

ANU Reporter

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\$132,000 for study of salinity problem

Two university researchers have received a \$132,000 grant to study salinity, a problem which is affecting an increasing amount of Australia's agricultural and grazing land.

Professor Barry Osmond, Head of the Department of Environmental Biology at the ANU, and Professor Michael Pitman, of Sydney University, will begin a three-year program researching the physiology of plant responses in saline soil.

The project will look at salt-sensitive crop plants to discover what distinguishes them from salt-tolerant native plants such as the mangrove or saltbush which have been widely studied in these departments in the past.

The grant from the Rural Credits Development Fund is sponsored by the Reserve Bank. Professors Osmond and Pitman will collaborate on the research, which at ANU will involve Dr Christa Critchley, of the Department of Botany, who has a Development Fund Fellowship, also sponsored by the Reserve Bank.

Dr Critchley's previous work on mangroves showed that these plants have evolved a salt requirement for the basic processes of photosynthesis which means the plants continue to grow even in extremely salty soil.

The research project will attempt to understand this mechanism and to find if it is this which distinguishes salt-tolerant from salt-sensitive plants.

The research is particularly important in Australia which according to a UNESCO report has the world's largest area of salt-affected soils, more than 20 times greater than North and Central America.

Professor Osmond said that in spite of present water management techniques salinisation of irrigated land and urban water supplies was increasing.

He helped organise a recent Boden Research Conference at Thredbo sponsored by the Australian Academy of Science, on salinity. The conference identified five ways of dealing with salinity:

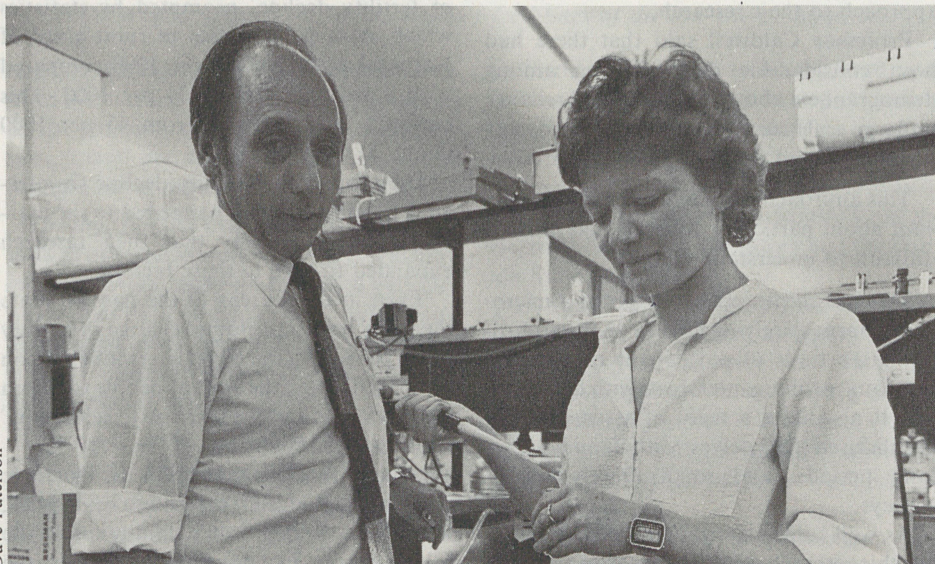
- improved management of plants (especially trees) to delay the entry of salt into water supplies;
- increased use of alternative salt-tolerant native plants to provide fodder;
- development of salt-tolerant horticultural varieties;
- studying the mechanism of transport of salt from leaves;
- studying whether the mechanism of salt-tolerance at the cellular level is enough to make the whole plant salt-tolerant.



Picture courtesy Australian War Memorial

Villagers' view of War

On Christmas Day, 1942, a cameraman called George Silk photographed a wounded Australian soldier being led to safety by a young Papuan villager. The picture was sold to LIFE magazine and became one of the world's best-known War photographs, helping make George Silk famous. For years the young villager was unidentified but now he tells his story in a new film produced by three Canberra men, including two staff members of the ANU. The film 'Angels of War' will be premiered in Australian cities to coincide with Anzac day. The ANU historians, Dr Hank Nelson and Professor Gavan Daws of the Research School of Pacific Studies, joined with Andrew Pike, a film historian and director of a film distribution firm to make the hour-long documentary about the experiences of Papua New Guineans during the Second World War. It also deals with the controversial question of compensation for the Papua New Guineans who served in the Australian Army during the War. A feature on the film and its background will appear in the next issue of ANU Reporter.



Dave Paterson

Professor Osmond and Dr Critchley in the laboratory

Have you noticed?

We've been on time this year with publication of the ANU Reporter, thanks to a lot of effort from our staff at University Information, our printers, and Koomarri Industries whose staff assist with distribution.

It means the Reporter is now being delivered to most local readers in time for them to make use of the diary notices on the back page. The Reporter is published on the second and fourth Friday of each month and those copies allocated on a regular basis to the Faculties, Research Schools and other buildings on campus are available at University Information after 10am on publication day. Staff responsible for collecting those copies are urged to do so promptly.

It is essential for ALL classified, visitors and diary notices to be submitted to University Information by 5pm on the Wednesday of the week BEFORE publication.

All Reporter inquiries, advice, compliments and complaints to the Editor, Helen Trinca, 494171/492229

A distant discovery

The University's Dr Bruce Peterson was among four scientists who made a significant astronomical discovery late last month.

Dr Peterson, a senior research fellow at the Mt Stromlo Observatory, helped discover the most distant known object in the universe, a quasar about 18 billion light years from Earth.

The discovery has pushed back about two billion light years the edges of the universe and made the team 'absolutely delirious' according to Dr David Jauncey, of the CSIRO's Division of Radiophysics.

He said the scientists had been working as a group for about eight years, using radio telescopes at Parkes and Tidbinbilla and optical telescopes at the Siding Spring Observatory.

The other members of the team are Dr Anne Savage, of the UK Schmidt Telescope and Dr Alan Wright also of the CSIRO's Division of Radiophysics. The group had identified a number of quasars in the past eight years but until the night of Thursday 25 March had found none more distant than one identified by astronomers a decade ago.

But the newly-identified quasar has changed all that, giving scientists the chance to discover even more about the origins of the universe.

Family and social change basic cause of fertility decline: study



Babette Scougall

At 66, Stella finds a goal at university

Stella Taber does not conform to the common image of a University student.

She is interested in religion, enjoys gardening and isn't hoping for employment when she graduates.

At 66 she is one of the University's oldest students and very proud to have gained a higher distinction in Hebrew and a credit in Religious Studies last year.

'My friends thought I was a bit batty to enrol last year for a degree in Asian Studies,' she said, 'but it has been wonderfully enjoyable.'

Mrs Taber spent 30 years as a farmer's wife at Canowindra in central NSW before moving to Canberra in 1979.

