ANU Reporter

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Academic boards differ on amalgamation

Council decision today on merger plan

Against a background of differing advice from the University's two academic boards, the University Council, at its meeting today, will decide whether the ANU should enter a tripartite amalgamation with the Canberra College of Advanced Education (CCAE) and the *Canberra College of the Arts (CITA).

The subject of the proposed amalgamation, under the heading *Future Structure of Higher Education in Australia,* is the only major item on the agenda and is expected to be debated at length.

The University's 'final, formal advice' by 15 September was requested by the Minister for Employment, Education and Training, Mr Dawkins, in a letter to the Vice-Chancellor, Professor Laurie Nichol, on 4 August. A meeting of Council on 11 August referred the matter to the University community .

Before convening the two academic boards, meetings were held at departmental, faculty and school level to seek individual views. The opinions of general staff were sought by the two general staff representatives on Council and the Secretary, and will be communicated at today's meeting.

The Board of The Faculties, at its meeting on 25 August, voted against amalgamation 27-21, with a number of abstentions. The results of voting earlier at faculty level had been 4-1 against the merger with voting as follows: **Against:** Arts (57-50), Asian Studies (20-6), Economics and Commerce (24-1) and Law (28-10). **In favour:** Science (27-16).

The Board of the Institute of Advanced Studies, while strongly protesting moves towards centralised control by government, voted 29-10 in favour of amalgamation. Its recommendation to Council is that the commencement date for the new Act should be 1 January 1991.

The voting at School and Centre level before the Board meeting was as follows: **Against:** JCSMR (large majority), RSSS (13-11 with four abstentions), RSPhysS (7-6). **In favour:** RSPacS (23-9),RSC (percentage vote 40-30 with 30 per cent undecided), RSES (on voices). The Research School of Biological Sciences did not voice a strong view either way. The votes in the Academic Centres was: **Against:** MSSSO (no vote available). **In favour:** CRES (10-0) School of Mathematical Sciences (on voices).

The motion before the Board of the Institute endorsed '...the call for universities to resist the unwarranted and bureaucratic intervention which Mr Dawkins has initiated...' noting that '...the course now before it (the Board) is a case of such intervention forcing the ANU either to accept amalgamation with the CCAE or to have its activities reduced to levels arbitrarily deemed appropriate for an institution with fewer than 8000 EFTSU...'

Both academic boards, in the motion put to the vote, noted that policies on research and recurrent funding for the Unified National System were still in the process of development and, accordingly, the Boards lacked specific information on the consequences to ANU of either amalgamation or non-amalgamation.

The Vice-Chancellor, commenting on the outcome of the voting, said there was clearly a difference of opinion within and between the Faculties and the Research Schools on amalgamation and Council at its meeting today would have to take these views into account.

** The ANU and CITA voluntarily entered into an affiliation agreement on 24 July 1989 with a view to full amalgamation by 1 January 1991.*

Astronomers' find sheds light on origins of universe

ANU astronomers are on an intergalactic adventure in search of additional evidence to confirm conclusively the existence of cosmic strings. The strings are relics of the early universe formed in the second after the Big Bang that could help unravel key mysteries of the universe.

The ANU team, led by Professor Don Mathewson, believes it has found evidence that cosmic strings exist. Their finding, revealed at a recent USSR/Australian symposium on the early universe, was reported last week in the national press.

Cosmic strings are a kind of cosmological time-capsule, preserving the primitive environment that existed at the time of the Big Bang which heralded the birth of the universe 15 billion years ago. Proof that the strings, which are invisible, exist will help scientists understand the large-scale structure of the universe and provide clues to its origin.

Using an impressive array of telescopes and highly specialised instruments with extremely sensitive light and radiation detectors, most of which were built by Mount Stromlo and Siding Spring staff, the ANU astronomers believe they have evidence that The Great Attractor – a huge gravitational force into which the Milky Way and neighbouring galaxies are falling at about 1000 kilometres a second – is actually a loop of cosmic string.

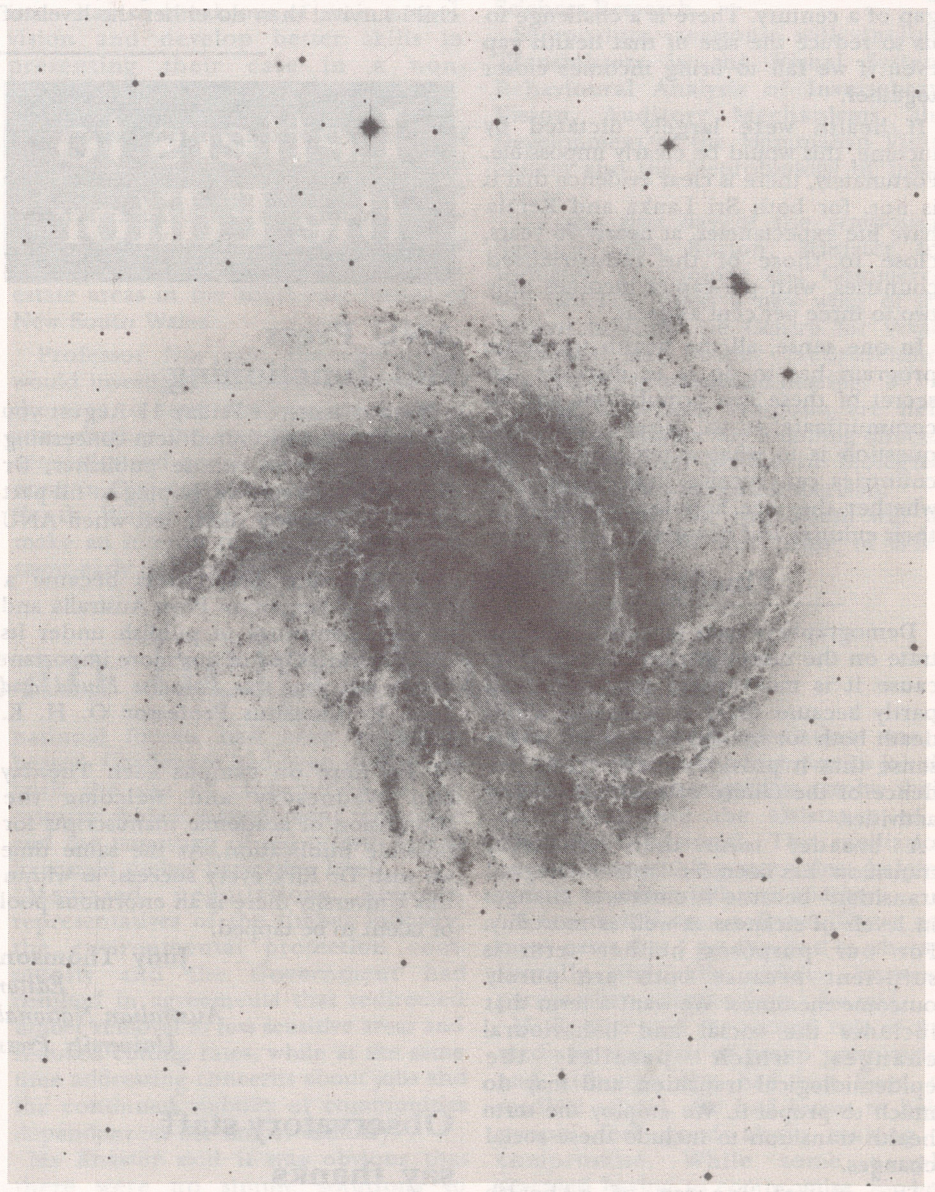
The Great Attractor was described in 1987 by a group of US and British astronomers but what it is has remained a mystery and a focus of intrigue for the world of astronomy. The group believed it to be a spherical mass in the southern sky weighing the equivalent of about half a million galaxies. Professor Mathewson, however, says the evidence now indicates that it is cylindrical, a very long extended line some 80 million parsecs long. (One parsec is 19 million million miles, or 3.26 light years.) The mass and enormous gravitational force it exerts, says Professor Mathewson, conforms to the specifications of a loop of cosmic string.

The ANU team is now trying to find one more piece of evidence to confirm its findings and is focusing on the gravitational lensing properties of cosmic string. The strings could betray their presence by bending light from galaxies beyond them and deflecting the light around them so it reaches the Earth by two different paths. The astronomers would then be able to see two identical galaxies separated by the distance that the cosmic string has bent space.

Professor Mathewson says one way to confirm the strings' existence is to detect the gravitational waves emanating from the strings as they wriggle through distant space at almost the speed of light.

He hopes that the giant gravity wave telescope, proposed jointly by the University of Western Australia and the ANU, will assist the project.

The astronomers working on the cosmic string project are Professor Mathewson and Mr Vince Ford from Mount Stromlo Observatory, Dr Ann Savage of the UK Schmidt Telescope Unit at Siding Spring and PhD students Markus Buckhorn, Carl Grillmair, Emmanuel Vassiliadis, Angela Samuel and Stuart Ryder.



One of the galaxies located in the direction of The Great Attractor that is speeding towards it at about 1000 kilometres a second. Photo courtesy of NASA.

Two astronomers in the United States, Dr Martha Haynes and Dr Ricardo Giovanelli from Cornell University's Astronomy Department, are doing the same sort of observation in the northern hemisphere. Professor Mathewson says that when the teams complete their work they intend to combine their findings to give a global view of The Great Attractor.

On Page 4 Professor Mathewson explains the fascination of The Great Attractor.

Looking at evidence of social, cultural and behavioural determinants of health

This is an edited version of the opening statement by Professor John Caldwell, Director of the University's Health Transition Centre and Associate Director of the National Centre for Epidemiology and Population Health, which, with funding from the Rockefeller Foundation and a supplementary grant from the Australian International Development Assistance Bureau, sponsored the Exploratory Health Transition Program's Workshop 1 held at the ANU recently. Professor Caldwell has been elected Vice-President of the International Union for the Scientific Study of Population (IUSSP) for 1989-93 and thereafter will be President of IUSSP from 1993-97. He is the first Australian to be elected to the position.

