THE AUSTRALIAN NATIONAL UNIVERSITY

First, to learn the nature of things

ANNUAL REPORT

1994
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Report of the Council for the period
1 January 1994 to 31 December 1994

To The Honourable Simon Crean, M.P. Minister for Employment, Education and Training

We have the honour to transmit the Report of the Council of The Australian National University for the period 1 January 1994 to 31 December 1994 furnished in compliance with Section 49 of The Australian National University Act 1991.

P E Baume
Chancellor

R. D. Terrell
Vice-Chancellor

August 1995
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The Australian National University

The Australian National University (ANU) is among the world's leading academic research institutions.

For nearly 50 years the ANU has produced renowned scientists, economists, historians, jurists, geographers, linguists and mathematicians. It has more members of the academies than any other Australian university. ANU staff are engaged in fundamental research in areas such as medicine, physics, astronomy, chemistry, biology, the earth sciences, information science and engineering. The high quality of ANU's contributions to the social sciences and the humanities is also widely acknowledged.

ANU was established by the Commonwealth Parliament in 1946 as Australia's only research-oriented university without undergraduate facilities to undertake postgraduate research and study at the highest levels on subjects of national importance to Australia. ANU was to become an institute of international standing which would attract prominent Australian scientists and scholars back from overseas. It's charter was to strengthen the nation's research effort and to set new standards for research in Australia.

In 1960 undergraduate teaching was added to ANU's role through amalgamation with the Canberra University College. In 1992 the Canberra Institute of the Arts, with its Schools of Art and Music, became part of The Faculties.

The University has eight Research Schools: Biological Sciences, Chemistry, Earth Sciences, Information Science and Engineering, Pacific and Asian Studies, Physical Sciences and Engineering, Social Sciences, and The John Curtin School of Medical Research. ANU's Mount Stromlo and Siding Spring Observatories are recognised as world leaders in astronomical research.

Undergraduate degree courses are offered through the Faculties of Arts, Asian Studies, Economics and Commerce, Engineering and Information Technology, Law, and Science, and through the Schools of Art and Music.

The Graduate School coordinates 39 Graduate School Programs provided through The Faculties and the Institute of Advanced Studies.

Staff in the Institute of Advanced Studies and The Faculties collaborate on major research with a wide range of Australian and overseas universities and institutions.

ANU has a total student population of more than 10,500 of whom approximately 2,000 are postgraduates. About one in 10 students come from overseas and are drawn from 60 countries. The University has about 1,300 academic staff and 2,400 general staff.

For more information about The Australian National University, contact:

For course and other academic information
The Registrar
The Australian National University
CANBERRA ACT 0200
Telephone: 06 249 5111; Fax: 06 248 9062

For general information
The Head
Public Affairs Division
The Australian National University
CANBERRA ACT 0200
Telephone: 06 249 2229; Fax: 06 249 5568
The Council

Members of the Council as at 31 December 1994

Members Ex-Officio

Professor The Hon Peter Erne Baume, AO, MD BS Syd., FRACP, FAFPHM (Hon), FRACGP — Chancellor

Pauline Marcus Griffin, AM BA DipSocStud Syd., HonDLitt Macq. — Pro-Chancellor

Professor Richard Deane Terrell, BEd Adel., PhD ANU — Vice-Chancellor

Professor Brian Leslie Norman Kennett, MA PhD ScD Camb., FAA — Chair of the Board of the Institute of Advanced Studies

Professor Richard J Campbell, AM, BD MA Syd., DPhil Oxf., FACE — Chair of the Board of The Faculties

Hamish McPherson — President of The Australian National University Students’ Association

David Atkins, BSc, MRACI — President of the Postgraduate and Research Students’ Association Inc

Members appointed by the Governor-General

Robin Margaret Gibson, BA LLB

Ian Francis Grigg, AM, BA

Richard Emanuel Klugman, BSc MB BS Syd.

Vacancy

Member of Parliament appointed by the Governor-General on the nomination of the Leader of the Opposition in the House of Representatives

Philip Maxwell Ruddock, BA LLB Syd., MP

Members appointed by the Chief Minister of the Australian Capital Territory

Justice Mary M Finn

Jeffrey Vincent Townsend

Member chosen by Heads of the Research Schools in the Institute of Advanced Studies and Deans of the Faculties in The Faculties

Professor Merle C Ricklefs, BA Colorado, PhD Cornell, FAHA

Member elected by the academic staff in the Institute of Advanced Studies

Professor Athel Laurence Johnson Beckwith, BSc WAust., DPhil Oxf.

Members elected by the academic staff in The Faculties

Professor Iain Richard Wright, MA Camb.

Members elected by Convocation

Mary Philomena Edmunds, BA Qld, DipEd CanberraCAE, MA PhD

David Harris Solomon, BA LLB, Barrister-at-Law

Member elected by the general staff of the University

Katrina Denise Ord, BSc

Member appointed by the Council

J F Muir, AO
Secretary to the Council

The Registrar

University officers

Chancellor

BAUME, Professor The Hon Peter Erne, AO, MD BS Syd., FRACP, FAFPHM (Hon), FRACGP

Pro-Chancellor


Vice-Chancellor

TERRELL, Professor Richard Deane, BEc Adel., PhD ANU

Deputy Vice-Chancellor and Director, Institute of Advanced Studies

SERJEANTSON, Professor Susan Wyber, BSc NSW, PhD Hawaii

Deputy Vice-Chancellor

POOLE, Professor Millicent Eleanor, BA BEd Qld, MA UNE, PhD LaT.

Pro-Vice-Chancellor, Chair of the Board of the Institute of Advanced Studies

KENNETT, Professor Brian Leslie Norman, MA PhD ScD Camb., FRAS, FAA

Pro-Vice-Chancellor, Chair of the Board of The Faculties

CAMPBELL, Professor Richard James, AM, BD MA Syd., DPhil Oxf., FACE

Pro-Vice-Chancellor (Planning and Administration)

SELTH, Philip Alan, BA LLB, Barrister-at-Law NSW, Barrister & Solicitor ACT

Pro-Vice-Chancellor (Finance and Fabric)

BARTON, Professor Allan Douglas, BCom Melb., PhD Camb., FASA

Dean, Graduate School

SPEAR, Raymond Harold, PhD DSc Melb., FAPS, FAIP

Dean of Students

CORNISH, Selwyn Harcourt, BEc WAust.

Registrar

ARTHUR, Robert Hugh, BA

Secretary

WILLIAMS, Warwick Raymond, BSc NSW

Master of University House

de CRESPIGNY, Richard Rafe Champion, BA Camb., Melb.&ANU, MA(OrientalStudies), PhD, FAHA

Librarian

STEELE, Colin Robert, MA Liv., GradDipLib Lond., ALA, AALIA, KrCrossSpain

Director, Information Technology Services

ERSKINE, Robin, BSc PhD Glas.

Head, Buildings and Grounds

HARDMAN, Donald, BA(Admin) CanberraCAE, FIMLS

Head, Finance and Accounting

BUNSELL, Alan Raymond, BAppSc CanberraCAE, FCPA

Acting Head, Management Information Systems

GIBBONS, Fay, BSc Syd., GradDipCompStud CanberraCAE

Head, Public Affairs Division

MAHONEY, James, BA, MPRIA
Director, Centre for Continuing Education
KENNEDY, Kerry J, BA MEd NSW, MLitt UNE, MA PhD Stan.

Officers for ceremonial occasions

Marshal
RICKARD, Michael John, BSc ARCS DIC Lond., FAIG

Esquire Bedell
DELVES, Angela Christine, BSc DipEd Bath. PhDC Hull
The fundamental objective of The
Australian National University is to be one
of the world's great research institutions,
distinguished also by outstanding teaching,
guiding students to the frontiers of knowledge
and the best standards of scholarship. Specifically,
it aims to:

- engage in research, scholarship and teaching at
  the highest international standards;

- foster critical inquiry and an environment that
  strengthens Australia's capacity to undertake
  fundamental research and research on subjects
  of importance for Australia;

- provide postdoctoral, graduate and honours
  education at the highest international
  standards in all areas of the University's
  research activity;

- provide outstanding higher education courses
  and other courses in the visual and performing
  arts which promote the highest standards of
  practice;

- sustain international links, and encourage
  collaborations which enable Australia to
  benefit from research in other countries and
  which make the scholarship and unique
  research resources of the University, and the
  expertise of its members, available to other
  universities and research institutions in
  Australia and overseas;

- encourage links which make the scholarship
  and research resources of the University
  accessible to the Australian community,
  industry and government; and

- contribute to education, culture, welfare and
  economic development both within Australia
  generally and in the Australian Capital
  Territory and surrounding areas.
1994 Highlights

■ Professor Peter Baume was installed as Chancellor to succeed the late Sir Geoffrey Yeend.

■ Miss Pauline Griffin was reappointed Pro-Chancellor for three years.

■ Professor Deane Terrell took up his appointment as Vice-Chancellor on 1 January 1995.

■ Professor Sue Serjeantson took up her appointment as Deputy Vice-Chancellor and Director of the Institute of Advanced Studies in January.

■ Professor Millicent Poole took up her appointment as Deputy Vice-Chancellor in July.

■ Professor Kurt Lambeck, Research School of Earth Sciences, was elected a fellow of the Royal Society.

■ 10 ANU scholars were elected Fellows of the Australian Academies.

■ ANU was ranked in the top group of Australian universities by the Committee for Quality Assurance in Education for its excellence in research, teaching and learning and community services, its well-developed planning processes and evidence of international and national referencing.

■ The Prime Minister, Mr Keating, opened the Manning Clark Centre in February.

■ The Vice-President of India, His Excellency Mr KR Narayanan opened the Australia South Asia Research Centre in the Research School of Pacific and Asian Studies in April.

■ ANU hosted the Committee for the Advancement of University Teaching's National Teaching Workshop and the annual conference of the Higher Education Research and Development Society of Australia.

■ Research schools in the Institute of Advanced Studies attracted $27 million in externally funded research, contracts and grants.

■ The Faculties were awarded 22 new large research grants from the Australian Research Council from 61 applications—a success rate of 30.5 per cent and well above the national average of 22 per cent.

■ ANU maintained its status as one of the most favoured destinations for ARC Fellowships, winning 10 of the 85 awarded. ANU received six Postdoctoral Research Fellowships, one Australian Research Council Fellowship and three Queen Elizabeth II Fellowships.

■ Eight doctoral and masters students won Australian Postgraduate Industry Awards.

■ The University became an active partner in the new ACT Clinical School as a joint enterprise with the Faculty of Medicine, University of Sydney.

■ The Research School of Information Sciences and Engineering was opened in June by the Minister for Industry, Science and Technology, Senator Peter Cook.

■ In August the University acquired a StorageTek data silo to serve the needs of researchers carrying out data-intensive computation.

■ The Centre for networked Information and Publishing was opened as a joint activity between Computing Services and the University Library.

■ The Department of Employment, Education and Training approved ANU as the location for the National Co-ordinating Centre for the Electronic Clearing Houses of the Committee for the Advancement of University Teaching.

■ The Centre for Middle Eastern and Central Asian Studies opened in February.
The Deputy Vice-Chancellor, Professor Poole, and the Deputy Registrar (Student Policy and Planning), Dr Delves, participated in the Australian Universities Roadshow in Europe, organised by Austrade.

ANU became involved in an initiative sponsored by the Department of Foreign Affairs and Trade and DEET to establish an Interdisciplinary Australia Research Centre at the University of Potsdam.

ANU won the ACT award for the Prime Minister's 1994 Employer of the Year (in the category of an employer of 100 or more employees) for outstanding achievement in assisting people with disabilities to gain work experience and undertake workplace assessment.

Together with University College (ADFA, the University of New South Wales) and Charles Sturt University, ANU received a $100,000 grant from the Commonwealth Staff Development Fund for a joint senior management development program to be offered to ACT and NSW universities in 1995.

The University's video conferencing centre opened during the year. It is being used to assist in teaching and learning initiatives. The centre is an integral part of the teaching facilities for the Actuarial Studies course which the University conducts in association with the University of Melbourne.

The new computer-based ANU Student Information System, a development from the Student Administrative Procedures Review, went 'live' for undergraduate students in June.

The University instituted the Frank Fenner Medal to be awarded for the most outstanding PhD thesis submitted each year in the John Curtin School of Medical Research.

Senator Peter Cook, Minister for Industry Science and Technology, opened the John Carver Building for the Research School of Physical Sciences and Engineering.

A Centre for the Science and Engineering of Material was formed with the participation of the Faculties of Science and Engineering and Information Technology and a number of Research Schools.

24 of the nation's top high school science teachers attended a week-long national summer school covering research in genetic engineering and the medical, earth and engineering sciences.

The Creative Arts Fellowship scheme was re-introduced and the renowned printmaker Udo Sellbach was awarded the 1995 Fellowship.

The Centre for Applied Economics, within the Faculty of Economics and Commerce, was established in mid-year.

Planning for the University's 50th Anniversary in 1996 began under the guidance of the Pro-Chancellor, Miss Griffin.

A number of new combined degrees were approved, including the combination of the specialist Asian Studies degrees with most other degrees and a combined Bachelor of Science/Bachelor of Science (Forestry).

The Centre for Law and Economics was established within the Law Faculty in the second half of the year.

ANU awarded honorary doctorates to the Vice-President of India, His Excellency Mr KR Narayanan (Laws), South Africa's Archbishop Desmond Tutu (Laws), Emeritus Professor Leslie Zines (Laws) and the Australian poet Les Murray (Letters).
The Australian National University

The Year in Review 1994

For the Australian National University, 1994 was a year of significant challenge and progress.

Major advances were made in the University’s research and teaching programs. ANU’s rating in the top rank of universities by the Committee for Quality Assurance in Education recognised the University’s excellent research, teaching and learning and community services, its well-developed planning processes and evidence of international and national referencing.

ANU hosted the CAUT National Teaching Workshop and the annual conference of the Higher Education Research and Development Society of Australia.

The University’s cooperation with other Australian higher education institutions included research collaboration, adjunct appointments, exchanges and a vibrant program of academic conferences across the University’s research and teaching activities.

The senior management of the University altered during the year following the appointment of a new Vice-Chancellor, two new Deputy Vice-Chancellors and two new Chairs of the Boards of the Institute of Advanced Studies and The Faculties. This largely new management team began a new phase in the University’s strategic planning to strengthen its focus of research, teaching and learning. The academic framework of the plan was completed in the second half of the year. Research Schools, The Faculties, and other areas within the University are contributing to the development of the plan.

Initiatives in a range of staff-related matters, including enterprise bargaining, the involvement of general staff in decision making, measures to improve the gender balance among academic staff, new promotions procedures for The Faculties, and an Aboriginal and Torres Strait Islander recruitment strategy, were undertaken in 1994.

Staff in the Institute of Advanced Studies and other areas of the University began preparing for the review of the Institute to be conducted jointly by ANU and the Australian Research Council in 1995.

Outreach to the broader community included ANU academic staff consultancies to government and other public institutions, the study programs initiated by the Centre for Continuing Education, cultural activities, the ANUTECH-sponsored public lecture series, and community events.

Sir Geoffrey Yeend

The University was saddened by the death of its Chancellor, Sir Geoffrey Yeend, on October 6, 1994. Sir Geoffrey, who had been Chancellor since 1990, was due to step down on December 13. Sir Geoffrey, who had previously been Pro-Chancellor, dedicated his life to public service. He was Head of the Department of Prime Minister and Cabinet and secretary to the Cabinet from 1978–86. As a public servant he advised Prime Ministers from Ben Chifley to Bob Hawke. He gained a Commerce degree from Melbourne University, with most of his study done through the Canberra University College, which became one of the constituent parts of the Australian National University. Sir Geoffrey was made a Companion of the Order of Australia in 1986, knighted in 1979 and made a Commander of the Order of the British Empire in 1976. He served on many company boards and became Chancellor of the ANU after his retirement from the Public Service in 1986. Sir Geoffrey exhibited wisdom, skill and fairness in conducting the business of Council meetings and his high standing with government and business and in international relations greatly assisted the University. He had a keen sense of mission of the University and was a forceful advocate of it. The University has lost a great Chancellor.

New Chancellor

Sir Geoffrey was succeeded as Chancellor by Professor PE Baume who was elected by Council to a three-year term beginning December 1, 1994. Professor Baume, a former
Senator for NSW, Minister for Education and a member of the University’s Council since 1986, is Professor of Community Medicine and Head of the School of Community Medicine at the University of New South Wales.

Pro-Chancellor

Miss PM Griffin was reappointed as Pro-Chancellor in May for three years and, among many other duties, continued the challenging task of coordinating the University's 50th anniversary celebrations.

Vice-Chancellor

Professor RD Terrell, took up his appointment as Vice-Chancellor on 1 January 1994. Professor Terrell was formerly Deputy Vice-Chancellor. He succeeded Emeritus Professor LW Nichol.

Deputy Vice-Chancellors

Professor SW Serjeantson took up her appointment as Deputy Vice-Chancellor on 1 January 1994. Professor Serjeantson was formerly in the Division of Clinical Sciences, John Curtin School of Medical Research and had been the School's Acting Director.

In July, Professor ME Poole took up her appointment as Deputy Vice-Chancellor for five years. Professor Poole was formerly Pro-Vice-Chancellor (Research and Advancement), Queensland University of Technology.

Senior Appointments

Professor BLN Kennett, Research School of Earth Sciences, was appointed Pro-Vice-Chancellor, Chair of the Board of the Institute of Advanced Studies, succeeding Professor JW White, who was elected Dean of the Research School of Chemistry.

Professor RJ Campbell, formerly Dean, Faculty of Arts, was appointed Pro-Vice-Chancellor, Chair, the Board of The Faculties, succeeding Professor DM Griffin, who retired.

Dr LJ Saha was elected Dean of the Faculty of Arts; Professor JC Turner was elected Dean of the Faculty of Science; Professor David Williams’ appointment as Director, Canberra School of Art, was extended to December 31, 1996; the appointment of Professor John Painter as Director, Canberra School of Music, was extended to December 31, 1995 or until a new Director is appointed and takes up duty.

Sir Anthony Mason, Chief Justice of the High Court of Australia, was appointed a National Fellow; Professor Wang Gungwu, Vice-Chancellor of the University of Hong Kong, was appointed a University Fellow.

Strategic Planning

All areas of the University were involved in the process of strategic planning towards the year 2005. Directors and Deans from the Institute of Advanced Studies, The Faculties and the Institute of the Arts, and Heads of Central Areas Divisions met at a retreat to initiate the collegiate process. This was followed by the development of plans for the Institute of Advanced Studies and The Faculties and specific sub-plans with particular emphasis on teaching, research, community outreach and cross-campus links. These plans were revised and sent to the Vice-Chancellor's Strategic Planning Committee. The University's strategic plan is due for release in mid-1995.

Focus on Asia and the Region

ANU decided to identify and assist networks and initiatives in studies on Asia and the region across the University. Special localised initiatives were encouraged and supported.

Following the 1993 Review of the Asian Studies Faculty, which recommended that steps be taken to coordinate Asian Studies across the whole campus, the Vice-Chancellor established the Asia Committee, composed of the Deputy Vice-Chancellor (as Chair), the Dean of Asian Studies, and the Director of the Research School of Pacific and Asian Studies. During 1994, the Committee began the work of establishing a picture of the various aspects of Asian Studies within the University. The operation of this Committee has
emphasised the value of the various links between the two main areas concerned with Asian Studies—the Faculty and the Research School of Pacific & Asian Studies. The process of appointment of an Asia Liaison Officer (to assist, and be responsible to, the Asia Committee) was also begun.

An Australia South Asia Research Centre was established in the Division of Economics, Research School of Pacific and Asian Studies. The centre was inaugurated in April by the Vice-President of India, Shri KR Narayanan, who was awarded the honorary Degree of Doctor of Laws by the University. Dr R Shand will be foundation Executive Director of the Centre.

Council approved the establishment of a Korean Studies Centre, open to all staff and graduate students of the Institute of Advanced Studies and The Faculties with an academic interest in the study of Korea.

A Pacific Islands Liaison Centre was established to consolidate and develop the activities initiated by the Pacific Islands Group, assisting in the more effective coordination of Pacific Islands Studies in the Research School of Pacific and Asian Studies and more generally in the University and in Canberra.

Research

The distinctive and pre-eminent research role of the Australian National University in the higher education sector stems from the vision and commitment of successive governments to support of the Institute of Advanced Studies, representing continuity of the original research and research training function of the ANU. The Commonwealth Government support of the IAS was $148 million in 1994, and this was augmented by $27 million in externally funded research, contracts and grants. The Institute continued to publish research in international journals and to foster academic exchanges with the world’s leading groups and institutions. Academic honours to Institute staff in 1994 included the election of Professor K Lambeck, Research School of Earth Sciences, as a Fellow of the Royal Society of London, election of three Fellows of the Australian Academy of Science, three Fellows of the Australian Academy of Social Sciences and one Fellow of the Australian Academy of the Humanities.

The principal funding for research in The Faculties derives from the Australian Research Council. ANU was granted $2.6 million from the Australian Research Council for research projects to begin in 1995. The University’s success rate for large grants for 1995 was outstanding. The ANU has achieved a greater rate of success for new awards than the national average of 22 per cent. Twenty new grants were awarded out of the 61 applications submitted for funding in 1994, representing a success rate of 30.5 per cent.

Although the number of awards are at a similar level to that achieved in 1993, the actual funds awarded for initial grants have significantly increased. The figure has risen from $606,500 for 1994 to $1,684,000 for 1995.

The academic distinction of staff in The Faculties is apparent in the election of three Fellows of the Australian Academy of Social Sciences.

The University maintained its status as one of the most favoured destinations for ARC Fellowships winning 10 of the 85 awarded. ANU received six Postdoctoral Research Fellowships, one Australian Research Fellowship and three Queen Elizabeth II Fellowships.

The two academic boards were asked to consider a proposal for the development of a research park to be associated with the University. Matters being considered were marketing research, co-location with the Institute of Advanced Studies, ANU’s commercial partners, structure and costs.

Clinical School

The University is committed to a close relationship with the new ACT Clinical School being established as a joint enterprise with the Faculty of Medicine, University of Sydney. The ANU will be represented in electoral committees to appoint up to nine Chairs, and some of these academic appointees could be offered adjunct appointments or Visiting Fellowships within the John Curtin School of Medical Research.
Developments in Information Technology

The Year in Review 1994

Developments in Information Technology

The first new Research School to be established in the Institute of Advanced Studies in 20 years, the Research School of Information Sciences and Engineering (RSISE), was opened in June by the Minister for Industry, Science and Technology, Senator the Hon Peter Cook. The new School, which brings together ANU research strengths in parallel computation, speech processing, computer vision and computational physics, systems engineering in control systems, signal processing and communications, and work in pure and applied logic and associated software, expects to be located in its own building by 1996.

A major initiative in advanced computing occurred in August with the acquisition of a multi-million dollar storage system from StorageTek. Known as the data silo, it was acquired primarily to serve the needs of researchers carrying out data-intensive computation. It has the capacity to hold the entire collection of the National Library.

The Centre for Networked Information and Publishing opened in September as a joint activity between Computing Services and the University library. It assists staff to develop networked information servers, enhance existing information services and promote their work through the Internet.

The standardised product, Entire Connection, was introduced to the campus-wide network to provide greater access to the mainframe. Entire Connection enabled the best features of the mainframe and the desktop to be exploited.

Enhancement of teaching and learning

The Centre for Educational Development and Academic Methods completed major projects in quality management in teaching, learning and supervision. A new initiative was a semester course on University Teaching and Learning, which complemented another course on academic leadership. At the national and international level the Centre was involved in higher education, teaching and learning through its support for the CAUT National Teaching Workshop and the annual conference of the Higher Education Research and Development Society of Australasia. It was the first major national event to bring together holders of CAUT grants to display their projects and exchange ideas with academics from around Australia. Two reports written at the conclusion of the Department of Employment, Education and Training-funded Quality Management and Evaluation in Teaching and Learning project will provide a basis for further development of quality management of teaching and learning in the University. In the area of Research Practice, the Centre continued to organise workshops on applying for grants. Included were separate workshops for staff applying for large and small Australian Research Council grants and fellowships and for National Teaching Development Grants.

Working Party on the Future Directions of the Graduate School

Following the first few years of the operation of the University's Graduate School, a Working Party, chaired by the Deputy Vice-Chancellor, began the process of examining the future directions of the School. The project generated a considerable degree of interest and participation across the whole campus and interviews and consultations were conducted with a wide range of people. Staff and students raised important issues relating to resourcing and infrastructure; quality of supervision; cross-campus access to facilities and support for postgraduate students; the roles of Graduate Program Convenors, Prescribed Authorities and the Graduate Degrees Committee; the structure of the Graduate School within the structure of the University as a whole. The Working Party reported to the Vice-Chancellor in October, and the report was circulated widely for comment, as part of a process of consultation and comment to formulate a University-wide response to its recommendations.
Government policies and pressures

During the first half of 1994 the results of the first Quality Assurance round were announced, with the ANU listed in Band 1. The University allocated the first round of Quality Assurance monies to support a range of projects in the Institute of Advanced Studies, The Faculties and Central Areas, including individual activities. In the Institute projects to support infrastructure development, such as a building for the Sensitive High Resolution Ion Microprobe project, an initiative to create women-only academic appointments in the social sciences and start-up funds for a Centre for Science and Engineering of Materials, approved by Council in August, were supported. In The Faculties, activities such as the Hypertext project for enhanced delivery of certain courses in the Law Faculty, the development of the Asian Studies Faculty’s Year-In-Asia program the establishment of a Teaching Development Fund, and the Graduate School’s Graduate Teaching Program were supported.

Preparations for the second Quality Assurance round focussed on teaching and postgraduate training. The University responded to make more explicit its processes and outcomes in relation to planning and management of teaching, and procedures for course development and review. A wide range of academic and administrative staff participated in the arrangements for the visit of the external panel.

In 1994, the number of school leavers applying for admission to universities declined across Australia. This made it very difficult for universities to meet their school leaver enrolment targets, established in support of the government’s policy to increase the number of school leaver enrolments in higher education. There was a nationwide decline in the scores required for university admission. The ANU shared in this trend, with lower entry scores across all Faculties, and the University was unable to meet its school leaver target for 1994. The government is maintaining pressure on school leaver enrolment targets for 1995 with the possibility of funding cuts for non-compliance.

For 1994 the Government issued changed guidelines, deregulating the charging of tuition fees to Australian postgraduate students. Later in the year, it announced a review of the system of charging postgraduate tuition fees, to be led by Professor Gordon Stanley, to which the University made a submission, based on the report of an ANU Working Party set up to examine the future of Graduate Tuition Fees within the University.

In December 1994 the Department of Employment, Education and Training approved the location at the ANU of the National Co-ordinating Centre for the Electronic Clearing Houses of the Committee for the Advancement of University Teaching. In addition, the ‘Creative Nation’ statement announced the establishment of a number of Co-operative Multi-media Centres, and the ANU began negotiations with appropriate partners, pending the issue of guidelines and formal call for bids.

During 1994, the ANU was involved in a number of international initiatives by various branches of Government. In November 1994, the Deputy Vice-Chancellor and the Deputy Registrar (Student Policy and Planning) participated in the highly successful Australian Universities’ Roadshow in Europe, organised by Austrade, which visited Sweden, Germany and France as part of a push to market Australian Education in Europe. The Deputy Vice-Chancellor, who was one of three Australian presenters, was chosen to give the Overview of Australian Higher Education at each venue. In December 1994, the ANU became involved in an initiative sponsored by the Department of Foreign Affairs and Trade and DEET, in connection with the establishment of the Interdisciplinary Australia Research Centre at the University of Potsdam.

During the year, the Government announced a recalculation of the ‘research quantum’ which was an element in the Relative Funding Model used in 1989 to vary the operating grant allocations to all universities in the Unified National System (UNS). As a result of this recalculation, the budget for The Faculties’ component of the ANU’s total operating grant for 1995 was cut by $1.522m, from approximately $6m to $4.5m. It is striking that the proportion of operating grants for the whole UNS allocated as research quanta dropped from 6 per cent in the 1989 calculations to 4.7 per cent. Coming on top of the successive ‘clawbacks’ of the late 1980s to increase funding for the Australian Research Council, and then the
successive cuts attributed to the alleged 'over-funding' indicated by the Relative Funding Model, this further reduction to the budget of The Faculties was a severe blow.

External grants

Reflecting the increased need for the University to expand and diversify its source of research funding, the Grants Office experienced a substantial increase in applications for external funding. The office took an increasingly pro-active role in identifying research grant opportunities and continued to provide an advisory service to staff on seeking external funding. The office also administered the Faculties' Research Grants Scheme, the Institute of Advanced Studies' Strategic Development Fund, the University's Major Equipment Fund and the Institute of Advanced Studies/Other Australian Universities Research Collaboration Scheme.

Employer of the Year Award for assisting people with disabilities

ANU won the ACT award for Employer of the Year in the category of an employer of 100 or more employees in the Prime Minister's 1994 Employer of the Year Awards. Nominated by the Commonwealth Rehabilitation Service, the award was for outstanding achievement in assisting people with disabilities to gain work experience and undertake workplace assessment.

Staffing and equity

Several times during the year Council considered initiatives to recruit greater numbers of women for senior academic posts. An affirmative action approach was approved for the selection of candidates for tenured senior academic posts in the Research School of Pacific and Asian Studies and the Research School of Social Sciences as a special measure to address the gender balance at the University. The Board of the Institute of Advanced Studies established a Working Party on Gender Balance to develop policy and make recommendations on exceptional measures to achieve an improved gender balance in the Institute. The recommendations are expected to come to Council in early 1995.

New procedures for assessing applications for promotion were established in The Faculties. These involve a preliminary consideration at the Faculty level prior to a review at the campus-wide level.

The lengthy process of the rationalisation of salary scales for general staff was completed in 1994 with the introduction of work level descriptors for each of the new grades.

The University began the enterprise bargaining process with a National Framework Agreement. Logs of claims from the unions on matters to be negotiated at the institutional level were received towards the end of the year. The University also issued a log of claims.

A review of participation of general staff in decision making was completed and the Council agreed with the principal recommendations relating to the establishment of consultative committees involving all staff at the School, Faculty and Divisional level. The operation of these committees will be reviewed by the end of 1995. The terms of reference of the campus-wide General Staff Consultative Committee were reviewed and its brief now covers all staff as the Staff Consultative Committee.

An Aboriginal and Torres Strait Islander recruitment and career development strategy achieved strong support from within the University. Negotiations with the Department of Employment, Education and Training for implementation of the strategy should be completed in 1995.

A voluntary tutor scheme whereby members of staff assist other staff of non-English speaking background, was established. The scheme enables assistance to be provided to people with a non-English speaking background in a variety of work situations.

At the end of the year ANU, together with the University College (ADFA), the University of NSW and Charles Sturt University, received a $100,000 grant from the Commonwealth Staff Development Fund for a joint senior management development program to be offered to universities in the ACT and NSW in 1995.
Reviews were undertaken during the year of a number of services including Stores, the University's mail service and its duplicating facilities leading to campus-wide rationalisations and significant savings.

Good health

The Health Service continued to provide medical consultations, nursing and physiotherapy services. These included nutrition information for the self-catered halls of residence, first aid and health advice for Inward Bound teams, sports medicine and general practice consultations for staff and students.

Students

Students had access to a wider choice of subjects and the benefits of exposure to a greater range of experts in Australia and overseas with the opening of the ANU's video-conferencing centre in November. The centre was established in collaboration with the University of Melbourne.

During the year consideration was given to ways in which the acute shortage of funds facing The Faculties could be addressed. As a result, Council approved a move to charge tuition fees for the Graduate Diploma in Legal Practice and proposed tuition fees for full-time postgraduate students. While the ANU charges tuition fees for fewer postgraduate courses than other Australian universities, a group of students and others occupied the Chancellery for eight days in September, and again for a few hours in October, to protest the decisions. Council established a number of inquiries into the structure of the Legal Workshop and the broader question of fees for postgraduate courses. A Review of the Legal Workshop was established in October to make recommendations on funding, structure, duration and content of the Graduate Diploma in Legal Practice. A report was to be submitted to the Vice-Chancellor in February, 1995. A second committee reviewed policy on the charging of graduate tuition fees, together with resource, access and equity implications of such fees. Council subsequently accepted the principle of charging graduate tuition fees for part-time and full-time postgraduate coursework and agreed that the status quo would apply for 1995. In December, Council agreed to implement a quasi income-contingent loan scheme recommended in the report of a Working Party on Loans for the Graduate Diploma in Legal Practice. The scheme applies to law graduates and graduands from the ANU and the University of Canberra undertaking the Graduate Diploma in Legal Practice in 1995.

The Student Administrative Procedures Review, which began in 1992, concluded in September. The new computer-based ANU Student Information System (ANUSIS), one of the major initiatives of the review, went 'live' for undergraduate students in June bringing benefits to the student community through direct receipting of fees, the on-line production of transcripts of students' academic records and the on-line production of significantly enhanced and more attractive degree testamurs. Maintaining an existing system and its supporting procedures while developing a new system based on altered parameters presented a challenge for staff in the Registrar's Division.

During the year 1156 full-fee paying overseas students were studying at the ANU. Of the total, 661 were postgraduate students, 427 of them in the Institute of Advanced Studies, 21 in Centres, 209 in The Faculties and four at the Institute of the Arts. Of the 495 overseas students studying undergraduate courses, 475 were enrolled in The Faculties and 20 in the Institute of the Arts. The majority of full-fee paying overseas students, 777, were from the Asia-Pacific region.

The role of the International Education Office was enhanced by centralisation of the diverse international student exchange arrangements and by the opening of an Asian Regional Office in Bangkok.

The Jabal Aboriginal and Torres Strait Islander Centre's relationship with the Institute of the Arts developed further with four new students commencing studies—three in the Canberra School of Art and one in the Canberra School of Music. This relationship is expanding beyond meeting individual indigenous students' needs to a broader concern with the place of indigenous art, and artist's needs within curriculum. As part of the Centre's responsibility for assisting indigenous students reach their academic potential, staff developed a tutor training program to prepare tutors for Aboriginal and Torres Strait Islander students' skills development.
Recruitment drives focused more intensively on New South Wales, with some recruitment conducted in Queensland. The Centre organised an exhibition of the work of Hope Neill, an Aboriginal artist from Queensland. The aim was to raise the profile of the Centre within the University and the wider Canberra area. Staff from the Centre were involved in teaching within various faculties as well as providing an indigenous perspective into courses offered through ANUTECH. The Centre has continued to provide both academic and pastoral support to Aboriginal and Torres Strait Islander students studying at the ANU as well as to maintain an indigenous focus for the University cultural environment.

Ms Elowyn Leonard, a graduate of the Canberra School of Music, won the ABC's Young Performers' Award. Ms Leonard played clarinet, leading the Melbourne Symphony Orchestra through a Neilson Concerto.