'I trained as an infants' teacher at the Armidale Teachers' College and during the War, when the men were enlisted, I taught 33 children in a one-room school.

'It was a very tough task as the children varied from 5 to 16 years and were at eight different levels.

'In all my years on the farm I took an active interest in community affairs. My father was an Anglican clergyman and my mother an English school teacher, so my brothers and I had a strong interest in religion and teaching.'

Mrs Taber said that after she was widowed she travelled abroad and visited Israel, which kindled her interest in Judaism and other religions.

'Hebrew is a fascinating course. We are an exceptionally happy and closeknit group,' she said.

'We would all like Hebrew to be a Major subject, but as it isn't yet, I'm doing Religions of India and Hindi this year to broaden my studies base.'

Mrs Taber said that Indian religions made her rethink the basis of her own faith, 'but it does not alter my beliefs'. She began University study because arthritis prevented her from playing sport or doing crafts.

'You must have a goal in life and my studies give me a reason to get up on a cold morning. At this rate I'll be graduating at 70,' she said.

India's extensive family planning program is not the basic cause of the considerable decline in the birth rate in South India, according to a joint Australia-India population program.

The study, conducted over the past three years indicates that changes in the family and society are the fundamental cause of decline in the fertility rates.

The project's co-director, Professor John Caldwell, head of the Department of Demography in the Research School of Social Sciences, said that the demand for family planning had arisen because of changes in parent-child relations, which meant that children cost more and returned less, and in the position of women, which meant that—with some help from the family planning program—they had greater control over their own reproduction.

Child marriage had disappeared but most women still marry soon after puberty and this change has had little impact so far on fertility in rural areas.

Once the conditions were set for a fertility decline, the family planning program undoubtedly facilitated it.

The study has moved into a new phase with the arrival on campus recently of the other co-director, Dr P. H. Reddy, director of the Bangalore Population Centre. He will remain at the ANU as a visiting fellow till the end of May collaborating with Professor Caldwell on analysing and writing up data.

The joint project on fertility decline began in 1977 when Professor Caldwell and his wife Pat spent six months travelling in India searching for a suitable rural environment on which to test a micro-level approach to demographic research and an Indian institute to work with them.

CENTRE

Eventually they found the Bangalore Centre which was established in 1973 as one of two research centres in India, funded jointly by the World Bank, the Government of India and the state Government although these links have now ended. The Centre has a strong reputation for getting into the field for its population research. The project centred on a village about 100 km west of Bangalore and soon spread to eight surrounding villages, regarded as hamlets of the larger settlement.

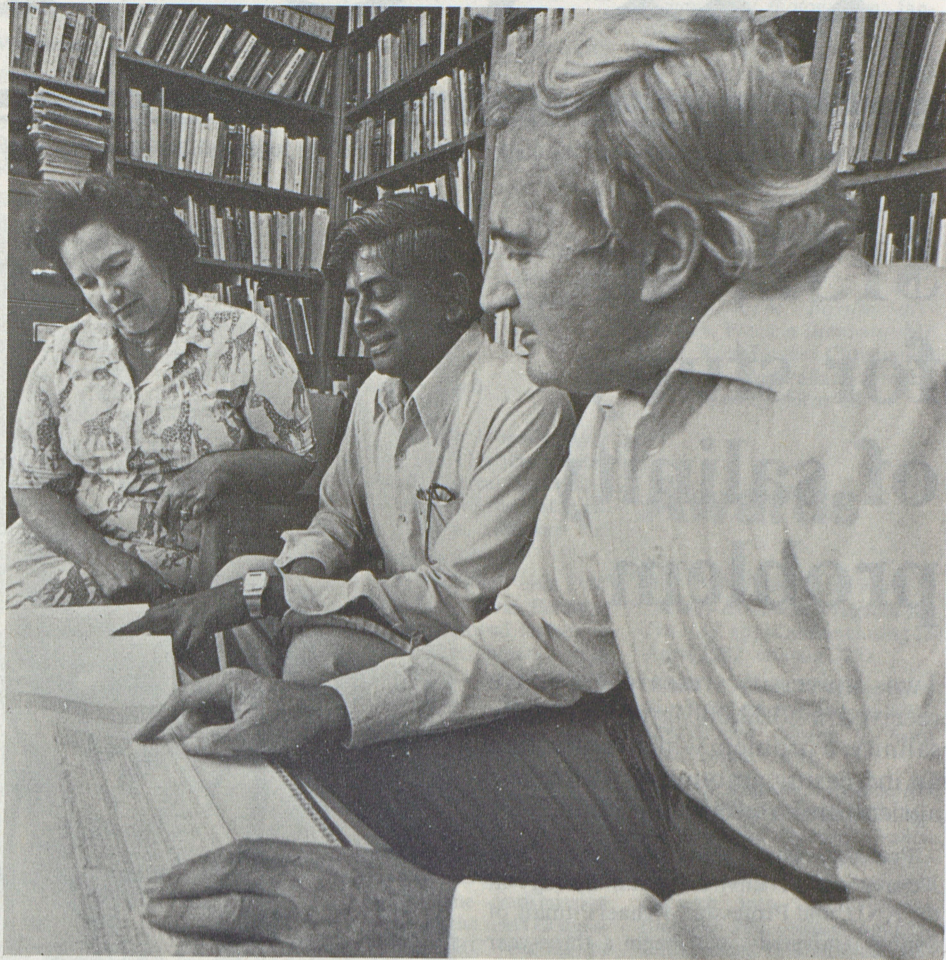
The Caldwells spent three periods of several months each living and working in the village, and assisted by staff from Dr Reddy's centre, adopted an anthropological approach to their research.

Professor Caldwell said that there had been considerable dissatisfaction among demographers about the traditional reliance on large scale survey methods for analysing population and demographic trends.

This approach left out much that was relevant about particular societies and made it difficult to understand change.

The Indian project had adopted a micro-level approach relying heavily on the anthropologist's tools of participant observation and long, probing interviews with the villagers. It also used a team of assistants who familiarised themselves with families over long periods, and small, highly-focused surveys.

As well as some classical methods of demographic research were used, such as an initial census and complete vital statistics surveys.



D. A. Fetherston

From left: Mrs Caldwell, Dr Reddy, and Professor Caldwell.

Professor Caldwell said that much of the theory for this approach had been developed during his 20 years of work on demographic change in Africa, and Dr Reddy had also been using the micro approach to study demographic change in South India. Much of the theory upon which this research has been based has been published this week by Academic Press in London and New York as Professor Caldwell's new book, *Theory of Fertility Decline*.

The Caldwells did much of the interviewing themselves, calling on assistants from Dr Reddy's team for discussions with non-English speaking villagers. According to Professor Caldwell, he and his wife were readily accepted in the area. He taught at the junior college near the large village and gave occasional lectures at an annex of Mysore University, located about 8km from the village.