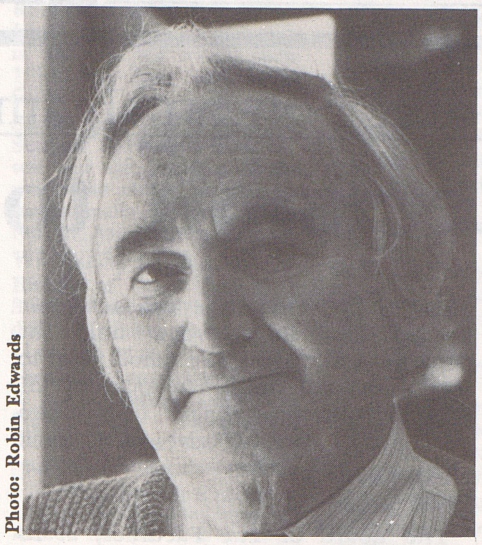


Photo: Robin Edwards

Professor Caldwell

Perhaps the single greatest achievement of the modern world has been a reduction in death rates nearly everywhere and probably also a very substantial increase in the proportion of the world's inhabitants who feel really well most of the time.

There is no room for doubt with regard to mortality change: only a handful of countries now have life expectancies lower than those achieved by the most advanced countries at the beginning of the present century. In terms of gaining higher living standards, this is probably the single most important achievement.

Yet that achievement has not yet meant good health for all, as is indicated by that gap of a century. There is a challenge to us to reduce the size of that health gap even if we fail to bring incomes closer together.

If health were largely dictated by income, this would be clearly impossible. Fortunately, there is clear evidence that it is not, for both Sri Lanka and Kerala have life expectancies, at nearly 70 years, close to those of the industrialised countries, with per-capita incomes only two to three per cent as great.

In one sense, all the health transition program has to do is to discover the secret of these two populations and to communicate it to others. The real question is to what extent these other countries can receive that message or whether they are hopeless prisoners of their cultures and histories.

Finality

Demographers have tended to concentrate on the mortality decline, partly because it is more easily measured and partly because there is a finality about death both for human beings and in the sense that it provides indisputable evidence of the failure of health-providing activities.

A broader term than 'mortality transition' has been the 'epidemiological transition' because it embraces changes in levels of sickness as well as mortality. For our purposes neither term is sufficient because both are purely outcome measures. We want a term that includes the social and behavioural changes which parallel the epidemiological transition and may do much to propel it. We employ the term health transition to include these social changes.

The central concern of a health transition program will be to establish how powerful this social propulsion of the epidemiological transition has been – the purpose of this workshop – and whether that knowledge can be employed to speed the transition.

Most of the social and behavioural change which has affected health has been spontaneous. Where policies have played a role, such as in the provision of education, the aim has usually been the stated one without a hidden agenda. Nevertheless there is no reason why health should not be part of tomorrow's explicit agendas over a wide area of policy formulation.

The matters with which we are concerned are of very great potential importance. Global expenditure on health shows that this point is appreciated both by individuals and their governments. But hardly any of that expenditure goes to the social or behavioural aspects of health. Yet we know from studies of the contemporary Third World that a single component of the whole social context, namely maternal education, usually plays a greater role in determining infant and child survival than do either the levels of medical intervention or those of per-capita income.

There is no real conflict here, for undoubtedly there is a best mix for achieving the best health at the lowest cost. Even from the viewpoint of those funding expensive medical interventions there is a need for those interventions to prove effective, and the most economical route is probably to spend the marginal additional investment in seeking complementary behavioural changes, rather than increasing the direct medical expenditure.

If health transition is to be adequately researched, then it will be necessary to make a series of research distinctions. It will be necessary to study behaviour that achieves its impact by avoiding illness altogether – health management, as well as that where illness is experienced but health recovered. Health recovery can, in turn, be subdivided into that achieved without health services and that where health services were also involved.

Health management is the least well understood process and has been inadequately researched and reported upon. We must develop almost a new branch of anthropology to deal with this problem, and yet the heart of health transition may lie here.

The study of recovery from illness without the help of health services is also subtle but is rendered easier by the possibility of identifying episodes of illness to pinpoint the investigation. The interaction between individuals and health services is often treated in too simplistic a manner.

No two health services are the same and few episodes of service are the same. The latter are moulded by both the giver and the receiver and are determined by the characteristics of each. There is no such thing as a simple provision of service but a continuing process of understanding and misunderstanding and of sequelae conditioned by a multitude of constraints.

Letters to the Editor

ANU Press still functioning

In your issue of Friday 11 August you published a contributed item concerning the Brolga Press, whose publisher, Dr Bob Kirk, said he was 'hoping to fill part of the publishing niche left when ANU Press closed down'.

In 1985, the ANU Press became a division of Pergamon Press Australia and as such continues to publish under its own imprint. One of our more important books last year was *Paradise Found and Lost*, by Emeritus Professor O. H. K. Spate.

I am here on campus each Tuesday and Wednesday and welcome the submission of academic manuscripts for possible publication. At the same time we wish Dr Kirk every success, as within this University there is an enormous pool of talent to be tapped.

Judy Thomson
Editor
Australian National University Press

Observatory staff say thanks

I am an employee of ANU at Siding Spring Observatory and late last year applied to the University's Staff Amenities Fund on behalf of the Siding Spring Observatory Social Tennis Club for funds to provide a playground adjacent to our tennis court.

Management on both sites of MSSSO was helpful in putting our claim to the Staff Amenities Fund. The claim was quickly approved on the grounds of special needs at SSO.

The Observatory is an outpost of ANU located in the north-west of NSW in the Warrumbungle Ranges some 27 kilometres from Coonabarabran and some 450 kilometres north-west of Sydney.

A few employees are required to live on site to provide technical backup and fire protection services for the telescopes. Our children, who spend an hour each way travelling on the school bus, do enjoy an abundance of virgin bushland and a variety of company provided within our 'global village' of visiting astronomers.

However, they did lack many functional assets of town life. Providing the playground for the children has made life on Siding Spring Mountain happier for both children and parents. We all wish to thank the Staff Amenities Fund very much for its assistance.

The grant was for $1000. Of this, $930 was spent on a pine log fort, balancing logs and a rope net, and $70 on freight. The Social Tennis Club supplied cement and shrubs. The playground was constructed by Trevor Houghton and myself, groundspeople at SSO.

Peter Eriksson
Siding Spring Observatory
Coonabarabran 2357

AITEA meeting

'The Dawkins Restructuring of Higher Education : Where will it lead?' is the topic for the next meeting of the Australian Institute of Tertiary Educational Administrators, to be held on Thursday, 14 September in the Staff Training and Development Unit, H Block, ANU.

Professor Grant Harman, Head of Administrative and Higher Education Studies at the University of New England will be the speaker.

Computer Centre offers trials of new software

The Micro Computer Unit (MCU) in the Computer Services Centre has announced that Omnipage will be available for trial, by courtesy of Anutech, from 8-22 September.

Those considering buying scanning software for the Mac may wish to make a booking with the MCU to try it. The software scans both text and graphics. Files can be saved in various formats and graphics can be imported into Microsoft Word on the Mac and Microsoft Word v.5 on the IBM.

Other news from the MCU includes a demonstration unit of a Zenith 80386 microcomputer for trial over a short period. The 14in VGA RGB monitor features Zenith's Flat Tension Mask, which provides high brightness performance and up to 95 per cent less glare than conventional screens.

University staff and postgraduate students are invited to contact MCU staff on ext. 4378 to make a booking to use either of the above.

MCU also advise that OA Link Computers will be holding a demonstration in the Seminar Room of the Leonard Huxley Building on 12 September, where IBM compatible hardware to be displayed will include micros, scanners, including a colour scanner and printers.

ANU Arts Centre

The Canberra Theatre Company's production of *A Midsummer Night's Dream* will run for three weeks from 16 September at the ANU Arts Centre during the Canberra Floriade Festival. Bookings and inquiries may be made at the Canberra Theatre Centre Box Office, telephone 571077.

Shortage of forestry experts a problem for the industry

A shortage of trained forestry specialists could be foreseen in the near future and will be a continuing problem for industry and government, according to the head of the ANU Department of Forestry, Professor David Griffin.

Professor Griffin said a number of factors were combining to create the shortage. First, a squeeze on employment because of financial stringency in the public service at state and federal levels, as well as industry, had led to low recruitment levels of new graduates in most areas. This was happening at a time when the forest industry was growing and becoming more complex.

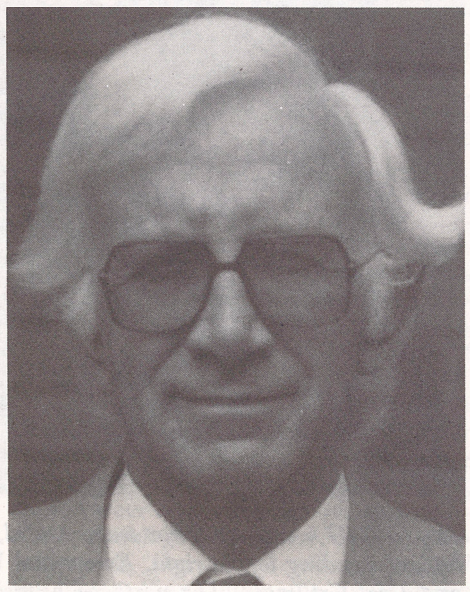
'If the forest plantation program is to increase in area and in sophistication, then more trained people will be required,' Professor Griffin said. 'We need people with post-graduate experience. All this takes time to crank up, and at the moment enrolments at all levels are barely adequate to meet current vacancies. If we are to handle the expansion of plantations then we will need more people in areas like soil science, forest entomology and the control of pests and diseases.'

The importance of the environment, politically and socially, was another factor. 'Forestry is becoming broader and broader in the types of issues that it needs to consider in the management of the forest, whether for conservation purposes or utilisation,' he said. 'The demand for higher skills in the future will be considerable.' Forestry education would need to be allied with the needs of agriculture, land resource use, the economy and the needs of rural communities.

Professor Griffin was speaking at the conclusion of the four-day national conference, 'Prospects for Australian Plantations', at the ANU at the end of August. Organised by the Centre for Resource and Environmental Studies and the Department of Forestry, the conference brought together representatives of industry, government, the conservation movement and academe to discuss the future of Australia's forest plantations.

Of enormous importance, Professor Griffin said, was the fact that plantation forestry was in the early stages of domestication – much like the position of agriculture millennia ago and horticulture centuries ago. This early stage of domestication applied not only to manipulation and selection of genetic material, but to management as well.