Eight doctoral and masters students from the University were successful in being awarded Australian Postgraduate Industry Awards.

Upgrades and repairs to facilities brought members back to the ANU Union in 1994. A discount on functions, entertainment, food and drinks coincided with the restaurant and bistro upgrades. Sullivans became a bistro; the once mobile servery at the Asian Bistro has been replaced by a permanent self-service bar and a Lebanese bar will open next year.

Achievement in sporting excellence was the high point of Sports Union activities with our Australian Football club winning its second consecutive premiership and the success of the Men's and Women's Eights in the Disher Cup Rowing Challenge. In general use of the sport and recreational facilities continued to increase, particularly the new indoor climbing wall.

Frank Fenner Medal

The University instituted the Frank Fenner Medal for the most outstanding PhD thesis submitted each year in the John Curtin School of Medical Research.

Campus development

Major buildings completed during the year were the joint ANU–CSIRO accommodation for the Department of Computer Science and the CSIRO Division of Information Technology; and the Faculty of Asian Studies and the Departments of Linguistics and Modern European Languages building.

Buildings and Grounds Division introduced its Quality Service initiative in April. This initiative precedes a change to Total Quality Management, which aims at a more effective delivery of quality service in all the Division's activities.

The Prime Minister, Mr Paul Keating, opened the Manning Clark Centre in February. The Centre honours Professor Clark's unique contribution to Australian intellectual and public life. After the opening Mr Keating was the first participant in an ABC Radio series sponsored by the University's Reshaping Australian Institutions Project (being undertaken by the Research School of Social Sciences) and which was produced in the Centre's main theatre.

The new John Carver Building for the Research School of Physical Sciences and Engineering was opened in June by the Minister for Industry, Science and Technology, Senator the Hon Peter Cook. Formerly the Accelerator Hall, it was refurbished to provide offices and laboratories and was named to honour a former Director of the School, Professor John Carver.

Two projects from the Strategic Landscape Plan were also completed. One involved the construction of a footpath to student residences between the Forestry–Research School of Biological Sciences. The other, reconstruction of the North Road entrance to campus, will separate pedestrians and cyclists from traffic.

Following fire, safety and public health reports from ACT government authorities advising the buildings were not fit for habitation, it was found that it was neither practical nor financially viable to restore Old Lennox House buildings to heritage standards and use them for low-rent accommodation. Following a Magistrates' Court decision in the University's favour in June, the University was granted vacant possession of Old Lennox House. Residents left the premises on June 13 and the buildings were secured. In
March, Council agreed that only block A be used as low-rent accommodation; the ACT Heritage Council be consulted before determining the future of blocks D, H, I, J and K; blocks A, F and G be preserved; and that blocks L, M and E be demolished.

The University’s telephone services were improved by the installation of 200 additional extensions, a 200-line PABX for University House and a 100-line PABX for rented accommodation in Acton House.

Community outreach

Twenty-four of the nation’s top high school science teachers attended a week-long national summer school to see the cutting-edge research being conducted at the ANU into genetic engineering and the medical, earth and engineering sciences. The insights gained were taken back to the classroom. An initiative of the Centre for Continuing Education, the summer school was a pilot project in professional development for teachers. Other initiatives included the Introduction to Aboriginal Studies evening course; the growing demand for in-house training courses for the public sector and a cooperative arrangement next year between the Centre for Continuing Education, the University Library and ANUTECH to promote the ANU as a community resource for Internet training.

The Vice-Chancellor established a Creative Arts Advisory Committee to assist in coordinating cross-campus creative arts activities. The first major activity of the Committee was to recommend the 1995 ANU Creative Arts Fellow following the revival of the Fellowship scheme by the Vice-Chancellor on the recommendation of the Pro-Vice-Chancellor (Planning and Administration). The renowned printmaker, Udo Sellbach, accepted the 1995 Fellowship. The Drill Hall Gallery experienced an increase in visitors during 1994 with a dynamic program of exhibitions by local, national and some international artists and sculptors.

Outreach programs open to the community continued to be successful. The ANUTECH-sponsored Public Lecture Series increased from 21 to 28. The ANU Convocation—Canberra Times Literary Luncheon program doubled to 20 talks by well-known Australian and international authors. Other activities, including the annual Town versus Gown Cricket Match and the ANU Chess Festival, and the publication of ANU Reporter and The National Graduate, continued to involve the community and graduates in the life of the University. The Reporter continued its short story competition, and introduced a poetry competition, both of which were open to the broad community, and were sponsored by ANUTECH Pty Ltd.

Planning for the University’s 50th Anniversary in 1996 began during the year. A working party, chaired by the Pro-Chancellor, is considering a program of events that reflect the ANU’s research and teaching roles and achievements as well as its place in and contribution to the ACT and the nation.

University House

University House assisted the international role of the University through an exchange program with the German Foreign Office in Bonn; a lunch was held to mark the establishment of the University’s new Centre for Middle Eastern and Central Asian Studies; and the staff exchange program with the International House of Japan continued. The House maintained its strong connection with post-graduate students, awarding two scholarships to current PhD students.

Finance

In 1994 the University received recurrent funding of $234,206,000, comprising $211,829,000 from the Department of Education, Employment and Training (DEET), $17,536,000 from the Department of Human Services and Health for the John Curtin School of Medical Research, and $4,841,000 from the ACT Government for the Institute of the Arts. The DEET grant included $17,358,000 derived from the Higher Education Contribution Scheme (HECS) and thus met by charges to students; capital roll-in funds of $3,145,000; Quality Assurance funds of $5,738,000; and an additional $585,000 for The Faculties for growth in student enrolments of 115. Conversely, the University suffered a reduction of $1.5 million as a result of the application of the Relative Funding Model which was borne primarily by The Faculties.
The 1994 budget was probably the tightest one in the University's history, particularly for The Faculties and the Central Areas, because of the reductions in real funding. Although in nominal dollars total operating grants increased by ca. $5.3m, this covered cost increases of $2.7m and capital works funds of $3.1m. The Cost Adjustment Factor increased by 2.9% over the year and total enrolments increased by 69 EFTSU.

Two welcome changes in 1994 funding comprised the introduction of the capital roll-in and the award of the Quality Assurance funds to the University. The University has received no regular capital works funding for some 20 years, and an acute accommodation problem has developed. Although the 1993 grant of $3.1m is only a modest sum, the grant is to be increased to ca. $7m in 1995 and to remain at about this level. However the University believes that under the capital roll-in formula, it should receive almost double this amount. The matter is under consideration by DEET. As well, the paucity of capital works funding has caused a serious backlog of essential maintenance work on University buildings and infrastructure. The University was pleased for its quality performance to be recognised and ranked in the highest category for the Quality Assurance review. The award has provided additional funds for enhancing selected University facilities and activities.

Other University income received for operating purposes amounted to $6,749,000. This was similar to that received in 1993. It mainly comprises interest earned on the investment of recurrent funds, and contributions to central overheads from syndicated research programs and Cooperative Research Centres.

Funds were allocated to operational areas as follows: Institute of Advanced Studies 46%; The Faculties 22%; Central Administration 15%; and the Library, Information Technology Services and Institute of the Arts 17%. These allocations differed only marginally from those in 1993. Included in the above allocations were $16,352,000 for new equipment purchases across the University and $1.65 million for new research activities in the Institute of Advanced Studies under the Strategic Development Fund which is funded from a two per cent levy on the Institute's budget.

The University undertook a major capital works program amounting to ca. $23m. in 1994 to help overcome the acute shortage of staff offices and laboratory space. The major projects included new buildings for the Faculty of Engineering and Information Technology together with the Department of Information Technology of CSIRO ($9.3m); the Faculty of Asian Studies and the Faculty of Arts language and linguistic departments ($6.9m); and a structured carpark ($3m). As well, several other buildings from the 1993 program were completed, and some major refurbishment and deferred maintenance work were undertaken. The program was mainly funded from the University's own Building Fund, the DEET capital roll-in, borrowings of $8m, a CSIRO contribution of $4m towards its part of the FEIT building, and capital contributions from International Student Full Fee Programs.

**Internal Audit activity**

During 1994 the Audit Committee considered a number of reports provided by the Internal Audit Office. These included reviews of financial systems and transactions on which the University's 1993 financial statements were based, reports on asset verification work in the Housing Operation and the central administrative areas, a review of Payroll-Personnel procedures in the John Curtin School of Medical Research and in the Research School of Social Sciences. The office also reviewed and reported on internal controls in the Arts Centre, on computing systems (local area networks) in the Faculties and in parts of the central administration and on financial and administrative issues related to special purpose funds, specifically Co-operative Research Centres. The office also provided ad hoc assistance to business managers in the University's operational areas on finance and administration.
Full-time equivalent staff financed from recurrent funds for the years 1977, 1992–1994
Excluding Part-time Teachers, Casual Staff, Academic Visitors and Staff of the Institute of the Arts

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<td>3390</td>
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(a) Comprises Instructional Resources Unit (IRU) (30), Centre for Educational Development and Academic Methods (CEDAM) (7), and Animal Services (18). The latter was transferred from JCSMR in 1992.

(b) Parking and Traffic staff (8), were transferred to outside funds in 1992.

(c) CCE funded from trading activities in 1994.
Institute of Advanced Studies

The 1994 activities included preparations for the 1995 Joint Review of the Institute of Advanced Studies, and of its schools and centres, by the University and the Australian Research Council (ARC). By year's end each school and centre had produced its strategic plan for the years 1995–2004, setting out its broad goals, objectives and strategies and performance indicators. The Institute strategic plan draws upon these area plans and is concerned with its national and international roles in research and scholarship and research training, and the links between its fundamental research and responsiveness to national needs.

During the year the University and the ARC continued their cooperative discussions and negotiations, commenced in 1993, relating to the conduct of the Joint Review. Agreement was reached on the terms of reference for the Review, its procedures and the nature of the quantitative and qualitative data to be provided to review committees. Members of the school, centre and Institute review committees were appointed on the basis of their very high research reputations and/or expertise in science policy. The background to and the arrangements for the conduct of the Review have been published by the University and the ARC and this information has been made available to persons and organisations responding to the December 1994 public call for submissions to the several review committees.

The Minister for Employment, Education and Training, Simon Crean, MP, in issuing to the ARC in 1994 a redefined Ministerial reference on the Review, wrote "The Government recognises that the Institute, as a major performer of research, should be a resource for the Australian higher education system and for Australian research as a whole, and that this national role also has an international dimension." These roles are described in detail in the Institute's statement of objectives which reads:

The fundamental objective of The Australian National University is to be one of the world's great research institutions, distinguished also by outstanding teaching, guiding students to the frontiers of knowledge and the best standards of scholarship.

The Institute of Advanced Studies aims to maintain and enhance the University's world class standing and excellence by:

- engaging in research and scholarship at the highest international standards;
- strengthening Australia's capacity to undertake fundamental research both generally and in relation to subjects of national importance;
- providing outstanding postdoctoral and graduate training in all areas of the Institute's research activity;
- encouraging collaborations which allow other Australian universities to benefit from the concentration of research resources available at the Institute;
- fostering international exchanges and collaborations which enable Australia to contribute to and benefit from the latest advances in front-line research;
- encouraging links which make the scholarship and research resources of the Institute accessible to the Australian community, industry and government;
- being well-placed to respond rapidly to a changing environment and new opportunities; and
- optimising use of its resources by promoting internal links, including those with The Faculties, based on shared or complementary technologies and interests.

The second meeting of the Institute's Consultative Council, the members of which include senior academics drawn from Australia and overseas, members of the University and the President of the Council of Australian Post Graduate Associations, was held in September. The meeting as chaired by the Vice-Chancellor. The key issue before the Council was Institute
strategic planning in the context of the 1995 Joint Review. In its advice the Council offered useful comment on how the Institute might enhance its national contributions to the conduct of research and to the training of doctoral and postdoctoral scholars. The Council put the view, which is accepted by the University, that the primary focus of the Institute must be basic research, sometimes with a high risk component, but that it has a national obligation to identify exploitable spin-offs from that research.

As part of its national role the Institute is committed to increasing the level of its research interactions with other Australian universities. Success in achieving this objective will be measured in part by progress towards directing by 1998, 12 per cent of the total operating budget of the research schools to such collaborations. Collaborative activities were expanded in 1994 to assist many more PhD students at other Australian universities visit the Institute for extended periods to access first-rate facilities, including the libraries, and expertise available at the ANU.

Brief reports of the year's highlights in the research schools and centres follow.

**Something to buzz about**

*(Research School of Biological Sciences)*

I buzz therefore I think: bees flying through mazes have demonstrated that the humble bee possesses considerable powers of memory, intelligence and, perhaps, consciousness. Experiments conducted by researchers from the School have shown that bees can be taught to uncover camouflaged patterns, just as humans can. The bees' ability to interpret what they see in the light of prior experience shows that they possess a trait previously reserved for humans and other animals with higher intelligence. In other highlights of 1994, the School held two Robertson symposia. Themes ranged from a consideration of the genetic evidence for the origins and spread of humans after their divergence from the chimpanzee to the genetics of fungal pathogens of plants. The papers and posters presented at the DNA Profiling and Gene Populations symposium are to be a Cambridge University Press title, *Biological Barcoding*. Another symposium dealing with the most widely applied technique for studying fundamental plant responses to stress attracted more than 100 leading physicists, chemists, plant physiologists and ecologists from Australia and around the world. Chlorophyll Fluorescence: Origins, Measurements, Interpretations and Applications was jointly sponsored by RSBS and the CRC for Plant Science. Research papers by the invited speakers will be published as a special issue of the *Australian Journal of Plant Physiology.* The School was successful in two Institute of Advanced Studies Strategic Development Fund competitions: for Cell Surface Biology and in Developmental Neurobiology of Wallabies.

**Saving the environment**

*(Research School of Chemistry)*

The environment, history and agriculture are three of the many areas that will benefit from the School's research projects. In collaboration with the Australian War Memorial and the Australian Defence Force Academy, the School's Coordination Chemistry and Inorganic Electrochemistry Group is studying corrosion inhibition with an aim to improving the preservation of historic objects. Landmark work carried out by the Solid State Molecular Group has resulted in a provisional patent of a material that has a variety of applications, such as aiding the slow release of drugs and specialist environmental clean up operations; and the Bio-Organic Chemistry Group has found that two unusual groups of antibiotics produced by potential biocontrol microorganisms offer an attractive alternative to the increasing use of agrochemicals to control plant disease.

**Modelling possible future global climate change**

*(Research School of Earth Sciences)*

Relationships between global climate, glacial loading and unloading and relative sea-level changes over the past 150,000 years provide essential knowledge to test any
predictive capacity in modelling possible future climate change and sea-level change. Research in Geodynamics at the Research School of Earth Sciences has improved the modelling of the earth responses to glacial and ocean basin load variations with applications in the Eastern Mediterranean, Western Australia and Antarctica.

An essential element in these studies is the ability to accurately date processes. The use of uranium and thorium isotopes, measured with high precision at low abundance levels by thermal ionization mass spectrometry, has now been developed to provide precise dating beyond the range of carbon isotopes and particularly in the 40,000 to 150,000 year interval. The technique is being applied to yield ages on uplifted coral reefs using the coral Porites which provides very well defined annual growth zones. In combination with the numerical age information, the annual growth rings of Porites provide a sensitive measure of sea-water temperature and of relative salinity by using chemical tracers (strontium content particularly) and oxygen isotope abundances. These have been calibrated against recent direct observations (in the Great Barrier Reef area) and demonstrate that these corals, providing up to 500 years of continuous record, can be interrogated for information on sea-water temperature and salinity (dependent on monsoon intensity) over the past 500 years. Measurements are being extended to the last Interglacial Period (125000 years ago) and, for monitoring historical climate change, extended to different areas around Australia to build up a picture of regional climate variation.

Also on the theme of global change, the determination of cosmic ray exposure ages using Accelerator Mass Spectrometry (RSPhysSE) enables measurement of glacial retreat in Antarctica, solution rates (indirectly related to rainfall) of exposed limestone and exposure dates of coastal rock platforms. The techniques of numerical age dating using the potassium/argon decay series have been extended to date particular minerals, cryptomelane-hollandite, formed in weathering profiles. The use of the laser sampling technique enables sequential periods of humid and dry climates in northern Australia to be placed in a numerical time frame. The development of these techniques provide a new, basic research tool for the understanding and mapping of one of Australia’s most threatened assets—its natural, and rather ancient, soils.

The use of the Sensitive High Resolution Ion Microprobe (SHRIMP) for zircon dating is now well established and the unique RSES facilities are in high demand for both Australian and international collaborations. During 1994, the techniques were extended to minerals rutile, baddeleyite and sphene, all of which may contain sufficient uranium to enable isotopic dating. A 'Highly Commended' award for Excellence in the Engineering Products of the 1994 National Engineering Excellence Awards was made for the ‘SHRIMP II’ designed and built by RSES and Australian Scientific Instruments (ANUTECH Pty Ltd). The School began the design and construction of a third variant of the SHRIMP. Valued at several million dollars, it has unique capabilities for the age dating of minerals. The related commercial development of these instruments, by Australian Scientific Instruments, an arm of ANUTECH, was progressed by contracted sales to the Canadian Geological Survey, Hiroshima University and by a US Geological Survey-Stanford University consortium.

Medical research achievements

(John Curtin School of Medical Research)

The development of clinical diabetes in disease-prone animals is preventable and results of a preliminary trial in children show that it might be possible to alter the natural history of the disease in man. The School’s diabetes program brought clinicians and scientists together to review these latest approaches to the research and treatment of the disease. Medical education and training continued to make significant headway. A joint appointment with the School of Life Sciences was sought for a molecular immunologist to facilitate the interaction between the two sections and to coordinate the training of honours’ students. JCSMR became a major partner of a Health Science Centre, which was opened to integrate health sciences in the ACT. Professor Frank Fenner, known for his discovery of the Myxomatosis virus, and for his part in the global eradication of small pox was honoured this year with a symposium and the establishment of a
permanent exhibition that commemorates his scientific achievements. Professor Fenner, a former Director of the School, is a Visiting Fellow at JCSMR.

China and GATT

(Research School of Pacific and Asian Studies)

Despite being a major player in the world economy, China is still outside the important global institutions that govern the rules and arrangements of the multilateral trading system. The School’s Australia–Japan Research Centre and two other institutions, the University of Adelaide and the Chinese Academy of Social Sciences, are looking at the impact of China’s entry into GATT on both Chinese and regional economies. The Centre also is studying the implications of APEC on regional economic integration. The joint study is being carried out with the Centre for Strategic and International Studies (Jakarta) and Institute for International Policy Studies (Tokyo). The new project looks at the development of APEC and the implications of the Bogor Declaration, particularly the commitment of APEC governments to achieving free trade in the Asia Pacific region.

A major project on past climatic changes in the Division of Archaeology and Natural History resulted in studies of vegetation history in both eastern Indonesia and eastern Arnhem Land; Western Pacific monsoon assessments; glacial history of Mt Carstenz in Irian Jaya, Indonesia; and hydrology of the Lake Eyre basin. The prehistory and palaeoanthropology area continued to focus on: the colonisation of Sahul particularly with excavation in Cape York, Queensland, Kimberley, WA, and at Cuddie Springs, NSW, where there is an association of artefacts and giant marsupials; biological anthropological work to resolve the origin of the modern human; and improvement in the extraction of DNA from prehistoric remains.

The South Asia Research Centre’s first major international conference on South Asia in December was attended by the Minister of State and Fiscal Adviser to the Indian Ministry of Finance, Dr Raja Chellia, and the recently retired Governor of the Reserve Bank of India, Mr RN Malhotra.

Mining industry benefits

(Research School of Physical Sciences and Engineering)

The mining industry is likely to be a major beneficiary of research undertaken by the Department of Applied Mathematics. A study of the transport and mechanical properties of disordered materials has had several commercial spin-offs. The modelling of fractures is being applied to coal seams and other aspects of the research have direct application to gold mining. Using the School’s Heliac, researchers in the Plasma Research Laboratory, in collaboration with a team at the University of Sydney, have devised a new method for making high-quality films for optical devices, microelectronics and wear-resistant or protective coatings without the need for hazardous and costly chemicals.

ANU Photonics was established. This umbrella organisation draws together the photonics-related research in the Department of Electronic Materials Engineering, Optical Sciences Centre, Laser Physics Centre and the Plasma Research Laboratory. A number of significant projects were established throughout the year. They include: Pilot National Centre For Theoretical Physics; Atom Optics and Atom Manipulation Group within the Atomic and Molecular Physics Laboratories and Laser Physics Centre; and Australian Fusion Research Group to coordinate fusion research in Australian universities using the School’s Heliac as a shared device.

The John Carver Building was opened by the Minister for Industry, Science and Technology, Senator Peter Cook. The building was named after a former Director, Professor John Carver and houses the Electronic Materials Engineering Department, the Laser Physics Centre and the Nuclear Physics Department’s new superconducting linear accelerator.
Market access assured

(Research School of Information Sciences and Engineering)

Australia has a good chance of increasing its share of the world’s high tech market, according to Professor BDO Anderson, Director, the RISE, which was opened this year. The School aims to increase Australia’s market access to burgeoning world markets for high tech goods. It was created from the Department of Systems Engineering, the Computer Sciences Laboratory (CSL) and the Centre for Information Science Research (CISR). The School’s research program comes from existing work at Systems Engineering on control systems, signal processing and communications; CSL work in parallel computation, speech processing, computer vision and computational physics; and CISR’s pure and applied logic and associated software. The high-quality work by staff already has been recognised locally and internationally: four Systems Engineering staff have received the Vice-Chancellor’s Award for Excellence in Teaching.

Shame in society

(Research School of Social Sciences)

Surprisingly, little work has been done on the emotion of shame and its effect on criminal behaviour, culture and the Australian identity, but a $2 million project to evaluate the effect of reintegrative shaming on violence, property-crime and drink-driving began in the Law Program. The project involves random assignment of offenders to community accountability conferences instead of court.

Research in the Labour Market strand of the Reshaping Australian Institutions Project involved work on the Government’s Employment Opportunities Committee which produced the White Paper on unemployment, now known as Working Nation, and a study of women in the labour market.

A $1.4 million contract with the Australian Agency for International Development will fund a four-year research project in Indonesia. Staff from the Demography Program and the Centre for Population and Manpower Studies of the Indonesian Academy of Sciences will collaborate in studying the role of population factors in development planning. Technology is facilitating the role of the Centre for Immigration and Multicultural Studies as an information clearing house. It has introduced an on-line world-wide Web page with links to 18 related research centres throughout the world. This makes the Centre one of the first of the research school’s specialist areas to have produced such a system.

Towards cleaner drinking water

(National Centre for Epidemiology and Population Health)

The development of new drinking water guidelines for Australian water supplies has raised serious concerns in a number of water authorities about the lack of hard data on risks of contamination. Australia has a number of unique problems in this area and a collaborative program is being developed by a consortium facilitated by NCEPH. The Centre has successfully joined with 13 health and water organisations to develop a Cooperative Research Centre (CRC) on risk assessment and management for water quality. NCEPH will work closely with the Social and Preventive Medicine Department at Monash University to develop a program around water epidemiology. The CRC and the ANU will jointly fund an epidemiology post at NCEPH to conduct research into water quality and its effect on population health beginning in 1995.

The epidemiology of AIDS and Communicable Diseases also is a strong feature of NCEPH’s research. The national framework on communicable disease control is still weak, however, as evidenced by continuing unacceptably high levels of incidence of vaccine-preventable disease in Australia and ongoing difficulties in the areas of hepatitis C, drug-resistant tuberculosis and Ross River Virus.

In November, NCEPH convened a meeting of key Australian participants to discuss new approaches to the development of the Australian
and New Zealand Communicable Diseases Network. The meeting reached a substantial degree of consensus on a course of action to improve national cohesion of disease control.

Work in Dubbo following a cohort of 3000 elderly people is beginning to bear fruit. An important publication of that work has provided insights pertinent to health-service planning in NSW. The long-term role and functions of NCEPH were defined following guaranteed, stable funding commitments by the ANU and the Commonwealth. The contract between the two organisations allows NCEPH to continue as a national centre for policy-relevant research into public health with an emphasis on doctoral and outposted master-degree training. An expanded role in classical epidemiology is planned.

The big questions

(Mount Stromlo and Siding Spring Observatories)

The big questions of astronomy remained the focus of the work of the Mount Stromlo and Siding Spring Observatories. The dark matter halo of the Milky Way is under investigation by an MSSSO team in a binational project with the Lawrence Livermore National Laboratory and the University of California in an endeavour to answer the question, 'What is dark matter?' In another project, involving the Hubble Space Telescope, ANU astronomers have teamed with Carnegie Observatories and the University of Arizona to measure the Hubble Constant and the expansion rate of the Universe. The collision of the string of approximately 20 major fragments of Comet Shoemaker-Levy 9 with Jupiter in July was a time of intense activity at the Observatories. The newly commissioned near-IR CASPIR camera on the 2.3 metre telescope at Siding Spring captured the image which most people will remember of the collision: Jupiter with an extremely bright star-like beacon at its limb. The most exciting new national development of the year was the invitation for Australia to join the European Southern Observatory. MSSSO hosted the 28th Annual General Meeting of the Astronomical Society of Australia in July. The proposed variation to the Territory Plan which would have permitted housing development closer to Mount Stromlo was deferred for 10 years. A number of anniversaries were celebrated at Siding Spring with open days and workshops.

Three PhD students submitted their theses during 1994 while four new students began their PhD studies, making a total of 15 students on course in the Graduate program. MSSSO is to establish a Korean Postgraduate Scholarship under DEET’s Targeted Institutional Links Program following approval of $90,000 in funding over three years. It is expected that the awardee will begin studies in the first half of 1996. The Faculty of Science is to introduce a BSc Honours program in astronomy and astrophysics in 1995.
New Initiatives

New Management Team

Major changes in the University’s senior executive structure in 1994 included the appointment of a new Deputy Vice-Chancellor with responsibilities defined in relation to staffing, resourcing, leadership in teaching and learning (particularly in The Faculties), the Library and the Graduate School. A new Pro-Vice-Chancellor and Chair, Board of the Faculties, took up office in September 1994. The Pro-Vice-Chancellor advises the Deputy Vice-Chancellor on matters of policy relating to resource allocation in The Faculties. In addition, three Faculties (Arts, Law and Science) acquired new Deans in the course of the year.

Student numbers in The Faculties and the Institute of the Arts

Enrolments in The Faculties continued the trend of flattening from the steep rises of the early part of the decade. The very slight decrease in the total number of undergraduate students was somewhat offset by a more significant increase in total postgraduate enrolments. New enrolments in The Faculties increased overall. A decrease in new postgraduates was more than compensated by an increase in the number of new undergraduates. The greatest proportional growth was in the Institute of the Arts. The overall decrease in undergraduates was due to the final departure of most of the 1991 ‘peak’ intake. There was a slight increase in the number of international students, particularly postgraduates.

Meeting demand for combined degrees

The role of combined degrees in broadening undergraduate education is becoming increasingly significant. The ANU has always been sensitive to this demand, and 1994 saw a large number of combined degrees being added to diversify offerings, with the finalisation of the combination of the specialist Asian Studies degrees (Bachelor of Chinese Studies, Bachelor of Japanese Studies etc) with most other degrees. Approval was also given for other combinations, including a combined Bachelor of Science/Bachelor of Science (Forestry).

Growth in Research Centres in The Faculties

1994 saw the establishment of a number of new Research Centres within the Faculties. The Centre for Law and Economics was established within the Law Faculty during the second half of the year. The Centre aims to promote research in the field and make the results available to students, academics, business and community groups, policy makers, members of the legal profession and the general public, as well as to contribute to undergraduate and graduate courses within the University. The Centre for Applied Economics, located in the Economics and Commerce Faculty, and established in the middle of the year, aims to promote and disseminate the results of policy-related research from the Faculty and elsewhere. In pursuance of this aim, it has launched a new quarterly journal, Agenda, for the publication of policy-relevant articles in economics and related disciplines by a wide range of authors, written in a style accessible to non-academic as well as academic readers. Also established in the middle of 1994 was the Centre for the Science and Engineering of Materials, a University-wide Centre formed with the participation of the Faculties of Science and Engineering and Information Technology, as well as a number of Research Schools, to foster closer research collaboration within the field and to assist in the coordination and further development of graduate and honours level coursework.
External Funding

The Faculties in 1994 were successful in achieving major external funding for research, to be carried out in 1995, in areas as diverse as the Australian language family, climate systems, the impact of court decisions on government, robotics, and computer-intensive statistical methods. The latter grant came in the form of a prestigious Special Investigator Award. ARC research grants to the total value of $2.6 million included a component of $990,000 for disbursement by the University for small grants. In addition, three ARC fellowships (for one Research Fellow and two Postdoctoral Fellows) were awarded for research in The Faculties in 1994.

Manning Clark Chair of Australian History

The University created the Manning Clark Chair of Australian History in the History Department in the Faculty of Arts to recognise the outstanding contribution of Professor Clark to the study of Australian history and to the ANU. The professorial post is expected to be advertised internationally and taken up in 1995.

Learning from the Roman Family

(Faculty of Arts)

Elements of Roman society, such as multiculturalism, and its family structures are pertinent to modern Australia, according to Professor BM Rawson, a world leader in research on the subject. She believes that for a society such as ours, where the family is an issue, the Roman family provides a historical perspective and gives us a better chance of understanding ourselves. The Australian Research Council (ARC) review of grants outcomes classified as outstanding the joint research between the ANU Classics Department and the University of Tasmania on the Roman family. The Faculty of Arts brought in more than $2.5 million in grant money during 1994 compared to $1.5 million in 1993. The dominating activity during 1994 was the completion of the new Linguistics-Asian Studies Building, which will be occupied in February, 1995. Other moves will follow to create valuable space needed as a result of graduate student expansion. Undergraduate enrolments remained firm while the graduate enrolments continued to expand. The Faculty of Arts obtained 53 PhD scholarships and two new ARC Fellowships.

Teaching innovations

(Faculty of Asian Studies)

New staff appointments and funding meant that a number of innovations in teaching have been made. Coverage of Asian society and religion and Indonesian and Javanese language and literature has been augmented; quality monies funded state-of-the-art language-teaching equipment and the Language In-Service for Teachers program; a system of outside assessors to monitor and improve language teaching has been pioneered; and study of contemporary Asian society was expanded with the introduction of a first year unit, Individual and Society in Contemporary Asia. The Faculty hosted the National Thai Studies Centre. Projects included: a cross-institutional focus on development issues in the Central and Upper Mekong Basin; a major conference, Thailand Update 1994, aimed at assisting the Australian business community in obtaining up-to-date information on Thailand; a report on the nation-wide teaching of Thai to the National Language and Literacy Institute of Australia; a Thai–Australian institution-links database; information technology links with the Australian studies centre at Kasetsart University, Bangkok; the first Thai NSW Higher School Certificate examinations; an assessment Thai-language broadcasts for Radio Australia.
Meeting a demand for combined degrees

(Faculty of Economics and Commerce)

The Faculty initiated a number of new ventures in 1994. They included: a joint teaching venture with the University of Melbourne in Actuarial Studies using newly acquired video-conferencing facilities; a mid-year intake into the Bachelor of Commerce; a combined Commerce–Economics degree; and the opening of the Centre for Applied Economics, noted earlier. Demand for combined rather than single degrees offered by the Faculty continued to increase. However, a rationalisation of program offerings in the Information Technology degree was needed. Plans were made to transfer the management of the degree to the new Faculty of Engineering and Information Technology in 1996.

Two world firsts in solar energy

(Faculty of Engineering and Information Technology)

1994 was a satisfying first year of operation for the Faculty with notable developments in teaching and research in both departments. In August, solar energy was stored by dissociation of ammonia in a successful test of a prototype high temperature pressure reactor. The test was carried out by researchers from the Engineering Department, Dr Keith Lovegrove and Andreas Luzzi. For the first time the reaction itself was driven by solar energy, paving the way for a technology which promises loss-free transport and storage of solar energy.

This thermochemical development was partnered by Dr Blakers' record breaking achievement in photovoltaics in which he fabricated a thin silicon solar cell having an efficiency of 17.6%, the highest figure reached to date. Researchers in the Computer Science Department trialled a number of high performance parallel computing systems using the experimental parallel supercomputer provided by Fujitsu Laboratories as part of a collaborative R&D Program aimed at developing a new generation of high performance computing. The program, valued at several million dollars over the initial five years, was established by the Computer Science Department and the Computer Science Laboratory (now in RSISE) in 1989 and is seen as an important exemplar of a cooperative R&D between Australia and Japan. Following a major review by Fujitsu early in 1994, the achievements of the researchers involved were recognised with the renewal of the agreement for a further five years.

This relationship also played an important role in the award of a CRC in Advanced Computational Systems (ACSys), an award which brings to three the number of CRCs linked the Faculty (the others being the CRCs for Robust and Adaptive Systems and for Research Data Networks). Both Engineering and Computer Science are major contributors to these CRCs. With the first cohort of students graduating from the Bachelor of Engineering course, 1994 was also a singular year for undergraduate teaching. The course was awarded full accreditation by the Institution of Engineers. Both the Engineering and the Information Technology courses underwent substantial reviews. In a pleasing outcome from the Faculty's teaching program more generally, four students were awarded University Medals, two of which being the first in engineering at the ANU.

The community's right to know

(Faculty of Law)

Everyday 60,000 chemicals that have the capacity to cause harm to human health and the natural environment are used in Australia. The Australian Centre for Environmental Law (ACE) and the Public Interest Advocacy Centre (PIAC) looked during the year at the community's right to know about the health, safety and environmental hazards imposed by chemicals and suggested legislative changes that would guarantee a community right to know. In an Australian first, a Centre for Law and Economics was established within the Faculty. The Centre will be self-funding and will
have as its first Director, Dr Ian McEwin, who will take up his appointment in early 1995. Quality funds were obtained for a number of projects including a new Information Technology Centre in the law library and a computer staff appointment to develop hypertext materials. Four research teams in the Faculty were awarded large Australian Research Council grants for 1995 and the Centre for International and Public Law obtained grants totalling $200,000. The Faculty reluctantly endorsed the proposal to charge fees for the Graduate Diploma in Legal Practice from 1995. This will preserve its capacity to provide places for all of its LLB graduates who wish to enter the legal profession in the ACT. It is hoped that a system of student loans will mitigate the financial hardship caused by the fees. A Committee of Review was appointed by the Vice-Chancellor to consider how the Graduate Diplomas might be adapted to deliver a quality course in the most cost effective manner.