The researchers also found few barriers to discussion of the fertility question. According to Professor Caldwell, questions of birth and family are very much 'the essence of life' in rural communities and fertility is one of the things the villagers are most aware of, and interested in.

DECLINE

The researchers started work on the origins of fertility decline, prompted by statistics which show a birth rate in rural areas of Karnataka State of 28 per 1000 compared with a national rate of 34 per 1000. This national level is down from 45 per 1000 about 30 years ago.

They found the fertility decline so interwoven with what had happened to the marriage and the family that their research expanded to take in these factors.

'Even in rural areas in the past 40 years there has been a profound change in fertility levels because of the increasing monetisation of the economy, the shift of people to urban areas for jobs and the increase in schooling,' Professor Caldwell said.

He said that in that period the marriage system has changed from using a bride price, where the bridegroom's family paid the bride's family, to a dowry system, where the bride's family paid the groom's.

This was an enormous social change and indicated the kind of factors involved in demographic change.

This month the co-directors will present the first four of their papers to seminars of the Demographic Department. The first paper will be on the origins of fertility decline, the third and fourth papers will be on changes to marriage and the family.

The second paper will represent an attempt to outline the new methodology. This will also be employed subsequently in an attempt to increase the number of research workers undertaking this kind of investigation. Professor Caldwell has been asked by the International Union for the Scientific Study of Population, the major learned society of demographers, to initiate a working group on the micro approach to demography and to provide it with some materials so that it can commence work. It is anticipated that the first meeting will be in the Department of Demography, which has a long history of social demographic investigations aiming at relating human behaviour to demographic phenomena.

All the papers written by Dr Reddy and Professor Caldwell will be used for the international seminar on the Micro Approach to Demography which will be held in Dr Reddy's centre in Bangalore in August this year. Subsequently the papers will be collected together in a book. They also intend to publish one or more volumes of community studies, rather similar to the village studies of anthropologists but with a focus on demographic behaviour and the conditions of its change.

Several of Dr Reddy's staff have now broadened the project and are working in two other village areas in Karnataka, in middle-class Bangalore and in a Bangalore slum. In addition, an ex-member of Dr Reddy's staff, Mr A. Shariff, is now working for a PhD as a research scholar in the Department of Demography with materials from another rural area.

The whole research to date has been funded by the Population Centre and the ANU although the researchers are now seeking larger funds from outside.

The University's Research School of Physical Sciences saved the day when a last-minute problem threatened the special laser art shows held to celebrate the 50th anniversary of the Sydney Harbour Bridge. Laservision, the company hired to run the show for the Main Roads Department, found the day before the show was to begin that its laser was not operating correctly. A search began for a replacement and eventually the laser from the Department of Solid State Physics (RSPhysS) was flown to Sydney so the show could go on. The laser is normally used for high resolution laser spectroscopy but for the birthday weekend it provided entertainment for Sydney-siders. RIGHT: A spectacular image of the bridge taken from the Opera House during the laser show. PICTURE: Michael Brandon, of On-Color. Courtesy of Laservision Pty Ltd.



New work on accelerator expands its existing research functions

The University's 14UD Pelletron has been significantly upgraded, adding an extremely powerful research technique to its existing capacity.

The accelerator, in the Department of Nuclear Physics, Research School of Physical Science, now has an experimental technique shared by only three or four other accelerators in the world.

The technique allows studies of nuclear states which decay so quickly that up till now they could not be observed directly.

The upgrading of the accelerator was partly funded by a \$90,000 grant from the University's Major Equipment Committee last year. Work on the first stage was completed about three months ago and was followed by a successful test program.

Dr Trevor Ophel, Professorial Fellow in the Department, said that the accelerator normally produced a steady flux of beam particles.

'What we are doing now is to compress the beam particles in time to form high-intensity bunches about one nanosecond wide,' he said. (A nanosecond is a thousand millionth of a second.)

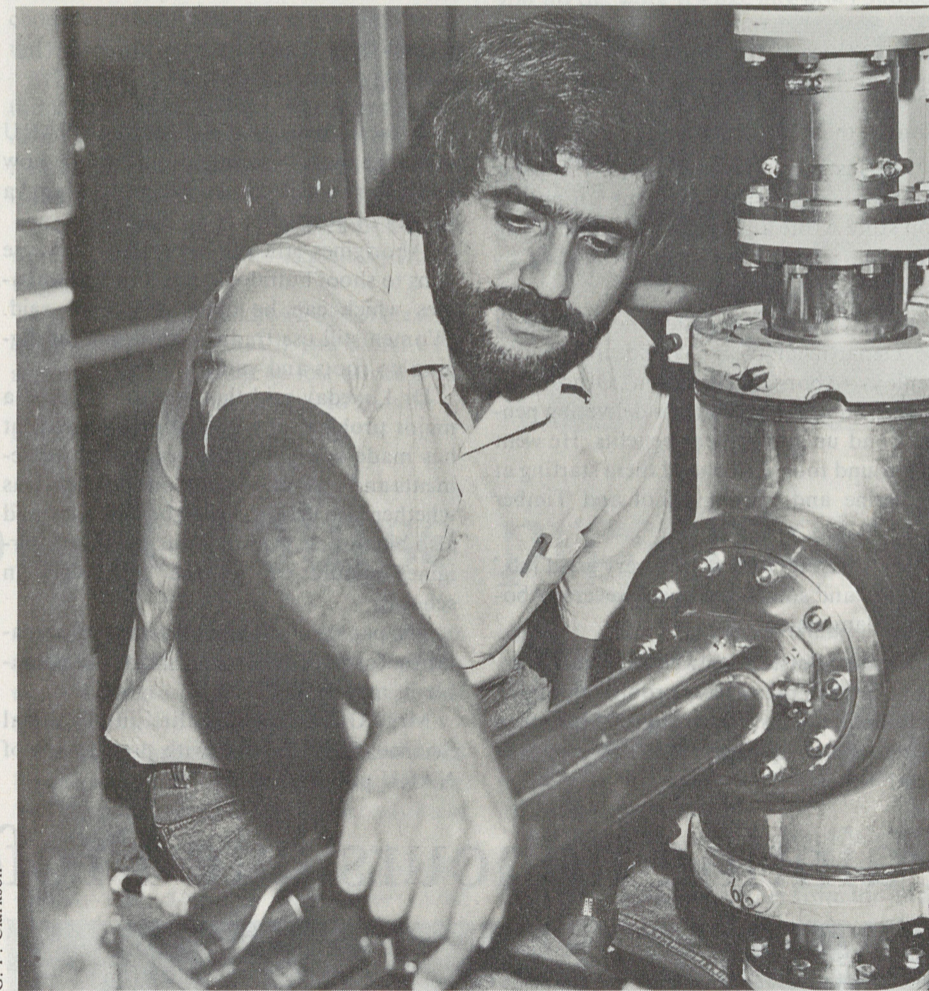
This pulsed beam allows study of nuclear phenomena which occur within fractions of a nanosecond and are observable only in the periods between beam pulses.

