Frankston campus will begin in the second semester on Wednesday 25 July. Classes will be held in the B Building gymnasium on Mondays at 5, Wednesdays at 4 pm and Fridays at 1 pm. The cost is $5 per class or $20 per semester.

Lunchtime yoga classes will start on 31 July. The classes run from 12.1 pm in Room D211 and cost $3 per class or $20 per course. Beginners may join the first class free.

Chaplaincy Library

The Chaplaincy library has a collection of about 1000 books under the following sections: the Bible, the Church, Theology, Ethics, Religion, Studies, Education and Jewish Studies.

Books may be borrowed for up to one month. Renewals are available.

The library, on the first floor of the Union, Clayton campus, is open between 9.30 am and 4.30 pm.

DICTA-91 papers sought

A conference entitled Digital Image processing: Techniques and applications will be held at the Royal Exhibition Building Conference Centre from 4 to 6 December.

Papers are sought for presentation at the conference and publication in the conference proceedings. For further information, contact the Australian Pattern Recognition Society at the Department of Computer Science on ext 75 5777.

Economic conference

The first International Congress on Economic Development and Growth will be held from 9 to 14 November, 1991 in Singapore. The theme of the conference is Growth and Growth. Authors are requested to submit an extract of their paper(s). For further information and brochures, contact Dr Akbar Husaini on ext 75 3560.

Japanese music recital

The Monash Japanese Club, in association with the Japanese Music Association and the Department of Music, will be promoting Japanese music during second semester. A recital will be held on Monday 5 August at 1 pm in the Music Auditorium, 8th floor, Menzies Building.

The koto of Koto, Shukabuchi and Shimamori will be performed by Suzuki Oda-ura and David Brown. This recital is being held in conjunction with the Japanese Society. The recital will be held at the Department of Music on 5 August at 6 pm.

Accommodation

Brighton: Persons 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 592 465.

House Sit: Efficient and happy professional couple to live in, and care for a home while owners are away for a period of six months from August. References are available. Phone: Sheik Pitchard 918 6743.
Theatre alive and well in Frankston

Professional theatre is thriving in Frankston, following the enthusiastic response to the opening of the first Monash University theatre subscription season at the George Jenkins Theatre.

Theatre alive and well in Frankston

Professional theatre is thriving in Frankston, following the enthusiastic response to the opening of the first Monash University theatre subscription season at the George Jenkins Theatre.

The theatre, which is presenting three plays this year, has received more than 500 full season subscriptions since bookings opened in June.

"Frankston traditionally has had a strong theatre background and the George Jenkins has long been a focus for community theatre groups," manager of the Alexander Theatre, Mr Phil A'Vard, said.

"By taking quality professional theatre there, the Monash University season will give Frankston even greater entertainment value."

The Monash season of professional theatre is now in its third year at the Alexander Theatre, Clayton campus.

The Frankston season is sponsored by the Sidney Myer Fund. A cheque for $15,000 was presented to the Deputy Vice-Chancellor, Professor Geoff Vaughan, at the season's official launch.

Professor Vaughan said the Monash season brought the best in Melbourne theatre to the outer metropolitan areas. "We hope that this will become an annual event," he said.

"It is the support of the Frankston community that will determine the season's ongoing success."

The season's first show, Alix and Kicking, will be followed by Wallflowering from 13 to 17 August and The Adman from 27 to 31 August. The Adman, starring Shane Bourne, begins at the Alexander Theatre on 14 August.

For George Jenkins Theatre bookings, phone 784 4500, and for the Alexander Theatre, phone 565 9992.

Talking language ...

Australia's stocks as a world pacemaker may have fallen in recent years, but one thing is certain: we remain one of the experts in the management of myriad languages.

And as 1992 ushered in the virtual disintegration of Europe's borders — with the inevitable collision of countless proud languages — attention now becomes focused on the way Australia has been able to maintain its multilingualism.

Cataloguing our successes, and our failures, is a new book by Professor Michael Clyne, head of the Department of Linguistics and research director of the Language and Society Centre.

In Community languages: The Australian experience, Professor Clyne explains how we manage to maintain more than 100 languages in a predominantly English-speaking environment.

So how did it happen to be so comparatively young, and yet, with 174 years of history, we now look in our direction for guidance?

The influx of immigrants from all parts of the world to this country in the 19th century produced a unique multi-cultural and bilingual mix. In areas of Melbourne and Adelaide, for instance, it was possible to do all your shopping in German. Australia boasted a thriving German press for many years.

According to Professor Clyne, at least 100 schools in Australia teach languages bilingually. There was, in fact, a non-discriminatory laissez-faire approach to multilingualism in most Australian colonies. Governments neither encouraged nor discouraged the use of community languages.

But then came the Education Act, passed in most colonies between 1872 and 1880, which, in effect, had a homogenising effect. Monolingualism — that is, English as the lingua franca — became the norm.

The outbreak of war in 1914 served to strengthen Australia's aggressive monolingualism. People were forced to forget their multilingual heritage. For instance, most German place names around the country were changed, 69 in South Australia alone.

Amendments to the state education acts during World War I outlawed bilingual education in four states. In the 1930s, local radio became a purely English medium and the last of the German-Australian newspapers, the Queensland Herald, ceased publication in 1939.

According to Professor Clyne, people were abused for using languages other than English on the street, and telephone conversations in foreign languages were sometimes intercepted.