Professor Griffin said although there was rapidly increasing knowledge about trees in the plantation environment, much more had to be learnt. Inevitably there would be very high returns from research at this stage.



Professor Griffin

He said the tyranny of time could not be underestimated; the nature of forestry demanded very long lead times in research and tree production and forestry practice had to come to grips with this. Plantations also had to be maintained over a very long period of time and the costs incurred, especially in thinning out the forests, were high.

The time factor also intruded economically. Attracting funds for plantations and research was often very difficult because of the long-term nature of the work. Investors were wary of supporting projects because financial returns may be some years down the track.

He said it would be a mistake to be starry-eyed about the prospects for eucalypt plantations as an answer to the logging of native forests. While there was a valuable pool of international knowledge about conifers, especially radiata pine, less was known about eucalypts. Information gained elsewhere, for example in Brazil, did not necessarily transfer readily to the Australian situation which was quite different; pests were rampant and the soil was poor in comparison.

The message from the conference was the need to establish very clear objectives for plantations and to identify the benefits and costs to industry and the community. Huge amounts of money were being allocated, yet the future was not clear and the objectives were not well defined.

In addition, the role of government, particularly the Federal Government, had been confused. It was most important to remove the taxation impediments and increase incentives for responsible private forestry. Few industries had been subjected to such intense investigation and indecision; over 30 government-sponsored public inquiries concerning forestry had been carried out since 1971 by the states and the Commonwealth, yet the results and benefits from this were questionable.

Professor Griffin said it appeared people were beginning to realise that mediation – not confrontation – was the only way the forests issue could be resolved satisfactorily in the long-term. Both sides – industry and conservationists – had to break out of their tunnel-vision and develop better skills in presenting their case in a non-confrontationist way.

• Professor Henry Nix, the Director of CRES, and Dr Ken Shepherd, Reader in Forestry, have been appointed by the Federal Department of Primary Industries and Energy to a committee conducting biological studies of national estate areas in the south-east forests of New South Wales.

Professor Nix said the committee would investigate the flora and fauna of the area to ascertain how important it was, whether the area had unique characteristics and how it related to adjacent areas in Gippsland and to northern New South Wales. The committee would make an interim report to the Government early in December.

Appeal launched to aid injured student

The ANU Rugby Club has established a fund to assist Paul McBride, a 21-year-old student in the University's Faculty of Economics and Commerce, who suffered a serious neck injury during a grade rugby match at ANU on 24 June.

The club has organised a raffle to raise money for the fund. First prize will be two rugby balls, one signed by the British Lions 1989 touring side and the other by the Australian national team, the Wallabies, which played the Lions.

Money from the raffle, which will be drawn on 16 September during the ACT Rugby Union grand final match, will be given to Paul McBride and his family to help pay for medical and other expenses. Those wishing to purchase raffle tickets ($1 each) or make a donation to the fund should contact Troy Nelson on ext. 0114.

Robertson Symposium on Seeing and Hearing

The Third Robertson Symposium will be held from 20 to 24 September in the Research School of Biological Sciences on the topic *Seeing and Hearing*.

On 19 September, at 8pm in the Forestry Lecture Theatre, one of the distinguished overseas symposium delegates, Professor Terrence Sejnowski, of The Salk Institute, San Diego, California, will give a lecture on *Computation Neuroscience*, organised by the University's Centre for Information Sciences Research.

Symposium sessions will include Transmitters in the Visual System, Behavioural Analysis of Invertebrate Vision, Auditory Mechanisms, the Development of the Mammalian Visual System and the Neurobiology of Insect Vision.

On the first day of the symposium Senator John Button, Minister for Industry, Technology and Commerce, will officially open a new wing of the School housing the Centre for Visual Sciences and other neuroscience laboratories in vision and hearing.

The Robertson symposia are held annually to honour the founding director of the Research School of Biological Sciences, Sir Rutherford Robertson.

A report on the symposium will be published in the next issue of *ANU Reporter*.

Mediation skills can help Australia

Photo: Robin Edwards

Alana S. Knaster

Lessons learned from mediated negotiations in the United States between representatives of the timber industry, the environmental protection community and the Government could be applied to environmental debate in Australia, a leading US mediator said in an ANU public lecture, *Environmental Mediation: Balancing Economic Viability with Environmental Protection.*

Alana S. Knaster, President of the Mediation Institute in the United States, gave the lecture as part of a national conference at the ANU, *The Future of Australia's Plantations,* organised by Dr John Dargavel, research fellow at the Centre for Resource and Environmental Studies (CRES) and Dr Ken Shepherd, reader in forestry, from 21-24 August.

Ms Knaster told delegates that within the last decade in the United States the policies of government and industry that permitted degradation of the environment had resulted in numerous challenges to these policies. Controversy over government programs in the national forests had been especially heated. Challenges had been directed at both the use of clearcutting as the primary timber management technique and the targetting of old growth forests to sustain timber harvesting levels.

Mediated negotiations between representatives of the timber industry, the environmental protection community and the Government had resulted in agreements that redirected timber removal to less sensitive areas and reduced cutting rates, while at the same time addressing concerns about jobs and the continued viability of communities dependent on the timber industry.

Ms Knaster said it was obvious that there were no simple solutions to provide greater environmental protection while at the same time mitigating the economic repercussions resulting from greater regulatory stringency.

Professional mediators with experience in labour and international dispute resolution offered their services to bring together the various interests and viewpoints in these conflicts in order to break the deadlock.

Ms Knaster said mediation was a voluntary process in which parties jointly explored and attempted to resolve their differences with the assistance of a neutral professional. The mediation process was nothing more than helping people negotiate with one another.

'I see myself as a referee. There are many cases that I get involved in where I literally physically referee between parties when tempers flare,' she said.

Ms Knaster said the second role of the mediator was that of group psychiatrist, and although she had not been to medical school, she had learnt to help people feel good about making a compromise. While some people resented having to compromise, for her it was a tool of trade.

Lastly, a mediator was an architect, she said. Some of the solutions were quite complicated, but even if a solution had all the attributes of a three-humped camel, this was not important if the design worked.

Ms Knaster said that when she viewed a conflict, she saw it as an opportunity, not as a negative.

The Great Attractor: first observational evidence for cosmic strings?

By DON MATHEWSON, Professor of Astronomy, MSSSO

Since the late 70s astronomers have been attempting to map the large-scale structure of the Universe – a daunting task! The reason for this mammoth effort is because the structure one sees now reflects the structure shortly after the Big Bang which heralded our birth.

It should be possible to tell from the type of structure which of the Grand Unified Theories (theories which try to identify the Force, the single force from which all the forces we know today were born) is correct. This Force only appears in the super-hot environment of the Big Bang and knowledge of this will allow reformulation of the fundamental laws of physics, which in turn will allow technology to advance dramatically.

The maps which astronomers are producing of our Universe show a complex distribution of galaxies and clusters of galaxies. Some describe the shapes as bubbles, others as Swiss cheese or sponges or even like spaghetti and meatballs! One thing for sure is that the distribution of matter in the universe is not smooth and certainly not random.

The fact that matter is not smoothly distributed means that the Hubble expansion of our universe cannot be as smooth as we thought; so astronomers started mapping the 'peculiar' velocities of the galaxies as well as the way they are distributed in space. ('Peculiar' velocity is the difference between the velocity of a galaxy and the velocity it should have if the expansion of our universe was perfectly uniform.)

Advantage

This has the advantage of tracing bright and dark matter as they both give rise to gravitational forces on surrounding matter. This was considered important as the realisation was beginning to dawn that 90 per cent of the Universe is composed of invisible material. What this matter was and where it came from were hotly debated. Suggestions ranged from rocks, Jupiters, cool stars, black holes, hot neutrinos or cold photinos (a hypothetical particle arising from the new supersymmetry theories of elementary particles).

The mapping of the velocity field entails measuring the distance to each galaxy – a tricky business and fraught with difficulties. Crack teams of American and British astronomers have been making these observations since 1980. In 1987, one team (called the Seven Samurai by their colleagues) announced that there was a spherical mass of 5 x 10^{16} solar masses (equivalent to about half-a-million galaxies) situated about 150 million light years away into which our Galaxy is falling at about 600 km/s and galaxies nearer to it, at more than 1500 km/s. They dubbed this mass The Great Attractor.

The Great Attractor lies deep in the southern sky in the direction of the constellation of Centaurus. It was obvious that many more observations of galaxies in the south were needed to map in detail the effects of this mysterious object.

So about two years ago I and my MSSSO colleague Vince Ford and Ann Savage, of the UK Schmidt Telescope Unit, set out to measure the peculiar velocities of nearly 1500 spiral galaxies – probably one of the most ambitious programs ever tackled. Crucial to the success of the project were five PhD students, Markus Buchhorn, Carl Grillmair, Emmanuel Vassiliadis, Angela Samuel and Stuart Ryder. They each worked for four months on the project as part of their first-year program.

Another vital factor was that instrumentally, the time was perfect for a full-scale onslaught on the problem. The 2.3m Advanced Technology Telescope at Siding Springs Observatory, dedicated by Prime Minister Bob Hawke in May 1984, was exactly right for the job. (Designed and built by the engineers at MSSSO for a total cash outlay of only $3.5 million, it has worked efficiently from the first night of formal scheduling in October 1984 to the present; no doubt a result of Bob's blessing!)

Spectrograph

Equally important was the Dual Beam Spectograph designed by Alex Rodgers and superbly built by the craftsmen at Mount Stromlo Observatory. It has a detector, a Large Format Photon Counting Array, the prototype for the detector in the Endeavour space telescope built by MSSSO and Auspace engineers and scheduled to be launched by the Space Shuttle in May next year.