As well, improved methods of heavy ion identification can be exploited from direct measurement of ion velocity over short distances.

This makes it possible to do a great deal of work that just cannot be done otherwise. He said the pulses were produced by a number of elements outside the accelerator. At the low energy end at the top of the accelerator the beam particles move relatively slowly and it is here that the compression or bunching of the particles takes place.

The bunching is done by applying a very high frequency voltage wave form. The shape of the wave is a sawtooth and creates the particle compression pattern needed. About 50 to 75 per cent of the particles are bunched together, the rest are distributed between the bunches as background dark current.

After the beam particles are accelerated through the Pelletron a high frequency



Dr Weisser adjusts the high-frequency feed-lines of the low energy buncher.

chopper assembly separates the bunches from the background. The bunches pass out of the accelerator into the beam transport system, and the unwanted dark current or background is deflected.

Dr Ophel said that the recent testing showed efficient operation of the low energy buncher. More than half the beam particles were easily compressed into one nanosecond-wide bunches and subsequent chopper operation eliminated the intermediate dark current.

The next stage will see the compression increased by a factor of 10 by using a superconducting resonator, that is, a resonator at liquid helium temperature.

The resonator has already been built by Applied Superconductivity, of Pasadena,

California, and is due to be delivered later this month. The other equipment, including the low energy bunchers and the chopper were designed and built in the Department of Nuclear Physics under the supervision of Dr D. C. Weisser, with assistance from the Argonne National Laboratory and the Florida State University.

Dr Ophel said that completion of the first stage already represented an addition of an extremely powerful research technique. 'Many new types of measurements will be pursued in anticipation of even more elegant studies which will be possible when the superconducting resonator is installed,' he said.

The Pelletron has been operating on campus since 1974 and till recently was the highest voltage machine in the world.

Honorary degrees to be awarded

Two honorary degrees will be conferred at the University's annual graduation ceremonies later this month. They will go to Dr S. Okita, the former Japanese Foreign Minister and now a special ambassador dealing with Japan's external economic relations, and to Emeritus Professor W. D. B. Borrie, formerly of the Research School of Social Sciences and Director of the National Population Inquiry.

The three ceremonies will be held on 22 and 23 April at the Canberra School of Music and all staff and students are welcome to attend.

At 2pm on 22 April candidates from the Faculty of Science, the John Curtin School of Medical Research, Research Schools of Biological Sciences and Earth Sciences and the Centre for Resource and Environmental Studies will receive their degrees.

The speaker will be Emeritus Professor A. J. Birch, formerly of the Research School of Chemistry.

The next day at 10am it will be the turn of candidates from the Faculties of Asian Studies, Law, Economics and the Research School of Pacific Studies. An honorary degree will be conferred on Dr Okita, and the speaker will be Professor D. M. Griffin, professor and head of the Department of Forestry.

At 2pm that day degrees will be conferred on candidates in the Faculty of Arts and the Research School of Social Sciences. An honorary degree will be conferred on Emeritus Professor Borrie. The speaker will be the Vice-Chancellor, Professor D. A. Low. Degrees at all ceremonies will be conferred by the Chancellor, Sir John Crawford.

University members, including students, who wish to attend can obtain tickets through University Information, 2229.

Student vacancies

An election will be held on campus on Wednesday 21 April to fill three student places on the Board of the Faculties. Polling booths will be located in each faculty office between 9am and 6pm on that day. The students elected will hold office from 30 April to 31 August this year.

Putting a little serendipity into scientific work

The demands placed on scientists to draw up strict outlines of their research proposals in order to obtain grants is inhibiting creative research, according to a retired academic who has written two books on the process of scientific discoveries.

Emeritus Professor W. I. B. Beveridge, an Australian, spent 28 years as Professor of Animal Pathology at the University of Cambridge and several years as a consultant to the World Health Organisation in Geneva.

More than 30 years ago he wrote *The Art of Scientific Discovery*, a work which has become a classic description of the creative and intuitive factors in discovery. His more recent work, *Seeds of Discovery*, expanded this theme and was published in 1980.

Professor Beveridge, now living in Canberra, this week gave a seminar at the Australian National University on 'A neglected field of inquiry: how scientific discoveries are made'.

He said, 'In the USA, to get funds you have to come up with a proposal describing

what you'll be doing for the next one or two years, yet the experiment you do this week often determines what you will do the following week.'

'I think it's very important to encourage research scientists to do some of their thinking along other than logical lines and to be prepared for the unexpected chance finding. Their research plans must remain flexible.'

Professor Beveridge told the *Reporter* that little serious study had been done on analysing the origin of discoveries.

Psychologists had studied creative thinking and philosophers had written about the logic of the scientific method but little attention had been given to the very important role of chance and opportunism.

'I believe an element of chance is involved in most discoveries,' he said. 'Scientists try to discover something which is so far missing from human knowledge so you can't really arrive there by logical extension alone. 'One form chance takes is serendipity, defined as finding something you are not looking for by "chance and sagacity". A good example is Columbus finding the New World.

'Then there is the Eureka form of chance: partly intuition and partly an observation that is relevant to a problem you are trying to solve. Examples are Archimedes in the bath and Newton with the falling apple.

'The essential thing with all chance discoveries of course is to have the prepared mind to be able to spot the unexpected as being significant.'

Professor Beveridge said it is sometimes an advantage for scientists to indulge in 'limited sloppiness', to play around a little and thus expose themselves to the unusual in their work.

He said chance must be linked with opportunism, the ability to seize on an unexpected finding by having the perception to recognise it and the ability to follow it up.

'I think it's very unfortunate when a young scientist comes under the supervision of a systematic researcher who tends to dismiss imagination and overstress the strictly logical approach,' Professor Beveridge said. 'Obviously scientists must be disciplined in doing their experimental work but it is also important for them to use the intuitive

aspects of their minds.

'The traditional method for achieving a new idea is to study the problem intensively till your mind is obsessed with it, to contemplate it endlessly so you wake up at night thinking of it, and then when you are relaxed, something may pop into your mind.

'The traditional locations are the bed and the bath, circumstances when you are relaxed. Of course most of these ideas turn out to be wrong but once in a while you may come up with a gem.'

He said other ways of helping creative thought were to employ lateral thinking techniques or the 'brainstorming' sessions popular among business and advertising executives in the USA.

In these a group of people tossed around wild, perhaps irrelevant but witty ideas, this exchange sometimes yielding a new way of looking at the problem.

The Art of Scientific Discovery, and Seeds of Discovery. (Heinemann, London).