**Biggest ARC grant for gravitational research**

*(Faculty of Science)*

The largest project grant ever awarded by the Australian Research Council went to the Australian Consortium for Interferometric Gravitational Astronomy under the leadership of Emeritus Professor John Sandeman from the Department of Physics and Theoretical Physics. The grant of $1.25 million over three years will fund related projects at the ANU, the Universities of Adelaide and Western Australia. Another ARC grant of $500,000 was awarded for research into the behavioural ecology of birds. Two major research projects were established this year. A Cooperative Research Centre in Landscape Evolution and Mineral Exploration involving the Department of Geology, the CSIRO, AGSO and the University of Canberra was established. The second project, ANU’s Astrophysical Theory Centre, undertakes frontline research in theoretical astrophysics. It is a joint venture between Mount Stromlo and Siding Spring Observatories and the Department of Mathematics.

**The Institute of the Arts**

The year 1994 was another productive year for the Institute of the Arts. The Institute further developed its strength of purpose and determination to further extend its local national and international mission. While the Institute’s own strategic planning process was under way in 1994, it contributed to the University’s strategic planning development initiatives.

As with the wider University, the Canberra School of Art (CSA) expanded and developed its local, national and international activities. Fifteen students and five staff made a three week visit to the Kyota Seika University in Japan, complementing the visit that our Japanese colleagues made the previous year. Negotiations with the Chinese National Academy of Fine Arts, Hangzhou; Sydney College of the Arts; the University of Western Australia; and the CSA have resulted in an agreement for exchange visits between all institutions.

Closer links with Asia were developed within the ANU through the implementation of a combined Bachelor of Arts (Visual)/Bachelor of Arts (Asian Studies) degree. This award is being developed especially to build upon significant student interest in all aspects of Asian art, culture, and language and combined staff expertise in the Faculty of Asian Studies and the CSA.

The CSA/Centre for Continuing Education Summer/Winter School program continued to be a great success. In 1994, 280 people from the Canberra region attended 13 programs; and the Open Art program attracted an additional 900 external students to 45 course offerings.

Klaus Moje, Foundation head of Glass Workshop was awarded one of the prestigious Creative Arts Fellowships. Carl Sutherland, a graduate of the Painting Workshop, and joint winner of a 1993 Anne and Gordon Samstag International Visual Arts Scholarship was also awarded a Martin Bequest Travelling Scholarship of $15,000 which he will use to travel to the United Kingdom in 1995.

The Canberra School of Music (CSM) maintained a substantial schedule of performance and recording throughout 1994.
The Faculties

construction of a new control room with Llewellyn Hall has facilitated digital recording capabilities as has the installation of a digital editing equipment. This has contributed to the production of several fine recordings, including the second series of the Anthology of Australian Music. The CSM’s strategic plan which includes the development and use of CD ROMs as teaching aids was further developed during this year.

Other highlights of the year included the inaugural Canberra Brass Festival, which was held at the School on August 20 and 21; and a successful season of Scenes from an Opera. Andrew Dalton, the Head of the Voice Department, was also awarded a 1994 Creative Arts Fellowship. Music students, Bronwen Arthur and Simon Rickard, were awarded the University Medal in 1994, the first music students to be so honoured. The CSM has enhanced its international profile through the development of an Australian music season International Composition award to be offered in conjunction with the Conservatoire Nationale Superieur de Musique et de Danse de Paris. This is part of the further cultural and academic exchanges between Australia and France.

The Australian Centre for the Arts and Technology (ACAT) continued its work with an international symposium on computer music and computer animation research. The symposium, ‘Synaesthetica’, was attended by delegates from all over the world.

ITA’s management of the National Carillon expired in 1994, however the Institute continued to oversee the Carillon whilst permanent management arrangements were reviewed by the National Capital Planning Authority.

The Board of the Institute of the Arts decided not to recommend to the University Council that formal dance education be introduced into the curriculum in the Institute of the Arts. While the Board was disappointed to have to take this decision, especially in the light of the Institute’s desire to provide a comprehensive arts institution in Canberra, it has asked the Institute to maintain a watch for future opportunities in dance education, including possibilities of collaboration or an opportunity where future resources may be available. In 1994 the Institute was allocated $150,000 out of the ANU’s Quality Assurance Funds for two projects, Development of a Multimedia Resource Centre in the Visual and Performing Arts, and for the development of a Visual Arts Teaching and Research Fellowship.
Centres and Bridging Structures

Goal-oriented research funds

(Centre for Information Science Research)

The Centre for Information Science Research (CISR) was established at the Australian National University in 1987 with a mandate to support research in innovative areas of information science and technology that are at the leading edge of current and potential developments. It funds research projects that are goal-oriented, high-impact and adventurous. It also promotes cooperation and current awareness in all areas of information science and technology. It actively promotes cooperative arrangements with the information technology industry.

Following the success of the first round of cross-campus research projects in information science and its applications that CISR established between 1988 and 1990, the process was begun in 1993 to award a new round of CISR research grants. Applications were called for in CISR's priority research areas. Eighteen applications were received requesting a total of more than $1 million per year which was over three times the annual funding available. A sub-committee of the CISR Management Committee was established to examine the applications and provide recommendations for funding. At the completion of this process, six grants were taken up for the following projects: 
- Scene Analysis;
- Non-linear inverse geophysical problems;
- Algorithms for astrophysical hydrodynamics;
- Parallel linear algebra;
- Symbolic reasoning and Robotic control.

1994 saw various initiatives in which CISR has been involved come to fruition, these included the ANU's massive data storage initiative and the establishment of the CRC for Advanced Computational Systems and its associated Research Data Network CRC projects.

Extensive postgraduate supervision network

(Centre for Resource and Environmental Studies)

The role staff and students play in forest ecosystem research was firmly established in 1994 with a conference that looked at international forest biodiversity. Following the theme, sustainable management in temperate forest ecosystems, the conference attracted many national and international researchers. An extensive network of co-supervisors drawn from other departments in the Institute of Advanced Studies and the Faculties, the University of Canberra, the Australian Defence Force Academy and the CSIRO enhances the quality of supervision for postgraduates in the Centre through access to a wider range of disciplines, databases and equipment. Postgraduate student support has become ever more dependent on external grants and on funding from academic consultancies.

The number of postgraduate students has risen to 40. This adds considerably to the intellectual resource and widens the range of environmental topics researched, but places strains on supervision, accommodation and financial support. Given current levels of resourcing, the Centre has reached its limit to postgraduate student numbers. Provided that time limits can be achieved, the Centre expects to graduate up to 10 PhD students annually from 1995.

The Centre's research projects range from global to local, milliseconds to millenia. Success in the competitive quality round bids has allowed the Centre to strengthen capacity in global modelling of atmospheric trace gases. This will enhance participation in the newly formed Global Change Consortium that includes researchers from the IAS and the Faculties.
Record number of PhD students
(School of Mathematical Sciences)

1994 was relatively steady for the School and its members largely devoted themselves to essential duties of research and teaching. As in previous years, there was a substantial research production evidenced in the publication lists of the Centre for Mathematics and its Applications and the Department of Mathematics. A record number of 26 PhD students were enrolled in the School.

Two new Centres were proposed in the School in 1994. The Astrophysical Theory Centre is a joint venture with the Mount Stromlo and Siding Spring Observatories (MSSSO) and commenced operation early in 1994. The Centre is led by Professor Wickramasinghe of the Department of Mathematics and during 1994 was largely funded by MSSSO. As with the Centre for Mathematics and its Applications, the new Centre emphasises visitor interaction and workshops.

Late in 1994, funding was confirmed from Banker's Trust Australia Ltd and the University to establish a Centre for Financial mathematics under the leadership of Dr Platen of the CMA. The Centre will commence operation in 1995 and will provide a key link between academic research in mathematics and statistics and the finance industry.

The School was successful with two proposals in the competition for Quality Assurance Funds in 1994. Grants were received to support the Special Program in Wavelets in 1995 and to develop software for mathematical teaching. A further success was achieved through a large grant from the University Computing Equipment Committee to set up a Visualization Laboratory, which will be used by various research groups including the Astrophysical Theory Centre.

The outcome of the IAS Strategic Developments competition was again disappointing and the consequent lack of support for the CMA's thrust to function as a National Research Centre is a matter of concern. Evidence of the international recognition of the CMA as a major research institute was provided through an invitation to the Centre to participate in a meeting of directors of international research institutes prior to the International Congress of Mathematicians in July.

A first in integrated studies
(Centre for Middle Eastern and Central Asian Studies)

The first of its kind in Australia to integrate the study of Middle Eastern and Central Asian politics, history, culture and economics, the Centre opened in February. Since then it has admitted 10 PhD students and one MA student. Its first conference, 'The Middle East: Prospects for Settlement and Stability', attracted distinguished international speakers, including a Reader in International Relations and a fellow of St Anthony's College, Oxford, Dr Avi Shlaim. The Centre introduced a seminar program attracting a wide range of regional speakers and established a specialised library for staff and graduate students.

Exploring ideas of freedom
(Humanities Research Centre)

The ideal of freedom has pervaded history from ancient to modern societies. But if it has been an elusive goal, it also has been a contested ideal. Together with the concept of individuality, which has fired the hope of freedom, it has been a source of conflict and critique. The HRC devoted most of its activities in 1994 to the universal theme of freedom and reflected on the conflict that surrounds aspirations of freedom in the current global political environment. Some of the themes explored in conferences were: Ideas of Liberty, Asian Paths to the Idea of Freedom; The Republican Conception of Freedom, held in conjunction with the Research School of Social Sciences; and Commitments to Representation and Freedom, held in conjunction with Museum of Contemporary Art and the National Gallery of Australia in Sydney. The ways feminist theory and feminist scholarship has shaped women's studies was explored during the F1RC summer school on Feminist Theory and Women's Studies in the 1990s. Criticism and discussion of participants on
papers presented has helped refine an important revisionist book on new directions within feminist theory and women's studies.

Women in research

(The Graduate School)

The School continued initiatives aimed at increasing participation of women in research degrees. In 1994, 43.5 per cent of graduate students were women, continuing the steady increase over the past decade. An increase in the overall student population means graduate student population now comprises 22.7 per cent of the student body. Another initiative was the provision of funding for a Pilot Graduate Teaching Program in 1994. Unique in Australia, the program will provide training in tertiary teaching techniques for PhD students currently tutoring or demonstrating at the University. The School awarded 33 PhD scholarships in addition to the 79 Australian Postgraduate Awards the ANU had received.

Accelerated Information Technology

(The Library)

Information access for the user community was improved with a significant increase in the availability of local, national and international electronic services and databases through the Internet and CD-ROMs, and the establishment of the Centre for Networked Information and Publishing (with the Computer Services Centre). Users of the new electronic services were offered demonstrations, courses and workshops. An Electronic Reserve Collection is also now available 24 hours a day to ANU staff and students via the campus network. Implementation of the Integrated Library Management System, Innopac, was completed. Innopac offers advanced searching techniques and supports Chinese, Japanese and Korean vernacular data, which are being progressively added to the Innopac catalogue. A project was initiated providing translated tables of contents of Chinese (in cooperation with the National Library of China) and Indonesian journals with an English keyword index. Electronic innovations by the Centre for Networked Access to Scholarly Information won the VALA (Victorian Association of Library Automation) Award for the Library.

The Labour experiment

(Public Policy Program)

Research findings reported in a trans-Tasman conference on public policy under the Labour Governments of the 1980s will be published in The Great Experiment: Labour Parties and Public Policy Transformation in Australia and New Zealand. Other new projects undertaken during the year were research into unemployment in Organisation of Economic Cooperation and Development countries and a study of hospitals and other public sector institutions, notably universities, as lead enterprises in the encouragement of technological and productive innovation in Australia. About 200 students enrolled in the program, which offers a three-tier graduate program, consisting of certificate, graduate diploma and master courses.

West word bound

(Australian National Dictionary Centre)

Words considered peculiarly West Australian, such as Broome time: an expression used in Broome to imply a lack of punctuality; and cacka, an under-sized fish, have been included in Words from the West: A Glossary of Western Australian Terms, a publication produced this year by the Centre's Maureen Brooks and Joan Ritchie. Their research for the book revealed that the regional variation in Australian English was much greater than previously expected. It contains 750 headwords and 1390 supporting citations. The Centre plans to produce a book on Tasmanian terms in 1995 and is working on Queensland terms. Just one part of the Centre's activities, this research will be an important contribution to the new edition of
the Australian National Dictionary, which will be published in 1998.

Longitudinal study of elderly continues

(NHMRC Social Psychiatry Research Unit)

Research on the epidemiology of mental disorders continues to be the major role of the NHMRC Social Psychiatry Unit. The Unit was established in 1975 by the National Health and Medical Research Council (NH&MRC), which provides an annual grant to The Australian National University as the host institution. With the ageing of the Australian population and the consequent national importance of the health of the elderly, the Unit has for the past decade focussed its research on mental disorders most affecting older persons, particularly dementia and depression.

In recent years there has also been rising national concern about the quality of mental health services and the Unit has carried out studies of service evaluation where these are relevant to its expertise in psychiatry epidemiology. Emphasis continues to be given to methods for measurement in research on mental disorders.

A major research activity is the Canberra—Queanbeyan Longitudinal Study of the Elderly which has been assisted by a grant from Rotary. The aims of this project cover three areas: (1) dementia, cognitive decline and, as a contrast, successful cognitive ageing; (2) depressive disorder and, again as a contrast, well-being; and (3) psychosocial factors in general health. The project began with a survey of over 1,000 elderly people in 1991–92. This group was followed up in 1994–95 and will be interviewed again in 1998–99.

The Unit has a strong reputation for its work in psychiatric epidemiology and this is reflected in on-going international collaborative projects. During the past year, research work has been carried out jointly with: the Division of Mental Health, World Health Organization; the Stockholm Gerontology Research Center; St Thomas' Hospital, London; and the Faculty of Medicine, University of Geneva.

Analysing optical images

(Centre for Visual Sciences)

Vision is our most highly evolved sense and the broad goal of research at the Centre for Visual Science has been, and continues to be, to achieve a better understanding of how the optical image captured by an eye is analysed by the visual system to generate a useful percept of the world. The Centre brings together researchers studying aspects of vision in a number of the ANU’s Research Schools (primarily RSBS, JCSMR and RSPhysSE) and Faculties (primarily Psychology) by facilitating interactions and funding collaborative research appointments.

The end of this year saw the retirement of the Centre’s former Director, Dr Geoff Henry, after a distinguished, thirty-year career at JSCMR studying the neurophysiology of visual processing in the mammalian cortex. The new Directorship was advertised and awarded to Professor Mandyam Srinivasan of RSBS, whose research focuses on understanding principles of vision in invertebrates, and applying these principles to machine vision.

Major highlights of the year included the appointment of Dr M Egelhaaf as a Fellow in RSBS to spearhead the development of new, optically based techniques for measuring neuronal responses in invertebrate visual pathways; the award of Strategic Development funding to Professor R Mark (RSBS) to continue research on the development of sensory pathways in marsupials; the award of a Quality Assurance Grant to Dr T Maddess (RSBS) and Dr M Cook (Psychology) for the establishment of an ANU Clinical Visual Sciences laboratory at Woden Valley Hospital; the completion of a new All Weather Bee Flight Facility in RSBS for the study of visual behaviour and memory in honeybees; the award of a Major Equipment Grant to the CVS to initiate a new program of vision research based on magnetic stimulation of selected brain regions; and the generation of some 80 research papers, published and in press, in refereed journals by CVS members.
Honours

Professor K Lambeck, Research School of Earth Sciences, was elected a Fellow of the Royal Society of London. His election recognised his research into the dynamics of the Earth, which included the development of the first comprehensive model of the Earth's gravity field using satellite and geodetic data, investigations into the Earth's rotation and tidal interactions with the moon and his contribution to the understanding of sedimentary basins. Professor Lambeck was elected a Foreign Member of the Norwegian Academy of Science and Letters and awarded an Honorary Doctor of Engineering by the National Technical University of Athens, Greece.

The following members of the University's academic staff had been made Fellows of the Australian Academy of Science. They are Professor DJ Evans, Research School of Chemistry; Professor JB Moore, Research School of Information Sciences and Engineering; and Professor BLN Kennett, Research School of Earth Sciences.

Elected to the Australian Academy of Social Sciences were Professor T Campbell, Faculty of Law; Professor FG Castles, Public Policy Program, Faculty of Arts; Dr R Cornes, Research School of Social Sciences; Dr A Jorm, NH&MRC, Social Psychiatry Unit; Professor H Nelson, Research School of Pacific and Asian Studies; and Dr C Young, Research School of Social Sciences.

Dr AG Thorne, Prehistory, Research School of Pacific and Asian Studies, was elected to the Australian Academy of the Humanities.

Emeritus Professor BH Neumann was honoured for his formidable contributions to education and research through the appointment as a Companion of the Order of Australia (AC) in the Queen's Birthday Honours List, 1994.

The Massey Medal of the British Institute of Physics was awarded to Professor RJ Baxter, School of Mathematical Sciences.

Dr SR Taylor, Department of Nuclear Physics, Research School of Physical Sciences and Engineering, was awarded the Council of the Geological Society of America's GK Gilbert Award in Planetology in recognition of outstanding contributions to the solution of a fundamental problem of planetary geology.

Professor RP Brent, Head of Computer Science Laboratories, Research School of Information Sciences and Engineering, was elected a Fellow of the Association of Computer Machinery.

Professor BDO Anderson, Director, Research School of Information Sciences and Engineering, received the International Award for the Society for Materials Engineering Resources, Japan.

The inaugural Riversleigh Medal was awarded to Dr AG Thorne of the Research School of Pacific and Asian Studies. He was also made an honorary life member of the Riversleigh Society of Australia.

The Pitman Medal of the Statistical Society of Australia was awarded to Professor JM Gani, School of Mathematical Sciences.

Professor DH Green, Director, Research School of Earth Sciences, was awarded an Honorary Doctor of Letters by the University of Tasmania.

Dr GH Henry, Division of Neuroscience, John Curtin School of Medical Research, and a former Director of the Centre for Visual Sciences, received a fellowship of the National Vision Research Institute.

Professor G Martin, School of Mathematical Sciences, won the New Zealand Mathematical Society Research Award.

Head of the Voice Department in the Canberra School of Music, Andrew Dalton, and a former head of the Glass Workshop, in the Canberra School of Art, Klaus Moje have each won prestigious three-year Creative Fellowships.

Professor PG Hall, School of Mathematical Sciences, received a new three year Special
Investigator Grant from the Australia Research Council.

Professor of Chemistry in the Faculty of Science, Professor BK Selinger, was appointed the Walter Murdoch Lecturer and Fellow for 1994 at the Murdoch University in WA.

In April the University awarded the degree of honorary Doctor of Laws to the Vice-President of India, Mr KR Narayanan and Emeritus Professor Leslie Zines.

In September the poet Les Murray was admitted to the honorary Degree of Doctor of Letters for his outstanding contribution to Australian literature.

In November, Archbishop Desmond Tutu of South Africa, was admitted to the honorary Degree of Doctor of Laws in recognition of his distinguished contributions in the service of society.

One of three economists winning the Nobel Prize was Professor Harsanyi, formerly from the Research School of Social Sciences. The Prize was awarded for his early work on game theory.

A special conference was organised in October in honour of the 60th birthday of the Associate Dean of the School of Mathematical Sciences, Dr MF Newman, and in recognition of his long and dedicated service to the University and the mathematics community.
In the difficult economic environment of 1994, ANUTECH generally maintained the profitability of its operating divisions while expanding into the international marketplace.

ANUTECH's total operating revenue for the year was $43.2m, compared with $43.6m the previous year. ANUTECH's profit, before gifts and donations to The Australian National University, was $753,000 compared to $998,000 in 1993. The shareholders' equity is now $7.4 million.

Donations totalling $425,000 were allocated to The Australian National University from 1994 profits, a rise of $105,000 from 1993.

The break-up for 1994 was as follows:

- Engineering Undergraduate Scholarships $18,000
- Women in Engineering Scholarships $5,200
- I G Ross Scholarship $2,000
- Departmental Publications Distribution and Promotion $25,000
- ANUTECH Access Scholarship (Disability) $8,000
- Public Lecture Series $17,500
- Vice-Chancellor's Initiatives $349,300

ANUTECH's Social Sciences and Training Division.

ANUTECH management changes

In management changes within ANUTECH, Dr Ken Shepherd retired as Manager of the Forestry and Environment Division. He was succeeded by Dr Frans Arentz, who was formerly head of the International Tropical Forestry Project and editor of the ITTO Tropical Forestry newsletter. Mr Bob Lane was appointed Manager of the Physical Sciences Division, succeeding Mr John Thorne.

Technology Programs Management Division was formed with responsibility for on-going projects, managed by Mr Geoff Herridge. Ms Anne Commins was appointed Manager of Bibliotech, the Company's book and publications division.

Divisional notes

Life Sciences

The Life Sciences Division concentrated on developing and consolidating its operational framework 'post-syndicated R&D'. Agreements signed by the Division in 1994 included an exclusive licence for US company Welch Allyn to produce a glaucoma testing device devised by Dr Ted Maddess of the Centre for Visual Sciences, and a collaborative agreement between ANUTECH and Pioneer Hi-Bred International (a major marketer of hybrid corn) for technology originating in the Cooperative Research Centre (CRC) for Plant Sciences.

The joint venture between ANUTECH and Rancoo Ltd, known as Virax, was restructured. Virax is a company vehicle for commercialisation of research from the laboratory of Dr Ian Ramshaw of the John Curtin School of Medical
Research (JCSMR), on the use of recombinant DNA in virus vectors for the treatment of such conditions as cancer and AIDS. The joint venture company will facilitate the marketing of potentially valuable medical products.

Acting on advice that investment money for R&D would be available if mechanisms could be found to utilise it, Life Sciences Division expended not inconsiderable time and effort on submissions aimed at influencing government to reconsider its stance on eligibility for syndicated R&D funding. These efforts, which at the close of 1994 had received sympathetic hearings in many quarters without generating positive policy change, included meetings with the Department of Science and Technology, the Minister for Trade and the ACT Chief Minister's Department, and submissions to and discussions with the Industry Commission reviewing research and development.

ANUTECH gave assistance to the JCSMR in a submission for the final round of CRCs. Unfortunately the bid proved unsuccessful.

Consultancies won were an investigation on precursor chemicals of drugs of abuse for the Department of Health, Housing, Construction and Community Services, and a consultancy with the Australian and New Zealand Environment And Conservation Council (ANZECC), which will be administered by the Environment Protection Agency, to develop a management plan for hexachlorobenzene waste, both consultancies involving Professor Ben Selinger of the Chemistry Department, ANU.

Physical Sciences

Among significant events for the Physical Sciences Division in 1994 was the successful production of electricity in June by the ‘Big Dish’ in the Energy Research Centre. The Big Dish is the world’s largest freestanding steerable paraboloidal solar collector, and its successful operation is an important milestone in the commercialisation of solar thermal technology, developed over more than a decade by the Energy Research Centre under the leadership of Professor (now Emeritus) Stephen Kaneff.

The consortium of State and Territory power utilities and the Energy Research and Development Corporation (ERDC), which funded construction, initiated the process of forming a company to commercialise the technology. Moves to introduce the Dish technology into the marketplace attracted significant interest from a number of overseas countries, including Israel, Spain and India.

Through an Australian company, Diamond Composite Pty Ltd, the Division was also actively investigating the marketplace for the ‘Ringwood materials’ (polycrystalline diamonds and cubic boron nitrides).

Negotiations began with a company, Kokonut Pacific, seeking a licence for the world wide market for the coconut oil press invented by Dr Dan Etherington in the Research School of Pacific and Asian Studies (RSPAS). Principal early applications of the technology related to the South West Pacific, for example the Solomons, Papua New Guinea and Vanuatu.

The licensee of Dr Rod Boswell’s Helicon plasma source, developed in the Research School of Physical Sciences and Engineering (RSPhysSE), began investigating a longer term sales arrangement with a major international electronics company.

Of the physical sciences syndicated research projects, the TRUST Project reached a point of development in 1994 where a comprehensive marketing program for early 1995 was finalised for Europe and the US.

The large chemical company Röhm and Haas Australia extended for 12 months its funding for research into the fundamental mechanisms of film formation with applications to paints and coatings. Researchers on the project were Professor Richard Pashley in the Department of Chemistry, The Faculties, and Professor Barry Ninham, the Department of Applied Mathematics (RSPhysSE).

An ongoing situation concerned two legal matters concerning previous licensees disputing aspects of technologies. In both cases, ANUTECH and the ANU stand in a strong position.
INTERNET ACT

The rapid expansion of the Internet to the commercial world raised the necessity to protect the resources of the ANU, while maximising the benefits of its expertise. This led to the establishment of INTERNET ACT by ANUTECH, to provide a 'one-stop shop' for Internet services to the business community and private users. A liaison committee with Dr Robin Erskine, Director Computing Services, ANU, Professor Robin Stanton, Dean of the ANU Faculty of Engineering and Information Technology, and Mr Colin Steele, ANU Librarian, was established to facilitate coordination and collaboration, and a Manager, Internet Services, Mr Anthony Wesley, was appointed.

Australian Scientific Instruments

ANUTECH's precision instruments division, Australian Scientific Instruments (ASI), further secured its position in the international marketplace with a pleasing number of marketing successes. This brought a challenging need to expand staff and facilities while maintaining quality and delivery times. A new factory was purchased in Fyshwick, to allow the parallel construction of several SHRIMP instruments, as well as the range of other instruments made by ASI.

Early in 1994, ANUTECH concluded the first sale of a SHRIMP RG. This is a sophisticated new generation SHRIMP (Sensitive High Resolution Ion Microprobe), evolved from the original instrument developed by Professor William Compston, Head of the Geochronology and Isotope Geochemistry Group of the Research School of Earth Sciences (RSES) and Dr Steve Clement. The SHRIMP RG is manufactured by ASI in collaboration with RSES. The purchasers were a consortium comprising Stanford University, US, and the United States Geological Survey.

In October 1994, ASI concluded the sale of a SHRIMP II to Hiroshima University. To win the Hiroshima sale, ASI needed to demonstrate considerable flexibility in its manufacturing operations, in order to meet Japan's strict import time limits. ASI also shipped a prototype MASIF (Measurement and Analysis of Surface Interactions and Forces) to Sweden and sold a MASIF to Le High University in the US.

ASI’s success in winning significant overseas sales is a further demonstration that ANU technology can compete on equal footing with high profile European manufacturers.

ASI won its share of awards in 1994, which helped to build its profile nationally. Following a previous success in the 1993 ACT Excellence in Engineering Awards conducted by the Institution of Engineers of Australia, SHRIMP II went on to win a national award amongst strong competition, including BHP, in the 1994 National Excellence in Engineering Awards. ASI also won highly commended in the 1994 ACT Export Awards for Small to Medium Manufacturers. This award was based on 1993 export figures, and was thus achieved before the most recent sales successes.

Forestry and Environment

As a result of a decision by the International Tropical Timber Organisation to transfer the ITTO Newsletter Project to its headquarters in Japan, ANUTECH's section of the ITTO Project approached its conclusion. The newsletter's assistant editor from ANUTECH was appointed Editor in Japan.

The long-term 'backbone' of the Division, the Nepal Australia Community Forestry Project (NACFP), underwent its mid-term review last year. The review found that the NACFP had established a good reputation for successfully implementing a difficult project. Among the review's recommendations were that in order to maximise the value of the project to the region there should be emphasis on increased participation by forest user groups. A parliamentary delegation to Nepal led by the Deputy Speaker of the House of Representatives had previously tabled a report in March 1994, which noted that the NACFP represented 'best practice' in aid development projects because of its "impact on community development extending far beyond the work being done."

The Division concentrated extra resources on winning consultancies through the Asian Development Bank (ADB) and the World Bank. In June, as a result, the Division signed a contract with ADB worth US$574,000 for the
implementation of a technical assistance project to evaluate the impact of policy reforms and institutional restructuring on the growth of the agriculture sector in Lao PDR, to be conducted by a small team of international consultants led by Professor Peter Warr, John Crawford Professor of Agricultural Economics, RSPAS.

The Division, in partnership with organisations from Australia and Papua New Guinea, was successful in bidding for the North Simbu Rural Development Project, an integrated rural project expected to run for five years in the remote Highlands of Papua New Guinea, awarded by AIDAB.

Other consultancies included an AIDAB-funded review of the issues surrounding the traditional land tenure systems in Papua New Guinea, with Dr Peter Larmour of NCDS at the head of a small team of Australian and international consultants, the Waning Environmental Impact Statement, and a small Bushranger Creek Local Environmental Study and Development Control Plan, involving Dr Chris Tidemann of the ANU Forestry Department.

Social Sciences

The development assistance base of the Division, in part provided by the major Kandrian Gloucester Integrated Development Project, was augmented by success in winning AIDAB period contracts.

The Division cooperated closely with ANU staff in gaining other consultancies. The Commonwealth Department of Human Services and Health awarded ANUTECH a $70,000 consultancy on assessment of dementia, based on work by Drs Tony Jorm and Andrew Mackinnon of the Social Psychiatry Research Unit.

Among other consultancies secured by the Division were a consultancy on the Indian Economy funded by the Department of Foreign Affairs and Trade, conducted by Dr Ric Shand of the Australia South East Asia Research Centre in RSPAS.

On 2 September, the ANUTECH English Language Centre (EELC) gained full accreditation for its English courses from the National ELICOS Accreditation Scheme (the only independent authority in Australia recognised by Federal, State and Territory governments to accredit ELICOS institutions and courses). In December, students graduated from their 10-week and 20-week English language courses.

The EELC hosted its first study tour in 1994. Students from Nagano University participated in a two-week program which combined English language study, visits around Canberra, and sporting activities.

Last year UNISTART, which includes English, Mathematics Bridging and Academic Preparatory Courses, became part of the ANUTECH University entry programs. Most students participating in the Academic Preparatory Course program, which entered its fifth year in 1994, are sponsored by AIDAB or IDP and undertake the course prior to postgraduate studies at the ANU.

Cooperation with the ANU in short course design and delivery continued with the development of the Geographical Information Systems short course by Forestry and Environment, in cooperation with the Departments of Geography and Forestry, School of Resource and Environmental Management, and also, the first course of its kind designed specifically for Vietnamese policy-makers on the transition to a market economy, conducted by Mr Brian Brogan of the MBA Program.

In late 1994 the 'Women and Environmental Management' short course was offered for the first time. This four-week course on gender-balanced environmental management was presented in cooperation with the Centre for Resource and Environmental Studies (CRES) and the National Centre for Development Studies (NCDS), with Dr Val Brown of CRES as the Course Director. Fifteen women in middle management, from countries in the Asia-Pacific region including the Philippines, Vietnam and Indonesia, completed the course.

Training

In the training area, both Forestry and Environment Division and Social Sciences and Training Division completed a good year.
Distribution Group

Ctech and Bibliotech showed consistent performance throughout 1994, and continue to serve the University in their respective areas of personal computer sales and service, and publications distribution.

We foresee a heavier reliance on international marketing, reflected in our strategies, and the allocation for travel for these purposes has been increased by $110,000.

1995 Directions

We are viewing 1995 as potentially more difficult. The major lessons learnt in 1994 were that we had insufficient staff in some areas for project management to achieve and maintain desirable quality standards, and insufficient staff to market technology and submit quotations. Staff increases to overcome these identified difficulties have been approved, but due to the lag until they take full effect, profit for 1994–95 will be reduced.

Overall, 1994 has been successful for ANUTECH in achieving its goals and objectives in benefiting The Australian National University, and in providing economical and efficient services to our academic and commercial clients.

ANUTECH is approaching 1995 optimistically, conservatively and professionally with a greater capacity to quote, to respond to the campus and to market to potential investors and customers.

ANUTECH is now sharing the costs of patents with the University, which will incur an anticipated expenditure on ANUTECH's behalf of approximately $71,000 in 1995.

ANUTECH Pty Ltd 30 March 1995.
Appendices
### University Statistics
Excluding the Institute of the Arts

**Full-time equivalent staff as at 31 March 1994**

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* includes Audio-visual, Health, Counselling, Student Policy & Planning, Communication skills, Centre for Continuing Education, CEDAM and other services

Small discrepancies may be apparent in totals, due to rounding.
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Small discrepancies may be apparent in totals, due to rounding.
### Institute of Advanced Studies

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**Total IAS**: 20

### The Faculties

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**Total The Faculties**: 36 62 132 143 44 13 430

### Total Teaching and Research Staff

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**Total Teaching and Research Staff**: 450
## Institute of the Arts at 31 March, 1994

(Excluding part-time and casual staff)

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|      | females |                |                         |                  |                       |                      |
| Total | 0.00    | 0.00           | 5.00                    | 16.64            | 7.50                  | 29.14                |

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|                   | males | 6.41 | 6.97 | 42.07 | 55.45 |
|                   | females | 5.56 | 0.60 | 30.35 | 36.51 |
| **Total ITA Staff** | males | 66.91 |       |       |       |
|                   | females | 65.65 |       |       |       |
| **Total** | 132.56 |
### Home Region of Overseas Students 1994

( Including Full Fee Paying Students )

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**Overseas Students**

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<td>Arts (PS)</td>
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<td>Arts/Comm</td>
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<td>Law (Graduate)</td>
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<td>Science</td>
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<td>Science (Forestry)</td>
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<td>Science/Law</td>
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<td>Science (Forestry)/Econ</td>
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<td>Institute of the Arts</td>
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<td><strong>Total Bachelor Courses</strong></td>
<td>5490</td>
<td>1846</td>
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### Gross enrolments

- Full Fee Paying: 6563
- Net Enrolments*: 6553

### Net Enrolments*

<table>
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<tr>
<th>Students</th>
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<td>postgraduate</td>
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<td>111</td>
<td>577</td>
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<tr>
<td>undergraduate</td>
<td>334</td>
<td>92</td>
<td>426</td>
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<tr>
<td>ITA (incl postgrads, 4)</td>
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<td>10</td>
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<td><strong>Net Total</strong>*</td>
<td>803</td>
<td>211</td>
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* adjusted for concurrent enrolments
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<th>Degree &amp; Diploma</th>
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<td>Doctor of Philosophy</td>
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<tr>
<td>Master</td>
<td>117</td>
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<tr>
<td>Graduate Diploma</td>
<td>166</td>
<td>102</td>
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<tr>
<td>Bachelor of Letters</td>
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<td>Bachelor with Honours</td>
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<td>Graduate Certificate</td>
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<td>Diploma of Music</td>
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<td><strong>Total</strong></td>
<td><strong>1027</strong></td>
<td><strong>915</strong></td>
<td><strong>1942</strong></td>
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</table>
Cooperation with government and other public institutions

The Australian National University encourages members of the academic staff to give specialist advice and assistance to Federal and State Government departments and to other public institutions, both within Australia and internationally. This help takes many forms—consultancies, membership of committees, involvement in particular projects, secondments, etc. The following list records such cooperation for 1994. This is not necessarily comprehensive.

Central Administration

Mr D Hardman, member National Capital Planning Authority Acton/West Basin Working Group; member, APPA—US Association of Higher Education Facilities Officers Committee on Information Services, San Antonio, Texas; member AAPPAA—Australasian Association of Higher Education Facilities Officers Committee on Information Services; member ad hoc OECD committee on design of Higher Education Buildings.