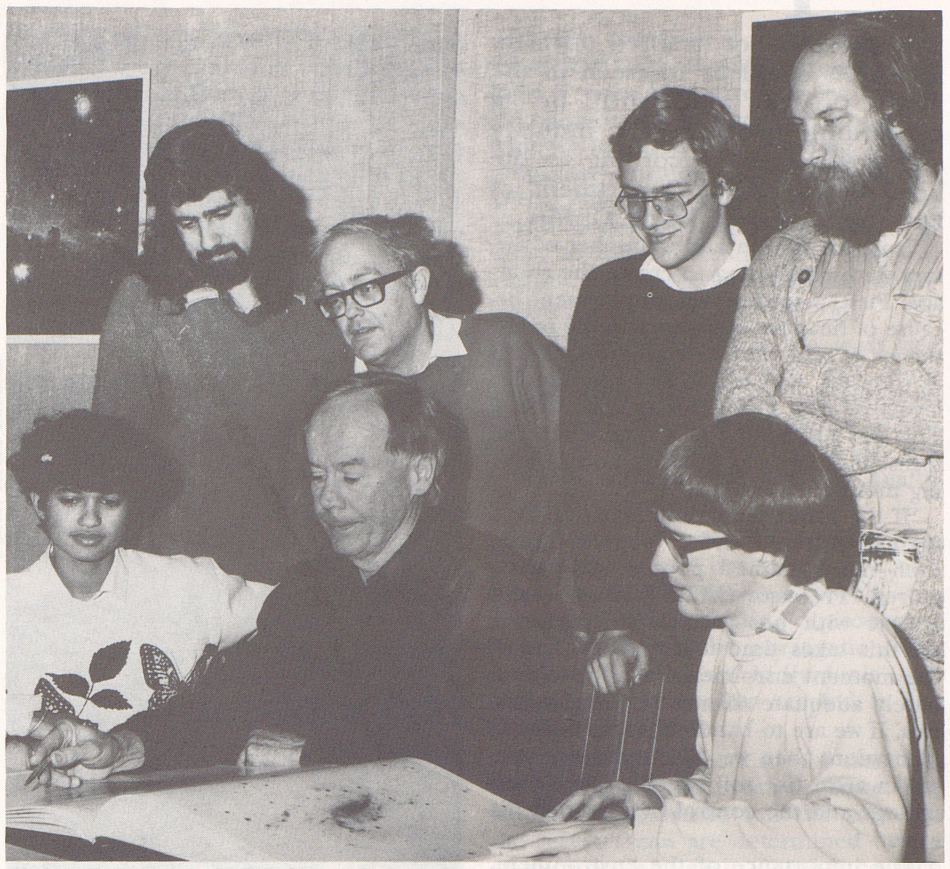
Also the 1 metre telescope at Siding Springs Observatory, which had obtained a new lease of life when a CCD (silicon chip) camera was placed at its back end, was used to obtain very accurate infra-red images of each galaxy; and last but not least in the suite of telescopes necessary for the program was the grand old lady of Australian astronomy, the Parkes radio telescope of CSIRO. It too had had a facelift. The supersensitive prototype receiver for the Australia Telescope at Culgoora had been installed at its focus for testing.

The power of this advanced Australian technology enabled the peculiar velocities of galaxies to be measured *beyond* the Great Attractor where galaxies should be falling back into the great mass. American scientists had tried to do this at their observatories at Las Campanas and Cerro Tololo in Chile but their results were inconclusive.

At a recent USSR/Australia Symposium on the Early Universe held on 28 and 29 June at Mount Stromlo Observatory, I announced that this 'fall-back' had been measured. This proved that the Great Attractor existed and allowed its position to be measured accurately. However it was not a spherical mass but cylindrical, with its long axis cutting our galactic plane at right angles.

The centre of the cylinder lay behind the Coal Sack, the dustiest part of the Milky Way, completely obscured from view. (Nature was certainly doing her best to keep her secrets from us!) Although perhaps the most exciting result was that *all* the galaxies in the sample were participating in the streaming towards the Great Attractor and *no* galaxies were observed that could be identified with the Great Attractor itself. In other words, this great mass was invisible!

I suggested at the symposium that it might be the first observational evidence of cosmic strings. What are cosmic strings? Well may you ask! They are exotic cosmological relics of the very early Universe, predicted to exist by some of the theories of fundamental particle physics. (Interesting thought for philosophers, how the physics of the incomparably small is the key to understanding phenomena on the scale of our universe.)



The MSSSO Great Attractor team: seated, Angela Samuel, Don Mathewson, Stuart Ryder; standing left to right, Emmanuel Vassiliadis, Vince Ford, Markus Buchhorn and Carl Grillmair. The northern hemisphere group working on the same problem are called the Seven Samurai or 7S for short. Their MSSSO colleagues have dubbed the team the Seven Bushwackers or the 7Bs for short!

Cosmic strings are created in the second following the Big Bang and they have no ends, are invisible, travel at almost the speed of light, are incredibly energetic, wiggle violently and often fold back on themselves so that loops of cosmic string can break off. By this process, a hierarchy of loops develops which attracts matter as if a very massive object lay at the centre of each loop.The strings are very thin, about 10^{-30} cm thick, and 1cm of string weighs 100 million billion tonnes.

Cosmic strings were originally called vacuum strings because they contain a very high-energy vacuum present in the Big Bang where the Force could operate alone. This environment of the Big Bang is preserved in the cosmic string and its identification should allow us to test many of the theories of the early universe. Indeed, the identification of a cosmic string would be as great in importance for modern physics as the measurement of the bending of starlight by the sun, which confirmed Einstein's Theory of Relativity.

Success

Yakov Zeldovich and Alexander Vilenkin of the USSR first realised in 1981 that strings might be able to explain the clumpiness of matter in the universe. Then followed a virtual avalanche of papers on cosmic strings. They had great success in explaining the large scale structure of the universe which came naturally out of the string theory with only one free parameter, the string tension – and even this was tightly constrained by the Grand Unified Theories. It also had greater success that other theories in explaining in a statistical sense, the peculiar velocities observed. In the past few years, enthusiasm has waned because there has been no direct observational evidence of their existence.

However, I pointed out that their observations would be explained if a loop of cosmic string had travelled from the PavoIndus cluster of galaxies up and behind the Centaurus cluster of galaxies. The cosmic string loop would not itself be present in the Great Attractor but has by now moved out of the region and is lurking in an apparent quiet region of the local universe above the Centaurus

Possibilities

cluster. Because they are such bizarre animals of the astronomical zoo, it is felt that nobody will be absolutely convinced of their existence until some other corroborating evidence is found.

There are several possibilities. As they oscillate, loops generate rythmic pulses of gravitational energy that propagate at the speed of light as gravitational waves. Unfortunately their intensity is below the detection limit of the University of Western Australia's gravitational wave telescope but should be detected by its proposed new telescope.

Alternatively, cosmic strings may betray their presence because they bend space around them and therefore act as gravitational lenses, i.e., they deflect light from a distant galaxy so that it reaches the earth by two different paths. As a result, observers see two images of the same galaxy separated by the amount that the cosmic string has bent space.

A search is under way using the Schmidt Telescope Sky Survey plates of the region where it is suspected that the string loop lies. The search is for look-alike galaxies separated by 20 to 60 seconds of arc, or for galaxies that look as it they have been cut in two by a pair of scissors. Spectroscopy will confirm that they are the same galaxy.

The hunt is on and the chances are good, but if nothing is found, it won't necessarily mean that cosmic strings do not exist. After all, the great flow of galaxies towards the invisible Great Attractor has to be explained. If it is not a cosmic string, then what is it?

ANU Scientist is 1989 Young Achiever

A postgraduate student in the ANU Research School of Biological Sciences has been awarded the NSW Young Achiever of the Year in technology and science.

Mr James Gray, a 25 year old PhD student with the Plant Microbe Interaction Group, was presented with the award by Dr Evian Gordon, head of the Westmead Hospital Neuroscience Unit, during a banquet at the Sydney Hilton Hotel telecast by sponsors Channel 10 on 26 August.

Mr Gray won the $5000 award for research into a soil bacterium, *Rhizobium*, which is one of many organisms producing complex sugar molecules called polysaccharides. These polysaccharides elicit various plant defence responses and could be used as a natural alternative to chemical pesticides.

His contribution now makes it feasible for a biotechnology company to produce an alternative that is ecologically safer than the synthetic compounds used in DDT and other chlorinated hydrocarbon pesticides which have been banned or severely restricted.

Mr Gray is studying the genetics involved in the biosynthesis of exopolysaccharides. He has characterised two genes which act as genetic switches, regulating the levels of exopolysaccharides produced.

These two genes are necessary for *Rhizobium* to successfully infect roots of a wide range of legumes such as clovers, peas, beans and soybeans. The bacterium occupies root nodules and fixes atmospheric nitrogen into compounds which the plant can use. This process is important to modern agriculture because it is a biological source for nitrogen fertiliser.

Mr Gray believes the possibility also exists for the *Rhizobium* exopolysaccharide molecules, which are chemically stable yet biodegradable, to be used as an active ingredient in sprays to induce plant protection.

While Mr Gray is more concerned with the scientific significance of his research, he said that commercial applications would enable industry to make a contribution to environmental management and the control of plant pathogens.

Professor Barry Rolfe, head of the School's Plant Microbe Interaction Group, said that James Gray was the right person to be recognised as a young achiever in science.

'James has the basic ingredients to achieve. He is firmly committed to science, and his desire and persistence drive him toward perfection.

'With a declining interest in science, James is a good model to encourage young people to still go into science,' Professor Rolfe said.

Mr Gray was one of three finalists for the technology and science category sponsored by the NSW Electricity Commission. The other two finalsts were Louise Scott, a postgraduate student physicist from Sydney University, and Louise Amorso, a postgraduate engineer from the University of NSW.

The Channel 10 Young Achiever of the Year is an annual award for people under 26 years of age who have excelled in the six categories open for nomination – arts, sport, career achievement, community service, technology and science, and rural development. The overall winner in NSW was Martin Vinnicombe, the sports young achiever who has recently returned from the World Cycling Championships with a silver medal.

The award was initiated in Western Australia in 1985 and is now run in states throughout Australia. This year marks the launch in Victoria and New South Wales.