Move to Aboriginal outstations prompts some innovative moves

Few people in Australia's southern cities realise the administrative innovations that have been made in the Northern Territory to deliver services such as health and education to remote areas.

This is the view of Dr Peter Loveday, the field director of the North Australia Research Unit who said the most difficult problems arise for Aboriginal outstations.

The move by Aborigines in settlements to small groups on outstations began some years ago but gathered momentum in the 1970s.

'Many Aborigines, who in traditional tribal life live in small closeknit groups, do not care for life on the settlements, where from 800 to 1500 people congregate,' Dr Loveday said.

'Naturally when different groups are put together there will be some strife and tension. Aborigines would, for instance, be concerned that their offspring were courting someone of another tribe with whom intermarriage is forbidden.

'There are also disciplinary, alcoholism and law enforcement problems in large settlements.

'During the dry season small groups move to outstations and naturally they want a range of services.

'The movement helps them to protect tribal lands and to preserve tribal customs and ceremonies. But as there are few income-generating activities for them they cannot pay for the services.'

Dr Loveday said outstations are often nothing more than a few huts, but it is necessary to provide safe drinking water, schools, health services, car repair facilities, general stores, social security benefits, ammunition for shooting animals for food and batteries for transistors.

The North Australia Research Unit (NARU) called a conference on these problems last December. It was opened by the Chief Minister of the NT, Mr Paul Everingham, who emphasised the enormous problems and costs in providing goods and services to Aborigines who move away from settlements to distant outstations.

Dr Loveday said NARU was overwhelmed with the number of people who wanted to give papers.

'Most government departments had problems in servicing outstations but were unaware that others shared this problem. It

brought them all together,' he said.

'For instance, David Bond, a mechanic employed by Aborigines to run an outstation store wrote a paper on the difficulty of repairing vehicles which get heavy use by Aborigines on outback tracks.'

A NARU researcher cited the example of the Department of Social Security which employs Aboriginal Liaison Officers to drive around the outstations delivering pensions and unemployment benefits. He went on a round tour with one of them starting at Katherine and visiting Elliot and Timber Creek.

'The Liaison Officers do a very good job,' he said, 'and sometimes speak several Aboriginal languages.

'As some outstation dwellers are not literate in English many have problems proving their entitlements to pensions. Also when they do get cheques where are they to cash them?'

A research assistant involved with NARU said that most Aboriginal outstations now had a store which cashed cheques and sold a variety of goods.

'Aborigines still use spears but they use guns to shoot buffalo, kangaroos and wallabies which can be quite tasty,' she said. 'Women still use traditional means for digging up roots and yams.'

Dr Loveday said that education posed a major problem. The Education Department has made a big effort to reach both settlements and outstations. But one problem was whether instruction should be bi-lingual and also bi-cultural. Another was whether Aborigines should control the curriculum in schools.

The papers of the conference are in preparation for publication and should be available in mid-year.

Mrs Gillian O'Loughlin in Political Science, RSPS, assists with preparation of NARU publications.

Instructional Resources Unit committee

The Vice-Chancellor has appointed a committee with the following terms of reference:

- To devise a charter for the Instructional Resources Unit and consider its implications (i.e. costs, administration, effects) on other parts of the University.

The Committee welcomes constructive comment from all interested people on the matters raised in the terms of reference. This comment can be in written or verbal form, or both, and should be addressed in the first instance to the committee chairman, Professor B. John, Research School of Biological Sciences.

Notification of a wish to comment verbally should be made as soon as possible so that suitable arrangements can be made.

All submissions will be confidential.

Please note that all submissions will need to be received by 7 May 1982.

Painting honours late Professor Stanner



An Aboriginal painting made for the late Emeritus Professor W. E. H. Stanner more than 20 years ago has been presented to the Research School of Pacific Studies. The presentation was made last week by Professor Stanner's widow, Mrs Patricia Stanner. Professor Stanner became Reader in Comparative Institutions at ANU in 1950; was Professor of Anthropology at ANU from 1964 to 1970, a Visiting Fellow in the Department of Anthropology (RSPaS) from 1971 to 1974, and Visiting Fellow in the Department of Prehistory and Anthropology (Arts) from 1974 till his death in October last year. The painting, which will hang in the Department of Anthropology, depicts the body designs used in one of the major ceremonies of the Murinbata Aborigines of the Port Keats area. It was made for Professor Stanner when he was carrying out fieldwork in the area in 1959. Mrs Stanner with Professor R. M. Keesing (centre), Professor of Anthropology, and Professor R. G. Ward, the director of the RSPaS.

Some different views on study of Economics

Bob Rodda and Mike Olijnk, both mature-age part-timers, met during Orientation week. Mike, who has worked in Accounts at the Canberra Times for 10 years, said that when he enrolled he didn't know about the failure rate and didn't have time to think about it. 'I was keen as pie to study. I have a background in accounting so that is a bit of a help.'

By contrast, Bob Rodda has a background in Economics.

'Before I joined the Public Service three years ago I was manager of a TV rental company,' he said.

'I went on a management course which had some economic content. But the method of teaching was different. When I enrolled my attitude was to get in and get through it.'

Bob and Mike both feel a little isolated in the course.

'The chief trouble is that there are so many students that if you have a problem you don't know who to turn to,' said Mike. Bob said he thought the lecturers were rather 'rushing the course', and 'going a bit too quickly'. They both found the course interesting and intend meeting at each other's houses on weekends to discuss problems.

Both thought economics degrees would help them with their present employment. 'I look upon it as my last change in life', said Mike. 'I think because we are older we are a lot keener than the young ones', added Mike.



Stephen Power

The problems of Economics 1 students have been aired on campus recently with discussion in Council of last year's 47 per cent failure rate. On this page, the Reporter, talks to some of this year's Economics 1 students and publishes a comment from a Study Skills adviser.

Stephen Power, another part-time student dropped out of Economics 1 last year because of work commitments and has enrolled again this year, knowing it will be a difficult course to pass. He says it is an interesting unit but with a heavy reading load and one which many students find they can't schedule enough time for.



Anne Broadbent

Anne Broadbent, a part-time first year student said that the high failure rate in Economics 1 last year did not affect her study choice. She needed economics in her work at the Bureau of Agricultural Economics.

'The failure rate worries me a bit but I think Economics is very important nowadays as is computer science,' she said. 'I find it interesting but I am not keen on the way it is taught.'

'The lecturers use a lot of technical terms which I wish they would explain in simple English.'

'Also they claim no knowledge of maths is assumed but I find that if you didn't have some maths you would be lost already.'