Mr J S Mahoney, chair, Australian Vice-Chancellor’s Committee National Public Relations Liaison Committee; editor, University Public Relations journal.

Mr G Pickford, member of the executive, Australasian Institute of Tertiary Education Administrators (ACT branch); member, ACT Cultural Council; deputy chair, Practices Committee, ACT Cultural Council; chair, Community Arts and Festive Events Committee, ACT Cultural Council; member, National Capital Attractions Association; vice-president, World Confederation of Productivity Science (Oceania Region).

Mr P A Selth, member, Advisory Board, Centre for Australian Public Sector Management, Griffith University, 1988–present; assistance to the University of Wollongong’s Faculty of Law, Court Administration Program.

Mr C R Steele, member, Executive Committee of ALIIS (Australian Library and Information International Service); member, Executive Committee of CAUL (Council of Australian University Librarians); convener, ANU Convocation/Canberra Times Literary Lunches; secretary, Magellan Society; member of selection committee of Sir John Crawford Scholarship, member, editorial boards, Australian Academic and Research Libraries, Australian and New Zealand Journal of Serials Librarianship, The Electronic Library, Information Management Report, Journal of Librarianship & Information Science and Librarianship and Information Work World Wide.

Professor R D Terrell, member, National Gallery Foundation Group, National Gallery; vice-president, IDP Education Australia; member, AARNet Board of Management; member, Canberra Business Council.

Research School of Biological Sciences

Molecular Evolution and Systematics Group

Dr E Ball organised the RSBS contributions to the National Science Summer School and the Siemens Science School; started organising the joint Robertson Symposium/Meeting, ANZ Society for Cell Biology on the ‘Biology of the Cell Surface’ to be held in Canberra in September, 1995.

Dr C Büchen-Osmund and Professor A Gibbs attended the midterm meeting of the Data Subcommittee, International Committee of Taxonomy of Viruses held in Utrecht in February.

Dr Büchen-Osmund, participant, meeting of the Commission on Standardised Terminology for
Access to Biological Data Banks during the CODATA'94 Conference, Chambéry, September.

Professor A Gibbs, member, Management Committee, CRC for Plant Science as co-program leader of its Defence Program; visited the Philippines, Taiwan and Thailand as chair, ACIAR review of a project on Pseudomonas solanacearum and team member, review of an ACIAR project on coconut cadang-cadang and of the virus research of the CSIRO Division of Horticultural Research.

Dr D Shaw, member, Editorial Advisory Board, Chromosome Research, Rapid Communications.

Dr C Weiller, convener, Canberra Chapter, Australian Systematic Botany Society.

**Director's Research Group**

Professor B Osmond, member, editorial boards, *Planta* and *Botanica Acta*, served on ARC Small Grants Committee, University of New England as chair of Committee 6 (Plant Sciences and Microbiology) Australian Academy of Science; President, Australian Society of Plant Physiologists.

T Wydrzynski, chair, Organizing Committee, Robertson Symposium on Chlorophyll Fluorescence: Origins, Measurements, Interpretations and Applications, held in RSBS May 1994, that drew over 100 participants from Australia and overseas; joint editor (with F Chow, CSIRO Plant Industry) of the special issue of the *Australian Journal of Plant Physiology*, arising from the Symposium; after the conference, most members of the group assisted with a workshop attended by 30 participants.

**Developmental Neurobiology Group**

Professor R Mark, member, Biology Panel, Australian Research Council; member, Promotions Committee, National Health & Medical Research Council.

Dr B Wimborne contributed to the secondary school science text book, *Investigate, Discover and Learn*, to be published in 1995 by Dellata Pty Ltd.

Dr D Blest, associate editor, *Cell and Tissue Research*.

**Visual Sciences Group**

Dr M Egelhaaf, member, editorial board, *Biological Cybernetics*.

Dr T Maddess, demonstrator, National Summer Science Fair and Siemens Science Fair.

Dr I Morgan, ministerial adviser to the ACT Vocational Training Agency, member of the Agency’s Australian Vocational Training Scheme Steering Committee and also member of the ACT Department of Education and Training Key Competencies Reference Group and Framework for Vocational Education and Training Working Group.

Dr P Sobey gave seminars on his mobile robot navigation work at the National Institute for Standards and Technology, Washington DC, at the Royal Institute of Technology (KTH), Stockholm at a workshop entitled Natural and Artificial Sensors.

Professor M Srinivasan, co-organised a workshop with Dr S Venkatesh and Dr D Kieronska, Curtin University, on 'Biologically inspired vision for machines', held in conjunction with the Third International Conference on Robotics, Automation and Computer Vision, Singapore, November; member, editorial boards of *Vision Research* and the *Australian Journal of Intelligent Information Processing Systems*.

**Plant Cell Biology Group**

Professor B Gunning, Co-Director, Cooperative Research Centre for Plant Science throughout 1994; member, Advisory Board, Plant Cell Biology Research Centre, University of Melbourne; member, organising committee planning the Australian and New Zealand Society for Cell Biology conference on the Biology of the Cell Surface; editor, *Protoplasma*, member, editorial boards, *Planta* and *The Plant Journal*.

Dr A R Hardham, member, editorial board, *Mycological Research* and *Canadian Journal of Botany*; ran practical classes for the National Science Summer School; state representative, Australian and New Zealand Society for Cell Biology; member, organising committee planning its conference on the Biology of the Cell Surface.
Dr R Williamson, member, editorial boards of *Cell Biology International*, *European Journal of Cell Biology*, *Plant Journal* and *Planta*; co-program leader, Development and Product Quality Program, Cooperative Research Centre for Plant Science.

Dr D Cahill contributed to the second year course on Flowering Plants given by the Faculty of Biological and Behavioural Sciences, University of New South Wales.

Dr G Wasteneys and Professor Gunning organised a practical class for visiting students from Sydney University.

**Plant Microbe Interactions Group**

Professor B Rolfe, president-elect (1996–98), International Symposium for Molecular Plant-Microbe Interaction organisation; section editor, journals *Plant and Soil* and *Plant Molecular Biology*.


**Molecular Plant Physiology Group**

S von Caemmerer contributed to a one-day workshop for visiting students from Sydney University.

Dr M Badger, co-program leader, Plant Growth and Performance Program in the CRC for Plant Sciences; member, editorial board, *Photosynthesis Research* and co-organiser, 1994 Robertson Symposium on Chlorophyll Fluorescence.

**Environmental Biology Group**

Dr J R Evans undertook an outside studies program at the Department of Plant Ecology and Evolutionary Biology, Utrecht University, The Netherlands where he taught the 'Advanced Photosynthesis' course; honorary treasurer, Australian Society of Plant Physiologists; member, Editorial Review Board, *Plant, Cell and Environment*.

Professor G D Farquhar, member, Council of the Australian Academy of Science; member, Australian Academy of Technological Sciences and Engineering Committee on Climate Change; reviewer, CSIRO INRE Climate Studies Program; visited the Biosphere 2 complex in the USA in September and was invited to present a white paper on possible research projects utilising the Biosphere 2 complex; chair, Australian Committee for the International Geosphere–Biosphere Programme; member, editorial board, *Oecologia, Functional Ecology* (British Ecological Society); Review Board, *Plant, Cell and Environment*; Editorial Review Board, *Tree Physiology*, Consulting Editor, *Plant and Soil*.

**Ecosystem Dynamics Group**

Dr M Ball, member, Editorial Committee, *Australian Journal of Botany*, member, Editorial Advisory Board, *Global Change Biology*, collaborated with colleagues from New Zealand to study the responses of rata forest to past and present climatic conditions in the sub-Antarctic Auckland Islands.


Dr H Gitay, part-time position with Global Change and Terrestrial Ecosystems (based at CSIRO Wildlife & Ecology, Gunghalin); at Global Change and Terrestrial Ecosystems she ran a training course for south-east Asian Scientists in modelling forests.

Dr I Noble, appointed to the National Forest Policy Advisory Forum to advise the Federal Ministers for the Environment and Resources on matters relating to forests and the forest industry; chair, working group to prepare report on land resources of Australia for the Federal State of the Environment Report; contributed to the Australian National Greenhouse Gas Inventory; part of a small group that initiated the first National Biodiversity Council to present the scientific view on biodiversity issues in the public debate; member, Global Change in Terrestrial Ecosystems (GCTE) Scientific Steering Committee and attended meetings in Thailand, Netherlands, USA, Malaysia, UK and Germany relating to GCTE activities; member, Executive, International Union of Biological Sciences (IUBS) at the General Assembly in Paris in September and was an invited panellist at the IUBS/UNESCO Conference on Biodiversity; took part in several aspects of the Global
Biodiversity Assessment by organising a small international workshop in Canberra on the biodiversity of arid regions and attending the SCOPE Synthesis Meeting on the role of biodiversity in ecosystem function in California; member, editorial boards, UNESCO/MAB Book Series, Ecological Modelling, Biodiversity Letters and Ecological Applications.

Professor R Slatyer continued to work closely with national and international bodies, particularly Commonwealth and State governments, the Academies and industry; with the Australian Academy of Science, chair, Australian Foundation for Science, the Fenner Conferences on the Environment and the National Science and Industry Forum; member, Board, Crawford Fund, Australian Academy of Technological Sciences and Engineering; independent chair, Commonwealth-State Working Group on Access to Australia's Genetic Resources; adviser, Australian International Development Assistance Bureau in the audit of its environmental programs and assisted the Western Australian Government in relation to new applications for Cooperative Research Centres; member, CRA’s Scientific Advisory Board; member, Board of the Australian Minerals and Energy Environment Foundation; Chief Adjudicator, BHP Science Awards for 1994; chair, Cooperative Research Centre for Tropical Rainforest Ecology and Management; member, Scientific Advisory Board of SCOPE’s Sustainable Biosphere Project and of UNESCO’s International Advisory Committee for Biosphere Reserves.

Professor M A Bennett, member, International Advisory Board, Dictionary of Organometallic Compounds and Dictionary of Inorganic Compounds; International Editorial Associate, Inorganic Syntheses; member, Editorial Advisory Board, Inorganica Chimica Acta; Australian representative on the IUPAC Commission on Nomenclature of Inorganic Chemistry; member, International Advisory Board for International Symposium on Homogeneous Catalysis; member, Organising Committee, XVIth International Conference on Organometallic Chemistry to be held in Brisbane, 8–13 July 1996; member, ARC Review Panel to evaluate Outcomes of Funding in Inorganic Chemistry.

Dr M A Collins, chair, Physical Chemistry Division, Royal Australian Chemical Institute.

Dr N E Dixon, ACT Representative on Council, Australian Society for Biochemistry and Molecular Biology; Organising Committee, ASBMB Annual Conference, Canberra, 1996.

Professor D J Evans, member, Editorial Board, Molecular Simulation; coorganiser and session chair, Statistical Mechanics/Mathematical Physics Meeting, Melbourne; member, Scientific Advisory Committee and Invited Speaker, 4th Liblice Conference on Statistical Mechanics of Liquids, Lake Milovy, Czech Republic; member, Organising Committee, CECAM sponsored conference on Adsorption and Transport in Amorphous Porous Materials, Lyon, France, for 1995; member, International Advisory Committee, 3rd European Physics Societies Liquid Matter Conference, Norwich, UK, for 1996; member, Organising Committee, 5th Liblice Conference on Statistical Mechanics of Liquids, Czech Republic, for 1996.

Dr G A Heath, president, ACT Branch, Royal Australian Chemical Institute; National Secretary, Federation of Australian Scientific and Technological Societies; Honorary Fellow Australian War Memorial.

Dr J K MacLeod, Australasian Regional Editor, Organic Mass Spectrometry; member, International Scientific Committee, 13th International Mass Spectrometry Conference, Budapest; member, Central Committee, Organic Division of Royal Australian Chemical Institute; president, Australian and New Zealand Society for Mass Spectrometry.

Research School of Chemistry


Professor M A Bennett, member, International Advisory Board, Dictionary of Organometallic Compounds and Dictionary of Inorganic Compounds; International Editorial Associate, Inorganic Syntheses; member, Editorial Advisory Board, Inorganica Chimica Acta; Australian representative on the IUPAC Commission on Nomenclature of Inorganic Chemistry; member, International Advisory Board for International Symposium on Homogeneous Catalysis; member, Organising Committee, XVIth International Conference on Organometallic Chemistry to be held in Brisbane, 8–13 July 1996; member, ARC Review Panel to evaluate Outcomes of Funding in Inorganic Chemistry.
Cooperation with government and other public institutions


Professor L Radom, vice-president, World Association of Theoretical Organic Chemists; member, Japan Exchange Sub-Committee, Australian Academy of Science; chair, Chemistry Sectional Committee, Australian Academy of Science; member, editorial boards, Accounts of Chemical Research, Advances in In Ion Chemistry and Physics, Journal of the Chemical Society, Perkin Transactions 2, Journal of Computational Chemistry, Journal of Molecular Structure: Theochem.

Professor R W Rickards, member, China Exchange Committee and Chemistry Sectional Committee, Australian Academy of Science; member, International Scientific Board of the World Congress of Microbiology, Prague; member, Council of the National Science Summer School; member, editorial board, Journal of Antibiotics; external examiner, BSc (Hons), Faculty of Science, University of Mauritius.

Professor A M Sargeson, member, International Relations Committee, Australian Academy of Science; member, International Relations committee, Royal Australian Chemical Institute; chair, Review Panel of the Australian Research Council, Department of Employment, Education and Training to evaluate the outcomes of ARC research grant funding in chemistry; chair, Commission on Nomenclature of Inorganic Chemistry, IUPAC; honorary research consultant, Department of Chemistry and Biochemistry, James Cook University; member, editorial advisory boards, Inorganica Chimica Acta, Coordination Chemistry, Advances in Inorganic Chemistry, and Supramolecular Chemistry.

Professor J W White, chair, Neutron Scattering Commission (International Union of Crystallography); chair, Working Party on ‘A Strategy for Australian Access to Synchrotron Beam Radiation’, Australian Academy of Science; chair, Program and Review Committee, Photon Factory Management Committee; chair, National Committee on Crystallography (Australian Academy of Science); member, Bede Morris Fellowship Committee (Australian Academy of Science); member, Council of the Asian Crystallographic Association; member, Department of Industry, Technology and Commerce Management Committee to the Photon Factory, Tsukuba, Japan; member, Federation of Australian Scientific and Technological Societies; member, ISIS International Scientific Advisory Committee (SERC); member, Neutron Experimental Selection Committee, Rutherford Appleton Laboratory, UK; member, Nuclear Physics Advisory Committee (Australian Nuclear Science and Technology Organisation—ANSTO); vice-president, Australian Neutron Beam Users Committee; member, editorial board, Advances in Physics, Journal of Materials Chemistry, Solid State and Material Science, Spectrochimica Acta; assessor, Chemical Physics Letters, Faraday Transactions (Royal Society of Chemistry), Journal of Physical Chemistry, Langmuir, UK, Institute of Physics.

Dr S B Wild, consulting editor, Tetrahedron: Asymmetry; editorial advisory board, Main Group Chemistry; member, International Scientific Committee, XVIIth International Conference on Organometallic Chemistry; past president, Royal Australian Chemical Institute, ACT Branch.

Dr R L Withers, member, Consultative Committee, Centre for the Science and Engineering of Materials.

Research School of Earth Sciences

ANUTech Pty Ltd

The research programs of RSES result in development of techniques, production of information and of intellectual property, and production of scientific equipment for which there is a commercial potential. The relationship between the research objectives of RSES and these commercially-oriented roles is fluid but effort is made to use AnuTech Pty Ltd, the University’s independent company, as the intermediary for commercialisation of RSES’s services and intellectual property. The highest profile activity is the commercial marketing of SHRIMP (Sensitive High Resolution Ion Microprobe) designed and developed in RSES, and as detailed
elsewhere in this report, now moving into a second design variant (SHRIMP-RG) complementary to SHRIMP-FG (originally known as SHRIMP-II).

Dr J Braun has set up a contract with AnuTech Pty Ltd and IT Connections for the distribution of his visualisation software 2DMap.

Professor W Compston, Drs S W J Clement, C S Eldridge, J J Foster and I S Williams and Messrs N Schram and R Waterford, continued to collaborate with Australian Scientific Instruments, a division of AnuTech, in the manufacture and marketing of the SHRIMP II and RG ion microprobe.

Professor W Compston, Dr T R Ireland and Mr P Radley, together with Dr A Rastawicki and Mr J Morphett from AnuTech and consultant Dr S Clement, visited Stanford University in April for final discussions with the Stanford-USGS Consortium regarding the purchase of the SHRIMP-RG. They also had discussions with Dr B MacKinnon regarding present and future magnet designs for SHRIMP-RG.

Dr R W Griffiths and Mr D L Corrigan are continuing an agreement with AnuTech to support the marketing and manufacture of the rotating table, a facility developed in the Geophysical Fluid Dynamics laboratory of RSES for research into the flow of fluids under the influence of planetary rotation. It is primarily a tool for dynamical studies of the oceans and atmosphere. A number of requests for quotations have been received.

Dr I Jackson continued to collaborate with Australian Scientific Instruments (a division of AnuTech Pty Ltd) in the marketing and manufacture of equipment for ultrasonic interferometry.

Efforts to commercialise the production of the sintered diamond composite material (ADC—Advanced Diamond Composite) devised by Professor A E Ringwood and patented by ANU have continued through 1994. The agreement with Crestel Pty Ltd, Bendigo, reported in the 1992 Annual Report, has been terminated and the RSES, together with AnuTech, are seeking industry partners to collaborate in further development and testing and to licence production of both ADC and the new-material (informally called ‘bornide-C’) based on cubic boron nitride which was also designed and tested by Professor Ringwood and the Petrochemistry Group (see 1992 Annual Report). Through 1994, collaboration with Diamond Composites Pty Ltd, a Sydney firm engaged in the use and applications of ADC, has continued in an effort to resolve issues around the marketing and applications of both ADC and ‘bornide-C’.

Precise Radiogenic Isotope Services (PRISE)

PRISE is a joint venture between the Research School of Earth Sciences and AnuTech Pty Ltd. PRISE offers contract geochronology and radiogenic isotope services through RSES. All analytical work is carried out in the isotope geochemistry laboratories at RSES under optimum conditions.

PRISE offers commercial and ‘commercial collaborative’ sensitive high resolution ion microprobe (SHRIMP) analyses on behalf of the Research School of Earth Sciences. Both SHRIMP I and SHRIMP II are routinely used.

State-of-the-art methods are used in each of the isotopic systems offered (U-Th-Pb, Pb, Sm-Nd and Rb-Sr). High precision isotopic analyses (Nd, Sr, U, Th & Pb) are carried out with a Finnigan MAT 261 multi-sample, multi-collector mass spectrometer.

A recently commissioned Inductively Coupled Plasma Mass Spectrometer (ICPMS) is used for general trace element work including REE and PGE.

Australian Geological Survey Organisation (AGSO)

This year was a landmark in the interaction between these two organisations in Canberra, as it represented the completion of 30 years of a successful and productive scientific relationship between AGSO (formerly BMR) and RSES. This cooperative relationship has principally involved geochronology and isotope geochemistry, but there has also been substantial cross fertilisation in petrology and geochemistry (Cameca electron microprobe), geomagnetism and palaeomagnetism (Black Mountain laboratory), and seismology.
The main focus of AGSO’s geochronological research is through its role in the National Geoscience Mapping Accord (NGMA) and Continental Margins Programs. The advent of SHRIMP II (in which AGSO is a one-third equity partner) in 1993 has enabled AGSO to target and make substantial progress with the numerous geochronological tasks related to these work programs. The Eastern Goldfields, Musgrave, North Queensland, and Broken Hill-Olary projects are areas of cooperative research that also involve RSES personnel. Further interaction between AGSO and RSES is via its Phanerozoic Timescales project which aims to build an integrated framework for Australian Phanerozoic sedimentary basins. AGSO’s other NGMA tasks using SHRIMP U-Pb techniques relate to the Halls Creek Inlier (East Kimberley, WA), Arnhem Land (NT), Lachlan (NSW, Victoria), and Tasmanian lower Palaeozoic terranes.

A recent and ongoing role for AGSO that will involve RSES is its development of OZCHRON, a national database for geochronology. This is intended both as a means of facilitating access to published or unpublished results using GIS or other methods, and as a repository for newly generated data. The AGSO/RSES link is focused through AGSO personnel active in RSES, Drs L P Black, J Claoue-Long, R Page and S-s Sun, and through joint activities in palaeomagnetism. The following additional links illustrate the scientific projects which arise from co-location and complementary roles.

Drs J Braun and H McQueen and Professor Lambeck collaborate with AGSO scientists in their on-going study of the structure and evolution of the Australian lithosphere.

Dr M I Bird collaborated with Dr R Simmons, AGSO and Dr A Murray (CSIRO) on studies of the carbon-isotope composition of biomarker compounds in, and a chronology for, a sediment core from the Great Barrier Reef.

Dr T McCulloch and Mr D Burrows are collaborating with Dr J Marshall from AGSO studying Holocene corals from the Great Barrier Reef.

Dr C Perkins had been a principal investigator in two projects involving AGSO, AMIRA and the mining industry: ‘Metallogenic Epochs of the Tasman Orogen’ and ‘The $^{40}$Ar/$^{39}$Ar dating of Cu and Cu-Au mineralisation in the Proterozoic Mt Isa Inlier, Northern Australia’.

Dr I S Williams and Dr R S Nicoll, AGSO continued their collaborative study of the protolith of early Palaeozoic sediments in central and eastern Australia.

Dr J Woodhead continued his collaborative studies with Dr W Johnson of AGSO on geochemical aspects of volcanism in the Melanesian region.

**Australian Geodynamics Cooperative Research Centre**

The need for geochronology within the program of the Cooperative Research Centre and the particular value of the SHRIMP U-Pb techniques in unravelling complex metamorphic terranes has led to a formal association with RSES through Professor W Compston. The CRC is funding geochronological studies, principally through Dr A P Nutman who has become a member of the *Evolution of Crustal Metamorphism in the Australian Plate* segment of this Cooperative Research Centre. He is working with Professor G Lister and Dr K Ehlers of Monash University, Melbourne, and Pasminco Ltd, Broken Hill, NSW, undertaking SHRIMP U-Pb geochronology in order to constrain the thermal history of the Broken Hill Block.

Mr S G Blake and Dr A R Chivas are collaborating with Dr A Arakel, Sydney Water Board, on sediment trace-element and nutrient determinations on the surficial and down-core sediments from the Whitsunday Islands region.

Dr I H Campbell co-hosted a visit of senior mineral explorationists from Australian mining companies at the RSES in June, in order to better acquaint them with the School’s research programs, facilities, and capabilities. Dr Campbell also gave lectures in October to exploration and mine geologists of Western Mining Corporation in Kambalda.

Ms M Carey has studied the petrology and geochemistry of two of the differentiated sills that host the gold mineralisation at Kambalda. During 1994 the project was financially supported by Western Mining Corporation.
Drs A R Chivas and M K Gagan continued research with Dr P J Isdale, Australian Institute of Marine Science, Townsville on stable isotopes within corals as indicators of palaeoenvironments.

Dr D R Christie is collaborating with the Civil Aviation Authority in a study of solitary waves and other windshear disturbances at Sydney International Airport. He is also undertaking a joint research project with Mount Isa Mines Corporation on the dispersal of pollutants in the atmospheric boundary layer.

Dr C S Eldridge was engaged in a cooperative study of the Olympic Dam and Nifty copper deposits with personnel of the Western Mining Corporation during much of 1994.

Mr C M Fanning continued collaborative studies with Dr A Belperio, Mrs S Daly and others at the Geological Survey of South Australia, on the tectonic, structural and isotopic evolution of the Late Archaean and Early Proterozoic of the Gawler Craton, South Australia. He also continued collaboration with Mr B P J Stevens, NSW Geological Survey on a U-Pb zircon study of the Wonaminta Block and Tibbooburra Inliers, western NSW. Mr Fanning collaborated with Dr R J Bultitude and Mr L Hutton, Queensland Department of Resource Industries on the age and crustal growth of igneous and metamorphic complexes in northern Queensland, and together with Dr V C Bennet, continued collaboration with Mr M Raetz and Mr D Moore, BHP Minerals Ltd on a project dealing with "Nd isotopic mapping of the Australian Continent".

Dr M K Gagan established collaboration with Mr S Buchan of Steedman Science and Engineering to calibrate coral-derived oxygen isotope ratios with sea-surface temperature data collected near Dampier, WA for Woodside Petroleum Pty Ltd. Dr Gagan also established cooperative research with Mr A Steven, Great Barrier Reef Marine Park Authority, to investigate the possible effects of elevated nutrient concentrations (phosphorus) on coral-based palaeoenvironmental records.

Professor D H Green, member, Institutional Grants Committee of the Australian Research Council during 1994; chaired review of the Key Centre for Strategic Mineral Deposits at the University of Western Australia; chair, Review of CSIRO Division of Oceanography, following retirement of Professor A McEwan as Chief of Division.

Professor D H Green's Petrochemistry and Experimental Petrology Group has appointed Dr J Mavrogenes as Postdoctoral Fellow to investigate sulphide/silicate melt equilibria as functions of pressure, temperature and composition. The position is jointly funded and supervised by Western Mining Corporation and RSES, in recognition that the experimental data sought are equally important for their applications to ore genesis and mineral processing, as for their applications to magma evolution and understanding of mantle and crustal geochemistry of chalcophile and platinum group elements.

Professor B L N Kennett and Dr D R Christie, members, panel convened by Department of Foreign Affairs and Trade for technical advice on verification of a Comprehensive Test Ban Treaty.

Dr S E Kesson, member, JAERI-ANSTO/ANU Synroc Steering Committee and attended meetings in Sydney and in Mito and Tokyo, Japan. She also attended an ANSTO Board Meeting in Sydney.

Professor K Lambeck, chair, Bilateral Science and Technology Programs, Department of Industry, Science and Technology; chair, Advisory Committee, Orroral Observatory, Department of Administrative Services.

Dr R R Loucks co-hosted a visit of senior mineral explorationists from Australian mining companies at the RSES in June, in order to better acquaint them with the School's research programs, facilities, and capabilities. Dr Loucks also gave lectures in October to exploration and mine geologists of Western Mining Corporation in Kambalda.

Dr M McCulloch is collaborating with Dr P Isdale of the Australian Institute of Marine Science working on the Sr/Ca levels on Pandora and Wheeler Coral reefs.

Professor I McDougall was awarded a grant by the Australian Institute of Nuclear Science and Engineering (AINSE) to facilitate irradiation of geological samples by fast neutrons in HFIR reactor of the Australian Nuclear Science and Technology Organization in relation to dating by the $^{40}$Ar-$^{39}$Ar method. Member, AINSE.
Cooperation with government and other public institutions

Radiation Specialist Committee that assesses applications for irradiations in HIFAR.

Mr S M Munroe and Dr S F Cox continued their collaboration with the Porgera Joint Venture Partners on an investigation of deformational and structural controls on fluid migration patterns involved in ore genesis at the Porgera gold deposit, PNG.

Dr C Perkins is partly funded by two grants from the Australian Mineral Industries Research Association (AMIRA). Five companies sponsor the project 'Metallogenic Epochs of the Tasman Orogen': North Exploration, MIM Exploration, Normandy Poseidon, Pancontinental Mining, and Placer Pacific. Dr J L Walshe (Geology Department, ANU) and Dr D Wyborn (Australian Geological Survey Organization) are collaborators on the investigation. Eight companies sponsored the recently concluded project "The 40Ar/39Ar dating of Cu and Cu-Au mineralization in the Proterozoic Mt Isa Inlier, Northern Australia": Billiton Australia, North Exploration, MIM Exploration, Normandy Poseidon, Pancontinental Mining, Placer Pacific, RCG Exploration, and Western Mining Corporation. The study was conducted in association with Drs C A Heinrich and L A I Wyborn of the Australian Geological Survey Organization.

Mr Q Wang commenced a geochronology project in the Murchison and Gum Creek greenstone belts. During 1994 the project was financially supported by BHP Minerals, Normandy Poseidon Limited, Pancontinental Mining and Western Mining Corporation.

Mr N G Ware spent one week in Perth with CRA Ltd assessing diamond indicator mineral analysis by the SEM.

Dr J Woodhead initiated a study with Dr M Weisler, Historic Preservation Office, Majuro Atoll, Marshall Islands, on the use of isotope geochemistry in sourcing stone artifacts found at archaeological sites throughout Polynesia.

National Academy of Science

Dr A R Chivas, member, National Committee for Quaternary Research.

Professor B L N Kennett, chair, Sub Committee on Seismology and Physics of the Earth’s Interior of the National Committee on Solid Earth Sciences; member, Academy’s Japan Exchange Committee.

Professor K Lambeck, member, Bede Morris Memorial Fund.

Research School of Information Science and Engineering

B D O Anderson, chair, Cooperative Research Centre for Robust and Adaptive Systems; chair, Encyclopedia Britannica Australian Advisory Board; board member, Nucleus Ltd; editorial board member, Journal of Multidimensional Systems and Signal Processing; editorial board member, Optimal Control Applications and Methods; editorial board member, International Journal of Adaptive Control and Signal Processing; editorial board member, International Journal of Robust and Nonlinear Control; editorial board member, The Book Series of Systems and Control: Foundations and Applications; external assessor, University of Malaya, Promotions and Appointments; immediate past president (from 1993) of International Federation of Automatic Control (IFAC); member, Cooperative Research Centres Committee; member, CRA Ltd Scientific Advisory Board.

R R Bitmead, chair, ACT Section, Institute of Electrical and Electronics Engineers (IEEE); member, IEEE Region 10 Committee; member, Control Systems Society Fellow Committee; member, Technical Board, International Federation of Automatic Control (IFAC); chair, Coordinating Committee on Control Design Methods; member, Committee of Symposium on Adaptive Control and Signal Processing; member, Technical Advisory Board, Cooperative Research Centre for Sensor Signal Processing and Information Processing.

T R J Bosomaier, member, editorial board, Complex Systems Electronic Journal (Complexity International); member, Program Committee for IEEE Evolutionary Computation—95 Conference, Perth; referee, Program Committee member and Session chair of Complex Systems—94 Conference.
R P Brent, editor, Prentice-Hall Series Advances in Computer Science; regional editor, Parallel Processing Letters; International Coordinator, ACM Special Interest Group on Numerical Mathematics (SIGNUM); member, Advisory Board of Software Verification Research Centre at University of Queensland; member, ARC Engineering Earth and Applied Sciences Panel; member, editorial board, International Journal on High Speed Computing; member, Program Committee for ASAP—94; member, Program Committee for SPIE—95; member, Organizing & Program Committees for ICPOA—95; member, Technical Program Committee for ICNN—95.

A N Burkitt, member, Organizing Committee for Australian Conference on Neural Nets—95.

S Crisafulli, consultant, two weeks consultancy on fibre rate estimation in a cane raw sugar factory, CSR Ltd; with A J Connolly, consultancy on prediction of gas-out problems in an underground coal mine.

G P Gore, member, Program Committee, International Workshop on Theorem Proving with Analytic Tableaux and Related Methods.

M Green, associate editor, Systems and Control Letters; member, editorial board, Journal of Robust and Nonlinear Control.


I D G Macleod, member, Organizing Committee for Australian Conference on Neural Nets—95.

I M Y Mareels, associate editor, Automatica (Adaptive Control); co-organiser, 1st Australian Workshop on Non-linear Systems and Control, September, 1994, Sydney; member, International Program Committee for 10th IFAC Congress on System Identification, July, 1994, Copenhagen.

J B Millar, chair, Australian Speech Science and Technology Association (ASSTA) National Spoken Language Database Committee; convener, Coordinating Committee for Speech Databases and Assessment (COCOSDA) International Working Group on Speech Corpora and Labelling; member, editorial board, Journal of British Voice Association; member, editorial board, Speech Communication; member, Coordinating Committee for Speech Databases and Assessment (COCOSDA); secretary, Australian Speech Science and Technology Association (ASSTA); secretary, Permanent Council of International Conference on Spoken Language Processing; technical chair, Organising Committee of Fifth International Conference on Spoken Language Processing.

J B Moore, associate editor, Springer-Verlag Industrial Control Series; associate editor, Systems and Control Editors.

J K Slaney, member, Program Committee, International Conference on Automated Deduction (CADE), London; Program Chair (joint with Professor McRobbie (CISR)) for the next CADE, to be held in the USA in conjunction with three other international conferences in logic-related areas; member, Program Committee, International Joint Conference on Artificial Intelligence (IJCAI).


X Zhu, editor, Australian Speech Science and Technology Association (ASSTA).

John Curtin School of Medical Research

Professor G L Ada, member, International Science and Technology Advisory Committee (ISTAC), Department of Industry, Technology and Regional Development; chair, Vaccine Working Group, National Centre in HIV Epidemiology and Clinical Research; member, International Committee to advise the Swedish Government on Vaccine and Drug Research for AIDS and Related Tropical Research; member, International Jury for the Sandoz Prize for
Cooperation with government and other public institutions

Immunology; adviser, Edna McConnell Clark Foundation, New York; member, division of AIDS, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Washington; member, Vaccine Selection Group and member, Working Group on HIV Vaccine Development and Assessment.

Dr N G Ardlie, member and councillor, Australian Postgraduate Federation of Medicine; member, Advisory Committee, Medical Laboratory Science Degree Course, University of Canberra; member, Medical Advisory Committee, National Heart Foundation (ACT Division); member, John James Memorial Hospital Ethics Committee for the IVF Program; member, Australian Steering Committee for tracking medical pedigrees with heterozygous familial hypercholesterolemia; member, Oncology Executive Group at Woden Valley Hospital; served on the Merck Sharp and Dohme Lipid Teaching Faculty and reviewer of Atherosclerosis, Pathology and Thrombosis Research; assessor for grant bodies including the National Health and Medical Research Council, the National Heart Foundation of Australia, the Anti-Cancer Council of Victoria, the International Science Foundation, and the Merck Sharp and Dohme Research Foundation.

Dr R Baker, reviewer for Genetics; assessed grants for the National Health and Medical Research Council; member, organising committee, Genome Conference Inc.

Professor R V Blanden, co-editor, Experimental and Clinical Immunogenetics; member, editorial board, Immunology and Cell Biology; member, Research Advisory Board, National Multiple Sclerosis Society of Australia; member, Research Advisory Committee, National Centre in HIV Virology Research; member, Virology-Immunology Study Group; member, assignment panel, Commonwealth Aids Research Scheme.

Dr G Buffinton, member, Board of Directors, Australian Society for Medical Research.

Dr I A Clark, referee, Journal of Immunology, Parasitology, International Journal of Parasitology, Parasitology Today, The Lancet, Today's Life Science, Journal of Infectious Disease, and Infection and Immunity; reviewed grant applications for NH&MRC, ARC, the Bi-national Science Foundation, the World Health Organisation, the University of Queensland, and the National Heart Foundation.