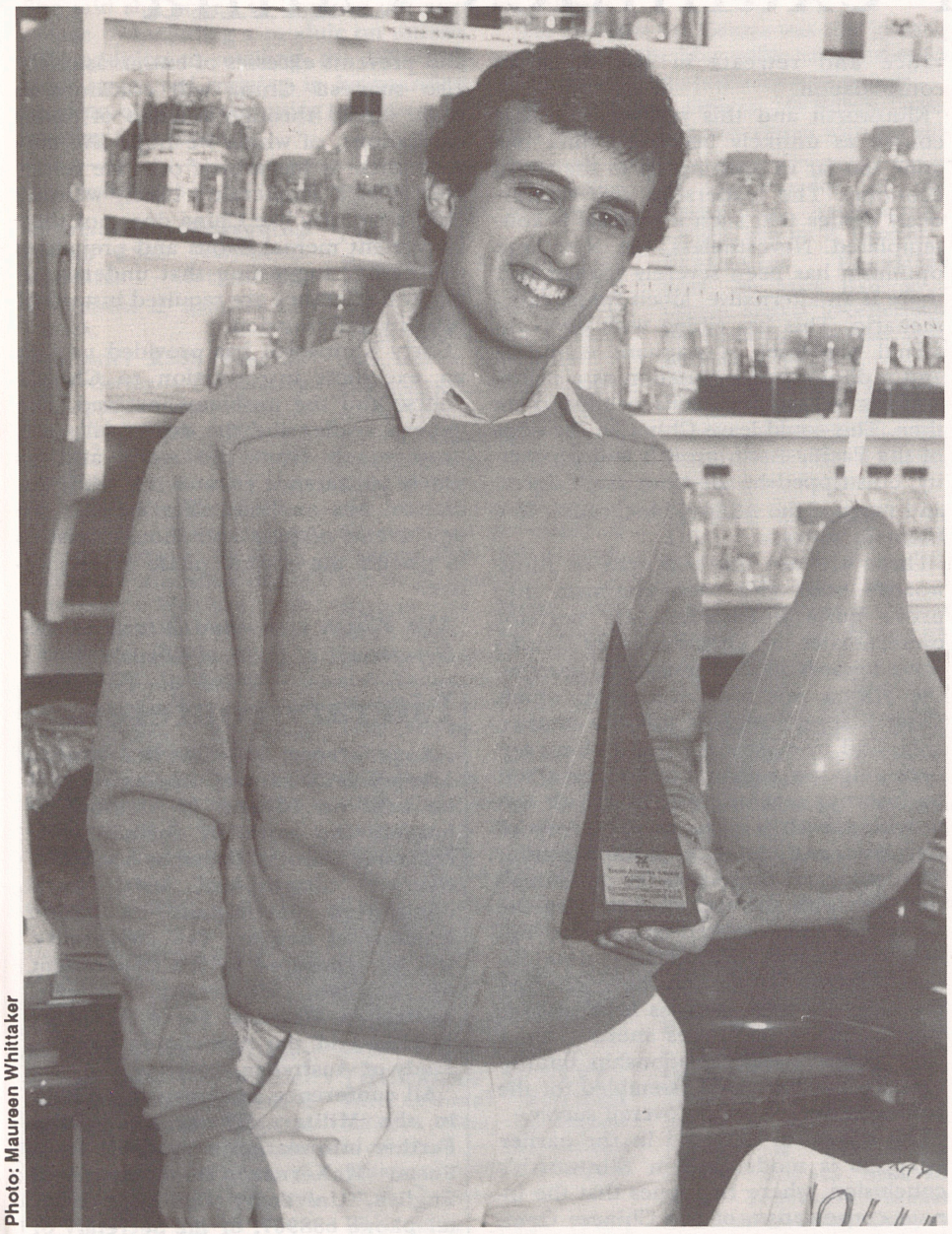


Photo: Maureen Whittaker

James Gray

Photo: Justin Dumpleton

Dr Rod Boswell, Mr Peiyuan Zhu and their laser, Basil.

A laser called Basil makes its entrance ...

A unique type of plasma generator has been used to create a new laser called Basil. This has been the culmination of eight years of work by Dr Rod Boswell's group in the Plasma Research Laboratory of the Research School of Physical Sciences.

Dr Boswell has been working in the Plasma Research Laboratory since 1981, when he started on experiments with radio frequency plasma excitation. *Basil* evolved from one of the experiments to use this method of exciting the plasma to produce an argon ion laser.

'Last year, a Chinese PhD student, Peiyuan Zhu, showed for the first time that it could lase,' Dr Boswell said. 'Basil uses an electrode-less discharge produced from outside the vacuum vessel. The laser beam is very large, an active lasing beam one centimetre in diameter. It is not in contact with the walls, which means it does not absorb their impurities.'

Dr Boswell said the system used a plasma resonance to get power into the plasma, which was the heart of the laser, and it operated at a frequency called the lower hybrid frequency, which is used to heat Tokamak plasma fusion devices.

'Not only is it a system of interest for optical lasers, because there is also a lot of plasma physics involved in it, but it is the use of our experience as plasma physicists to build a laser, rather than starting from a technologist point of view and try to improve our present technology,' he said.

Dr Boswell said the system could be used for general scientific experiments, to pump other lasers, and for sounding the atmosphere, although one of the major uses for lasers at present was in discos.

Anutech had patent protection on the laser and was actively seeking commercial partners to further the development of this invention.

Dr Boswell said the project had been entirely funded by the Research School of Physical Sciences.

$250,000 for biological science

An international award, to be known as the Australia Prize, will be awarded annually for an outstanding specific achievement in a selected area of science promoting human welfare.

Announcing the prize, the Minister for Science, Mr Barry Jones, said he believed it would come to rank with other great international science prizes such as the Nobel Prize and the Japan Prize.

Worth $250,000 tax free, the inaugural prize will be for work in biological sciences related to agriculture or the environment. Nominations will be sought throughout the world in the next few weeks and the first presentation of the prize will be on 9 April 1990 in the Great Hall of Parliament House.

The Australia Prize will be awarded each year in a field recommended by a selection committee which will be chaired alternately by the Presidents of the Australian Academy of Science and the Academy of Technological Science and Engineering.

Chairman of the committee for the 1990 prize is Professor David Curtis, President of the Australian Academy of Science and Director of the ANU's John Curtin School of Medical Research.

AINSE grants

The Australian Institute of Nuclear Science and Engineering (AINSE) has announced the availability of grants for 1990. The Institute awards grants in support of projects undertaken by its member organisations in the fields, or applications, of nuclear science and technology. The closing date for applications by AINSE is 15 September .

Most Aboriginal artists earn very little, according to study of industry

Very few Aboriginal artists make a living solely from their creative output and most have to rely on other sources to support themselves and their families, according to University academic Dr Jon Altman. His research for a recently completed *Review of the Aboriginal Arts and Crafts Industry* revealed that only six per cent of Aboriginal artists earn more than $5000 a year and that the average annual income from the production of arts and crafts is about $1500.

Dr Altman presented the report to the Minister for Aboriginal Affairs, Mr Gerry Hand, early in August. It was published last week as *The Aboriginal Arts and Crafts Industry* *.

Dr Altman, a senior research fellow in the Research School of Pacific Studies (RSPacS), spent six months on secondment to the Department of Aboriginal Affairs chairing the review. He said the report, the most comprehensive review of the Aboriginal arts and crafts industry undertaken to date, was the first major study in this area for eight years.

'It is a politically contentious area, due partly to the belief of some Aborigines that they are exploited and due also to structural tensions in the industry itself, because it is supported by a number of different government agencies,' Dr Altman said.

The report concluded that in general Aborigines were not exploited when they sold their work through community-based Aboriginal art organisations, although there were some situations where Aboriginal people could be exploited.

Support

It argued strongly for increased government support to key areas of the industry that were under-resourced and for expanded opportunities for industry participation to be provided to Aboriginal artists currently without access to adequate markets. There was recognition that core funding of the industry, particularly at a remote community level, had been unable to meet recent expanded needs.

Dr Altman's report recommended the establishment of an art industry support structure within the Department of Aboriginal Affairs (or the proposed Aboriginal and Torres Strait Islander Commission) to administer a program of industry support and to provide a coordination focus for the development of specific art industry policy.

'The funding has to be special,' Dr Altman said. 'It has to be guaranteed and there should be financial accountability as to how the money is spent, although there should be no attempt to control community cultural decision-making or arts productivity.' He said that in the arts area, Aboriginal arts organisations had shown both responsibility and accountability.

Dr Altman said there was currently only one organisation out of 35 which operated without government support. He believed that most organisations could need support for 10 to 15 years. Some, especially those in remote areas, might never be self-supporting. He estimated that the recommended industry support strategy would cost the Government about $5 million a year. However, in the context of Aboriginal employment-generation programs, the arts industry provided an unusually cost-effective means to generate jobs and to supplement cash incomes in many areas where economic opportunities were extremely circumscribed.

**The Aboriginal Arts and Crafts Industry* (394 pp) is published by AGPS and costs $19.95.

Dr Jon Altman

Timely publication examines China

Garry Klintworth, *China's Modernisation: the Strategic Implications for the Asia-Pacific Region*; Canberra: Australian Government Publishing Service. 1989. pp. x + 127. $14.95.

By IAN WILSON*

This is a particularly timely publication, appearing only shortly before the declaration of martial law in Beijing and its tragic aftermath. By providing an economical but thorough survey of the modernisation drive to early 1989, Klintworth allows us to see the subsequent events in a broader context. As such, the study reflects the optimistic outlook its political leaders and most outside observers had for China until April and May.

There are both strengths and weaknesses in holding this temporal perspective. We are still too close to assess the full significance of the brutal slaughter in Tiananmen Square and it is certainly too early to predict the imminent collapse of the regime or its systematic transformation. If the efforts of the new leadership coalition to restore normalcy are effective, then the optimism of the New Year may well be justified in the longer term. Certainly few would dispute the author's contention that China will continue to exercise its influence in the region and continue to strive for major power status.

On the other hand, if the economic and social fallout from the massacre is serious and sustained, then the predictions about China's behaviour may need revision. As Klintworth makes clear, 'China's modernisation presupposes an uninterrupted flow of foreign technology and Western capital, guaranteed access to overseas markets, a no-war environment, and of course the right domestic, economic and political formula'. [p 54].

The optimism of early 1989 was also based on the assumption that the recent growth rates averaging about 9 per cent per annum would be sustained. Current suspensions of aid, new credit, technology transfer and a major shortfall in the foreign currency tourism normally brings in have already had an effect on the economy. The threat of another poor grain harvest will exacerbate the currency problem, but of greater concern is the inability of the regime to establish effective control of the economy. This is undermining both domestic and foreign business confidence, the latter already shattered by fears for life and property in the wake of the disorder in Beijing and other cities. Farmers worried about the value of the paper chits issued in payment for their crops, continued concern about corruption, poor labour morale in the face of widening wage differentials and inflation at almost 30 per cent for the quarter, all suggest an economy that could be entering a period of much lower growth or even stagnation.