'It would be an advantage to be able to think in maths terms, too'

Pictures by Babette Scougall

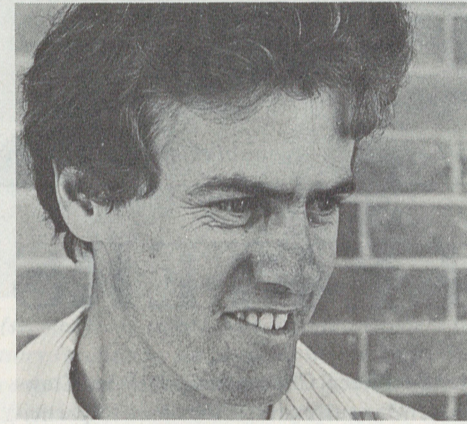
Mary-Helen Dineen, a full-time second year student was one of the 47 per cent who failed last year. She is repeating the course and hopes that this year, unlike 1981, she will have the time to put in the work required for what she regards as a heavy course.

She believes part of her problem last year was that she had not studied economics at school. 'Even though they say economics is not a pre-requisite, I think I was at disadvantage not having done it,' she said. 'One of the problems is that because you are just being introduced to the subject you can't really relate to it very well at first.'

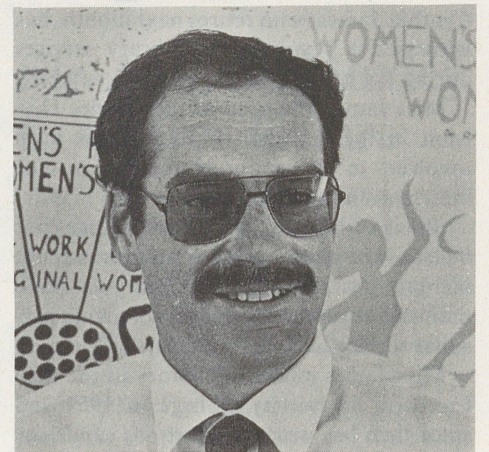
Even though she failed, she has not been scared off the subject and considers economics essential for the way she is structuring her degree towards business.

Steven Gerhardy is a part-timer who already has a degree in statistics and so far has found few problems with Economics 1. In fact he is finding the course a 'little slow' but thinks that for school-leavers it is probably pitched at the right pace.

Asked whether he knew about the 47 per cent failure rate, Steven said: 'I thought it was even higher! The failure rate didn't effect my decision to do the course, I think if you do the work it's like any other subject.'



Steven Gerhardy



Brad MacDonald

Brad MacDonald, is a part-time student who works as a statistician. He told us that he did not know about the high failure rate in the course but enrolled for career reasons. He is finding the course interesting but was surprised that there are no pre-requisites. He believes that it may be more important to be selective at the start of the course—stopping students who may not be able to cope, before they begin.

He believes one tutorial a week is not enough for students struggling with the course and who have no economics background.

He believes there would have to be a change in course content in order to change the failure rate.

Two other students we spoke to declined to give their names but we publish their comments.

One full-time student said he was 'quite satisfied' with the course and attributed the high failure rate to lack of application by students or lack of ability. Although he had not heard about the high failure rate this would not have affected his choice of subject.

Another full-time Economics/Science student said the large size of classes, even in some cases tutorials meant that students missed out on the personal contact with lecturers. She believed smaller classes would help students cope with the course.

Need to look at course presentation in debate

John Taffe, a mathematics and statistics adviser in the Communications and Study Skills Unit, offers a response to comments made in the last edition of ANU Reporter.

Professor Bachelard (*Reporter*, 26 March), discussing the 47 per cent failure rate in Economics 1 last year, says, 'what we are seeing is not a less capable student population but a different one—different to that of, say, five or 10 years ago'.

He concludes, 'If we are to continue to deal effectively with students...we must adapt to a changing student population.'

The population has certainly changed. The most noticeable feature of the change is the increased variety of students' educational backgrounds.

At ANU this change is commonly attributed to the large proportion of part-time and mature-age students who have taken a variety of paths between secondary and tertiary education.

But since the end, in the ACT, and the relaxation, in some other States, of univer-

sity control over school curricula through uniform HSC examinations, the educational backgrounds of school leavers are also much more variable.

Another significant feature of the change, however, is that on average, students are 'less capable'—in a narrow interpretation of that phrase.

The contraction of the employment market has combined with other social changes to ensure that a far greater proportion of secondary students are now staying at school longer and gaining university entrance qualifications than was the case ten or fifteen years ago.

Among the mature-age and part-time students are many whose school years had conditioned them to believe they could never 'make it' to university.

This means that but for the recent 'special entry' schemes they would not have begun university study, having been deemed inadequate to this task by their schools.

Professor Bachelard seems to have based his judgement on the performances of students at the top end of the spectrum only.

While it may be true that 'the best students are as good as they have ever been', the worst students are 'worse' and the medium students not so 'good'.

The terms 'worse' and 'good' are related to the narrow concept of 'less capable'—students are less capable of meeting academic expectations which have hardly

changed while significant changes in the composition of the student population have occurred.

Professor Barton (*Reporter*, 26 March) points to 'student laxity in preparing assignments' and to a failure on the part of tutors to 'pursue lax students'.

The idea that academics should 'pursue' students is indicative of some change of attitude, as nothing was further from the minds of most academics 10 to 15 years ago. Then, academics pursued their research, and the keener students pursued them.

Laxity on the part of students would have been more credible as an explanation of spectacular failures. Continuous assessment was virtually non-existent and students had much more freedom to be lax.

Nowadays a student's failure to complete assignments on time is more likely to be evidence that the task is beyond his present capabilities.

Like many other first year courses Economics 1 still uses the same teaching strategies and style which were successful and appropriate with the much more homogeneous (in terms of educational background) classes of the sixties.

One aspect of this style is what Professor Barton calls the 'abstract logic used in the course'.

Economics 1 is presented as a closed system operating on purely deductive logic. Assumptions about economic behaviour are

the basis of economic equilibrium models, usually presented in graphical form.

The effects of disturbing an equilibrium position are shown by a comparison of 'before' and 'after' representations of a model.

Some students find it difficult to separate their own perceptions of economic relationships from the propositions proceeding from economic 'axioms' and laws of inference. They may have no concept of a *model* in the sense of a formalised approximation to the real world situation it simulates, and so fail to realise that the test of conclusions and the models which lead to them is in how adequately they describe real world economic situations.

To help these students, consideration should perhaps be given to devoting time in the early part of the course to explaining the nature and function of economic models, using very simple examples to begin with.

Ideally it would be made clear to students that all models have deficiencies—none gives an exactly faithful reproduction of real world economic behaviour.

Explanations of the Economics 1 failure rate are less than adequate if they ignore the possibility that it may be influenced in part by how the course is presented and taught. Increasing the number of full-time tutors is an important step towards improving the situation, but it cannot be expected to solve the problem completely.

A revolution in Library services

Cynthia James, who retires next month, has witnessed a revolution in library services during her more than 23 years on campus.