Dr D Cohen, member, editorial board, Oncogene.

Dr P Cooper, Public Officer, Australian Cancer Society and Clinical Oncological Society of Australia; consultant for the Commonwealth Serum Laboratory, ANUTECH and Strathdee Pharmaceuticals Pty Ltd.

Professor D R Curtis, president, Australian Physiological and Pharmacological Society, chair, Research Advisory Board, National Multiple Sclerosis Society of Australia; member, PET Research Advisory Committee, Royal Prince Alfred Hospital, Sydney; joined by invitation, panel of consultants for the Spinal Cord Society (Australia); member, editorial board, Synapse; member, Editorial Advisory Board, Pharmacology and Toxicology; member, Board of Co-Editors, Experimental Brain Research; International Adviser, Chinese Journal of Physiological Sciences.

Professor W F Doe, member, Australian Drug Evaluation Council; member, Scientific Advisory Committee, Australian Advisory Council of Australian Cancer Foundation, Advisory Committee of National Centre for Epidemiology and Population Health, and the NH&MRC Social Psychiatry Research Unit; Director, Gastroenterology Unit at Woden Valley Hospital and chair, Hospital—JCSMR Liaison Committee; Councillor, Royal Australasian College of Physicians; member, International Scientific Advisory Committee for the World Congresses of Gastroenterology 1994; editor, Journal of Gastroenterology and Hepatology; member, editorial board, Inflammatory Bowel Disease; reviewer, Cytokines, Clinical and Experimental Immunology, Gastroenterology, Inflammatory Bowel Disease and Gut; Patron, Canberra Cancerians Committee; member, Australian Academy of Forensic Science.

Dr S Eastal, associate editor, Molecular Biology and Evolution and The Journal of Molecular Evolution; member, Board of Directors of Genome Conference Inc; ACT Representative, Council, Human Genetics Society of Australasia; member, National Institute of Forensic Science Working Party on the establishment of a national forensic DNA database; gave expert evidence and advice in relation to DNA evidence to the
Tasmanian Supreme Court, the Queensland Supreme Court, the Legal Aid Commission of New South Wales, and the Legal Aid Commission of South Australia; member, Advisory Committee, NH&MRC Social Psychiatry Research Unit.

Dr P Foster, attended: 3rd International Symposium on Malignant Hyperthermia, Hiroshima, Japan; 7th International Workshop on Malignant Hyperthermia, Hiroshima, Japan; Australian Society for Immunology, 29th Annual Scientific Meeting.

Professor P W Gage, corresponding editor, Proceedings of the Royal Society, Series B; member, editorial board, Journal of Cellular and Molecular Neurobiology and Physiological Reviews; committee member, Research Advisory Board of ALS Motor Neurone Disease; committee member, Australian-American Education Foundation Selection Committee; assessor for grant bodies including the National Health and Medical Research Council, Australian Research Grants Committee, National Heart Foundation, Ramaciotti Foundation, Utah Foundation, National Science Foundation (USA), NZ Neurological Foundation.

Dr X Gao, member, Asia and Oceania Histocompatibility Committee.

Dr A Gautam, ACT Councillor for the Australian Society of Immunology.

Dr A J Hapel, reviewer for project and program grants for the NH&MRC, CARG and Cancer Society of NSW, Victoria and Queensland.

Dr I A Hendry, science adviser, board of the Wenkart Foundation; member, editorial boards, Journal of Neuroscience Research and International Journal of Developmental Neuroscience; assessor, National Health and Medical Research Council, Australian Research Council, Medical Research Council (NZ), and National Science Foundation (USA).

Dr C E Hill, treasurer, Australian Physiological and Pharmacological Society; assessor for the National Health and Medical Research Council, Australian Research Council and the National Heart Foundation.

Dr P D Hodgkin, chair, organising committee, 1994 annual scientific meeting of the Australasian Society for Immunology; undergraduate lecturer on Immunology at James Cook University, Qld; examined theses from the University of Melbourne and University of Sydney.

Dr D A Jans, gave invited talks, Australian Society for Experimental Pathology Photobiology Meeting; and 2nd Congress of the Asian-Pacific Organization for Cell Biology.

Professor W R Levick, member, editorial boards, Biological Cybernetics and Journal of Theoretical Neurobiology; member, House and Precincts Committee, Australian Academy of Science.

Dr K I Matthaei, Founding Member, Lorne Genome Inc; Deputy Spokesperson, Animal Research Public Education Committee (ARPEC); reviewer, Lottery Health Research, Department of Internal Affairs, New Zealand.

Dr A Müllbacher, founding member and member, steering committee, Australian Science Festival.

Dr S McColl, reviewer, Arthritis Foundation of Australia, the Cancer Society of Canada, the Medical Research Council of Canada and Le Fonds de la Recherche en Sant-du Quebec; and editor, Journal of Immunology.

Dr P McCullagh, Deputy President, National Brain Injury Foundation; medical adviser to Legacy, Vietnam Veterans' Association of Australia and Returned Services League of Australia; member, Australian Health Ethics Committee.

Dr H O'Neill, member, organising committee and program convener, Australasian Society for Immunology annual meeting, Canberra.

Dr C Parish, Editor-in-Chief, Immunology and Cell Biology.

Dr A J Ramsay, editor, Australian Society for Immunology (ASI) Newsletter.

Dr I A Ramshaw, member, Working Party Group on Immune-Based Therapies for HIV; member, editorial board, Viral Immunology.

Professor S J Redman, member, editorial boards, Neuroscience, Journal of Neuroscience Methods, Neuropeport, Trends in Neuroscience, Journal of Computational Neuroscience, European Journal of...
Neuroscience and Journal of Clinical Neuroscience; member, research grant interviewing committees for National Health and Medical Research Council and the New Zealand Health Research Council; assessor for the Australian Research Council, National Health and Medical Research Council, New Zealand Health Research Council, National Science Foundation, Ramaciotti Foundation and Wellcome Trust.

Dr J Ruby, member, Organizing Committee for 1994 Australian Society for Immunology meeting.

Dr D Tremethick, 16th International Congress of Biochemistry and Molecular Biology at New Delhi, India

Dr P Waring, Committee and Founding Member, First Australian Science Festival, March 1993; examined theses from University of Queensland and Queensland University of Technology.

School of Mathematical Sciences

Centre for Mathematics and its Applications


Dr D J Daley, trustee, Applied Probability Trust; technical editor, Australian Journal of Statistics; and consultant to the ACT Board of Senior Secondary Studies.


Professor P G Hall, member, Physics and Mathematics Panel, ARC; member, Organising Committee, 1995 Bernoulli Society Meeting; member, IMS, Bernoulli Council; member, Review Committee, Department of Mathematics, University of Western Australia; associate editor, Probability Theory and Related Fields; Annals of Statistics; Journal of the American Statistical Association; Journal of Statistical Planning and Inference, and Econometric Theory.

Professor C C Heyde, Director, Australian Foundation for Science; member, Science and Industry Forum, Australian Academy of Science; board member, Australian Mathematics Trust; member, National Committee for Mathematics, Australian Academy of Science; member, Management Committee, Australian Journals of Scientific Research; chair, Committee for Mathematics and Science Olympiads, Australian Academy of Science; member, Awards Committee, Statistical Society of Australia; Vice-President, International Statistical Institute; chair, Membership Committee, International Statistical Institute; member, Bernoulli Society Publications Committee; Council member, Institute of Mathematical Statistics; Editor-in-Chief, Journal of Applied Probability and Advances in Applied Probability; joint editor, Australian Mathematical Lecture Series; joint editor, Springer Series in Probability and its Applications; associate editor, The Mathematical Scientist; advisory editor, Journal of Applied Mathematics and Stochastic Analysis; consultant to Borealis Technical Incorporated; and Director, Columbia University Center for Applied Probability.

Dr L G Kovacs, associate editor, Journal of the Australian Mathematical Society Series A.

Professor B H Neumann, Honorary Research Fellow, CSIRO Division of Mathematics and Statistics; member, Advisory Board, Australian International Centre for Mathematics Enrichment and Australian Mathematics Trust; Vice-President, Friends of the Canberra School of Music; editor and publisher, IMU Canberra Circular; honorary editor, Bulletin of the Australian Mathematical Society and The
Australasian Journal of Combinatorics and Algebra Colloquium (Beijing); editor and member, editorial board, Houston Journal of Mathematics; editorial consultant, Southeast Asian Bulletin of Mathematics; and Mathematics Adviser to the World Scientific Publishing Company.

Dr M F Newman, Public Officer, Australian Mathematical Publishing Association Inc; member, Organising Committee, Special Year of Geometric Group Theory (1996); Australian Representative, International Commission for Mathematical Instruction; member, Australian Mathematics Olympiad Committee and Junior Problems Committee; Director, Canberra Mathematics Enrichment Program; editorial adviser, Journal of Symbolic Computation; and invited to be a joint organiser of the Oberwolfach meeting on Computational Group Theory in 1997.

Dr T J O'Neill, consultant to the Federal Office of Road Safety.

Professor Osborne, chair, CTAC; member, organising committee, CTAC'95; and associate editor, Journal of the Australian Mathematical Society Series B (Applied Mathematics).

Dr E Platen, member, Q-Group, Institute of Quantitative Research in Finance Inc; member, Bernoulli Society for Probability and Statistics; member, Deutsche Mathematiker Vereinigung; member, Australian Mathematical Society; member, editorial board, Journal Monte Carlo Methods and Applications; and coorganiser of the Workshop on Stochastics and Finance, Berlin.

Professor D W Robinson, president, Australian Mathematical Society (from July 1994); member, working party, Strategic Review of the Mathematical Sciences (from July 1994); and associate editor, Reviews in Mathematical Physics.

Professor N S Irudinger, member, Academy of Science Japan Exchange Committee; member, editorial board, Proceedings of the Royal Society of Edinburgh and Journal of Potential Analysis.

Dr S R Wilson, member of NH&MRC Social Psychiatry Research Unit Advisory Committee; representative, Statistical Society of Australia at the Australian Foundation for Science meetings, (elected to Advisors’ Committee); chair, ISI Standing Committee for the Promotion of Statistics in the Life Sciences; member, Programme Committee for the 50th Session of the ISI, Beijing, August 1995; member, Long Range Planning Committee, International Biometric Society; editor, The IMS Bulletin; member, editorial board, Statistical Methods in Medical Research; associate editor, Annals of Human Genetics; elected to the Council of the International Statistical Institute.

Mount Stromlo and Siding Spring Observatories

Dr M Besell, president, IAU Commission 29 on Spectroscopy; member, Working Group Spectroscopic Data Archives; member, Organising Committee IAU Symposium 167, 1994; member Organising Committee ESO Workshop on The Bottom of the Main Sequence and Beyond 1994.


Dr M Colless, member, Australian Time Assignment Committee for the Anglo-Australian Telescope; member, Hubble Space Telescope Cycle 5 Review Panel on Galaxies and Clusters.

Dr J Dawe, member, Coonabarabran District Advisory Committee to National Parks and Wildlife Service; member, Consultative Committee of Orana Regional Environmental Plan, No 1; member, Consultative Committee of Orana Regional Environmental Plan, No 1; member, Standards Australia Committee LG/10 on the Obtrusive Effects of Outdoor Lighting; executive secretary, Forum for Continuing Astronomical Liaison; chair, Education Subcommittee of the Astronomical Society of Australia; member, National Committee for Astronomy Sub-Committee on Astronomical Education; chair, Local Organising Committee for SSO 30th Anniversary celebrations.
Dr M Dopita, vice-chair, Organising Committee of IAU Commission No 34 on Interstellar Matter; member, Board of Editors, Astrophysics and Space Science; member, Board of Editors, Publications of the Astronomical Society of Australia; member, Council of the Astronomical Society of Australia; member, Future Facilities Panel of the ARC/DEET Review of Australian Astronomy; member, Antarctic Astronomy Working Group.

Dr D Faulkner, chair, Organising Committee, 1994 Harley Wood School of Astronomy; chair, National Committee for Astronomy Sub-Committee on Astronomical Education; member, ANU/ARC Review Committee for the Research School of Chemistry; member, Rhodes Scholarship Selection Committee for Applicants from Commonwealth Territories.

Mr R Fenwick, member, Warrumbungles Landcare Group Inc; member, Regional Fire Plan Committee.

Dr L Ferrario, member (with Wickramasinghe & Bicknell), Organising Committee, ANUATC Workshop on Magnetic Fields, Discs & Jets Canberra, 18–19 April; member (with Wickramasinghe & Bicknell), Organising Committee, ANUATC Workshop on Astrophysical Fluid Dynamics, Canberra, 7–8 July; member (with Wickramasinghe & Wood), Organising Committee, ANUATC Workshop on Evolution and Pulsation of Single & Binary Stars, Canberra, 20–21 October; member (with Wickramasinghe, Organising Committee, ANUATC Workshop on Cooling Gas in Ellipticals & Clusters, Canberra, 17 November.

Professor K Freeman, member, European Southern Observatory Visiting Committee; member, Scientific Advisory Committee, Indian Inter-University Centre for Astronomy and Astrophysics; chair, Hubble Space Telescope Time Allocation Panel for Stellar Populations and member of the Time Allocation Committee for Cycle 5; member, Australia Telescope Time Allocation Committee; member, Australia Telescope Users Committee; member, Large Telescope Working Group of the National Committee for Astronomy, Australian Academy of Science.; vice president, IAU Commission 33 on Structure and Dynamics of the Galactic System; member, Organising Committees of IAU Commissions 28 Galaxies and 30 Radial Velocities; member, Scientific Organising Committees of IAU Symposia 164 Stellar Populations, The Hague, August 1994, 171 New light on Galactic Evolution, Heidelberg, June 1995, 173 Gravitational Lensing, Melbourne, July 1995 and 174 Dynamical Evolution of Star Clusters: Confrontation of Theory and Observation, Tokyo, August 1995.

Mrs M Groombridge, member, Coonabarabran Chamber of Commerce.

Dr A Kalnajs, member, Organising Committee of IAU Commission No 33 on ‘Structure and Dynamics of the Galactic System’.

Professor D Mathewson, vice-president, IAU; member, Executive Committee of IAU; member, IAU Working Group on Antarctic Astronomy; member, French/Australian Working Group on Antarctic Astronomy; patron of the Canberra Amateur Astronomical Society; chair, MSSSO Telescope and Instrumentation Committee; member, Australian Time Assignment Committee, Anglo-Australian Telescope (until April); member, Time Assignment Committee, Australia Telescope (until April); member, International Bilateral Programs Committee, Department of Industry Science and Technology.

Professor J Mould, member, Anglo-Australian Telescope Board; member, Australian Astronomy Heads and Directors Committee; member, National Committee for Astronomy; member, Research Centre for Theoretical Astrophysics Advisory Board; chair, NCA Review of Astronomy Future Facilities Panel; chair, NCA Large Telescope Working Party; member, Australian Research Council Astronomy Grants Outcomes Review; member, Australian Working Group on Antarctic Astronomy.

Dr J Norris, member, Time Allocation Committee, Anglo-Australian Telescope; member, Selection Panel for Staff Astronomers, Anglo-Australian Observatory; member, Schmidt Telescope Panel, Anglo-Australian Observatory (from September); councillor, Astronomical Society of Australia; member, ASA 1994 Annual Scientific Meeting Organisation Committee; member, ASA 1994 Harley Wood Winter School Organisation Committee; member, Duffield Building Extension Project Team.
Dr B Peterson, member, Australian Committee on Instrumentation for the Anglo-Australian Telescope.

Dr P Quinn, member, Scientific Organising Committee, IAU Symposium on Gravitational Lensing, Melbourne, 1995; member, Scientific Organising Committee, George Preston Meeting on The Galactic Halo, Tucson, 1995; member, ASA 1994 Harley Wood Winter School Organising Committee.

Professor A Rodgers, national delegate, International Astronomical Union Commission #46, Teaching of Astronomy; reviewer, Dept Industry, Science and Technology grant proposals—Dept Education, Employment and Training (ARC) proposals.

Dr P Saha, member, Astronomical Society of Australia Annual General Meeting Organising Committee.


Dr P Wood, member, Australian Time Assignment Committee, Anglo-Australian Telescope; member, Australia Telescope Users Committee; member, JACARA Science Steering Committee; member, Scientific Organising Committee for the conference Astrophysical Applications of Stellar Pulsation, 6–10 Feb 1995, Cape Town; member, Scientific Organising Committee for the conference AGB Stars 20–23 August 1996, Montpellier.

Mr W Ambrose, assistance on Xeroradiography Imaging, Marine Geo-Science and Petroleum Program, Australian Geology Survey Organisation.

Professor A Anderson, member, Komiti Tuku Iho (Heritage Committee) and Komiti Ko Iwi Tangata (Human Remains Committee), Ngai Tahu Maori Trust Board, New Zealand.

Professor D Ball, consultant, Australian Navy; consultant, Royal Australian Air Force (RAAF); consultant, Government Ministers; founding member, CSCAP Steering Committee; chair, CSCAP subcommittee on working groups; co-chair, Australian CSCAP Committee (AUS-CSCAP); member, editorial advisory boards, Security Studies, Defense Analysis, Intelligence and National Security, and Journal of Peace Research; member, Council of the International Institute for Strategic Studies (IISS).

Dr C Barlow, assistance, Department of Agriculture, Malaysia in annual assessment of automics and related research at the Palm Oil Research Institute of Malaysia; with the Center for Policy and Implementation Studies, Jakarta and the National Rubber Research Institute, Medan in the study of tree crop technology; with the provincial government of Nusa Tenggara Timor in the study of NGO's; member, editorial boards of the Rubber Research Institute of India—Trivandrum, the Rubber Research Institute of Sri Lanka—Agalowetta, and the Palm Oil Research Institute of Malaysia—Bandar Baru Bangi; president, the Nusatenggara Association as Australian NGO undertaking development and research work in Eastern Indonesia.

Dr G Barme, participant, BBC, Voice of America, Radio Australia and ABC; participant, Sydney Writers' Festival; adviser, Australian Political Exchange Council, Foreign Affairs; presenter, Asia-Australia Institute, University of New South Wales.

Dr C M Bell, member, Advisory Council, Official War History.

Dr H Booth, consultant, Asian Development Bank for Government of Fiji on establishing a database on women.

Ms M Bourke, consultant, Sydney Water Board.

Research School of Pacific and Asian Studies

Mr A Agafonoff, consultant, microenterprise financing in Zimbabwe; consultant, World Bank on microenterprise financing in Bolivia; consultant, UNDP on macroeconomic management with CHIRD (China) and KDI (Korea); consultant, IMF on Central Bank of Uzbekistan.

Dr B J Allen, consultant, mapping agricultural systems in PNG, Australian International Development Assistance Bureau.
Dr R M Bourke, consultant for mapping agricultural systems in PNG, Australian International Development Assistance Bureau.

Professor H C Brookfield, coordinator, Collaborative Research on Population, Land Management and Environmental Change with the United Nations University; member, United Nations University Steering Committee, UNESCO South South Cooperation Programme on Environmentally Sound Socioeconomic Development in the Humid Tropics, member, editorial boards, Global Environmental Change, Land Degradation and Rehabilitation, and Pacific Viewpoint.

Professor J Chappell, consultant, Australian Institute of Marine Science, Townsville and Australian Geological Survey Organisation; member, Review Committee, Schools Music Program, Canberra School of Music.

Dr K Clements, member, National consultative Committee on Peace and Disarmament; member, interdepartmental committee synthesising An Agenda for Peace with 'An Agenda for Development' in preparation for World Summit for Social Development; convener, UNAA Peace and Studies Conflict Programme; member, UN University Expert Group on Regional Security in the North Pacific; Asia-Pacific consultant, UN Office for Disarmament Affairs; secretary-general, Asia Pacific Peace Research Association; president, International Peace Research Association; member, editorial boards, Current Sociology, Peace Review, International Peacekeeping and Pacifica Review.

Mr R V Cole, consultant, ILO (South Pacific office); associate consultant, University of the South Pacific Economics Department; reviewer of Lomé Convention activities on Pacific states.

Dr J Croke, consultant, South Australian Department of Mines and Energy (Geology Division).

Mr G Crough, consultant, Australian Taxation Office; adviser, Central Land Council on funding issues.

Professor D J N Denoon, consultant, Department of History and Politics, University of the South Pacific; interviewee, ABC-TV and Radio on South African politics; consulted by Anglican Committee on International Affairs on religion and politics in South Africa; chair, history section, Australian Academy of the Humanities; chair, panel at Academy's 25th Symposium, Sydney; collaboration with editors of journals in US, France and New Zealand on bibliographic work and the creation of CD ROM.

Professor P Dibb, consultant, on defence policy to Department of Defence (on 1994 Defence White Paper), and on regional security policy to the Department of Foreign Affairs and Trade; adviser to The Australian Federal Police; member nominated by the Minister of Defence, Australian Defence Force Academy Council; member, Board of Studies, Joint Services Staff College.

Professor P Drysdale, coordinator, Pacific Trade and Development Conference series; member, Australian Pacific Economic Cooperation Committee (AUSPECC); member, International Standing Committee, Pacific Economic Cooperation Conference; adviser, Asia-Pacific Foundation of Canada; adviser, Japanese Finance Ministry Institute of Fiscal and Monetary Policy Studies; member, Foundation for Advanced Information Research (Japan); adviser, Japanese Ministry of International Trade and Industry Research Institute Board; member, Time Magazine's Asia-Pacific Board of Economists.

Professor R Duncan, consultant, AIDAB on the Melanesian Forestry Sector; consultant, ESCAP agricultural prospects for exporting countries in post-Uruguay Round period with Dr D Robertson and Dr Yongzheng Yang.

Ms S Dunlop, consultant, Aboriginal Areas Protection Authority, central Australia.

Dr T Dutton, Tok Pisin lessons for AIDAB and AFP personnel; review of Radio Australia programs in Tok Pisin.

Dr A Elek, member, Australian Pacific Economic Cooperation Committee; member, International Economic Advisory Group of the PECC Trade Policy Forum; member, PNG Prime Minister's International Economic Advisory Group; adviser to Mr N Wran, Australia's Representative on Eminent Persons Group to recommend future strategies for APEC.

Dr D M Etherington, consultant, FAO for establishing a tea industry in the NW Frontier Province of Pakistan; consultant, Commonwealth Secretariat for the rehabilitation of the
Mozambique coconut industry; deputy chair, TEAR Australia; Hon Secretary, Society for International Development, Canberra Chapter.

Dr G Fane presented a talk to the Industry Commission Inquiry into Innovation; wrote a short paper for the New Zealand Treasury; participated in a short course on tax policy organised by UNIDO for officials of the Ministry of Industry in Sri Lanka; prepared a report for the World Bank on the system of indirect taxation in Madagascar and on the state order system and the barter trade agreements of the Republic of Georgia.

Dr B Fetherston, adviser, Australian Defence Forces on Peacekeeping Training Force, Williamtown.

Dr C Fletcher, member, editorial committee, *Australian Journal of International Affairs*; assistance, Australian Defence Forces Peacekeeping Training Course, Williamtown.

Professor J J Fox, chair, subpanel for the Humanities, Australian Research Council; chair, R G Menzies Scholarship Committee; vice-president, Australian Anthropological Society; member, editorial board, Asian Studies Association of Australia Southeast Asia Publication Series; member, International Advisory Board, *Bijdragen, Koninklijk Instituut voor Taal-, Land-en Volkenkunde*; consultant, Asian Development Bank on Indonesian Forestry policy; member, supervisory committee, University of Wollongong and Monash University.

Professor R Garnaut, consultant with Dr Yiping Huang, Organisation for Economic Co-operation and Development (OECD); consultant, Australian International Development Assistance Bureau; addressed senior departmental officers, Department of Immigration, Local Government and Ethnic Affairs 'Portfolio Update on the Asia-Pacific and DIEA'; presented seminar 'Vital issues seminar on Asia Pacific trade policy'; attended Executive Board meeting, Department of Primary Industries; guest speaker, Confederation of Asia-Pacific Chambers of Commerce and Industry Bi-Annual Conference, Perth; chair, WA China Economic and Technical Research Fund, (CHANNAR Fund); chair, Australian Centre for International Agricultural Research (ACIAR); chair, Board of Bank of Western Australia Ltd; chair, Primary Industry Bank of Australia Ltd (until October); member, Australian-American Leadership Dialogue Group; member, Board of the Sydney Institute; member, Asia Society's International Council; member, Advisory Council of Murdoch University's Asian Studies Centre; member, Pacific Trade and Development Conference Steering Committee; member, International Advisory panel at the East-West Centre, Honolulu; joint editor, *Australian Quarterly*; chair, editorial board, *Bulletin of Indonesian Economic Studies*; member, editorial boards, *Journal of Asian Pacific Economic Literature* and *ASEAN Economic Bulletin*; member, editorial advisory board, *Singapore Economic Review*.

Dr A D Gordon, participant with DFAT and IOCP, Perth, in a series of quasi-official consultations and joint Indo-Australian meetings on Indian Ocean security; member, DFAT Steering Committee on economic development in India; consultant, AIDAB on Nepal, India and Bangladesh for review of aid programs.

Dr R Grün, editor, *Quaternary Geochronology* (QSR); associate editor, *Journal of Human Evolution* and *Archaeometry*; member, editorial boards, *Radiation Measurements* and *Ancient TL*.

Professor S Harris, chair, Australia-China Council; chair, Remuneration Tribunal; member, Australian Pacific Economic Cooperation Committee; member, Trade Policy Advisory Council; member, Australia-Korea Foundation; treasurer, Academy of Social Sciences in Australia; member, United Nations Human Rights Commission Expert Group on the Right to Development; co-chair, Australian National Committee for CSCAP.

Ms B Headon, assistance, Australian Centre for English in Cambodia.

Dr S Henningham, member, Advisory Committee, ILOTES-FISP (Innovative Languages Other than English-French in the South Pacific); chair, Research Committee, Australian Institute of International Affairs; lectures for ANUTECH for Defence Department program.

Dr R Hide, consultant for mapping agricultural systems in PNG, Australian International Development Assistance Bureau.
Cooperation with government and other public institutions

Dr R A Higgott, member, Trade Negotiation Advisory Group; member, editorial board, *Australian Journal of Political Science* and *International Studies Quarterly*.

Dr H Hill, grants from DFAT and AIDAB in support of Indonesia Project activities.

Dr S Holzknecht, collaboration, Parliament of PNG on preparation of data base of published and unpublished work on forestry, agriculture, mining and fisheries.

Dr G Hope, consultant, Australian Heritage Commission.

Dr D M Horner, member, National Defence Committee, Returned and Services League of Australia; consultant, Australian Army; consultant, Department of Veterans' Affairs; chair, *Australian Dictionary of Biography* armed services working party; member, Australian Army Military History Advisory Committee.

Dr C Hunt, member, Great Barrier Reef World Heritage Area planning team.

Dr M Jolly, research on Asian Pacific women as migrants, funded by Department of Foreign Affairs and Trade; collaboration with Department of Immigration and Ethnic Affairs.

Dr R M Jones, member, Council, Australian Institute of Aboriginal and Torres Strait Islander Studies; Commonwealth representative, Consultative Committee, Tasmanian World Heritage Area; member, Social Sciences Committee, Antarctic Research Evaluation Group, Antarctic Division; member, Research Committee, Australian Institute of Aboriginal and Torres Strait Islander Studies.

Dr M Keen, member, Advisory Committee, Commonwealth Bureau of Resource Sciences, Department of Primary Industry and Energy; co-convener, short training course for the ACT Department of Environment, Land and Planning.

Dr D Kelly, member, editorial board, *Chinese Studies in Philosophy*; member, ACT Fulbright Selection Committee, Australian-American Education Foundation; adviser, Centre for Chinese Studies, Hong Kong; International Research Fellow, Research Centre for Contemporary China, Beijing University.


Dr M Krongkaew, member, Board of Management, Association of Development Research and Training Institutes of Asia and the Pacific; member, East Asian Economic Association.

Dr B V Lal, commentator, Australia public radio and the Deutsche Welle on contemporary Fijian affairs.

Mr R Langdon, member, Advisory Committee, Australian South Pacific Cultures Fund; treasurer, Magellan Society.

Dr P Larmour, team leader, AIDAB on customary land tenure issues in PNG; rapporteur for consultation on Fiji's constitutional review.

Dr S Lawson, editor, *Australian Journal of International Affairs*; member, Research Committee, Australian Institute of International Affairs; member, editorial board, *Nationalism and Ethnic Politics*; member, International Advisory Board, *Nations and Nationalism*; treasurer, Australasian Political Studies Association; member, Executive Council, Commission on International Conflict, International Peace Research association; executive member, Research Committee on Politics and Ethnicity, International Political Science Association; member, Pacific Islands Political Studies Association International Advisory Board.

Professor D Lea, managing consultant, Community Development Planning in Aurukun; member, ANCA Scientific Advisory Committee Kakadu National Park; member, BIR Reference Group, NT; member, Remote Communities Consultancy Committee; Director, Nuggett Coombs Forum.

Mr D Lewis, member, Cultural Heritage Committee, National Trust of Australia (Northern Territory).

Professor G J R Linge, chair, Publications Committee, Academy of the Social Sciences in Australia; member, Workshops Committee, Academy of the Social Sciences in Australia; member, editorial board, *Australian Geographer*.
external examiner 1994–95, Geography Section, School of Humanities, Universiti Sains Malaysia.

Mr T H Loy, adviser, National Museum of Australia.

Professor G P McCormack, consultant, NHK (Japan) and ABC Radio and Television on preparation of various Japan-related programs; consultant, Trade Union Tutorial Authority, Sydney; consultant, DEET; adviser, University of Western Sydney; consultant, Korean and Japanese Chairs Selection Committee; consultant, Kobe University Graduate School of International Education.


Dr R McLeod, consultant, Indonesia matters to officers of DFAT, AIDAB and Office of National Assessments.

Professor A J R Mack, consultant to Minister for Foreign Affairs and Trade; consultant, Institute for Foreign Policy Analysis, Washington DC; member, editorial boards, Global Government and Contemporary Security Policy; testimony, Joint Committee for Foreign Affairs, Defence and Trade hearings on Japan's security policy.

Emeritus Professor J A C Mackie, chair, Australia Indonesia Institute; member, Advisory Committee to the Australian Official Historian, Australian War Memorial; patron, Indonesian Cultural and Educational Institute, Melbourne.

Dr M Macphail, consultant, Australian Geological Survey Organisation, NSW Department of Mineral Resources, Rural Water Commission of Victoria, Ocean Sciences Institute, University of Sydney, and Conservation Commission of the Northern Territory.

Mr J Magee, member, Willandra Lakes World Heritage Region Consultative Committee.

Dr S Mahendararajah, member, Committee of the Modelling and Simulation Society of Australia.

Dr C Manning, assistance, Indonesian Central Bureau of Statistics; Indonesian Department of Manpower and DEET; ADB.

Dr D G Marr, member, Social Science Research Council and the American Council of Learned Societies, Indochina sub-committee; chair, Asian Studies panel, Australian Academy of the Humanities; president, Vietnam Studies Association of Australia.

Dr R J May, consultant, review of AIDAB's International Seminars Support Scheme; member, Research Committee, Australian Institute of International Affairs; review editor, Australian Journal of International Affairs; member, editorial committee, Cambridge Pacific Studies; associate, Peter Gowing Memorial Research Centre, Marawi City, Philippines.

Dr R Miller, Parliamentary Research Service (2 publications); briefings, Office of National Assessment on current situation in ex-Yugoslavia; Trustee of ACT Public Cemeteries Trust.

Dr T Morris-Suzuki, member, Priority Panel on Australia's Asian Context, Australian Research Council; member, Committee of Review, Centre for Asian Studies, Adelaide University.

Dr M Mulrennan, consultant, Northern Territory Conservation Commission on the management implications of tidal creek extension and salinisation of the Mary River plains.

Dr A J Murray, assessor, Commonwealth AIDS Research Grant and Non-Northern Thai AIDS Projects; briefings, Indonesia AIDS Project Feasibility Team and Dr Nafsiah Mboi (Indonesia National Aids Committee).

Professor H Nelson, consultant, Australian Broadcasting Corporation ABC Radio 'Talking History' series.


Professor A K Pawley, president, Linguistic Society of Australia; member, editorial board,
Cooperation with government and other public institutions

Diachronica, Language Sciences, Oceanic Linguistics and Typological Studies in Language; member, advisory board, International Pragmatics Association; international adviser, Summer Institute of Linguistics; president, Australasian Association for Lexicography.

Dr F Perkins, collaboration, World Bank on state-owned enterprise reform in China; collaboration, Professors D Fureng and Z Yuxin, Drs M Xin and C Yong on collecting enterprise and financial data; collaboration, M Raiser (Kiel Institute of World Economics) on comparative studies of enterprise reform and macro adjustments of China’s and EFCPE’s enterprise reform process and macro policies; consultant, GEC Alsthom on financial and cost benefit analysis of an Indonesian railway project and a central Javan power distribution project.

Mr K Piddingron, consultant, World Bank on Solar Energy Initiative.

Dr D J Porter, consultant, AIDAB; adviser, Community Aid Abroad, Indochina Project; consultant, UNDP, HIV-AIDS and Development Program; consultant, UN Capital Development Fund, Vietnam Program, research Coordinator, Development Financing Project; editor, Development in Practice.

Dr J Ravenhill, editor, Cambridge University Press series, Cambridge Asia-Pacific Studies; member, editorial board, Journal of European Integration; member, research committee, Australian Institute of International Affairs.

Professor A J S Reid, external examiner in history, Universiti Brunei Darussalam and Nanyang University of Technology, Singapore.

Associate Professor C Reynolds, councillor, Asian Studies Association of Australia; director, National Thai Studies Centre; member, Joint Committee of Southeast Asia, Social Science Research Council, New York.

Professor J L Richardson, consultant, Department of Foreign Affairs and Trade on Cooperating for Peace project.

Professor M C Ricklefs, member, editorial board, History Today, co-editor, Southeast Asia volumes of Handbuch der Orientalistik; member, Council and International Secretary, Australian Academy of the Humanities; member, UNESCO Social Science Network.

Professor T Rigby, member, International Relations Committee of the Academy of Social Sciences in Australia; member, General Synod International Affairs Commission, Anglican Church of Australia; member, editorial board, Europe-Asia Studies.

Dr P J Rimmer, accreditation panel, School of Nautical Studies, Australian Maritime College; examiner, Transport Studies, Hong Kong University; consultant, East Asia Analytical Unit, Department of Foreign Affairs and Trade; member, Board of Secondary Studies (Asian Studies) (Geography), ACT; member, editorial boards, Asian Geographer and Transport Geography.

Dr D Robertson, consultant, Gaston Sigur Center, OECD Trade Directorate; World Bank, consultant, ESCAP.

Dr D B Rose, founding member, National Biodiversity Council; board member, Centre for Social Research (NTU); consultant, Aboriginal Land Commissioner and Northern Territory Land Council.