Barter

If this happens, we might expect China's leaders to throttle back on development plans, settling instead for a slower rate of growth and perhaps relying on the more appropriate but scarcely state-of-the-art technology from the Soviet Union. This can at least be paid for in barter goods or soft currency. Investment capital remains a problem if China follows this course but tighter central controls and planning, coupled with a return to more self-reliance, might convince them that a change in this direction would work. After all, China's development since 1949 has been characterised by alternating spells of heady advance and retreats in the name of consolidation.

Klintworth and this reviewer see this course as unlikely because China has gone too far in opening up to the world economy. The leadership also vociferously denies that such a reversal is contemplated. Nevertheless, the New Year optimism has been severely shaken and there is an alternative, albeit 'worst case', scenario. This has China with deep internal problems, a stagnant economy and a diminished reputation as a manufacturer of quality goods produced on time. This could leave China on the edge of the Pacific Basin growth and prosperity, outstripped by the 'four small tigers' and most of the ASEAN bloc, rather like Vietnam today.

These are not the concerns of Klintworth's book and such alarmism may prove quite unfounded. He perhaps overestimates the effectiveness of China's drive towards modernisation by stressing the efforts put into education, which Deng Xiaoping regards still as a disaster area, and by suggesting that politics are becoming less personal and less marked by internal tension. But in all we are provided with a very good survey of domestic and defence modernisation. The impact of these policies on China's relations with the superpowers and the region are then covered one by one, followed by a chapter on how developments in the last decade have effected the attitudes these nations have towards China. Space precludes more than a page or two on each relationship, but the material has been well assembled for the reader wanting a sound overall survey.

The optimism detected in the earlier chapters is moderated in Klintworth's conclusion, where he argues that the innate conservatism of the Chinese Communist Party is not altogether a bad thing for China since it maintains control and prevents excesses of enthusiasm. He also suggests China will continue to move ahead through a series of policy oscillations, of which we hope the current phase is but a brief one. He reiterates Patrick FitzGerald's timely warning that 'a country like China does not shed its ancient mental habits and prejudices overnight', suggesting that understanding and tolerance are required instead of hostility and isolation.

Garry Klintworth has provided us with an excellent introduction to China's course and the problems involved. The general reader and the expert will each draw much from the study and its timely appearance ensures it a ready audience. His analysis takes us past the ugly events of June and should assist us in placing the current phase in perspective.

**Mr Wilson is a senior lecturer in the Department of Political Science.*

Literary conference

A conference, *Directions in Australian Literary Criticism and Scholarship*, will be held on 13 and 14 October to honour the work of former ANU academic Dorothy Green as a scholar, literary biographer, critic and committed participant in public intellectual debate. The conference will be sponsored by the Department of English, University College, Australian Defence Force Academy (ADFA) and the Association for the Study of Australian literature.

All conference sessions will be held in the Military Theatrette, ADFA. Further information is available from Susan McKernan, Department of English, University College, ADFA, telephone 688907, or the Secretary of the English Department on 688901.

Skillshare project at Work Resources Centre

Thirteen unemployed people have recently graduated from the first retail training course at the ANU Work Resources Centre (WRC).

This Civic Skillshare project aimed to give participants, ranging from teenagers to people in their 40s, the skills and confidence to gain jobs in the retail industry.

Various other Civic Skillshare courses are offered free to long-term unemployed or disadvantaged people and are sponsored by the WRC, a voluntary body supported by many ANU staff through fortnightly salary deductions. ANU provides further assistance by making available facilities not in regular use.

The four week retailing course provided the seven men and six women with an introduction to retailing and intensive training in professional selling skills, customer relations, stock control, handling cash and credit cards, as well as safety and security procedures. Training included classroom discussions and practice, store visits, work experience and videotaped role playing.

The retail course co-ordinator, Mrs Annette Irvine, said that instruction covered personal presentation, communication skills, including telephone techniques and listening for instructions, job searching, writing job applications, and interview techniques.

Mrs Irvine has a 33-year background in retailing and is using her experience to develop a training course which will give an overview of the retail industry.

'We have received immense support from the major retail chains in Canberra,' she said. 'Store visits and work experience gave the big picture of retailing and not only that of stock control.'

Mrs Irvine uses training videos and has students playing roles to examine body language and confidence building skills. She said she hoped to improve the next course by including a module on unions.

In addition to retailing, the WRC provides structured training in keyboarding, word-processing, computing, and assertive training for women.

Photo: Justin Dumpleton

Course Co-Ordinator, Mrs Annette Irvine (left) instructs her students Ian Bayly, Gitchka Dimitroff and Marissa Bala in the finer points of customer service before they graduate from the first Skillshare retail training course at the ANU Work Resources Centre. Ms Dimitroff is the first female to graduate from the retailing course.

'Our aim is to run courses in areas where there is a demand for employment,' said Development Manager, Mr Bob Budd. 'They are not intended to be the intensive six month courses offered by TAFE or colleges.'

He said that the Centre was also looking at courses in the blue collar area and saw a need for a commercial cleaning course.

Senior Project Officer, Ms Robyn Davis, said Skillshare was concerned with providing individual support in a friendly, non-threatening training environment. The small classes meant that people could go at their own pace instead of competing with each other.

With an outstanding success rate in trainees gaining employment, the Work Resources Centre is grateful for the assistance of the ANU and is looking forward to continued support in future Skillshare courses.

Student elections to take place next month

The process of the 1989 Students' Association elections has commenced.

Nominations closed on 18 August for the positions of president and treasurer of the association, the editor(s) of the association newspaper, *Woroni,* and general, part-time student and faculty representatives.

According to Mary Todd, president of the association, the SA is the students' political representation. It has delegates on all the major committees on campus and puts forward student opinions to the University administration and to government.

Four people were nominated for the position of president – John Coroneos, from the Back on Track team, Helen Jenkins, from Left Catalyst, Dylan Harrison, an independent, and Penny Smith, from Labor Students. The nominations for the editors of *Woroni* are Harlequin Ade, Popular Press and Back on Track.

About 28 per cent of ANU students usually vote - more than on any other campus in Australia.

Polling will take place in various places around campus between 3 and 6 October.

I.G. Ross Scholarships

Two scholarships for BSc students of chemistry have been established in appreciation of the work of Professor Ian Ross, the University's Pro Vice-Chancellor (Special Projects).

Professor Ross was Head of the Department of Chemistry from 1970 to mid-1977, when he left to become Deputy Vice-Chancellor of ANU. During his term of office he was instrumental in setting up Anutech, the commercial arm of the University. He took up his present position earlier this year.

The I. G. Ross Scholarships, funded by Anutech, will be awarded from 1990 to the male and female BSc students who achieve the best results in first-year chemistry and who intend to complete the second year.

Cont. from Page 8

Automated Reasoning Project RSSS Sem, Dr C. Mortensen – Inconsistent Mathematics II, 2pm, lect rm, I Block.

Economics RSSS Sem, Mr Gerry Garvey – Encouraging Frim-specific Investment: Is Managerial Slack a Bonding Device? 2pm, sem rm D, Coombs.

SATURDAY 16 SEPT

Student's Association Public Lecture, Dr Helen Caldicott – Australia's role in Nuclear Warfare & International Arms, 1pm, Physics Lect Theatre.

MONDAY 18 SEPT

International Relations and Peace Research Centre RSPacS Sem, Dr Nabil Sha'ath – Prospects for a Middle East Peace Settlement, 11am, sem rm B, Coombs.

TUESDAY 19 SEPT

Physical and Theoretical Chemistry RSC Sem, Prof Taiju Tsuboi (Kyoto Sangyo Univ) – Optical Studies of Low Dimensional Magnetic Insulators, 11am, rm 134, RSC

Far Eastern History RSPacS Sem, Prof Wu Chihua – Ming and Qing Canal & Sea Transport in Relation to the History of the Environment (in Chinese with English summary), 11am, sem rm E, Coombs.

Automated Reasoning Project RSSS Sem, Dr C. Mortensen – Inconsistent Mathematics III, 2pm, lect rm, I Block.

Economics RSPacS Sem, Ms Anne Booth – Poverty in Indonesia: Measurement & Socio-Economic Correlates, 2pm, sem rm B, Coombs.

WEDNESDAY 20 SEPT

Anthropology RSPasC, Prehistory & Anthropology Faculties Sem, Dr Margaret Jolly – We saw but few women: men of discovery and the women of Vanuatu 1606-1850, 9.30am, sem rm C, Coombs.

History of Ideas Unit RSSS Sem, Prof Leszek Nowak – Beyond Revolution and Evolution: A Certain Model of Social Progress, 11am sem rm A, Coombs.

Inorganic Chemistry RSC Sem, Prof T. G. Traylor (Univ California) – Oxygen Activation & Metalloporphyrin Catalyzed Oxidation Reactions, 11am, rm 134, RSC.

Public Lecture, Emeritus Prof Sir Mark Oliphant – The Long Term Future of Australians and Australia, 8pm, Leonard Huxley Lect Theatre. Inquiries: University Public Relations, 492229.

THURSDAY 21 SEPT

International Relations RSPacS Sem, Dr Michael McKinley – The Realist Critique of ANZUS, 11am, sem rm B, Coombs.

Philosophy RSSS Sem, Dr Chris Mortensen (Univ Adelaide) – A simple Account of the Paradox of the Unexpected Examination, 1.45pm, sem rm E, Coombs.

Economics Faculties Sem, Mr Mark Harrison – Capital Market Imperfections and Financing Education, 2pm, rm 1048, Copland.

RSES Sem, Prof K. Lambeck – Glacial Rebound, Sea-level Change and Mantle Viscosity: Part II, Northwestern Europe, 4pm, sem rm, Jaeger.

FRIDAY 22 SEPT

Austronesian Project RSPacS Sem, Prof Joel Kahn (Monash Univ) – Traditional Cultures or Cultures of Tradition, 12.30 pm sem rm C, Coombs.

Economic History Faculties & RSSS Joint Sem, Prof Lawrence H. White –Banking Without a Central Bank: Scotland before 1844 as a "Free Banking" System, 11am, rm 1004, Crisp.

Peace Research Centre RSPacS Sem, Dr John Fitzpatrick – The Implications of Soviet New Thinking for the US 'Soviet Threat' Thesis, 11am, sem rm B, Coombs.