Miss James, the head of the Science Division in the University Library, has been involved in the major change to on-line information retrieval services.

She is enthusiastic about the changes but believes the swing to machines has made it increasingly difficult for library staff to maintain their traditional role of giving personal service to library users.

Miss James joined the library of the then Canberra University College in 1959 and since then has worked in various capacities with the science collection on campus.

In 1975 she was given the task of setting up the Life Sciences Library and the following year became head of the Science Division when this new division was formed.

In this position she has responsibility for the seven science libraries on campus and a science collection that now numbers more than 250,000 volumes.

She said that the job had been a difficult but challenging one at a time when the University was building up its collection and facing the problems of financial cutbacks.

The cuts had been felt both in terms of staff numbers and the need to carefully rationalise purchase of material such as periodicals.

The Science Division worked closely with academic staff in the selection of material and this close consultation through formal committee structures had been a very satisfying aspect of her work.

Miss James made several overseas trips during her time on campus to assess library and information services in other countries.



D. A. Fetherston

Miss James holds one of the Library's rare books. Behind her is part of the new technology.

Useful work, but need for a broader perspective

by Brian Martin

NUCLEAR ISSUES: INTERNATIONAL CONTROL AND INTERNATIONAL CO-OPERATION by D. A. V. Fischer. (Department of International Relations, ANU, 1981, pp. 126.)

One of the key findings of the Ranger Uranium Environmental Inquiry, First Report in 1976 was, 'The nuclear power industry is unintentionally contributing to an increased risk of nuclear war'.

Since then the issue of the spread of the capability to make nuclear weapons has been central in the Australian debate over uranium mining.

The Government has justified uranium mining by saying this will reduce proliferation, while opponents of uranium mining have argued the contrary view.

In this context some enlightenment might be expected from D. A. V. Fischer, formerly the assistant director-general for external relations of the International Atomic Energy Agency (IAEA), the body responsible for worldwide inspection and control of civilian nuclear technology.

Fischer in *Nuclear Issues* presents a straightforward view of proliferation from the point of view of international regulation with a treatment of the problems of preventing the spread of nuclear weapons, the development of safeguards agreements (especially the Non-Proliferation Treaty) and the prospects for the near and long term.

The book also looks at the experience of the IAEA as a body fostering international co-operation over nuclear technology.

Although efforts by the IAEA and others to regulate the use of nuclear technology are well intentioned, they clearly are insufficient. Fischer notes that the dependence of 'peace' on a 'balance of terror' is something which 'obviously cannot endure forever' but that 'it has become almost impossible to believe that we shall ever again have a world free of nuclear weapons'.

A deficiency in Fischer's treatment in tackling this problem is the almost exclusive focus on nation States as individual actors, at times reasonable or recalcitrant, but always indivisible. This perspective is a natural one in studying international relations, but it has severe limitations.

On the one hand it is necessary to analyse the forces promoting nuclear power and nuclear weapons: the communities of nuclear scientists and engineers, the military-industrial complexes, and the forces behind economic and social imperialism.

On the other hand it is necessary to take into account citizens' movements against nuclear power and (especially since 1980) nuclear weapons around the world, which favour the phasing out and elimination, rather than the regulation, of nuclear power and nuclear weapons.

Fischer scarcely mentions either of these powerful forces. So while this book provides a clear view of proliferation problems from the point of view of international regulation, by omission it should warn us of the necessity to go beyond this perspective.

Dr Martin is a Research Fellow in the Department of Mathematics, in the Faculties.

Editor.

LETTERS

I write with reference to the extraordinary account of the 'debate' on the matter of the dramatic increase in the failure rate for students of Economics I that appeared in your edition of 26 March.

Initially, a matter of fact. It is my recollection, and the minutes support me, that it was the head of the Department of Economics who was asked to account for the increased failure rate to the next Council meeting and not the head of the Faculty: Professor Barton has already had his turn, as your quotes from his report to Council, in your page one item give evidence.

More significant than that small point of accuracy, however, is your distinguishing as 'debate' the interview with Professor Bachelard you publish on page two.

As you will be aware, Professor Bachelard participated in the genuine debate in Council on 12 March, when he expressed similar views (though I do not think that television 'pap' featured then) which were, in effect, that the failure rate can be blamed upon the deteriorating quality of students.

This is, of course, a convenient explanation for academics, though one that tends to ignore Professor Barton's conclusion that a very large part of the onus must be borne by the failure of the department (and I paraphrase only slightly) to provide adequate tutoring for the students concerned.

Had your use of the term 'debate' been accurate you would have included some other views.

I can excuse your failure to mention my rebuttal of the Bachelard thesis in Council—that no such gradual deterioration can account for the startling failure rate of 1981—on the basis that the proposal to which I was speaking was, as I anticipated, defeated. (But it did elicit an alternative, proposed by the Vice-Chancellor, that gave me about 80 per cent of what I was after.)

However, it is less easy to understand how you omitted the contribution to the real

debate of the Chancellor, Sir John Crawford, who surrendered the chair to participate, and who delivered himself of the view that much of the problem was attributable to the failure of members of the Economics Department to make the subject of their courses sufficiently interesting for their students.

Nor could an account of a 'debate' reasonably ignore the observation of the Deputy Vice-Chancellor, Professor Ross, that notwithstanding what some speakers (including Professor Bachelard) had said about declining standards of student numeracy, other departments whose courses are dependent upon numerical skills (accounting and statistics were, I believe, mentioned) nevertheless managed to maintain a satisfactory pass rate.

No one appreciates more than I the difficulties attendant upon producing a publication such as ANU Reporter. Nevertheless, it surely is incumbent upon an editor to seek a degree of balance, especially when reporting something ostensibly labelled a 'debate'.

As I have indicated, a variety of significant views on the matter of last year's deplorable Economics I performance were expressed when Council met. I believe that members of the University are entitled to a fair representation of those views. Instead, apart from the careful words of Professor Barton's report (and by no means all its more trenchant passages) we have been given, through the columns of the Reporter, only the views of one partisan participant in the Council debate.

The term 'University democracy' has been dropped loosely around this campus for a good many years, without proper attention being given to the countervailing 'Council confidentiality'.

That latter doctrine has, according to the Council papers periodically sent me, been relaxed in recent times, with luck giving 'democracy' a better chance.

Even so, I would not have been moved to write this letter but for the considerable distortion of 'University democracy' manifested in the favoured treatment given one side in this very serious debate—the buck-passing one—by the ANU Reporter.

Bruce Juddery,
30 March.

Mr Juddery is quite correct in pointing out that it is the head of the Department and not the Faculty who will report to Council. We admit the error. However, Mr Juddery has misread the intent of the articles. They did not purport to be an account of the debate in Council.

The story on the student failure rate was based on, and quoted extensively from, the Dean's Report to Council. It was cleared for publication with him. The interview with Professor Bachelard may have restated views he expressed in Council but was in fact a report of an interview conducted with him some days later.