Fifty years on, the cultural climate is quite different. With its promotion of social and cultural equity and the provision of services in languages other than English, we now have in place a National Language Policy that is the envy of the rest of the world.

We also have thriving multilingual radio stations, multicultural television, a telephone interpreter service, 82 languages taught in VCE, and a progressive policy on multilingual holdings in public libraries.

So what happened in the intervening years? Several things, says Professor Clyne: "There were changes in self-concept in the 1960s and early 1970s. With the weakening of ties with Britain, we began to ask, 'how are we different?' The answer, of course, was that we were multicultural.

'The difference is that in Britain they talk of race, while here, where there has been ongoing migration, we talk of culture.

'Then there were the early reformists of the Whitlam government. A vocal group of second generation Australians of non-British descent — known as the 'ethnic lobby' — found assimilation undesirable.

'There was a quest for new identities. Groups were demanding change. Certainly there was a very strong grassroots movement in which people tried to get away from large-scale structures towards ethnic rights.

'Through the medium of subtitles and public radio, languages were given a forum previously denied to them. The changes were drastic.

'For the first time, people were being given the opportunity to maintain their language, to observe how language was being renewed in their country of origin. It gave the young a peer group register.

'People saw that an Australian was no less an Australian just because he or she spoke a language in addition to English."

According to Professor Clyne, more and more families are maintaining their languages, particularly the new groups of immigrants such as Turks, Vietnamese and Arabs.

'Such groups which are culturally different to the dominant group tend to hold on to their languages longer. Most also arrived in Australia after attitudes towards bilingualism became more favourable.'
Scientists have a saying that no piece of research is finished until the results are published. This is not just a public relations exercise or, to put it more kindly, an announcement of new findings to an interested community of scholars. In many cases, consideration of the results and challenge to them may go for years—Wegener’s theory of continental drift is an excellent example.

Publishing a research paper is not just a matter of writing it up and waiting for it to appear in a journal. In between lies a step which is largely hidden from public view: secret reports on the paper by one or more referees, whose role is to advise the journal editor as to the acceptability of the submitted paper.

Few papers survive the refereeing process unaltered, and many are rejected outright. Rejection may not mean—usually does not mean—that the work is shoddy or even seriously flawed. More often the reasons for rejection carry with them a positive message: try a more appropriate journal, more or less specialised perhaps, or one which does not offer rapid publication. Or it might be advice about more experimentation that is required, that two papers should be combined, or—rarely—that a large manuscript should be split in two.

Papers which are not subjected to refereeing become what is known in the trade as grey literature. Magazines and their editors accept such works because they conform to a theme, because they are likely to stimulate debate and thus increase sales of the journal, or for a host of other reasons. Scholarly journals stake their reputations on the fact that everything they publish is refereed and so, continuing the colour-coding, this would be regarded as the white literature.

Most editors pass the referees’ comments—but not the names of the referees—to the authors and advise them about what is required to make their manuscripts acceptable for publication. The scope for unethical behaviour by referees who can take advantage of such privileged information is obvious, and the rare proven cases are part of the folk culture of science.

Peer review—as the process is known—is constantly criticised and modifications are often suggested. For instance, it has been suggested that authors’ names and addresses be deleted from the version which go to the referees, noting that such manuscripts should not contain phrases such as ‘in our earlier work’! In the social sciences, experimenters have found great variation in referees’ comments on the same manuscript when it is submitted without the names of high-status or low-status authors on the title page. Some—a very few—journals give their authors the signed referees’ reports but this practice has never become widespread.

With these caveats, I think the white literature (refereed) is in pretty good shape. Much of the grey literature (un refereed) is destined to remain just that, but some company and government reports are important documents and their authentication is in the public interest. Can you believe BHP on the Board of Works? If you think not, what could we do to improve the credibility of any research which is published in their names?

The Environment Protection Authority of Victoria has recently tackled this problem by appointing a reference panel of expert scientists to provide an overview of the contributions of several groups to a Melbourne-wide study of dioxins. This group of substances—dioxin is a code word for the 75 polychloro-dibenzofurans and polychloro-dibenzofurans which vary in their known toxicity—was detected in effluent from the factory of Nufarm Limited, an agricultural chemicals company in the western suburbs. Greenpeace activists had sampled the company’s discharges to sewer, and paid for the dinor analysis. Based on the data they predicted human health hazards and damage to the downstream ecosystems, and called for action.

The EPA and MMBW stepped in and Nufarm production was halted but then permitted to resume if it met certain standards for its effluents. Meanwhile, studies were commenced of the Nufarm plant, the sewer system and its Werribee Treatment Complex, fish and shellfish in Port Phillip Bay, and soils in a number of locations around the city.

In order to improve public confidence in the findings of these studies, the EPA also appointed a reference panel which I chaired and which included a CHOIR waste-water expert, an epidemiologist from the University of California at Berkeley, and an environmental scientist from the Office of Technology Assessment of the US Congress.

The reference panel did more than just referee the contributions. It had available the first drafts of the reports and it recommended modifications to their presentation and, in a few cases, asked for more work. The panel also commented on a human health risk study prepared by one participating group, and again the advice was taken up in the final version. Participants in the studies expressed appreciation of the work of their referees and the process seems to be a valuable one which EPA will employ in future studies of this kind.

Professor Ian Rae is Dean of the Faculty of Science.