TUESDAY 26 SEPT

BIE sem, Mr John Whiteman – Globalisation: Implications for The Australia Information Technology Industry, 2pm, sem rm B, Coombs.

Pacific & SE Asian History RSPacS Sem, Dr Stein Tonnesson (Peace Research Institute, Oslo) – Vietnam's August 1945 Revolution in the context of Europe's grand revolutionary tradition, 2pm, sem rm E, Coombs.

FEH RSPacS Sem, Prof Mark Elvin – The Collapse of Scriptural Confucianism, 11am, sem rm E, Coombs.

WEDNESDAY 27 SEPT

Public Lecture, Dr Don Faulkner (MSSS) – The Supercomputer in Astrophysics, 8pm, Haydon Allen Lect Theatre. Inquiries: ANU Public Relations, 492229.

History of Ideas Unit RSSS sem, Prof Hedva Ben-Israel – The Role of Morale Judgement in Historiography: The Case of Munich, 11am, sem rm A, Coombs.

THURSDAY 28 SEPT

International Relations NE Asia Project RSPacS Sem, Mr Ian Simington – China, Hong Kong, Immigration & Australia, 11am, sem rm B, Coombs.

Philosophy RSSS Sem, Dr John Slaney – The Implications of Paracossistency, 1.45 pm, sem rm E, Coombs.

Visitors

Dr Hartmut Frank, Univ Tuebingen, W. Germany, at RSC until 10/89, x3733. Interests: Chromatography, stereochemistry, environmental chemistry.

Dr Helmut M. Hügel, Phillip Institut of Technology, at RSC until 12/89, x3645. Interest: Organic synthesis.

Prof Gerald Arthur Poulton, Univ Victoria, Canada, at RSC for one year, x0793. Interest: organic chemistry, natural products.

Prof Dr L. Schmithausen, Univ Hamburg, at S & W Asia Centre, Faculties, 11/9 to 17/10/89, x3223, 3163. Interests: Tibetology and Buddhist studies.

Meetings

THURSDAY 21 SEPT

University House Ladies' Drawing Room Luncheon, $10, 12.30pm, Univ Hse Drawing Room, RSVP 19/9, ph 865014.

THURSDAY 28 SEPT

I.W.G. Coffee morning, 9.30am in the Holly Huxley Room. There will be an Indian Cooking demo., all interested welcome to attend.

Awards

Australian Institute of Sports Sports Medicine and Sports Science Fellowships and P/grad Scholarships 1990 close 22/9/89. Graduate Students Section, x5949.

Commonwealth Scholarship & Fellowship Plan Awards for graduates. Close 22/9/89. Graduate Students Section, x5949.

National Health & Medical Council Biomedical Postgraduate Research Scholarships. Close 30/9/89. Graduate Students Section, x5949.

Peterhouse, University Cambridge, Bursaries for Overseas & Graduate Students, close 31/10/89. Research Studentships, close 1/4/90. Graduate Students Section, x5949.

The World Bank – Robert S. McNamara Fellowships, awarded in area of economic development. Close 1/11/89. Graduate Students Section, x5949.

Harvard University – Frank Knox Memorial Fellowships 1190-91, two awards. Close 10/11/89. Graduate Students Section, x5949.

Cambridge Commonwealth Trust Following Scholarships: Cambridge Australia for Master of Law, close 30/4/90; Pegasus Cambridge for Master of Law, cl 30/3/90; British Telecom Cambridge for Hons I graduate, cl 31/12/89; Cambridge Australia for Aust'n Hons I graduates, cl 30/4/90. Coles Myer Cambridge to pursue PhD at Cambridge, cl 30/4/90; Packer Cambridge to pursue PhD, cl 30/4/90. Graduate Students Section, x5949.

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Classified

Advertisements are restricted to staff and students of the University and members of Convocation and to 20 words each. Normally, only one advertisement per person can be accepted for each issue. Typed advertisements should be sent or delivered to ANU Reporter, University Public Relations. The envelope should be marked, 'Advertisement'. No advertisements can be taken over the telephone. The closing date for the next issue is Wednesday 13 September 1989. Inquiries x2106.

FOR SALE

Albums over fifty, 60's & 70's, $45; Adler manual typewriter $35; 479410.

Baby Furniture Pool open Wed 12-12.45pm. Hire all baby and toddler needs very cheaply; Maria Monypenny, 953063.

Baby pram gd cond, incl shopping bag, storm cover, $50 ono; foam cot mattress, as new $10; Veronica x4707.

Backpack NZ; leather trekking boots, sz 9 1/2-10, Austrian; Canon camera, 2 lenses, flash etc; all exc. cond; 480486(ah).

Bassinet $30; cot $40; Steelcraft stroller $15; Rheem hot water system; x2284.

Bed, old sgl, free; typewriter trolley $5; Kenwood Chef $25; car seat $20; spinning wheel $150; x4480.

Bicycle $50; stereo, radio, casette deck, cabinet $120; art deco french perfume atomiser $12; young african lovebirds $10 ea; Jaky x4456, 491639.

Bicycle girls Malvern Star 20" $75; Hills swing set $75; x4258, 511977(h).

Bike men's 10 spd, new tyres, gd cond $100 ono; x2695, 475569(h).

Bikes: ladies 27", foot brake $65; girls 24", 3 spd $65; Electrolux vac cleaner $55; x0787, 472147(h).

Bookshelves; lounges, exc cond; old solid wood dining table; old sideboard/dressing table; upright freezer; reas offers; 582531 after 7pm.

Boots ladies brown knee highs, sz 6 1/2B, exc cond $10; black sandals, pointy high heels, sz 7 1/2 $15; 861947.

Boots, blue leather high heels, sz 8 1/2, Catleia made in Brazil; x2113.

Business shirts 5 brand new, bought o/s, never worn, collar sz 43cm; also ladies grey leather flat shoes, sz 10; x0621, 496830(h).

Camera Nikon F801, 35-70 zoom, case, 4 mth old, still in boxes, cost $1,700, sell for only $1,500 ono; x0157.

Camera Olympus OM-707, as new, 35-70 zoom lens, full auto $990; mens m'cycle jacket $60; Patrick x3413, 816992(ah).

Child's safe-n-sound car booster seat, as new, $12; 548619.

Chinese course basic spoken Mandarin, full set of 7 books & 9 tapes, never used; Patrick x3439, 318506.

Colour TV 14", portable, antenna incl, five stns, near new, $190 ono; Edith, Bruce Hall, x0703.

Colour TV Sanyo 22", Sanyo video recorder/player, all channels $280 ono; x2468, 814876(h).

Colour TV Sharp 14", 18 mth old, remote control, new model, $400; B&G Hall, D005.

Computer Commodore C64 & disk drive $250; new winter sleeping bags $250; Trevor Holsworth x4722.

Computer Sanyo 550 WP, 360K & 720K drives, monitor, elec typewriter/printer, Wordstar, Calcstar, Engl & I'national daisy wheels, manuals, disks, $1,250 ono: 574046, 485847.

Curtain Tracks, 2.67m $35, 1.66m $25; x3676, 861947(h).

Dresser white, 4 drawers, full-length mirror, $30 ono; dbl bed foam mattress $10, x4712.

Firewood, free to anyone who wants it, several trailer loads; x3088, 887475.

Freezer Pacific 200 ltr, $100; 916214.

Fridge, GC $80; 573195(ah)

Fur coat cream, sz8-10, $100; suede jacket sz10, $100, other quality ladies wear sz8-10, $40-50; Elisabeth x3576.

Golf Clubs, Lynx USA, 1&3-SW irons, Prosimmon Staff persimmon woods nos 1&3, bag, vgc $375; x5542, 979549, 884259.

Guitars IBANEZ Lee Ritenour electric $750; Strat copy $200; both with hard cases; Stage Musician GX25 amp $250; Donald x4081

Ladies clothes quality preowned, sz 10, imported lables, as new; 475762(h).

Lawn mower with catcher, vgc $165 ono; lounge (2x1, 2x2) vgc $395 ono; 436618(w), 581687(h).

Lounge 1x3 & matching chair, autumn colours, gd cond $60; 478659.

Lounge modular Indian cotton, seats four plus corner table, $300 ono; John Williams 493017.

Lounges: pine 3pce $95, velvet 4pce $185; old sideboard, dining tables, pine wardrobe, as new; 582531 after 7pm.

Motorcycle jacket, men's black leather, sz small $140; 733578(ah).

Pine bunks two with mattresses $200 ono; Betty x3083, 924414(h).

Sewing machine Huskvarna stretch, fancy stiches, many other functions, exc cond $550 ono; Cathy x2740, 583248(ah).

Speakers Goodmans Axiom 201, 20". dual range, very efficient, in large wood cabinets, great for coast hse $150; x3301, 514662(h).

Stereo Aiwa midi, tuner, t'table, tape deck, Dolby, graphic eq, speakers, exc cond, $600 ono; mountain bike, Diamond Back 20", 15 spd, gd cond, $250 ono; Saul x0280.

Stereo am/fm receiver, t'table and speakers, display stand incl, as new $450 ono; skis Kazama 180's, great for spring skiing $100; 512452 any time.

Stove, 4 burner, natural gas bench top, as new cond $75; double bowl stainless steel sink, gd cond $50; x3603.

TV, p'ble B&W, vgc $80; boys (5-9 yrs) BMX bike, near new, $100; Sanyo wash mach, small, vgc $120; owner going o/s; x5580, 852024(h).

Typewriter Chevron manual $40; Bike, needs repair, $15; Vaporizer $15; Oil heater $5; Kashem 477170(h), 4/12 Masson St, Turner.

Video National VHS remote control, as new, 6 mth old, was $690, now $450 ono; 575809.

Washing machine Simpson med.sz, 2yo, $400 ono; x4660, 851904(h).

MOTOR VEHICLES

Datsun 180B '75 vgc, reg 7/90, $1850 ono; Rahman x3641, 571929(ah).

Ford Cortina Ghia 9/77, immac cond, fitted with new sony stereo worth $700, sunroof, 2 mths reg, $3800 ono; x3906, 472323(h).

Ford Escort 1300, '76, manual, gd cond, 1yr ACT rego, $2250 ono, avail end Oct, owner going o/s; x5580, 852024.

HJ Statesman Caprice Turbo 400, pwr windows, a/c, pwr str, mag wheels, reco motor, $9250 ono; x2241, 918731(h).