The term 'debate' was used in its widest sense to describe the failure rate and the 'debate' it provoked and continues to provoke on campus, as further coverage in this issue of Reporter will testify.

As a member of Council, Mr Juddery would be aware of the guidelines on confidentiality which state in part that 'members of Council and others receiving the agenda are reminded of the need for careful discretion in the use and communication of Council business—' It is for this reason that ANU Reporter, which receives the agenda, feels restrained from reporting in the detail in which Mr Juddery has. That Mr Juddery has reported not only his own views but those of others is an indication of his depth of feeling on the matter.

People and events around the campus

Final curtain for 'Happy Endings'

The final lecture in Professor Ian Donaldson's 1982 University Lectures on comedy will be held in the Leonard Huxley Lecture Theatre on Wednesday 14 April at 8.15pm. Titled 'Happy Endings' the series has covered the different versions of the Don Juan story and Shakespearian comedy. Professor Donaldson is the Director of the Humanities Research Centre and his final talk on Wednesday will be on Ben Jonson's comedies concentrating on *Volpone*. There will be discussion and coffee after the lecture.

Donations to Tonga relief appeal

The Geography Society has raised \$1376 for the Tongan relief appeal through a raffle and two auctions.

The Research School of Pacific Studies is co-ordinating other donations from people on campus and the director of the school, Professor R. G. Ward, has written to a former PhD student from the school, Dr Epilli Hau-Ofa on Tonga to ask about specific needs of the people there.

Peter Grimshaw, business manager of the Joint Schools, said that some people had offered to donate clothes but at this stage it was not known whether these were wanted. As well it was not known whether the Federal Government would make donations of more than \$2 tax deductible but receipts were being issued for donations. Inquiries to Mr Grimshaw on 2369.

Information Day for Pacific Atlas

The recent publication of the *Language Atlas of the Pacific Area* provoked such widespread interest among the public that a special Information Day has been arranged on the issue.

The special forum will be held at the Coombs Lecture Theatre in the Coombs Building from 10am to 1pm on Saturday 17 April.

There will be talks from a number of people involved in the production of the Atlas who will explain the complex language situation of the region and also give the background story to research field work which is often very adventurous.

The Information Day has been organised by the Australian Academy of the Humanities and the Research School of Pacific Studies.

Spanish Week

The University Librarian, Mr Colin Steele, will give a lecture on 'The Hispanic Element in Latin America from Conquest to Independence' in the Haydon-Allen Lecture Theatre at 8pm on 20 April. The lecture is being given in conjunction with the Spanish Embassy's Spanish Language Week.

Pitman Medal

Professor P. A. P. Moran, the Professor of Statistics in the Research School of Social Sciences has been awarded the Pitman Medal by the Statistical Society of Australia.

The medal is in recognition of Professor Moran's distinguished contributions to a variety of problems in theoretical and applied statistics and applied probability.

Professor Moran has held a chair at the ANU since 1952 and was elected a Fellow of the Australian Academy of Sciences in 1962 and of the Royal Society in 1975.



The Vice-Chancellor, Professor D. A. Low (second from right), was among members of Chancery who visited Siding Spring Observatory recently to see progress on the University's 2.3m New Generation Telescope, due for completion in December 1983. With Professor Low are (from left) Mark Downing, Professor Don Mathewson (Director of Mount Stromlo and Siding Spring Observatories) and Ted Stapinski. Professor Mathewson says the new telescope has brought together experts from engineering, electronics and astronomy to make it the best in the world. He said many other observatories are already asking for detailed plans so that they can make similar telescopes. Mark Downing and Ted Stapinski, together with Gary Hovey, designed the electronic control systems for the telescope.

Secretaries' steward

The University's secretaries had an unexpected steward for their recent champagne breakfast—the Assistant Vice-Chancellor, Mr Colin Plowman.

Mr Plowman turned the tables by waiting on tables at the breakfast held in the Staff Centre to celebrate Secretaries' Day on Friday 26 March.

About 65 people attended the breakfast which began at 7.30am and both the meal and the Assistant Vice-Chancellor's gesture reportedly went down well.

Appointment

Mr Chris Makepeace, formerly the manager of the ANU Press, has been appointed the director of the Division of Publishing and Printing. He will be responsible for the ANU Press, the ANU Printing Services, the ANU Duplicating Services and the Graphic Design Unit.

Mr Makepeace, who joined the University in the middle of last year, was formerly the publications manager of the Curriculum Development Centre in Canberra.

New Law Dean

Professor A. D. Hambly has resigned as Dean of the Faculty of Law, in order to be free to accept another commitment. Professor D. C. Pearce has been appointed Dean for a two-year period.

Sir Andrew Huxley to deliver lecture

Nobel Prizewinner, Sir Andrew Huxley, will give the Florey Lecture on campus at 4pm on Wednesday 14 April. Sir Andrew, who is President of the Royal Society and the Royal Society Research Professor at University College in the University of London, will speak on 'Discovery: accident or design?'. The Florey Lectures are organised jointly by the Royal Society and the Florey Committee of the ANU.

Sir Andrew is a grandson of T. H. Huxley, who was President of the Royal Society from 1883 to 1885 and is a half-brother to the late Sir Julian Huxley and the late Aldous Huxley, the writer.

The lecture will be held in the Florey Lecture Theatre, John Curtin School of Medical Research. It is open to the public.

Self-reliance theme at IFIAS seminar

East Asia and the Pacific will be the focus for a two-day seminar to be held at the University this month. The seminar, 'Self-reliance and interdependence: the case of East Asia and the Pacific' has been organised by the International Federation of Institutes for Advanced Studies.

It will begin on Saturday 24 April with a session chaired by the Vice-Chancellor, Professor D. A. Low. The afternoon session will be chaired by Dr Victor Urquidi, the President, El Colegio de Mexico, and on Sunday 25 April Dr Ian Burton, the Director of the Environmental Studies Unit, University of Toronto, will chair the morning session.

Speakers from Australia and overseas will address the seminar on questions such as population planning, food resources, economic co-operation and regional development and the need for an integrated policy for the regions. Further information from Dan Coward, 3386



D. A. Fetherston

Mr G. G. Rossiter recently retired after being Warden of Burton Hall for 17 years. Mr Rossiter, who was a Rhodes Scholar was also a part-time lecturer in History, in the Faculties, lecturing in the History of the USA. At a ceremony in the Hall last Friday to mark Mr Rossiter's retirement, Professor Burton, after whom the Hall was named, unveiled a portrait of Mr Rossiter by Louis Kahan. The portrait is a companion to one of Professor Burton, also by Louis Kahan, which was hung in Burton Hall in 1965. Mr Rossiter is at present giving a course in American History at the Centre for Continuing Education.