Dr M D Ross, member, editorial board, Oceanic Linguistics; international adviser, Summer Institute of Linguistics, Dallas; academic advisory board, Lincom Europa.

Dr D Shineberg, member, Expert Panel on General Academic Qualifications for the National Office of Overseas Skills Recognition.

Dr M Spriggs, member, Lana’i Island Archaeology Advisory Board, B P Bishop Museum, Hawaii; cooperation in training of field personnel with Vanuatu Culture Centre and Vanuatu Cultural and Historic Sites Survey.

Professor B Stening, consultant, International Development Program of Australian Universities and Colleges; member, editorial boards, Asia Pacific Journal of Human Resources, Japanese Studies, Research and Practice in Human Resource Management; participant, ABC and Radio Australia.

Dr P Sullivan, consultant, Kimberley Land Council on native title claiming and regional agreements; member, Australian Anthropological Society Committee on native title.
Associate Professor C Thayer, research associate, International Institute for Strategic Studies, London; member, Australian Committee for Scientific Cooperation with Vietnam; observer, Cambodia elections; national secretary, Vietnam Studies Association of Australia.

Dr A Thorne, member, Australian Zoological Parks Taxonomy Advisory Group, Melbourne.

Dr R Trewin, referee, 'Subsistence to Supermarket' by the Department of Foreign Affairs and Trade; a monograph 'Food Price Policy in Indonesia' by ACIAR; University of Adelaide report to the Rural Industries Research and Development Corporation; Wollongong University paper submitted to the Bulletin of Indonesian Economic Studies; and University of Adelaide paper submitted to the Australian Agribusiness Review.

Dr D T Tryon, assistance, Government of Vanuatu and Department of Foreign Affairs and Trade; member, South Pacific Cultures Fund Advisory Committee.

Dr J Unger, member, Advisory Board, Universities Services Centre, Chinese University of Hong Kong; member, editorial board, China Information (Holland), Bulletin of Concerned Asian Scholars (US), and Chinese Sociology and Anthropology (US); editor/associate editor, The Australian Journal of Chinese Affairs.

Mr P Ulrich, consultant, International Board for Soil Research and Management (IBSRAM), Bangkok; technical adviser, Mag-Uumad Foundation, Cebu City.

Dr N Wace, member, Gough Island Wildlife Reserve Advisory Committee, Tristan da Cunha Administration.

Professor R G Ward, member, Council, University of Papua New Guinea, Université Française du Pacifique, National University of Samoa; member, Review Committee, Research Institute for Asia and the Pacific, University of Sydney; chair, Joint Academies China Exchange Committee; member, Academy of Social Sciences International Relations Committee; chair, Pacific Science Association Statutes and Structures Committee; corresponding editor, Mappe Monde.

Professor P Warr, assisted Australian Centre for International Agricultural Research (ACIAR); undertaking a study for Asian Development Bank on impact of economic reform in Laos on Lao agriculture.

Dr K Wells, member, Korean Language and Cultural Studies Workshop, sponsored by Australia-Korea Foundation and NILS in conjunction with Language Expo, Sydney.

Dr G Wijeyewardene, president, Australia-Burma Society; joint editor, Thai-Yunnan Project Newsletter with University of Western Australia.

Dr S Woodman, consultant, Industry Commission Inquiry into Defence Procurement, Defence Studies Program, Deakin University.

Yang Yongzheng, consultant, ESCAP on the benefits and challenges facing Asia-Pacific Agricultural Exporting countries.

Dr Yiping Huang, assistance to OECD; China's grain issues with Dr C Findlay and A Watson, University of Adelaide and research officers, Ministry of Agriculture; China's agricultural policies with Fang Cai, Chinese Academy of Social Science; labour market and income distribution in East Asia with Dr Xin Meng, Public Policy Program, ANU.

Research School of Physical Sciences and Engineering

Applied Mathematics

D T Atkins, committee member, ACT Branch, Royal Chemical Institute, RACI.

V S J Craig, newsletter editor and committee member, ACT, RACI.

Professor B W Ninham, initiator and organiser of the National Science Teachers Summer School ANU.

Dr A M Stewart, member, Program Committee, International Conference on Magnetism to be held in Melbourne in 1997.
Cooperation with government and other public institutions

Atomic and Molecular Physics Laboratory


Professor J H Carver, member, Subcommittee for Space Research of the National Committee for Solar-Terrestrial and Space Physics (Australian Academy of Science); chair, United Nations Scientific and Technical Subcommittee on the Peaceful Uses of Outer Space; Director of ANUTECH; Director of AUSPACE; National representative to COSPAR.

Professor R W Crompton, president, Australian Institute of Physics; member, Board and Executive of the Australian Journals of Scientific Research; member, National Committee for Physics (Australian Academy of Science); member, Board of the Federation of Australian Scientific and Technological Societies; member, Advisory Board of the Australian Science Olympiads; vice-president, Australian Fulbright Association; member, Editorial Advisory Board of Physics of Atoms and Molecules.

Dr M T Elford, member, Editorial Board, Australian Journal of Physics.

Dr B R Lewis, associate editor, Journal of Quantitative Spectroscopy and Radiative Transfer; member, International Advisory Board for the International Conferences on Vacuum Ultraviolet Radiation Physics.

Professor E Weigold, secretary (Physical Sciences) and Member of Council and Executive Committee, Australian Academy of Science; chair, editorial board, Australian Journal of Physics; Associate Director, Electronic Structure of Materials Centre, Flinders University of South Australia; member, National Committee for Spectroscopy; member, International Scientific Committee, International Symposium on (e,e2e) Double Photoionisation and Related Topics, Canada, 1995; member, Scientific Committee, Euroconferences on Coincident Studies of Electron and Photon Impact Ionisation; member, 1995 Australia Prize Selection Committee; member, Board of the Australian Photonics CRC; co-chair, USA-Australia Advanced Workshop on Atomic and Molecular Physics, Australian National University, 1995; member, Review Committee of the Centre for Atomic, Molecular and Surface Physics, University of Western Australia and Murdoch University; member, Consultative Committee of the Australian Academies; member, Australian Academy of Science Forum on Industry and Science.

Dr L A Woolf, chair, University Cooperative Credit Society Ltd; deputy chair, ACT Radiation Council.

Electronic Materials Engineering

Dr A Callka, member, Editorial Board of International Journal on Mechano-Chemistry; member, International Steering Committee, International Symposium on Metastable, Mechanically Aligned and Nanocrystalline Materials.


Professor N H Fletcher, chair, Australian Academy of Science Primary-school Science Project; chair, Antarctic Science Advisory Committee; visitor, CRC on Molecular Engineering and CRC on Southern Hemisphere Meteorology; editor-in-chief, Acoustics Australia; member, Editorial Advisory Board, Acustica and Applied Acoustics; member, Program Advisory Committee, ANSTO, Application of Nuclear Science.

Dr C Jagadish, chair, IEEE Australian Chapter of Electron Devices and Lasers & Electro-Optics Societies; member, Professional Activities, IEEE ACT Section Executive Committee; represented IEEE ACT section in the Region 10 Meeting of IEEE held in Tokyo, Japan, April 1994.

Dr M C Ridgway, member, Local Organising Committee, 9th International Conference on Ion Beam Modification of Materials, 5–10 February 1995.

Dr M C Ridgway, member, Local Organising Committee, 9th International Conference on Ion

Professor J S Williams, member, editorial board, *Vacuum* TAIP and *Radiation Effects and Defects in Solids*; International Advisory Committee of the following international conferences: Ion Beam Analysis; Ion Implantation Techniques; IUMRS meeting, Taiwan; interim president of Australian Materials Research Society; member, ARC Large Grant Physics Specialist Panel; member, Program Advisory Committee, ANSTO, Application of Nuclear Science; member, Review Committee of Melbourne University, MicroAnalytical Research Centre; member, Local Organising Committee, 9th International Conference on Ion Beam Modification of Materials, 5–10 February 1995.

**Laser Physics Centre**

Dr H Bachor, National Accreditation Panel Member, Australian Institute of Physics; Australasian Representative on Commission C17, International Union of Physics and Applied Physics.

Dr K Baldwin, president, Australian Optical Society; member, editorial board, *Journal of the European Optical Society*; member, Science Policy Committee, Australian Institute of Physics; member, ACT Branch Committee, Australian Institute of Physics; member, Australasian Council on Quantum Electronics; member, the National Committee for Physics, Australian Academy of Science; vice-president, Federation of Australian Scientific and Technological Societies; chair and organiser, Atom Optics Session of the 1994 AIP Congress in Brisbane; member, General Organising Committee for the International Quantum Electronics Conference ’96; member, Australian Conference on Optics, Lasers and Spectroscopy Liaison Committee; consultant, Coherent Scientific Pty Ltd on Pulsed Laser Systems and Applications.

Professor L T Chadderton, founding editor, the *International Journal of Radiation Effects and Defects in Solids* (formerly *Radiation Effects*); member, editorial advisory board of the following international journals: *Journal of the Physics and Chemistry of Solids; Nuclear Tracks and Radiation Measurement; International Materials Science Forum Thin Films*; member, Steering Committee, Bilateral Science & Technology Agreement, Mexico and the Federal Government of Australia; member, Committee for Solar Photovoltaic Cell Development, DITAC; member, United Nations Committee on Photovoltaic Applications in less-developed Countries, UN Centre for Science and Technology for Development; Co-author, UN São Paulo Declaration of 1991; member, International Committee, Biennial conference series on Radiation Effects in Insulators; member, International Committee, Biennial conference series on Ion Beam Analysis; member, International Committee, Biennial conference series on Particle Tracks in Solids; Elena A de Moshinsky Visiting Professor of Physics, Autonomous National University of Mexico (UNAM) DF, Mexico; Visiting Professor of Physics, Hahn-Meitner Institute, Berlin; Visiting Professor of Physics, NEHU University, Shillong, India; 'Jawaharial Nehru' Distinguished Visiting Professor of Physics, University of Hyderabad; lecturer, Physics, High Schools and Colleges, ACT schools district.

Professor B Luther-Davies, member, Technical Committee for Optical Society of America, Quantum Electronics and Laser Science Conference, 1995; member, Technical Committee for Optical Society of America, Nonlinear Guided Wave Phenomena 1995; consultant, Australian Survey and Land Information Group, Orroral Valley Laser Ranging System; consultant, Electro-optic Systems Pty Ltd on Eye-safe Lasers and Laser Ranging.

Dr N Manson, member, International Committee of the International Conference on Dynamic Processes in Excited States of Solids, chair 1995; member, International Committee for the International Conference on Luminescence.

Dr M Samoc, member, editorial board, *Photonic Science News* published by Gordon and Breach.

**Nuclear Physics**

Professor G D Dracoulis, member, the International Advisory Committee for the Conference on Physics with Large Gamma-Ray Detector Arrays held at Berkeley in August; member, the Advisory Committee for the ‘International Workshop on Physics with Recoil Separators and Detector Arrays’ at New Delhi; Nuclear Physics Theme Organiser for the AIP Congress held in Brisbane in July 1994; co-chair of the 15th AINSE Nuclear and Particle Physics Conference held as part of the AIP Congress in...
Cooperation with government and other public institutions

Brisbane; chair, Nuclear and Particle Physics Group of the Australian Institute of Physics; member, Joint UK/ANU panel advising the Nuclear Physics Committee of the SERC (now EPSRC) under the provisions of the ANU-EPSRC Agreement.

Mr J C Mein, Presenter on Public Speaking at the CRA National Science Summer School in January.

Professor J O Newton, member, International Advisory Committee for the International Nuclear Physics Conference 1995, to be held in Beijing.

Professor T R Ophel, member, Council of Australian Institute of Nuclear Science and Engineering and Elected Member of the Executive; Convener, AINSE Accelerator Science Specialist Committee.

Dr A E Stuchbery, member, Committee of the ACT Branch, Australian Institute of Physics; supervisor of students projects within the CSIRO Research Students Scheme.

Dr S R Taylor, member, Bureau of the International Lithosphere Project, a joint operation of the International Unions of Geodesy and Geophysics (IUGG), and Geological Sciences (IUGS); associate editor Geochimica et Cosmochimica Acta; associate editor Meteoritics.

Dr D C Weisser, chair, Steering Committee for the 7th International Conference on Heavy Ion Accelerator Technology, to be held in Canberra in 1995.

Optical Sciences Centre

Dr Yu Kivshar, member, Organising Committee, 3rd Workshop on Guided Wave Optics, held at the ANU in June; member, Organising Committee of the European Science Foundation Study Centre ‘Nonlinear Optical Guided Waves, held in Edinburgh, Scotland in August; official opponent, PhD dissertation at the Chalmers University of Technology, Sweden in November.

Dr J D Love, member, Steering Committee, 19th Australian Conference on Optical Fibre Technology, held in Melbourne in December; vice-chair, Steering Committee of the 10th International Conference on Integrated Optics and Optical Fibre Communication, to be held in Hong Kong in June 1995; Director, Siemens Science School, held at ANU in September; Director, Photonics Summer School, Australian Photonics Cooperative Research Centre, held in Melbourne in December; convener, First National Science School for Secondary Teachers, held at ANU in January; lecturer, Department of Electrical Engineering, University of Sydney.

Plasma Research Laboratory

Dr R W Boswell, member, Committee on the ICRP Conference, Japan; member, American Vacuum Society, Plasma Physics Division; chair, Eighth Gaseous Electronics Meeting, Canberra; member, editorial board, UK Institute of Physics journal Plasma Sources Science & Technology.

Professor R L Dewar, member, ACT Branch Committee, Australian Institute of Physics; member, Executive Committee, ANU branch, NTEU-Academic Section; member, Program Committee for the 1995 AINSE Plasma Science and Technology Conference; ANU Branch, NTEU-Academic Section and member, Executive Committee; member, Selby Fellowship Selection Committee, Academy of Science.

Dr H J Gardner, secretary, AINSE Plasma Science and Technology Conference and Elizabeth and Frederick White Workshop on Fundamental Problems in Magnetically Confined Plasmas; secretary, Computational Techniques and Applications Conference, CTAC93.

Professor S M Hamberger, member, Scientific Committee, International Conferences on Plasma Physics; member, AINSE Plasma Science and Technology Conference and Elizabeth and Frederick White Workshop on Fundamental Problems in Magnetically Confined Plasmas.

Dr M Persson, Honorary Research Associate, Chalmers University of Technology, Gothenburg, Sweden.

Theoretical Physics

Dr C J Burden, member, Local Organizing Committee, Lattice 95 Conference, Melbourne 1995.

Professor W A Coppel, member, Advisory Board, Dynamics Reported.


Dr A J Davies, casual science correspondent, JJJ National ABC radio network.

Professor R L Dewar, member, ACT Branch Committee, Australian Institute of Physics; member, Executive Committee, ANU Branch NTEU-Academic Section; member, Program Committee, 1995 AINSE Plasma Science and Technology Conference; member, Selby Fellowship Selection Committee of the Academy of Science.

Dr K Kumar, member, editorial board, Transport Theory and Statistical Mechanics.

Dr M Persson, Honorary Research Associate of Chalmers University of Technology, Gothenburg, Sweden.

Dr B A Robson, member, International Advisory Committee, 5th International Conference on Nucleus-Nucleus Collisions, Taormina, Italy 1994; member, Organising Committee, 15th AINSE Nuclear and Particle Physics Conference, Brisbane 1994.

Research School of Social Sciences

Australian Dictionary of Biography

Dr C Cunneen, member, Editorial Advisory Committee, Guide to collections of manuscripts relating to Australia.

Ms S Edgar, member, Advisory Board of the Writers’ Centre, University of Canberra.

Professor J D Ritchie, lecturer, Joint Services Staff College; member, advisory committee, Australian National Dictionary Centre; member, Australian Universities Advisory Committee to the Encyclopaedia Britannica; committee-member, Friends of the National Library of Australia.

Centre for Economic Policy Research

Dr B Chapman, consultant to the Prime Minister on labour market issues; advice to Federal Canadian Government, to Federal Department of Advanced Education, Ottowa, to Government of New Brunswick, Canada, and to the Senate, McMaster University, on income contingent loans, and Australia’s experience with HECS; member, advisory committee, National Centre for Social and Economic Modelling, University of Canberra; chair, committee of review, Western Australian Labour Market Research Centre; member, committee of review, Youth Studies Centre, University of Tasmania; committee member, Economic Society of Australia ACT Branch.

Centre for Immigration and Multicultural Studies

Dr J Jupp, executive director, Academy of the Social Sciences in Australia; member, ACT Multicultural Advisory Council; chair, ACT Reference Group of the Bureau of Immigration and Population Research; board member, Research Committee on Politics and Ethnicity of the International Political Science Association; international member, Refugee Studies Centre, York University, Canada; member, Canberra Regional Committee on Migration, Planning and Settlement, Department of Immigration and Ethnic Affairs; member, Steering Committee and Agenda Committee for the 1995 Global Cultural Diversity Conference; member, National Scholarly Communications Forum.

Dr B York, Oral history interviewer, National Library of Australia; consultant, The Malta Year Book.

Demography

Dr G Carmichael, member, Council of the Australian Population Association (APA); Program Organiser, 1994 APA Conference; convener, APA’s W D Borrie Essay Prize Competition.
Dr A Gray, completed assistance to Aboriginal and Torres Strait Islander Commission on a study of Aboriginal mortality levels.


Ms C McMurray, collaboration with National Statistical Office of Papua New Guinea on socio-economic data collection and management; collaboration with Ministry of Health and Environment, Republic of the Marshall Islands, on fertility and family planning.

Dr M Prazak, Research Associate, Population Studies and Research Institute, University of Nairobi, Kenya.

Dr C Young, member, ACT Electoral Commission; member, ACT Reference Group for Bureau of Immigration and Population Research; coordinator, Population strand of RSSS Reshaping Australian Institutions Project, including liaison with other strands, particularly the Gender strand; major role in organisation of three sessions regarding the Reshaping Project for 1994 Australian Population Association Conference; assessor, research proposals for NHMRC and Australian Research Council; made submission, provided other documents and research references and gave evidence at public hearings of the Inquiry into Australia's Population Carrying Capacity, conducted by the House of Representatives Standing Committee for Long Term Strategies; participant, discussions of Professor Jonathan Stone's population committee, and participant, Symposium on Australia's Population at Academy of Science in April.

Dr D Anderson, chair, Committee for the Advancement of University Teaching; chair, Australian College of Education research and projects committee; planner and speaker at national conference on 'Choice, Market Theory and Schooling'; co-author of reports (for Department of Employment, Education and Training) on The Impact of the Discipline Review of Engineering (the Williams Report), The Impact of the 1990 Review of Careers Advisory Services (the Kagan Report), and Recent Developments in Australian Education (a report commissioned for a UNESCO conference).

Professor G Brennan, executive member, International Seminar in Public Economics.


Professor P Pettit, appointed, July, to the Australian Health Ethics Committee for 1994–97; chair, organising committee for the philosophy of social science section, 8th Congress for Logic, Methodology and the Philosophy of Science, Florence, August 1995; member, review committee for Philosophy Department, University of Wollongong; adjunct professor, Monash University; co-editor (with Dr A Hamlin) of Blackwells' Economics and Philosophy series.

Economic History

Dr J Edwards, adviser to Australian Member of the APEC Eminent Persons Group, The Hon N K Wran; adviser to Australian Members of the APEC Pacific Business Forum, Mr P Brass and Mrs I Roche; adviser to the chair and managing director, Macquarie Bank.

Dr R Grove, founding editorship, Environment and History, member, Smithsonian Museum (New History Museum); New Exhibits and Planning Committee, Smithsonian Museum, Washington DC; External member, Cambridge University Inter-disciplinary Environment Committee; supervision of PhDs at University of California, Berkeley, and at University of Cambridge, UK.

Ms J Smith, (PhD student), consultant, Parliamentary Library Legislative Research Service, May–June; executive member, ACT and Southern Region Conservation Council.
Professor G D Snooks, joint editor, Australian Economic History Review; joint general editor, the Macmillan Economic History of Southeast Asia; consulting editor, Cambridge Economic History of Australia; consultant to the Australian Academy of Science on its Environmental Science Project for Schools; executive member, Economic History Society of Australia and New Zealand; member, Board of Advisers, History of Global Change Project (USA).

Economics

Dr S Dowrick, consultant, Industry Commission, Bureau of Transport and Communications, Department of Housing and Regional Development, Queensland Bureau of Mineral Resources.

Dr S Grant, consultant, World Bank and the Soros Foundation, as visiting Western expert to New Economic School, Moscow.

Professor R G Gregory, board member, Reserve Bank of Australia, Australian Institute of Family Studies; consultant, Aged Care Review, Department of Human Services and Health; consultant, Chinese Government, lessons from the Australian welfare system for the reform of Chinese State enterprises.

Professor F H Gruen, chair, Economic Priorities Review Committee, ACT Government, Bureau of Tourism Research.


Dr D Mitchell, consultant, Economic Planning and Advisory Council; advice and seminars, Department of Social Security.

Professor A R Pagan, consultant, Reserve Bank of New Zealand, Access Economics, Commonwealth Treasury; member, program committee, World Econometric Congress, Tokyo, 1995.

Professor J D Pitchford, lectures, Economic and Fiscal Analysis Branch, Department of Finance; chair, review committee, Economics Department, University of Queensland.

History

Professor P Bourke, president, Academy of the Social Sciences in Australia; president, Australian Historical Association; member, steering committee, Australian Research Council Project on Research Funding Bases; member, steering committee, Australian Research Council Project on Publication Indicators; member, management committee, ARC Project on Indicators for Institute of Advanced Studies review; member, Review Committee, Faculty of Arts, Adelaide University; reviewed History Department at Australian Defence Forces Academy (ADFA).

Professor K S Inglis, member, Conseil Scientifique, Centre de Recherche de l'Historial de la Grande Guerre, Peronne; chair, editorial advisory board to official history of Australia's involvement in southeast Asian conflicts 1948–1975.

Mr G Briscoe, member, Fred Hollows Foundation.

Ms E Kwan, invited panel member, Ideas for Australia forum, Sydney, 14 February.

Dr K Massam, archives advisory board, Catholic Archdiocese of Perth.

Professor H Nelson, consultant, new course in history, James Cook University, Townsville; lecturer, ANUTECH course, Department of Defence; guest lecturer, James Cook University, Townsville.

Dr G Reekie, manuscript reader, Cambridge University Press; ARC small grant assessor; ABC Radio interview.

Professor F B Smith, associate, official history unit, Australia in the Vietnam War, Australian War Memorial; committee, Australian Society of the History of Medicine.

Humanities Research Centre

Professor G Clarke, council member, The Australian Archaeological Institute at Athens; member, National Committee of Australian Foundation for Study in Italy; member of council, Australian Academy of the Humanities, and treasurer and member of Academy's council, publication committee, travel scholarships
Cooperation with government and other public institutions

committee, joint academies' consultative committee, and joint academies' library committee; member, selection committee, Harold White Library Fellowships, National Library of Australia; member, selection committees, Australian-American Education Foundation, Exchange Schemes; member, Advisory Board of Mediterranean Archaeology (Australian and New Zealand Journal for Archaeology in the Mediterranean Basin).

Professor I McCalman, representative of the Academy of Social Sciences in Australia on the National Library of Australia's selection committee for the Harold White Fellowships; member, programs' committee and postgraduate advisory committee of the Centre for Australian Cultural Studies; president of the Australasian and Pacific Society for Eighteenth-Century Studies; manuscript reader for Cambridge University Press and Oxford University Press; reader and coordinator of the committee appointed by the Australian Historical Association to determine the Hancock Prize for the best first book by an Australian historian; member, editorial advisory board of Edinburgh University Press 'Studies in European Romanticism' series.

Law

Professor J B Braithwaite, council member, Australian Consumers' Association; part-time commissioner, Trade Practices Commission; consultant, Australian Law Reform Commission; consultant, National Road Transport Commission; consultant, OECD; chair, NSW Police Research Advisory Council; member, advisory committee, Institute of Criminology, University of Sydney; board member, Research Committee on Crime and Social Control, International Sociological Association; vice-president, Australian and New Zealand Society of Criminology; council member, International Society for Criminology.

Professor P D Finn, member, advisory board, Centre for Comparative Constitutional Studies, University of Melbourne; consultant, chair selection committees, Law Faculty, University of Melbourne; external examiner, Law School, University of Hong Kong; editor, Essay Series, Law Book Company; public officer and councillor, Constitutional Centenary Foundation; consultant, Unidroit, Australian National Audit Office; invited submissions to some number of Commonwealth Parliamentary Committees.

Philosophy

Professor R E Goodin, editor, book series on 'Theories of Institutional Design', Cambridge University Press; member (Australian Representative), executive committee, Society for the Advancement of Socio-Economics; member, founding board, Committee on the Political Economy of the Good Society; member, advisory board, Centre for Philosophy and the Environment, University of Manchester, UK; program chair and ex officio member, executive committee, International Political Science Association.

Politics

Professor B Hindess, member, review panels, Faculty of Social Sciences, University of Technology, Sydney and School of Behavioural Sciences, Macquarie University.

Dr T Hunter, member, National Foundation of Australian Women; Women's Electoral Lobby ACT; Australian Association of Adult Education; Health Consumer's Association; ethics committee, Australian Political Science Association.

Professor T H Rigby, member, international relations committee of the Academy of Social Sciences in Australia; member, General Synod International Affairs Commission, Anglican Church of Australia.

Sociology

Dr J Baxter, member of executive, The Australian Sociological Association; invited lecture on feminism and gender roles at Canberra Boys Grammar School, May.

Dr M D R Evans, board member, International Sociological Association's Research Committee on Social Stratification and Mobility.

Dr T Makkai, consultant to the Commonwealth Department of Human Services and Health: Drug use patterns in Australia and the US; Tobacco research in Australia since 1985 (with I McAllister); and adviser to Steering Committee

Professor J Marceau, reviewer, Australian Research Council Fellowship Scheme, commissioned by ARC/DEET; assistance with preparation of a research proposal on women entrepreneurs in Australia provided to the Business and Professional Women’s Association; member, executive committee, Committee for Economic Development Australia; member, board of the Centre for Leadership Studies, University of Western Sydney, Macarthur; member, Small (ARC) Grants Committee, University of New England; informal adviser to Bureau of Industry Economics on benchmarks in science; informal adviser to Department of Industry, Science and Technology on a paper on innovation.

Social Sciences Data Archives

Dr R G Jones, treasurer, Australian Consortium for Social and Political Research Incorporated (ACSPRI); regional secretary, International Association for Social Science Information Service and Technology (IASSIST); council member, International Federation of Data Organisations (IFDO); member, Australian Council of Archives Electronic Records Committee; consultant, Australian Construction Services on Aboriginal and Torres Strait Islander housing needs assessment project, Stage 2; consultant, Department of Employment, Education and Training on Year 12 completion rates database; Department of Industrial Relations for statistical advice on the 1994 Workplace Bargaining Survey and 1995 Australian Workplace Industrial Relations Survey.

Mr E V Merrill, secretary, Australian Consortium for Social and Political Research Incorporated; member, executive committee of the Australian Association for Social Research.

Urban Research Program/
Administration, Compliance and
Governability Program.

Dr V Braithwaite, chair, Australian Institute of Criminology’s Ethics Committee, and member, Aged Care Advisory Council of the ACT.

Dr P Grabosky, chair, Scientific Committee for the 8th International Symposium on Victimization; member, Advisory Committee of the Sydney University Institute of Criminology.

Dr D Lamberton, Consultant to Bureau of Transport and Communications Economics and Australia Post; member, Advisory Committees to School of Information Studies, University of Technology, Sydney, and the Communications Centre, Queensland University of Technology; Board member, International Telecommunications Society and the Pacific Science Association; chair, Pacific Science Sub-committee, Consultative Committee of the Australian Academies; Conference Chair, Tenth Biennial International Telecommunications Society Conference, Sydney, July, and organiser, International Workshop on Telecommunications and Information Activities, Canberra, July.

Professor M Neutze, member, Australian Statistics Advisory Council; member, Committee to Review the Output of the 1991 Census; member, Steering Committee of the Australian and Regional Development Review; chair of the Board of Directors of the Australia Institute; Trustee, Bogong Fund of the Canberra and South East Region Environment Centre and the Conservation Council of the South East Region and Canberra.

Professor P Self, member of academic group to advise on the review of the Public Service Act.

Faculty of Arts

Department of Art History

‘Best of the Net’ award made to Art Serve (http://rubens.anu.edu.au) ‘for contributions which have significantly enhanced the Internet’.

Professor M Greenhalgh, joint academic director (together with Emeritus Professor C Bryant) of
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the Australian University Electronic Clearing House Scheme, promoted by CAUT (Committee for the Advancement of University Teaching).

**Department of Classics**

Mr R W Barnes, member, Religious Studies accrediting panel, ACT Board of Senior School Studies; member, School of Religion and Philosophy, (ACT Division) Advisory Committee, Australian Catholic University.

Dr D H Kelly, member, History accrediting panel, ACT Board of Senior School Studies.

Dr C M Mayrhofer, member, Latin accrediting panel, ACT Board of Senior School Studies.

Professor B M Rawson, member, Australian Research Council; chair, ARC Research Training and Careers Committee; member, Women’s Employment, Education and Training Advisory Group.

**Department of History**

Dr D Blazer, member, History panel, ACT Board of Senior Secondary Studies; co-editor, *Australian Historical Association Bulletin* and member, AHA executive (to September).

Dr F R Bongiorno, lecturer, University of the Third Age, Canberra.

Dr G L Bowen, treasurer, Australian and New Zealand American Studies Association.

Dr N P Brown, member, Australian Studies Curriculum Development Committee, ACT Board of Senior Secondary Studies; historical consultant, ABC Radio National Social History Unit on the proposed ‘National History Day’; radio broadcasts, including ABC Radio/Open Learning Australian Studies series ‘Australia since the War’; co-editor, *Australian Historical Association Bulletin* and member, AHA executive (until September).

Dr D B S Craig, recipient, travelling fellowship, Australian Academy of the Humanities; ANU representative, Academic Committee, Australian Centre for American Studies.

Mr I R Hancock, honorary Harold White Fellow, National Library of Australia (first half of 1994); member, Advisory Board, Biographical Dictionary of the Australian Senate; newspaper articles; historical consultant, ABC TV and radio series ‘The Liberals’; radio broadcasts and TV appearances.

Dr A M I Hyslop, treasurer, Australian Historical Association; representative, editorial board, *Australian Historical Studies*; member, Commonwealth Working Party, *Australian Dictionary of Biography*; historical consultant for documentary film *Living Sydney* produced for the National Film and Sound Archive.

Dr J W Knott, historical consultant, Australian Archives exhibition ‘Making Ends Meet; Child Endowment for Australian Families’, Old Parliament House, Canberra; historical consultant for documentary film *Living Sydney*, produced for National Film and Sound Archives; member, editorial board *The Push: A Journal of Early Australian Social History*; press, television and radio interviews on his research into the history of road safety.


Professor I McBryde, member, Technical and Scientific Advisory Committee for the Willandra Lakes World Heritage Area; member, Aboriginal Cultural Heritage Advisory Committee of NSW; member, Reference Group for Culture and Heritage for the Commonwealth State of the Environment Report; member, Australia ICOMOS Sub-Committee on World Heritage; participant at forum on future management of Mt William axe quarry site involving local residents, farmers, State heritage managers, archaeologists, local Aboriginal cooperatives and local government; invited to attend World Heritage Centre, ICOMOS meeting in Madrid in November on ‘Itinerarios como patrimonio’ convened by the Spanish Ministry for Culture and although unable to attend presented a discussion paper on trade routes as cultural heritage and their significance and management; attended meeting and symposium of the Australian Academy of the Humanities in Sydney.
in November; member, editorial board, *Aboriginal History* and editor of forthcoming volume 20.

Dr A C Milner, member, Social Sciences and Humanities panel, Australian Research Council; member, Research Committee, Australian Institute of International Affairs; member, editorial boards of Cambridge University Press’ Asia-Pacific Series, *Review of Indonesian and Malaysian Affairs* (University of Sydney), Southeast Asia Monograph Series of the Asian Studies Association of Australia, and *Australian Journal of International Affairs*; participant in Department of Foreign Affairs and Trade academic seminar on business and security relations between Australia and Asia; speaker on Australian-Asian relations at seminar, Advanced Executive Programme, Public Service Commission, and at seminar organised by Aston James International; discussion chair, ABC radio series ‘Orientations: Defining Australia in Asia’; consultant, Telstra seminar on business ethics in Asia; participant in two joint meetings of St James Ethics Centre and The Asia-Australia Institute in Sydney on the ethical implications of Australia’s business engagement with Asia; member, IDP committee which published a report, ‘Promoting Australian Studies Abroad: Strategies and Guidelines’, for the Department of Education, Employment and Training; gave briefing on Malaysia in series of national briefings organised by ANU for the Defence Department; presenter and co-writer of report, *Australia Abroad Council annual meeting*; member, advisory committee on new project on Australian-Asian-US relations, Australian Centre for American Studies, University of Sydney.

Dr P Read, public officer, Link Up (NSW) Aboriginal Corporation; his paper ‘Sharing the Country’ was circulated as preliminary reading for the Native Title Tribunal Conference in Perth in October; expert witness in *Joy Williams v NSW Ministry of Aboriginal Affairs*, chair, editorial board, *Aboriginal Australia*.

Dr E J Waters, as project coordinator organised official presentation to ANU Library of Ukrainian Famine Archive, funded by Australian Research Council, ANU Faculties Research Fund and Ukrainian Studies Foundation and supported by Ukrainian community in Australia.

**Department of Philosophy**

Dr Boddington, assessor for the Department of Health; member (appointed as an ethicist), Departmental Ethics Committee, Commonwealth Department of Human Services and Health; member (appointed as a philosopher), working party, Australian Health Ethics Committee (AHEC), National Health and Medical Research Council (NHMRC), Commonwealth Department of Human Services and Health) examining Australian Policy on Organ Donation and Transplantation.

Drs Deutscher and Stoljar, organisers, The Women in Philosophy Conference (2–4 July).

Dr Thielen with Dr Haakonsen (RSSS), organisers, The Australasian Society for the History of Philosophy Conference on Kant and philosophical theories of human nature in the eighteenth century (19–20 August).

The Department, with our sister Department in RSSS, hosted the annual meeting of the Australasian Association of Philosophy (3–8 July).

**Department of Political Science**

Mr D M Adams, tertiary representative, Politics Accreditation Panel of ACT Board of Senior Secondary Studies.


Dr L M Klliott, invited speaker, Department of Foreign Affairs and Trade International Women’s Day lunch, lecturer, Junior Officers Maritime Study Program, Royal Australian Navy, HMAS Creswell.

Dr G Gray, member, ACT Women’s Consultative Council, visit to South Africa sponsored by the Australian International Development Assistance Bureau, to assist Committees set up to develop health reform policies; worked with Maternal and Child Health Committee and had discussions with members of the Finance Committee, Secretary, Reproductive Health Services Ltd.