Honda Accord '80, reg 2/90, 4dr, 5spd, well looked after, $6800 ono; Mon & Tue 958559.

Magna GLX '85 exc cond, 79,000km 12mths reg, auto, 2.6ltr $12,000 ono; x2229, 574374(h).

Toyota Camry station sedan '88, 9500 km, as new, pwr str, a/c, manual; $21,000; 812640(ah).

Toyota Crown '72, 12mths reg, new tyres, rel, $2000; Chris 485212.

Triumph 2000 manual, body gd, 6mths reg, complete spare motor, auto gearbox, carbs etc $1790; 887547(h).

Volvo 244GL sedan '82, auto, a/c., pw. str, fuel injection, new tyres, log book, owner going o/s, $14,500 ono; x0104, 917684(h).

VW type 3 parts, cheap; some beatle parts; 825005.

WANTED

Classical guitar case gd cond, normal size; 814140(ah).

ESL English as a Second Language teachers req'd for summer courses, ESL experience & training essential; G. Chaikin, B&G Hall; x3511.

Laser Printer secondhand; x0621, 496830(ah).

ACCOMODATION AVAILABLE

Ainslie n/smoker for cosy 2 br hse with piano, cl bus & shops, avail 1/10/89, $50pw; x4363, 574532(h).

Ainslie rm avail in lge attractive hse, 10min cycle ANU, cl bus & shops, suit fem n/smoker; x2229, 573774(h).

Charming 2br hse cl shops & lake, hot water but no bath, $180pw neg; 851728.

Garran lge bdr with ens avail in t'hse; Janina x4566, 823737(h).

Griffith lg sunny hse to share with one female, pref n/smoker, male or fem 30-45yo, $80pw; 957109.

Lyons person 18-25yo to share 2br unit, part furn, $70pw, cls bus & shops; Lisa x0396, 825134 (h).

Macquarie 3 br share hse, n/smoker, cl Jamison shops, bus, bike track, unfurn but can help with acquis'n & moving, $45pw + exp; x4799, 512005(h).

O'Connor hse cl shops, ANU, CSIRO, 2br part furn, avail 9/89 to 7/90, $120pw; 476104.

O'Connor rm in attractive hse, lge garden, avail mid Oct to early 1/90, n/smoker, $55pw; x3104, 479999(h).

O'Connor rm in ff hse, avail end Sept to 31/12, nr shops & ANU, $50pw; 576484.

O'Connor to let, ff 3br hse with gar, $150pw, avail 18/11/89 to 4/3/90, owners travelling o/s; 719269(w), 489686(h).

Turner fem n/smoker, 30 yr+, share with same, pleasant 3br hse & gdn, $82.50pw; 483240(w), 472226(h).

Turner n/smoker, pref fem to share pleasant 3br hse with one other, cls ANU/Civic, $70pw; x3373, 575542(h).

Watson n/smoker to share sunny 3br hse with 1M, $55pw; 417106, 468822(h).

Weetangera all Dec & Jan, 4br ff hse, 2 cats, hse & gdn must be lovingly cared for, ref req'd; Linda x4231, 542201(h).

ACCOMMODATION WANTED

Couple require unfurn rent accom cl ANU, long lease pref, refs avail; Stephanie x5171.

Housesitting, granny flat or furn flat nr ANU req'd by 2 academics 15/10 to 15/12/89; Ria x2362.

Mature resp male seeks hse caretaker situation from early Oct; Richard 467848, 821072(h).

Visiting parents need accom from about 9/9, will mind hse for cheap rent; William 485388.

SECRETARIAL

Typing/WP reports, thesis etc $2/page, free pick/up & del, 575517 all hrs (fund raising to Buddhist Centre).

Wordprocessing essays, theses, CV's etc pick up & deliver on campus. Competitive rates & fast turnaround; x2137, 2275748(h).

Wordprocessing with editing into standard English if required, 5c/line, $1.05/pg, 5 day deliv; x2908, 5728(h).

MISCELLANEOUS

Interested in starting a social club for young(ish), single, staff, p/grads who feel isolated on campus. Write: PO Box 2412, ACT 2601.

Tuition native speaker of Mandarin, with some experience of tutoring students of Chinese, $12/hr; Kim 542439.

Academic Diary

Diary entries for the fifteenth issue in 1989 close at 5pm on Wednesday 13 September, and will be for the period Friday 22 September to Thursday 19 October, inclusive. Please assist by submitting ALL diary entries on the forms available from University Public Relations, x2106.

FRIDAY 8 SEPT

Physical & Theoretical Chemistry RSC Sem, Dr Piotr Wielpolski – Structure and Dynamics of a Stage 3 Cs – Graphite Intercalate, 11am, rm 2069, Copland.

Political Science Faculties Sem, Dr Marian Simms – Gender Politics in the Australian 1987 Elections, 11am, rm 2069, Copland.

Austronesian Project RSPacS Sem, Dr Nicholas Thomas (King's College, Cambridge) – Permutations of debt; Austronesian exchange systems and their postcontact transformations, 12.30pm, sem rm C, Coombs.

Economics RSSS Sem, Mr Peter Forsyth – Competitiveness, Microeconomic Reform and the Current Account Deficit: Is Senator Button a Failure? 2pm. sem rm A, Coombs.

SDSC RSPacS Sem, Dr Leszek Buszynski – South East Asia After the Kampuchean Problem, 11am, sem rm B, Coombs.

Psychology Faculties Sem, Dr Alex Haslam (Macquarie Univ) – Social Stereotyping and Social Judgment, 3.30pm, rm 105, Psychology.

MONDAY 11 SEPT

Contemporary China Centre RSPacS Sem, Dr Gavin Peebles – Money and Prices in The People's Republic of China 1953-1985, 11am, sem rm A, Coombs.

Organic Chemistry RSC Sem, Dr E. N. Baker (Massey Univ, NZ) – Lactoferrin: Structural Studies on a Binding Protein in Liganded and Unliganded Forms, 11am, RSC Lect Theatre.

Sociology Faculties Sem, Dr Andrew Hopkins – Social Values in Occupational Safety Law, 3.45pm, rm 2095, Haydon-Allen.

HRC Pre-Sem Screening, *The Fly*, to provide a basis for discussion for B. Creed's sem 14/9, 7.30pm, HRC Reading Rm, Hope.

TUESDAY 12 SEPT

Economic Studies (IAC) Sem, Ms Agnes Walker – World Agricultural Trade Reform: Implications for Australia, 2pm, sem rm B, Coombs.

Organic Chemistry RSC Sem, Prof Dr J. Sauer (Univ Regensburg) – Topic TBA, 11 am; rm 134, RSC.

Automated Reasoning Project RSSS Sem, Dr C. Mortensen – Inconsistent Mathematics I, 2pm, lect rm, I Block.

Demography RSSS Sem, Dr Gavin Jones – Development of population policy in Tanzania, 3.30pm, sem rm A, Coombs.

HRC Work In Progress Sem, Prof Franz Kuna – The Dilemma of Contextualism, 4pm, HRC Reading Rm, Hope.

Political Science RSSS Sem, Dr E. Papadakis – Should 'Welfare' Recipients be Shot? Public Opinion and the Welfare State in Australia, 4pm, sem rm D, Coombs.

WEDNESDAY 13 SEPT

Anthropology RSPacS, Prehistory & Anthropology Faculties Sem, Dr Mark Mosko – The developmental cycle in public groups, 9.30am, sem rm C, Coombs.

History of Ideas Unit RSSS Sem, Prof Leszek Nowak (NIAS, Wassenaar) – Man and Revolution: a non-Marxian Historical Materialism Presupposes a non-Christian Model of Man, 11am, sem rm A, Coombs.

Inorganic Chemistry RSC Sem, Prof T. G. Traylor (Univ California) – Dynamics of Ligation of Oxygen, Carbon Monoxide, Isonitriles, and Imidazoles in the Second and Picosecond Time Ranges, 11 am, rm 134, RSC.

Indonesia Study Group, Mr George Miller – Issues Affecting the Publishing Industry in Indonesia: Piracy & Taxation, 12.30pm, rm 301, Asian Studies.

Linguistics Faculties Sem, Ms Kristina Sands – Topics in the Grammar of Karadjari, 4pm, rm 2135, Dedman.

THURSDAY 14 SEPT

History RSSS Sem, Mr Peter Read – Progress Through Confrontation: Charles Perkins' Role in Aboriginal Affairs 1959-89, 10.45am, sem rm A, Coombs.

International Relations RSPacS Sem, Prof Sir Harry Hinsley (Cambridge) – Assumptions About International Relations: Their Development During the 20th Century, 11am, sem rm B, Coombs.

China Centre Faculties Language Colloquium, Mr Gi-Hyun Shin – What does a topic do in Korean? 12.30pm, rm 301, Asian Studies.

HRC Work In Progress Sem, Ms Barbara Creed – Horror & the Body Monstrous, 12.30pm, HRC Reading Rm, Hope.

Economics Faculties Sem, Dr David Gruen – A Random Walk Around the Australian Dollar: Expectations, Risk and Consequences for our External Imbalance, 2pm, rm 1048, Copland.

History Faculties Sem, Dr Debbie Rose – West of Tomorrow: Time and Narrative in Aboriginal Histories, 5pm, Geoffrey Fairbairn Rm, Haydon-Allen.

FRIDAY 15 SEPT

Philosophy Faculties Sem, Ms Fran Gray – Jungs Archtypes as Stereotypes, 10am, rm 2097, Haydon-Allen.

Economic History Faculties & RSSS Joint Sem, Mr Ian Diamond – Return migration from Brazil to northern Portugal in the late 19th century, 11am, rm 1004, Crisp.

Physical and Theoretical Chemistry RSC Sem, Prof Howard Hanley (US National Bureau of Standards) – Structure of Colloidal Suspensions by Neutron Scattering, 11am, rm 134, RSC.

Political Science Faculties Sem, Prof Harry Hinsley – Body Politic or Association of States: The Nature of and Prospects for the European Community, 11am, rm 2069, Copland.

SDSC RSPacS Sem, Mr Ken Ross – The South Pacific: Five Years Hence? 11am, sem rm B, Coombs.

Austronesian Project RSPacS Sem, Dr Mark Mosko – Quadripartite Conception: North Mekeio and the Trobriands, 12.30pm, sem rm C, Coombs.

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