Dr J Hart, lecturer, Joint Services Staff College.


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Dr M McKinley, lecturer, Joint Services Staff College; Royal Australian Naval Staff College.

Dr J J Pettman, member, Student Assessments Review Tribunal; member, Department of Social Security Appeals Tribunal.

Professor A Saikal, lecturer, Australian Defence Force Academy; Royal Australian Navy Staff College; Command and Staff College, president, Australasian Middle East Studies Association, member, National Advisory Committee for Arabic and Middle Eastern Studies, member, Research Committee of the Australian Institute of International Affairs.


Dr K Tabusa, briefing sessions, Department of Defence; Australian Political Exchange Program, lecturer, Australian Defence Force Academy.

Professor J L Warhurst, member, editorial board, Journal of Commonwealth and Comparative Politics and Policy Organisation and Societies, immediate past president, Association for Canadian Studies in Australia and New Zealand, Council member and ACT Convener, Constitutional Centenary Foundation, member, Australian Catholic Social Justice Council, invited speaker, Australian Police Staff College; NSW Police Academy; Parliamentary Research Service, Department of the Parliamentary Library, Canberra; ACT Public Service Public Policy Course.

Mr J F H Wilson, Submission, Senate Foreign Affairs, Defence and Trade References Committee, lecturer, RAN Staff College.

Dr O Dent, member, Ethics Committee, Commonwealth Department of Community Services and Health; member, ACT Cancer Regulations Advisory Committee, ACT Department of Health; member, ACT Cancer Registry Advisory Committee, ACT Department of Health; member, Medical and Scientific Advisory Committee, ACT Cancer Society; member, Medical Workforce Advisory Committee, Royal Australasian College of Physicians; consultant, Committee of Presidents of Medical Colleges Medical Workforce Advisory Committee; visiting Professor, Faculty of Medicine, University of Sydney.


Dr F Lewins, ACT Member of Student Assistance Review Tribunal.


Dr S Mugford, consultant, Australian Federal Police regarding formative evaluation of the Diversionary Conferencing Project; consultant, Commonwealth Department of Community Service and Health on development of anabolic steroids use indicators in Australia.


Dr L Saha, director (with G Caldwell, Centre for Continuing Education) of Summer School for Secondary School Science Teachers—a Department of Employment, Education and Training Evaluation and Investigations Program; ANU Representative, ACT Education Department Accreditation Committee for the Behavioural Sciences.

Department of Sociology

Ms L Bost, consultant, United Nations Fund for Population Activities regarding assessment of the demand for and supply of training in Population Studies in the Philippines; consultant, United Nations Fund for Population Activities regarding family planning and health needs of women in two counties in Ningxia, China.

Centre for Middle Eastern and Central Asian Studies

Professor A Saikal, lecturer, Australian Defence Force Academy; Royal Australian Navy Staff College; Command and Staff College; speaker, Ditchley Foundation conference, UK; visited and presented papers at Princeton University, USA;
Graduate Society, Kuwait; member, Australian Education delegation to Saudi Arabia and Kuwait; National Advisory Committee on Arabic and Middle Eastern Studies; chaired session at DEET Conference on Education and Training Links with the Republic of Turkey; President, Australasian Middle East Studies Association; member, Research Committee, Australian Institute of International Affairs.

B Bowker, MA scholar, presented papers at RAND, Santa Monica, USA; Wilton Park, UK; University of Jordan.

Faculty of Asian Studies

China and Korea Centre

Mr Gi-Hyun Shin, assisted Chief Press Secretary, President R O Korea during his visit to Australia, the work involved analysing the Australian media’s perception of the President’s visit and his official day-to-day activities and preparing reports to the President; presented jointly with Ms Y Albina, Indonesian teacher at Daramalan College, Korean CAL materials at the Interactive Technology in Korean Language Teaching Session in Korean Language and Korean Studies Seminar in July 1994, this was organised by the National Language and Literacy Institute of Australia as part of the Language Expo for 1994 and was sponsored by the Australia-Korea Foundation.

Ms Tiejun Yang, consultant and translator to the State Government of Tasmania for the promotion of Tasmanian and Australian exports and for the absorption of foreign investment; and to the local government of Tamworth for the visit of a Chinese economic and trade mission with an aim of enhancing bilateral economic cooperation; interpretation service was provided for the Governor General HE Mr Bill Haydon, the Prime Minister Mr Paul Keating, the Deputy Prime Minister Mr Brian Howe, the Foreign Minister Senator Gareth Evans, the Trade Minister Senator Bob MacMullan, the Minister for Primary Industries Senator Bob Collins, the Minister for Industry, Science and Technology Senator Peter Cook, the Minister for Art and Communications Mr Michael Lee, the Minister for Social Security Mr Baldwin, the former Opposition Leader Mr Alexander Downer, the Opposition Leader Mr John Howard and other ministers and senior officials of the Federal Government; interpretation services were also provided for state leaders eg. the State Governors of South Australia and Victoria and the premier of South Australia, etc; adviser to the ACT Social Science Education Advisory Committee for the aim of incorporating an Asia literacy component in local primary and secondary schools.

Japan Centre

Dr A E Backhouse, external assessor, Japan Exchange and Teaching Program, Embassy of Japan; member, ACT Selection Committee, Australia-Japan Business Cooperation Committee School Student Exchange Awards; member, ACT Accreditation Panel for Japanese; member, University of Canberra Course Advisory Committee (Modern Languages); chair, LIFT (Language Inservice for Teachers) Program Advisory Committee; member, External Consultative Committee, Department of Asian Languages and Societies, University of New England; ARC assessor, Asian Languages and Literatures; external examiner, Monash University.

Mrs R Gibbons, consultant to Department of Foreign Affairs and Trade; examination reader, NAATI; coordinator, summer intensive course in Japanese, Centre for Continuing Education.

Ms C Hayes, lectured on Japanese culture in National Briefings Series for Department of Defence.

Mr S Ikeda, visited Japanese universities under grant from Department of Education Employment and Training to evaluate Year-in-Japan Program and to discuss further exchange programs with four more Japanese universities under UMAP Scheme; organiser, Japanese Film Series with Embassy of Japan; judge, secondary school essay contest, Embassy of Japan; examination reader, NAATI; referee, CAUT.

Ms H Moore, coordinator, intermediate course in Japanese, LIFT Program.

Ms K Matsuda, coordinator, elementary course in Japanese, Centre for Continuing Education.

Dr R Tyler, visiting researcher at National Institute for Japanese Literature, Tokyo; presented
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Dr A Kumar, member of Steering Committee, ACT Magnet Schools Program; program designer and coordinator, National Briefings for Department of Defence; external assessor of papers submitted to third International Bali Studies Conference, Universities of Sydney and New South Wales; DEET coordinating group for academic links with Vietnam.

Dr I Proudfoot, member, ACT Board of Senior Secondary Studies.

Southeast Asia Centre

Dr A Diller, National Thai Studies Centre and Thai Program staff cooperated in a wide range of projects: conducted a wide range of public-relations activities, including response to press inquiries; the provision of information and advice to Public Service units, the educational sector and the general public; production and distribution of Thai-related research publications, briefing documents and contributions to country surveys; appeared before the Foreign Affairs Sub-Committee of the Commonwealth Parliament’s Joint Standing Committee on Foreign Affairs, Defence and Trade and prepared a 25-page submission for the Sub-Committee; hosted a cross-institutional Australian Research Council project focusing on development issues in the Central and Upper Mekhong Basin, with Mr E C Chapman, Project Leader, appointed as Visiting Fellow in the Centre during 1994; sponsored and coordinated a major conference, IRailand Update 1994, held in Melbourne, to assist the Australian business community in obtaining up-to-date information on IRailand, with support from the Department of Foreign Affairs and Trade; prepared a report on the nationwide teaching of Thai, under terms of a consultancy for the National Language and Literacy Institute of Australia; prepared a Thai-Australian institutional links data base, under terms of a consultancy for the Department of Employment, Education and Training; set up electronic information-technology links with the newly-established Australian Studies Centre, Kasetsart University, Bangkok; played a leading role in several information-technology conferences and workshops relating to establishing Australian-Thai electronic links; cooperated with New South Wales Department of Education in supporting the first-ever Thai HSC examinations; assisted the Volunteers Abroad organisation in providing resource people for orientations; assisted RAAF College, School of Applied Management, (Sqnldr M Golding) in providing academic support for a Thai discourse analysis project; provided Radio Australia with detailed assessments of Thai-language radio broadcasts.

Dr V Hooker, consultant, Academy of Brunei Studies, Universiti Brunei Darussalam concerning purchase of a collection of Malay manuscripts from Southern Thailand; chair, Humanities and Social Sciences Panel of Research Training and Careers Committee (RTCC), of the Australian Research Council, and member Humanities panel of Large Grants Committee; assessor, DEET National Priority (Reserve) Fund, Asian Studies submissions; consulting editor, Jurnal Persuratan Melayu, Department of Malay Letters, National University of Malaysia; member, International Advisory Board, South East Asia Research, School of Oriental and African Studies, University of London; invited speaker, Australian Institute of International Affairs Indonesia conference, on panel ‘Australia-Indonesia Complementaries and Cultural Dissonances’.

Mr Preecha Juntanamalaga (Thai program), assisted the ACT and New South Wales Departments of Education with their Thai language programs; provided elementary Thai teaching materials and follow-up support to four Thai programs in Queensland and New South Wales; organised video production and other development work associated with externally-funded projects, as above; assisted the Royal Thai Embassy and the local Thai-Lao community of the ACT in various community fund-raising activities; served as representative of the local Thai community on the Ethnic Communities Council of the ACT.

W Mukherhee, ‘Islam and the Patriarchy in West Java, Admonitions to Sundanese Gentlewomen during the 1920s’ at the Workshop on Southeast Asian Women, Centre of Southeast Asian Studies and Monash Asia Institute, Monash University, 29 September.
Dr S Supomo, member, Steering Committee of Teaching Indonesian as a Foreign Language, University of the Northern Territory (a DEET project); member, Reference Group (Committee) of the Australian Consortium of In-Country Training for Indonesian Studies; vice-president, Australia-Indonesia Association, ACT, whose aim is to foster a good relationship between Australia and Indonesia; adviser of the Himpunan Pengajar dan Peneliti Indonesia di Australia (Indonesian Teachers and Research Students Association), whose aim is, among others, to help post-graduate students from Indonesia to 'feel at home' while studying in Canberra.

Mrs Thuan Macintyre conducted short intensive language courses for Department of External Affairs and for AIDAB; Australia Council for the Arts asked her assistance in assessing the works of three Vietnamese authors, who had applied for grants.

**Faculty of Economics and Commerce**

**Department of Commerce**

Mr S Brehaut, member, Membership Services and Education Committee, Australian Society of Certified Practising Accountants; presented a paper titled 'Introduction to Accrual Accounting' for the ACT Government Treasury Training Unit.

Mr R Clarke, consultancies for the Electronic Commerce Office within the Commonwealth Department of Administrative Services, relating to the impact of electronic commerce 1995–2000, and the government's strategy for whole-of-government implementation of electronic commerce; written and verbal submissions to: the ASTEC Working Party on Research Data Networks; the Committee on Regulation of Bulletin Boards administered by the Commonwealth Attorney-General's Department; the Broadband Services Expert Group administered by the Department of Communications and the Arts; a Sub-Committee of the NSW Parliament considering the Privacy Bill 1994; meetings with and support for a delegation of five from the Government of Korea, visiting Australia to study information infrastructure policy.

Mr B Oliver presented two seminars to students in Financial Management, in the Department of Finance, titled 'Evaluating Departmental Performance' and 'Commercialisation in the Public Sector'; presented a seminar to students in Financial Management in the Department of Veterans' Affairs, titled 'Benchmarking'; attended a seminar/workshop, a briefing session for Senior Managers and Decision Makers in the Department of Finance, on 'Trends in Public Sector Financial Management'.

**Department of Economics**

R Albon, prepared review of ACIL’s Smoking: Costs and Benefits for Australia for the Tobacco Institute of Australia; met with Industry Commission inquiry team on 'Private Infrastructure' reference; adviser, Bureau of Transport and Communications Economics on pricing of rail infrastructure; adviser, Australian Federal Police on cost-benefit methodology; submission to Senate Standing Committee on Community Affairs Inquiry, 'Tobacco Industry and the Costs of Tobacco-Related Illness'.

R Falvey, Research Fellow, Centre for Research in Economic Development and International Trade, University of Nottingham, UK.

G T Garvey, reported for Economic Planning Advisory Commission on Corporate Governance and Corporate Time Horizons.

M Harrison, member, ACT Economics Course Accreditation Panel for college level school courses.

F Menezes, consultant, UNDP (United Nations) The Impact of the Uruguay round of GATT Negotiations on the Brazilian Exports; prize winner for best research article, Revista de Econometria, Brazilian Econometric Society.

J Pitchford, chair, Review of Economics Department, University of Queensland; Associate Editor, Journal of Population Economics.

R Tyers, president, ACT Branch, Australian Agricultural Economics Society; won research grants from World Bank and Australian Research Council as principal investigator on "Wage inequality and unemployment in Australia and other developed countries: Developing country trade or domestic technical change?"
N Vousden won ARC Research Grant, on Effects of import Competition on Productivity in Australia and East Asia, (with P Forsyth (UNE) Satish Chand and Sang Myon Oh.

G Wells, member, expert panel supervising econometric model-building project, for New Zealand Treasury; research associate, New Zealand Institute of Economic Research; book review editor, *Economic Record*.

**Department of Economic History**

Dr H M Boot presented training courses to various government departments on economic principles for non-economists.

**Department of Statistics**

Dr Nicholls, consultant to the North East Forest Alliance: Wingham Forest Action group: Comcare; Attorney-General’s Department, Federal Airports Corporation.

Dr O’Neill, consultant for the Federal Office of Road Safety.

Dr Chambers, consultant for ABARE on sample survey design and analysis, CSIRO on fuel temperature profile study, and the Australian Bureau of Statistics, with the Australian Nature Conservation Agency on data collection and analysis of sea bird nest counts; data analyst for vehicle emissions study being carried out by the Federal Office of Road Safety; awarded an ASA/NSF/BLS research fellowship tenable at the Bureau of Labor Statistics, Washington for the period 1 September 1994–31 December 1994.

**Faculty of Engineering and Information Technology**

**Department of Computer Science**

Dr C W Johnson, chair, Standards Australia subcommittee IT/9/22 (Programming Languages and their Environments); member, ACT Information Technology Industry Training Council; member, Computing Discipline Advisory Group Canberra Institute of Technology.

Dr A V Peterson, member, Computing Studies Panel, ACT Board of Senior Secondary Studies.

Professor R B Stanton, Industry Research and Development Board; member, Information Technology Committee; member, Board of ACT School of Engineering, member, working group on High Performance Computing and Communications for International Competitiveness Report to the Prime Minister’s Science and Engineering Council.

**Department of Engineering**

Dr A Blakers, President, ACT Branch and member, national committee, Australian and New Zealand Solar Energy Society; board member, Sustainable Energy Industry Council of Australia.

**Faculty of Law**

Mr P Bailey, appeared before Joint Standing Committee on Foreign Affairs, Defence and Trade on human rights reference; addressed ACT Attorney-General’s public seminar on a bill of rights for the ACT; appeared before Senate Committee on Legal Affairs in relation to Human Rights (Privacy) Bill; negotiated placements for law interns with a number of Commonwealth and ACT Departments and agencies including Attorney-Generals’ Departments and Commonwealth Departments of Administrative Services, the Environment, Foreign Affairs and Trade and Ombudsman’s office.

Mr P Bayne, chair, ACT State Selection Committee, Australian-American Educational Foundation; member, Ethics in Human Experimentation Committee (ANU); external assessor for the Australian Research Council; member, Academic Advisory Board, Ombudsman Committee, American Bar Association; section editor, *Australian Journal of Administrative Law*; editor, administrative law section, *Australian Law Journal*; consultant to Australian Law Reform Commission in relation to its reference on freedom of information; consultant to Victorian Attorney-General’s Law Reform Advisory Council in relation to the reform of the law of judicial review; written submission to the Australian Law Reform Commission in relation to its reference on costs of litigation; written submission to the Commonwealth Administrative Review Council in relation to its reference on the Review of Commonwealth Merits Review Tribunals; submission to the Select Committee on the Privacy and data Protection Bill 1994 of the Legislative Council of NSW; submission to the Commonwealth Minister for Justice in relation to a project concerning the rules of evidence; legal advice to the Public Interest Advocacy Centre (Sydney) and to the Welfare and Legal Rights Centre (ACT); advice to Law and Government group of the Parliamentary Research Group; training seminars or conference presentations for the Faculty of Law (ANU), the Centre for Continuing Education (ANU), Calwell High School, the Commonwealth Retirements Benefits Office, IIR Conferences, and AIC Conferences; joint presenter of program on law for radio station 2CN (Canberra).

Dr J Behrens, consultancy for the Department of the Parliamentary Library, Parliament of Australia to provide a background paper on some current issues in family law, December 1994 continuing; member, organising committee for the Feminist Legal Academics Workshop, Gender in Legal Education Workshop, to be held in Canberra 23–24 February 1995; funded by DEET through a National Priority (Reserve) Fund Grant; interviewed by ABC National for a radio series on environmental disputes ‘Green and Practical: The Reluctant Nation’, broadcast during second half of 1994; guest lecturer, University of Wollongong, Graduate Program in Natural Resources Law, ‘World Heritage: International and National Perspectives’, November 1994; co-presenter, two-day course offered by the Australian Centre for Environmental Law, ‘Environmental Law and Policy: An Introduction for Managers’, Melbourne, February 1994; member, Australian Centre for Environmental Law; member, National Environmental Law Association.

Mr S Bottomley continued to work on a jointly authored text book with Professor R Tomasic, University of Canberra—this will be published in February 1995 as: *Corporations Law in Australia* (with R Tomasic) The Federation Press; board member, Welfare Rights and Legal Centre, an ACT community legal service; member, editorial advisory board, *Australian Journal of Corporate Law* (published by Butterworths via the Centre for National Corporate Law Research at the University of Canberra); refereed article submitted to the *Australian Journal of Public Administration*.


Ms R Creyke, member, ad hoc national Working Party on Elder Abuse, 1993–1994, (*Working Party on the Protection of Frail Older People in the Community*, Department of Human Services and Health, Report No 14, August 1994, 97 pages); part-time member, Social Security Appeals Tribunal; part-time member, Nursing Homes Standards Review Panel; founding member,
Cooperation with government and other public institutions

Australian administrative law teachers; consultant (with Mr J D McMillan) for National Road Transport Commission.

Professor J Davis, legal adviser, Senate Standing Committee for the Scrutiny of Bills; consultant, Office of the Status of Women (within the Department of Prime Minister and Cabinet) on the portability of orders for the protection of victims of domestic violence; consultant, the Attorney-General of the Commonwealth and of New South Wales on a review of joint and several liability for economic loss; appointed by Department of Employment, Education and Training as member of the advisory committee to assist the consultants in the Department’s Project on Gender Issues and the Law Curriculum; member, editorial board, Torts Law Journal; member, Legal Studies Panel, ACT Schools Accreditation and Certification Agency; Director, Centre for Copyright Studies Ltd; consultant, School of Law, Deakin University to review that School’s teaching of the law of contract.

Professor J Disney, Director, Public Law Program, Centre for International and Public Law; member, Australian Government delegations to the 1st, 2nd and 3rd Preparatory Committees for the World Summit on Social Development; member, National Consultative Committee for the World Summit on Social Development; consultant to the Chair, United Nations Global Preparatory Committee for the World Summit on Social Development; member, Australian Government delegation, Asia-Pacific Ministerial Conference on Social Welfare; editor for Department of Social Security of Social Security Policy: Issues and Options; member, Economic Planning Advisory Council; Council Member, Constitutional Centenary Foundation; member, Commonwealth Superannuation Consultative Committee; chair, Task Force on Unemployment, Canberra Business Council.

Mr S Fridman, consultant, Department of Defence Commercial Support Program; consultant, Department of Defence, ANZAC Ships Project; lecturer, Australian Defence Force Academy, Graduate Management Studies Program; subject leader, Law for Practising Managers, Australian Graduate School of Management, University of NSW; member, Selection Panel, Faculty Enrichment Award, Canadian High Commission; participant, Corporations Law Simplification Program.

Mr H Geddes, Acting President, Australian Capital Territory Guardianship and Management of Property Tribunal; gave two lectures on Wills and Estates and Enduring Powers of Attorney at a Retirement Seminar for the Joint House Department organised by the Council on the Ageing (ACT) Inc.


Professor N Cunningham, consultant, Department of Environment, Sports and Territories (Incentive Mechanisms and Biodiversity); consultant, Industry Commission (Occupational Health and Safety Reference); United Nations Economic and Social Council (expert adviser, Crime and Environment); Community Right to Know Project (with Public Interest Advocacy Centre NSW); member, ACT Reference Group on Development of Integrated Environmental Legislation; collaboration with CSIRO in Project ‘Incentives and Biodiversity’.

Professor D Hambly, chair, Parole Board of the ACT; Visiting Professor, Faculty of Law, University of Melbourne; Academic Visitor, Ormond College, University of Melbourne; member, editorial board, Torts Law Journal; member, Criminal Law Consultative Committee of the ACT; member, Selection Committee for Rhodes Scholarships for Australia; member, International Society for Reform of Criminal Law; member, Australian Academy of Forensic Sciences; Director, London House Association of Australia; member, Medical Legal Ethics and Research Panel, National Brain Injury Foundation Inc.

Dr D Kinley, a (1993) submission and oral evidence given to the Human Rights Sub-Committee of the Commonwealth Parliament’s Joint Standing Committee on Foreign Affairs, Defence and Trade, on the Options for Enhanced Parliamentary Scrutiny of Legislation Affecting Human Rights in Australia.
was endorsed by the Committee and constituted one of its recommendations in its Report: *A Review of Australia's Efforts to Promote and Protect Human Rights* (November 1994), paras 3.46–9.

Mr J D McMillan, Vice-President, Australian Institute of Administrative Law Inc; convener, Government Law Interest Group of the Australian Law Teachers Association; member of the Built Environment Reference Group for the first ACT State of the Environment Report; consultant to the Queensland Parliamentary Committee for Electoral and Administrative Review, concerning appeals from administrative decisions; consultant to the National Road Transport Commission, to prepare report on integration of State and Commonwealth systems of administrative law review; referee of articles for *Australian Journal of Public Administration*; co-organiser of a national administrative law teachers conference, Brisbane, 6–7 July 1994

Dr R Moles, Hypertext—an ANU priority development. This project was included in the ANU submission to the external assessors on Teaching Quality in 1993 and in 1994 it was designated an ANU priority development project; currently exploring, with the Attorney General's Department, the possibility of developing hypertext links directly into the SCALE database; Butterworths, the law publishers have extended their previous cooperation with this project by making materials available for wider use. *Presentations of Hypertext.* Discussion and presentations of the system have been given at the following: Flexible Teaching Law Colloquium, Adelaide; IT & Education Conference, Sydney; Flinders Law School; ALTA Advanced Workshop, Brisbane; IT conference, Sydney University; HERDSA conference ANU (plenary). Outside bodies who assisted with student research projects in contract law: The ACT Govt Solicitors Office—Commercial Section—Govt solicitor; The Attorney General’s Department—Scale Project dealing with tenders—Director; Australian Estate Management—Dept of Administrative Services—construction; The Canberra Times—Deputy Editor; A Canberra Horse Club; Ministry of Defence—Submarine Project—business manager/project director Ministry of Defence—Commercial Support Program.

Mr J Passant, Register of Consultants, Australian Tax Office, Adviser on Tax Simplification to the ACTU.

Professor D Pearce, member, Commonwealth Copyright Law Review Committee; member, Copyright Research Centre Board of Directors; member, Executive Committee Australian Institute of Administrative Law; member, ACT Law Society Administrative Law Committee; chair, Board of Inquiry into a Contract entered into between ACT Totalisator Board and VTTAB Ltd; Inquiry Officer, staff disciplinary matter, Civil Aviation Authority; consultant, Senate Legal and Constitutional Committee, reference on drafting of Australian Nuclear Science and Technology Organisation Regulations; opinion, Civil Aviation Authority on Authority's power to delegate certain functions; submission, House of Representatives Legal and Constitutional Affairs Committee reference on Legislative Instruments Bill 1994.

Mr C Rowland, lectured to: various Government departments, retirement planning courses (including the ANU) and community groups on consumer protection as well as the need to make a will, estate planning and the administration of deceased estates (some 350 people reached in this way each year); member, Probate Committee, Law Society of the ACT; member, Law Reform Committee, Law Society of the ACT.

Dr J Seymour, member, Criminal Law Consultative Committee of the ACT and Research Ethics Committee of the Australian Institute of Criminology; member, ACT Children's Court Juvenile Justice Consultative Group.

Mr N Seddon, member, ACT Community Law Reform Committee; member, sub-committee working on reform of domestic violence law; member, Board of the Welfare Rights and Legal Centre Ltd; chair, Board of CARE Credit and Debt Counselling Service Inc; member, ACT Law Society's Law Reform and Law Review Committee; member, board of Softlaw Community Projects Inc; liaised with the AMA concerning the re-drafting of their Code of Ethics to reflect the law relating to the reporting of child abuse; wrote to Professor Alan Fels, chair, Trade Practices Commission, about various 'holes' in the Trade Practices legislative scheme in relation to
government commercial activity; wrote to ACT Law Reform Unit about some anomalies arising from old legislation remaining on the statute books.

Ms P Spender, Assistant Treasurer, Parents on Campus Child Care Centre, ANU; examination of Honours Thesis on Elimination of Minority Shareholdings for University of Melbourne.

Mr P Waight, submission to the Senate Legal and Constitutional Affairs Committee examining the Evidence Bill 1993 (Cth); member, ACT Law Society Committee on Legal Education; member, Legal Workshop Committee of Management.

Ms P Weeks, ACT Convener, Student Assistance Review Tribunal and Chair of the national Conveners Conference 1994; presided over and wrote judgements for 21 cases, and presented a one-day training course for ACT and NSW members of the Tribunal; member, Family Planning ACT Ethics Committee; conducted 5 seminars and workshops for the Family Planning Association on legal issues; gave addresses on industrial law in the Department of the Parliamentary Library, the Department of Industrial Relations, and the Update '94 series, conducted by the Faculty of Law, the Legal Workshop and the Law Society of the ACT; made a submission to the Review of Western Australian Labour Relations Legislation on individual workers' rights and freedom of association; editorial committee, Australian Journal of Labour Law

Professor D Whalan, Legal counsel to advise the Senate Standing Committee on Regulations and Ordinances and ad hoc advice to the Department of the Senate; legal adviser to the ACT Legislative Assembly's Committee on the Scrutiny of Bills and Subordinate Legislation; consultant to the Scrutiny of Acts and Regulations Committee of the Parliament of Victoria; member, Editorial Boards, Australian Dictionary of Biography, Journal of Law and Information Sciences and the ANU Academic Board of The Laws of Australia; Council member, British Institution of Environmental Sciences; member, Australian Federal Police Assessment and Career Development Centre's Assessment Panel; consultant to the Government of the Northern Territory on land law reform; member, Medical Legal Ethics and Research Panel National Brain Injury Foundation.

Faculty of Science

Division of Biochemistry and Molecular Biology

Dr C A Behm, Vice President and Archivist, Australian Society for Parasitology; Specialist Editor, International Journal for Parasitology.

Professor C Bryant, member, editorial boards, Advances in Parasitology, International Journal for Parasitology and Journal of Helminthology.

Dr F L Bygrave, member, Committee (UNESCO) International Cell Research Organisation Panel, on Structure, Function and Regulation.

Dr L Dalgarno, retained by intellectual property attorneys Palombi Hazan as an expert witness in the case: Murex Diagnostics Australia versus Chiron Corporation in the Federal Court of Australia; examined two PhD theses (by Ellen S P Ho, ANU and Lin Bo, Monash University); member, Togaviridae Study Group, International Committee on Taxonomy of Viruses (ICTV).

Dr D A Day, member, Advisory Panel Australian Research Council; Education Program leader, member Management Committee and Executive Committee of the Cooperative Research Centre in Plant Science.

Dr A J Howells, Visiting Research Fellow, CSIRO Division of Entomology.

Dr P A Janssens, Deputy Director and Education Program Leader of the CRC for Biological Control of Vertebrate Pest Populations; Board Member, Educational Program in Reproductive Biology, Monash University.

Dr G D Smith, member, Selection Committee, RG Menzies Scholarship to Harvard University; CMSF Scientific Advisory Committee, Biomolecular Resource Facility Committee.

Dr M K Udvardi, ANU representative, Biology Panel ACT Board of Senior Secondary Studies.

Dr N K Verma, member, ACT branch committee, Australian Society for Microbiology; organised 'Young Speaker's Night' sponsored by the Australian Society for Microbiology; member,
scientific program committee 1995 Annual Scientific Meeting of Australian Society for Microbiology.

Dr R C Weir, chair, Program Committee 1995 Annual Scientific Meeting, Australian Society for Microbiology; member, Vertebrate Biocontrol CRC Honours Scholarships Committee.

Division of Botany and Zoology


Dr M Crisp, member, Flora Editorial Committee, Australian Biological Resources Study, Australian Nature Conservation Authority, Canberra.

Dr P Gullan, Honorary Visiting Fellow and Curator of the Coccoid Collection, Australian National Insect Collection, CSIRO, Canberra.

Dr Kalish, member, Biology Reference Group, Australian Capital Territory State of the Environment Report.

Dr P Olsen, consultant, Australian Nature Conservation Agency on Norfolk Island Owl re-establishment program; consultant, Australian Nature Conservation Agency; and consultant, Vertebrate Pests Committee, Australian Nature Conservation Agency.

Dr R Peakall, consultant, National Parks and Wildlife Service of NSW; consultant to Greening Australia.

Dr M I Whitecross assisted the National Office of Overseas Skills Recognition.

Department of Chemistry

Dr M G Humphrey, member, National Advisory Committee, XVIIth International Conference on Organometallic Chemistry; ACT representative, Inorganic Division Council, Royal Australian Chemical Institute.

Dr M Rasmussen refereed a paper for Aust J Chem and J Amer Chem Soc, and also a grant application for ARGs.

Professor B Selinger, chair, Board of Directors of the National Registration Authority for Agricultural and Veterinary Chemicals; report for the ANZECB ‘Hexachlorobenzene Scheduled Waste—Background and Issues’; ACT Department of the Environment ‘Arsenic contaminated home sites in the ACT’.

Department of Forestry

Professor Bachelard, overseas representative on the committee to review School of Forestry, University of Canterbury, New Zealand, 19–23 September; continued as Member, Maxwell Ralph Jacobs Committee, to consider applications for grants from M R Jacobs fund.

Dr Banks, contributor to the University of Canberra entry, Jerrabomberra National Ideas Competition, National Capital Planning Authority, August. The entry, one of 30 national entries, was awarded second prize; submitted the second report to Greening Australia on the 1991 Dry Sclerophyll Forest Manipulation Trial at Mulloon Creek, Southern Tablelands, NSW; and with Dr Field submitted a report on the Mulloon Creek Project: Regrowth of Dry Sclerophyll Forest, Southern Tableland, NSW; member, Biology Reference Group for 1994, Commissioner of the Environment, ACT Government.

Dr Brack, member, Technology Advisory Committee—Forest Management Information, provided expert assistance to State Forests of NSW on development and use of a State-wide information system to support sustainable management of public forested lands; provided advice on the valuation of public plantations, State Forests of NSW and Auditor-General’s Department of NSW; advised CSIRO, Wildlife and Ecology on mensuration.

Dr Evans lectured at University of Canberra on the conservation of wood.

Dr Field collaborated in joint teaching with University of Canberra in Soil Mapping and Advanced Pedology; taught in a short course in agroforestry at the University of Ballarat; participated in field days, inhouse teaching, student experience placement, and research with Department of Conservation and Land Management (CALM), NSW, and with Landcare; Board Member, Greening Australia
Cooperation with government and other public institutions

(Act); member, organising committee of 'South Coast Farm Forestry'; completed a 2-year term as President, ACT Branch Australian Soil Science Society; member of the Federal Council (ASSS).

Dr Florence presented lectures on Australian forest policy to Australian Pulp and Paper Institute, Monash University, Melbourne; continued his role as National Chair of Commonwealth Forestry Association.

Dr James participated in discussions on research into site preparation for tree establishment with ACT Forests; visited and participated in discussions on management with Queensland Forest Service and West Australian Department of Conservation and Land Management.

Dr Mahendarajah established links with the University of Western Australia, the Victoria University of Technology and the Australian Bureau of Agricultural and Resource Economics (ABARE) through a joint research project with Dr K Jegasothy, Department of Economics, Victoria University of Technology; co-edited a book entitled 'Modelling Changes in Economic and Environmental Systems', with Professor M J McAlen, Department of Economics, University of Western Australia and Dr A J Jakeman, CRES, ANU (to be published by John Wiley & sons in 1995); and participation of Dr U N Bhati and Ms J Gomboso of ABARE as guest lecturer and tutor in the undergraduate course in Natural Resource Economics.

Dr Slee, chair, Research Working Group No 1 (Forest Genetics), Standing Committee of the Ministerial Council for Forestry, Fishing and Aquaculture; organised Departmental participation and contributions to the CSIRO Division of Forestry Genetics Seminar Series held weekly through the year at CSIRO.

Dr Tanton liaised with State Forests of NSW in preparation of environmental and fauna impact statements.

Dr Tidemann, member, Feral Cat Working Group, ACT Parks and Conservation Service; chair, Advisory Committee, Australian Bird and Bat Banding Schemes, Australian Nature Conservation Agency; member, Animal Experimentation Ethics Committee, Australian Nature Conservation Agency.

Dr Trevitt collaborated with staff from the Bureau of Meteorology (Head Office, Melbourne, and Regional Offices, Sydney and Canberra) and with Mr N P Cheney (CSIRO, Forestry) and Dr A N Gill (CSIRO, Plant Industry) on curriculum development and computer-aided learning in fire science and management. He prepared a submission to the NSW parliamentary Select Committee on Bushfires and cooperated with State Forests NSW, NSW Department of Bushfire Services, NSW National Parks and Wildlife Service, Tasmanian Parks and Wildlife Service and the Department of Conservation and Land Management, WA in fire science and management.

Dr Turner participated with State forestry organisations, Commonwealth bodies and the University of Melbourne in preparing a proposal for the establishment of a Collaborative R&D Organisation for Forest Inventory and Planning.

Department of Geography

Dr R Baker worked with staff from the Braidwood office of the NSW Department of Conservation and Land Management and the Braidwood region landcare groups on landcare and Total Catchment Management issues in the Braidwood region; and assisted the Murray-Darling Basin Commission with environmental education material; member, Interim Board of Management, ACT Cultural and Heritage Centre; editorial board member, Aboriginal History; chair, Cultural Geography Study Group, Institute of Australian Geographers; editor, Cultural Geography Study group Newsletter; organiser, public forum on Landcare at Benalla, Victoria; lecturer, Australian Defence Force Academy, the University of Canberra, and the Canberra Organic Growers Association.

Dr M Diesendorf, member, Department of Foreign Affairs & Trade's Advisory Panel on Economic Modelling of Greenhouse Responses; Hon Secretary, Sustainable Energy Industries Council of Australia, Inc; initiated the Ecological Economics Roundtable comprising academics from all three universities in Canberra and public servants.

Dr I Hughes, member, Council of Tertiary Environmental Programs; member, Environmental Studies Panel, Board of Senior Secondary Studies, ACT.
Dr B Lees, chair, Chapter Executive, Australasian Urban and Regional Information Systems Association.


Dr L Sternstein, reviewer, *Journal of the Siam Society; Journal of the Australian Geology and Geophysics* and *Journal of Geology*.

Dr P L Blevin, member of Committee (AVCE) Commission on granites.

Department of Geology

Professor R J Arculus, Cooperative Research with the Solomon Islands Geological Survey; collaborative research with the Australian Geological Survey Organisation; member, Geological Society of Australian Congress (1996) Technical Committee; member, ANZAAS 96 Steering Committee; member, Planning Committee of the International Ocean Drilling Program.

Dr P L Blevin, member of Committee (AVCE) Commission on granites.

Professor K S W Campbell, chair, Schools Geology Project, and Land of Australia Committee, Academy of Science; Australia/China Academy Exchange Committee; ANU/Moscow State University Exchange Committee; DITAC Australia/Russia Scientific Exchange Committee.

Professor B W Chappell with Lachlan Mapping Project, AGSO, Granites Geochemistry Project, Geological Survey of Queensland.

Dr R A Eggleton, Council Member, AIPEA.


Dr M J Rickard, Organising Committee, 13th Australian Geological Society Convention.

Professor W D L Ride, Commissioner, International Commission on Zoological Nomenclature; chair, Editorial Committee, 4th Edn International Code of Zoological Nomenclature; member, Joint Academies Committee on Museums; representative, Australian Academy of Technological Sciences and Engineering and chair, CRA National Science Summer School Council.

Dr B N Opdyke, corresponding member, Scientific Committee on Oceanic Research (SCOR) Working Group 104: Coral Reef Responses To Global Change; The Role of Adaptation.

Department of Mathematics

Dr R A Bryce, ACT representative, Council of the Australian Mathematical Society; Aust Math Soc representative, Australian Mathematical Olympiad Committee; member, Advisory Committee of the Australian Mathematics Trust; member, ASICMI; member, Aust Math Soc Committee on Mathematics Education; member, Problems Committee, Australian Mathematics Competition; member, Problems Committee, Mathematics Challenge for Young Australians.

Dr P J Cossey, Vice-President, Canberra Mathematical Association; associate editor, *Bulletin of the Australian Mathematical Society*; member, Mathematics Course Development Committee, Charles Sturt University; assessor, 2 large ARC proposals; refereed papers for *J Aust MS, Communications in Algebra, Houston J Math*.

Dr A A T Howe, treasurer, Australian Mathematical Society.
Cooperation with government and other public institutions

Dr J E Hutchinson, member, Australian Mathematical Society Council; representative, AMS at the ANU.

Dr R J Loy, referee for Grant Applications: National Science Foundation (USA); National Science and Engineering Council of Canada; NATO International Scientific Exchange Programmes; member, Mathematics Panel, ACT Board of Senior Secondary Studies; member, Categorisation Panel for HSC; member, Feedback Group for CAUT Commissioned Project on Assessing and Examining.

Dr S G Roberts, chair and treasurer, ACT Branch, Division of Applied Mathematics AustMS; secretary, Computational Mathematics Group of ANZIAM; treasurer, ACT Branch of ANZIAM.

Dr N F Smythe, member, Apple University Development Fund Awards Committee.

Dr M A Ward, member, Australian Mathematics Competition Committee.

Department of Physics and Theoretical Physics

Dr Bachor, member, National Accreditation Committee, Australian Institute of Physics and in this capacity was involved in the accreditation of physics courses at the University of Western Sydney, Nepean and Macarthur Campus's, and Newcastle University; Australasian representative on Commission C17 of the International Union of Pure and Applied Physics.

Drs Baxter, Byrne, and Kennett, members, AIP ACT-Branch Education subcommittee.

Dr McClelland, ANU representative, ACT Schools Authority Accreditation Panel for physics courses.

Dr Houwing, member, Committee, ACT Branch, Australian Institute of Physics.

Dr Kennett, member, Project Reference Group, CAUT National Teaching Development Grant awarded to the University of Canberra.

Division of Psychology

Dr D G Byrne: chair, ACT Branch Australian Psychological Society, and member of various national committees of that Society; second president elect, International College of Psychosomatic Medicine and chair, Long Range Planning Committee, International College of Psychosomatic Medicine; chair, Planning Committee for 14th World Congress on Psychosomatic Medicine; adviser to ACT Minister for Health on legislation to register psychologists in the ACT; keynote speaker, 20th European Conference on Psychosomatic Research, Gent, Belgium.


Dr M L Cook; reviewer for ARC, NH&MRC, DEET research grants; member, standing review panel for Child Development; reviewer for Australian Journal of Psychology and Perception; PhD examiner, University of Sydney.

Professor R A M Gregson gave a seminar on 'Categorisation, triadic comparisons and relative similarity' at Psychology Department, University of Melbourne.


Mr B Heubeck, member, Australian Psychological Society Advisory Committee on the ACT Psychologists' Registration Bill (ACT).

Dr P J Oakes, member, editorial board of British Journal of Social Psychology, reviewer, ARC Grant Applications; gave a seminar, 'Life is just too short (Gordon Allport, 1954): Ignorance, carelessness, and the role of social reality in stereotyping', University of Muenster, Germany.
Dr J A Slee, academic coordinator of Graduate Diploma in Scientific Communication, offered jointly by the Faculty of Science and the National Science and Technology Centre.


Mr R Wilkinson, convener, Obsessive-Compulsive Disorder workshop presented by the Division of Psychology and Mental Health Branch (ACT Health Department).

**Centre for Resource and Environmental Studies**

Dr M A McRobbie, member, Prime Minister’s Science and Engineering Council Working Group on High Performance Computing and Communications; participant in national video-conference on Science and Innovation in the Asian-Pacific Region, chaired by the Minister for Industry, Science and Technology; member, Program Committee, 12th International Conference on Automated Deduction; co-chair, 13th International Conference on Automated Deduction; member, Steering Committee, Asian Pacific High Performance Computing Conference; co-chair, Pacific Rim Conference on Artificial Intelligence; member, editorial boards, *Lecture Notes in Artificial Intelligence, Journal of Automated Reasoning, Applied Non-Classical Logic*; chair, Canberra/Nara Sister City Committee; member, ACT Government Advanced Technology Forum; establishment of position of ACT Government Liaison Officer with ANU in information technology.

**Centre for Information Science Research**

Professor M A McRobbie, member, Prime Minister’s Science and Engineering Council Working Group on High Performance Computing and Communications; participant in national video-conference on Science and Innovation in the Asian-Pacific Region, chaired by the Minister for Industry, Science and Technology; member, Program Committee, 12th International Conference on Automated Deduction; co-chair, 13th International Conference on Automated Deduction; member, Steering Committee, Asian Pacific High Performance Computing Conference; co-chair, Pacific Rim Conference on Artificial Intelligence; member, editorial boards, *Lecture Notes in Artificial Intelligence, Journal of Automated Reasoning, Applied Non-Classical Logic*; chair, Canberra/Nara Sister City Committee; member, ACT Government Advanced Technology Forum; establishment of position of ACT Government Liaison Officer with ANU in information technology.

Mr M S Common, Reader, Department of Environmental Economics and Environmental Management, University of York.

Dr H C Coombs, Joint Visiting Fellow, Centre for Resource and Environmental Studies, North Australia Research Unit (May to September).

Ms S Driml, member, Great Barrier Reef Consultative Committee.

Mr S R Dovers, Associate Editor, *Australian Journal of Environmental Management*.

Dr F Ghassemi, secretary, Modelling and Simulation Society of Australia; executive member, Hydrological Society, Canberra.
Cooperation with government and other public institutions

Dr J W Handmer, senior associate, Flood Hazard Research Centre, Middlesex University, London; Australian representative, International Geographical Union (IGU) Working Group on Megacities and Disasters; United Nations World Conference on Natural Disaster Reduction; member, National Flood Warning Working Party, Australian Emergency Management Institute; Advisory Panel, Centre for Disaster Management, University of New England; Australian National Coordination Committee for the International Decade for Natural Disaster Reduction; Flood Planning Committee, Australian Capital Territory.

Mr P M Hancock, fellow, Institute of Mining and Metallurgy; member, Steering Committee for International Conference on Miners, Mining and Mineral Resources Policy; convener, Australasian Institute of Mining and Metallurgy, Canberra Seminar Series; consultant, NSW Department of Mineral Resources.


Dr D B Lindenmayer, member, Greening Australia Advisory Committee; Leadbeater’s Possum Recovery Team, Victorian Department of Conservation of Natural Resources; consultant, Australian Nature Conservation Agency; NSW National Parks and Wildlife Service; Greening Australia; State Forests of NSW.


Professor H A Nix, chair, Advisory Committee, Australian Network for Plant Conservation; Program Advisory Committee, Commonwealth Climate Impact Assessment and Management Program (COMCIAM); Review Team for Environmental Characterization at the International Rice Research Institute (IRRI), Manila, Philippines; director, Water Research Foundation of Australia Ltd; member, ANU Advisory Committee on Forestry Education; Organising Committee, Joint Academies Symposium on Land Use/Land Use Cover; Australian UNESCO Man and the Biosphere Committee; Committee of Management, Edith and Joy London Foundation, ANU; Coordinating Committee, Global Terrestrial Observing System (GTOS); International Technical Advisory Committee, International Benchmark Sites Network for Agrotechnology Transfer (IBSNAT); National Tidal Facility Project Coordinating Committee for the South Pacific Sea Level and Climate Monitoring Project; adviser, National Population Council’s Inquiry into Population Issues and Australia’s Future; UNEP Scientific Advisory Committee Meeting on Terrestrial Ecosystem Monitoring and Assessment (SACTEMA); leader, Australian Delegation, Australia/New Zealand/United Kingdom Tripartite Committee on Biodiversity and Climate Change.

Dr T W Norton, adjunct assistant professor, Department of Earth Sciences, Montana State University, USA; council member, Simulation Society of Australia; scientific adviser, New South Wales National Parks and Wildlife Service (Biodiversity conservation); Tantawangalo Catchment Protection Association; Nature and Society Forum (Biodiversity Conservation); Ontario Ministry of Natural Resources, Canada; Forestry Canada (Ontario Region); Department of the Environment, Sport and Territories; Australian Nature Conservation Agency; convener, Symposium on ‘Ecology, Uncertainty and Policy’, Ecological Society of Australia Conference. Alice Springs, NT, September–
October; International Forest Biodiversity Conference on 'Conserving biological diversity in temperate forest ecosystems—towards sustainable management', Canberra, December; consultant, New South Wales National Parks and Wildlife Service; Department of the Environment, Sport and Territories; Canadian Wildlife Service, Environment Canada, Ottawa; Contributor to the development of Rapid Biodiversity Appraisal techniques for an invited Australian consultancy to the World Bank's Global Environment Facility (WB-GEF); NSW National Parks and Wildlife Service Southern Region Biodiversity Program; CSIRO Division of Wildlife and Ecology, Community Solutions and ANU Project Committee on 'Socio-economics instruments for biodiversity conservation'.

Ms A-M Wilson, member, National Corridors of Green Program (Greening Australia) Advisory Committee.

Humanities Research Centre

Conferences 'Commitments to Representation and Freedom' held in conjunction with Museum of Contemporary Art and the National Gallery of Australia, in Sydney; 'The 4Rs, Writing, Repairing, Re-presenting, Re-creating the Text' held jointly with the Australian Scholarly Editions Centre, Australian Defence Force Academy.

Professor G Clarke, attended the North American Consortium of Directors of Humanities Research Centres at Rutgers University, New Jersey, USA; Council Member, The Australian Archaeological Institute at Athens; member, National Committee, Australian Foundation for Study in Italy; member, Council, Australian Academy of the Humanities, and Treasurer and member of Academy's Council, Publication Committee, Travel Scholarships Committee, Joint Academies' Consultative Committee, Joint Academies' Library Committee; member, Selection Committee, Harold White Library Fellowships, National Library of Australia; member, Selection Committees, Australian-American Education Foundation, Exchange Schemes; member, Advisory Board, Mediterranean Archaeology (Australian and New Zealand Journal for Archaeology in the Mediterranean Basin).

Professor I McCalman, British Academy Visiting Research Professorship, University of Wales, Aberystwyth to work in the archives of the National Library of Wales at Aberystwyth; received grant from Centre for the History of Freedom, Washington University at St Louis to present final draft of paper 'Popular Constitutionalism and Evolution in England and Ireland, 1915–1870' which will become a chapter in the book Revolution and the Meanings of Freedom in the Nineteenth Century, edited by Professor I Woloch, Columbia University and published by Stanford University Press; presented paper 'Prophesying Revolution: Edmund Burke, mad Lord George and Madame La Motte', to the Graduate Seminar on Romanticism, Chicago University; president, Australasian and Pacific...
Cooperation with government and other public institutions

Society for Eighteenth-Century Studies; member, editorial board, *Enlightenment and Dissent*; member, editorial advisory board, Studies in European Romanticism Series, Edinburgh University Press; Academy of Social Sciences in Australia representative on the National Library of Australia’s selection committee for the Harold White Fellowships; member, Programs Committee and Postgraduate Advisory Committee, Centre for Australian Cultural Studies; manuscript reader for both Cambridge University Press and Oxford University Press, UK, as well as for *Journal of Enlightenment and Dissent and Journal of British Studies*; reader and coordinator, committee appointed by Australian Historic Association to determine the Hancock Prize for the best first book by an Australian historian.

**National Centre for Epidemiology and Population Health**

Dr G Bammer, grant assessor, Commonwealth AIDS Research Grants, South Australian Health Commission Research Grants and Western Australian Health Promotion Foundation Grants; presented briefing on Feasibility Research into Controlled Availability of Opioids to South Australian Legislative Council Select Committee on the Control and Illegal Use of Drugs of Dependence, to staff at Australian Bureau of Criminal Intelligence, to staff of the NSW Drug and Alcohol Directorate and Federal Council of the Australian Medical Association and to ACT members, Insurance Council of Australia Limited; reviewer, *Addiction Research, Australian Journal of Public Health, Drug and Alcohol Review*.

Dr D Broom, consultant to the Division of Health Sciences, Curtin University of Technology developing research in women’s health, which involved the presentation of two seminars (one on Contextualising Women’s Health Research, the second on Gender and Drug Use at the Drug Research Centre), two workshops on women’s health research, a public lecture (Gendering Health: Beyond Sex Differences) and individual discussions with members of staff; reviewed manuscripts for three journals: the *Australasian & New Zealand Journal of Sociology, Australian Feminist Studies, Women’s Studies International Forum*, and for an edited collection of readings in preparation; and reviewed research proposals for NH&MRC, PHRDC and ARC; honourary consultant to the Public Interest Advocacy Centre in their project on bereaved relatives and the ACT coronial system.


Ms P Dance, adviser, ACT Workers In Sex Employment for their research on occupational risk factors.

Dr J Deeble, Commissioner, Health Insurance Commission; consultant to the Government of South Africa, on health care financing, supported by the Australian International Development Assistance Bureau.

Mr E T d’Espaignet, Senior Research Fellow, Australian Institute of Health and Welfare; data availability adviser to National Health Goals and Targets Implementation Committees for cardiovascular disease, cancer and mental health; member of Global Strategy Working Party into Sudden Infant Death Syndrome (epidemiology section); presented a paper on *Trends in coronary heart disease* to representatives of divisions of general practice, National Health Goals and Targets community; consultation meeting in Brisbane, February 1994; addressed a meeting of parents at the Sudden Infant Death Association of the ACT, April 1994; presented a paper on Reproducibility of diagnosis of Sudden Infant Death Syndrome in Western Australia and comparability with diagnosis in the United States at SIDS International Conference in Stavenger, Norway, August 1994; presented a paper on A comparison of methods of selection of controls for an epidemiological study of sudden infant death syndrome in Western Australia at SIDS International Conference in Stavenger, Norway, August 1994, co-authored with M L Croft.
Western Australian Research Institute for Child Health, Perth.

Professor R M Douglas, formation of Australian Health and Water Research Consortium with government and industry health and water agencies; editorial adviser, ARI News and Health Transition Review.

Ms P A Ferroni, research adviser, Endometriosis Society of Western Australia.

Dr G Gill, examiner, University of Tasmania medical students, supervising foreign medical students on electives; planning for the assessment of Division of General Practice—Northern Tasmania’s projects in association with the Divisional Project Officer.

Dr R Hall, seminar on Epilnfo, National Reference Centre for Education in Primary Health Care, University of Wollongong; referee for the National Health and Medical Research Council; assessor for the Commonwealth AIDS Research Grants Committee; referee for the Commonwealth Research and Development Grants Committee; referee for Medical Journal of Australia and Australian Journal of Public Health; attended meetings as member of the Technical Advisory Group on the Expanded Programme on Immunization and Polio Eradication, Western Pacific Region, World Health Organization, in Manila April 1994 and in Beijing November 1994, rapporteur for both meetings.

Dr G Hall, report written for Helen Keller International on nutritional status and socioeconomic indicators between 1990–1993, in sixteen thanas in rural Bangladesh.

Dr E Kliewer, reviewer, Australian Institute of Health and Welfare; editor, NCEPH working papers series.


Dr D Legge, joint consultant (with Ms B Flick) in the development of a regional health plan, Apunipima regional health council, Queensland.


Dr R MacIntyre, consultant in tuberculosis services, Victorian Tuberculosis Program; February to July, 1994.

Dr C Martin, Acting Director Technical Advisory Group (TAG), General Practice Evaluation Program of Commonwealth Department of Human Services and Health (this role included assessing grants and final research project reports, compiling newsletters with other members of the TAG team).

Dr J McCallum, chair, Study Advisory Committee Vietnam Veteran’s Mortality Study, Department of Veterans Affairs; member, Ministerial Advisory Committee on the Longitudinal Study of Women’s Health, Commonwealth Steering Committee for Research into Dementia Care, the Commonwealth Working Party on the Protection of Frail Older People in the Community; consultant, National Mental Health Information Strategy, House of Representatives Standing Committee on Community Affairs Inquiry into the HACC Program; review panel, Department of Social and Preventative Medicine, University of Queensland; reviewer research program, Department of Community Medicine, Westmead Hospital/ Sydney University; consultant, NSW Office on Ageing, Health Outcomes in the Elderly Advisory Group, South Australian Health Department, Health Outcomes Study.

Professor I O Orubuloye, editorial board, Health Transition Review.

Dr M Patel, reviewer, Medical Journal of Australia, Public Health Research and Development Committee Grants.

Dr C Peterson, assessor for Worksafe.

Dr A Plant, external examiner/reviewer, Diploma of Public Health, University of Otago and Auckland University; grant assessor, Commonwealth AIDS Research Grants, Public Health Research and Development Research.
Cooperation with government and other public institutions


Dr D Plummer, medical specialist, New South Wales Health Department; board member, AIDS Action Council of the ACT; editor, *Venerology: International, Interdisciplinary Journal of Sexuality and Health*; board member, National Venerology Council of Australia; member, Sexual Health Research Group, La Trobe University; associate, International Health Program, Macfarlane Burnet Centre for Medical Research; associate, East West Center, Hawaii; board member, National Centre for HIV Virology Research; honorary senior lecturer, Reproductive Medicine, University of Newcastle; honorary senior lecturer, Infectious Diseases and Venerology Unit, Monash University.

Dr T V Riley, consultant, Rural Industries Research and Development Corporation on the safety and efficacy of tea-tree oil as an antimicrobial agent; grant assessor, Medical Research Foundation of Western Australia; co-editor, *Western Australian Notifiable Diseases Bulletin*; advisory panel member, *Journal of Medical Microbiology*; international editorial advisory panel member, *Reviews in Medical Microbiology*.

Dr G Santow, grant assessor, NH&MRC Public Health Research and Development Research Fellowships; co-editor, *Health Transition Review*; member, editorial advisory board, *Journal of the Australian Population Association*.

Dr B Sibthorpe, worked with Ms C Caesar, ACT Health on a review of child health screening and surveillance in the ACT.

Dr L Smith, adviser, Fred Hollows Foundation.

Dr P Stanley-Davies, editor, *Townsville Division of General Practice Annual Report* and monthly newsletter, *Tropical Ear*.

Dr J Thompson, ACT Legislative Assembly Standing Committee on Social Policy Inquiry into Early Intervention Services for Children; February 1994; and appeared at public hearing of the Committee on 25 May 1994.

Dr B Veale, training adviser, RACGP Training Program.

Dr R Woodward, South Australian Department of Education; policy on children with chronic illness.

**NHMRC Social Psychiatry Research Unit**

Dr H Christensen, member, Scientific and Research Sub-Committee of the Alzheimer's Association.


Dr A F Jorm, member, NHMRC Assigner's Panel in Psychiatry and Psychology; member, Ethics Committee of the Commonwealth Department of Human Services and Health; member, Committee of the Australian Society for Psychiatric Research; member, Scientific and Research Sub-Committee of the Alzheimer's Association; member, Panel to evaluate National Mental Health Projects, Commonwealth Department of Human Services and Health.
Visual Sciences Group

D Blest, associate editor, *Cell and Tissue Research.*

M Cook, PhD examiner, Sydney University; reviewer for ARC, NHMRC, DEET research grants; member, standing review panel for Child Development; reviewed articles for the *Australian Journal of Psychology and Perception* in which he was an expert witness on visual perception in a case on confusability of product packaging.

K Hill visited the laboratories of Professor C D Geisler at the University of Wisconsin, Madison, Wisconsin, USA.

A Horridge, awarded a Visiting Fellowship at Churchill College, Cambridge to research insect neurophysiology; invited Bidder lecturer at the Annual Meeting of the Society for Experimental Biology in Swansea, UK; attended conferences at the Photobiology Society, London; Physiological Society, Cambridge; The Royal Society, London and the India Office, London; lectured and conducted seminars at the University of Sussex, University of Cambridge, Newcastle University and the Glasgow University; lectured on eastern boatbuilding techniques at the Cambridge Philosophical Society and the Churchill College, Cambridge and received a $10,000 grant from the Royal Society of London to work on the impact of western technology on Eastern boatbuilding methods.

W Levick, member, editorial boards, *Biological Cybernetics* and *Journal of Theoretical Neurobiology*; served on the House and Precincts Committee for the Australian Academy of Science.

T Maddess, invited speaker, SIG Satellite Meeting on Nonlinear Analysis of Vision, Sarasota, USA and at the John James Medical Centre in Canberra; gave seminars at the Institute d'Anatomie at Lausanne, INSERM Vision and Brain Laboratory at Lyon and the University of British Columbia, Ophthalmology, Vancouver; attended research meetings at the Medical R&D Division at Welch Allyn, Skaneatles NY, USA and at the laboratory of Dr C Johnson, UC Davis, Sacramento; demonstrator for the National Summer Science Fair and for the Seimens Science Fair.

R Mark, acted as member, Biology Panel, Australian Research Council and member, Promotions Committee, National Health & Medical Research Council.

I Morgan gave seminars at the Lions Fight for Sight Centre, Calgary, Alberta, Canada; the Nuffield Institute of Ophthalmology, Oxford, UK; the Department of Physiology, Universidad Complutense, Madrid, Spain; the Department of Anatomy, National University of Singapore Medical School, Singapore and at the Singapore National Eye Centre, Singapore; lecturer, Biomedical Science students, University of Canberra; Ministerial Adviser to the ACT Vocational Training Agency; member, ACT Vocational Training Agency's Australian Vocational Training Scheme Steering Committee; member, ACT Department of Education and Training Key Competencies Reference Group and Framework for Vocational Education and Training Working Group.

P J Sobey gave seminars on his mobile robot navigation work at the National Institute for Standards and Technology, Washington, DC; at Fresno State University, California and at James Cook University, Townsville and gave an invited presentation at the Royal Institute of Technology (KTH), Stockholm at a workshop entitled Natural and Artificial Sensors; attended the International Mobility Conference in Melbourne and gave a course on image processing for the Australian National University's Electron Microscopy Unit; 'Motion strategies for monocular robots.'

M V Srinivasan gave invited papers at the Annual Meeting of the Australian Neuroscience Society (Sydney), the Annual Meeting of the Society of Experimental Biology (Swansea) a workshop on Natural and Artificial Visual Sensors (Stockholm), the International Conference on Neurobiology (Cochin) and a workshop on Biologically Inspired Vision for Machines (Singapore); gave the Inaugural Address at the International Conference of Neurobiology in Cochin; chaired sessions at the International Symposium on Signal Processing, Robotics and Neural Networks in Lille, and the International Conference on Neurobiology in Cochin; co-organised a workshop with Dr S Venkatesh and Dr D Kieronka, Curtin University on 'Biologically inspired vision for machines', in conjunction with the Third International Conference on Robotics, Automation and Computer Vision, held in Singapore in November; gave seminars at the
University of Sussex and the University of Zurich; served on BIAS, and on the IAS Promotions Committee; member, editorial boards of Vision Research, and the Australian Journal of Intelligent Information Processing Systems.

S-W Zhang, invited to give seminars at: the Max-Planck-Institut fuer Biologische Kybernetik in Tubingen, the Institut fuer Zoologie, Technische Hochschule Darmstadt and the Theodor-Boveri-Institut fuer Biowissenschaften, Wuerzburg.

Institute of the Arts

Emeritus Professor P Karmel, AC CBE, president, Australian Council for Educational Research; member, Australian Statistics Advisory Council; member, Council of The Chinese University of Hong Kong.

Professor D Williams, chair, Australian Council of Universities Art and Design Schools; member, International Committee of the Visual Arts and Crafts Board of the Australian Council; member, National Advisory Committee for the Asia-Pacific Triennial; executive members, Board of Management, Art Monthly Australia; chair, ACT Assembly Artsworks Committee; member, ACT Cultural Planning Coordination Group.

J Beaumont, musical director, Canberra Children's Choir; council member, Australian Society for Music Education, ACT Chapter.

V Binns, chair, Board of Contemporary Arts Space, Canberra.

R Boynes, member, visual arts fellowship sub-committee of the ACT Cultural Council.

A Brennan, member, management committee, ACT Crafts Council.

J Bruce, member, management committee, ACT Crafts Council.

P Campbell, treasurer, Canberra Choral Society Inc; vice-president, Oriana Chorale; member, Organising Committee, 33rd World Conference of the International Council for Traditional Music; secretary, ACT Chapter, Musicological Society of Australia; representative, National Choral Music Lending Scheme at Australian Intervarsity Choral Council (AIVCC) meeting, July 1994; attended 'Closer Musical Relations Conference': Joint Conference of the Musicological Society of Australia and New Zealand Musicological Society, Auckland NZ, July 1994.

D Crisp, member, Music Accreditation Panel, ACT Department of Education.

G Daley, president, Craft Australia.

J De Boos, member, editorial committee, Ceramic Art and Perception magazine.

M Gates; member, advisory committee to the advocacy position, Museums Australia.

M Grey-Smith; member, ACT Cultural Planning Coordination Group

I Guthridge, member, Board of the ACT Crafts Council.

D Harvey, member, Programming Committee, Canberra Symphony Orchestra; member, Audition panel, Canberra Symphony Orchestra; member, Planning Committee, Canberra Festival; member, Audition panel, Canberra Youth Orchestra; co-conductor and tutor, Canberra Youth Orchestra; member, Canberra Wind Soloists; principal Horn, Canberra Symphony Orchestra; principal Horn, Brandenburg Orchestra of Australia.


V Hill; member, ACT Flute Society Committee; member, Programming Committee, Canberra Symphony Orchestra; provided classes to Flute students of Sydney Flute Society, Newcastle Flute Society and Wellington Flute Society; provided classes at New Zealand flute convention.

M Jolly, member, advisory committee, Photofile/Australian Centre for photography; member, Board of the Canberra Contemporary Art Space; member, Board of Senior Secondary Studies Photography Accreditation Panel, ACT Department of Education; member, Advisory Committee for course development in Associate Diploma, Canberra Institute of Technology.
V. Kirk, member, Board of Senior Secondary Studies, Textiles Accreditation Panel, ACT Department of Education.

I. Kleinert; member, National Infrastructure Committee of the Visual Arts and Craft Board of the Australia Council; member, Australia Council Multicultural Advisory Committee.

H. Kim, member, Canberra Symphony Orchestra; member, Australian String Teachers’ Association.

N. Lendon, member, Board of Senior Secondary Studies Art Accreditation Panel, ACT Department of Education.

M. McBride, conductor, Canberra Youth Orchestra; member, Programming Committee of the Canberra Symphony Orchestra; member, Brandenburg Orchestra of Australia; member, the Australia Ensemble; guest conductor, Queensland Symphony Orchestra; guest conductor, Sydney Symphony Orchestra.

A. McIntyre, chair, 8th National Ceramics Conference; member, selection panel for professional accreditation of the ACT Crafts Council.

R. McIntyre, member, Programming Committee, Canberra Symphony Orchestra; musical Director, Canberra School of Music Community Choir.

M. Martin, chair, Art Bank Board.

D. Nuttall, creating Culture, August 1994, Commonwealth Dept of Communications and the Arts; member, Working Committee on Enterprise Flexibility Agreement, Canberra Symphony Orchestra; visiting Lecturer in Oboe, Victorian College of the Arts, September 1994.

B. Palmqvist, conductor, Oriana Chorale.

S. Proctor, member, Visual Arts and Draft Board of the Australia Council.

G. Riedelbauch, member, management committee, ACT Crafts Council.

J. Schmeisser, member, Board of Studio One Inc.

L. Sitsky, composer *The Golem* performed by the Australian Opera.

V. Taylor, board Member, Canberra Symphony Orchestra; member, Programming Committee, Canberra Symphony Orchestra; member, Finance Committee, Canberra Symphony Orchestra; president, ACT Flute Society; coordinator, ACT Flute Society Scholarship; ANU Speakers List.

A. Trevillian, member, committee of Megalo Access Art Centre.

A. Vivian, member, Performing Arts Sub-Committee of the ACT Cultural Council.

J. Volker, attended and presented a paper at the Arts Libraries Society/ANZ Conference in Wellington New Zealand; vice-president, Australian Library and Information Association ACT Branch; coordinator of Index to Art in Australia, Arts Libraries Society/ANZ; Strategic Planning Sub-Committee, Australian Council of Library and Information Services, ACT.

A. Watt, member, committee of the Brindabella Arts Community, Strathnairn.

D. Watt, secretary/deputy chair, Canberra National Sculpture Forum.

D. Worrall, board member, Australian Music Centre; ACT representative, Australian Network for Art and Technology.
Joint research projects undertaken with universities, CSIRO and other institutions

Research School of Biological Sciences

Molecular Evolution and Systematics Group

**Other Australian universities**

Cloning and characterisation of coral genes that control development by Dr E Ball and D C Hayward with Dr D J Miller, H Dodd and Dr H Berghammer, James Cook University and Dr P Harrison, Southern Cross University.

Molecular phylogenetics of the immune system by A J Gibbs with Dr E J Steele, Wollongong University.

Cloning and characterisation of grasshopper cyclin C by M G Jones and E E Ball with Dr H E Richardson and Professor R B Saint, University of Adelaide.

Hybrid Zones in Queensland sittellas by D C Shaw with I Scott and M Westerman, La Trobe University.

Molecular systematics and evolution of potyviruses by A J Gibbs with Professor J L Dale, Queensland University of Technology.

Automated taxonomic revision and keys for Pooidae (Poaceae) for Flora of Australia by C M Weiller and L Watson with Dr M J Henwood, University of Sydney.

Taxonomic studies of the Epacridaceae by C M Weiller with Dr R K Crowden, University of Tasmania.

Molecular systematics by A J Gibbs and G Weiller with Professor P Reeves and Dr A Reisner, University of Sydney.

**CSIRO and other institutions**

Role of nitric oxide and cyclic GMP in neuronal maturation by E E Ball with Professor J W Truman, University of Washington, Seattle, USA.

Construction of standardised descriptors for virus characteristics for the International Committee of Taxonomy of Viruses database ICTVdB, a database for all viruses by C Büchen-Osmond with L Blaine, Bioinformatics, American Type Culture Collection, Rockville, MA, USA and M C Horzinek, Division of Virology, Institute of Veterinary Research, University of Utrecht, The Netherlands.

VIDE plant virus database by A J Gibbs with Professor A A Brunt, Horticulture Research International, UK.

*de novo* origins of genes by A J Gibbs with Dr P Keese, CSIRO Plant Industry.

Cloning and characterisation of grasshopper transcription factors by D C Hayward and E E Ball with Dr N H Patel, Carnegie Institution, Baltimore, Maryland, USA and E J Rehm and Professor C S Goodman, University of California, Berkeley, USA.

Evolutionary biology of the Australian avifauna by D C Shaw with L Christidis, National Museum of Victoria.

Flora and DELTA accounts of Chloridoideae, Poaceae for Flora of Australia by C M Weiller with M Sutton, M Lazarides, J Palmer, Centre for Plant Biodiversity, Australian National Herbarium and B K Simon, Queensland Herbarium.

Taxonomic studies of the Epacridaceae by C M Weiller with Dr J M Powell, National Herbarium of New South Wales.
Molecular and Population Genetics Group

Other institutions

Molecular analysis of Gpdh electrophoretic variants by J B Gibson and T M Wilanowski with Dr P Barnes, Connecticut College, Connecticut, USA.

Molecular Structure and Function Group

Other Australian universities

Novel genes involved in the control of apoptosis (programmed cell death) by H D Campbell with Dr S W McKechnie, Monash University.

Other institutions

Chromosome mapping of human homologues of Drosophila melanogaster genes by H D Campbell with Dr J D Hoheisel and Dr P Lichter, German Cancer Research Centre, Heidelberg.

Deletion of the human flightless-I homologous gene in the Smith-Magenis syndrome by H D Campbell with Dr K-S Chen and Dr J R Lupski, Baylor College of Medicine, Houston.

Chromosome mapping of the mouse flightless-I homologous gene by H D Campbell with Dr J D Hoheisel and Dr P Lichter, German Cancer Research Centre, Heidelberg.

Expression of the human and mouse flightless-I homologous proteins by H D Campbell with Dr G Orloff and Dr D Kwiatkowski, Harvard Medical School, Boston.

Mechanisms of induced myeloid leukemia cell differentiation by H D Campbell with Dr M-C Fung, Chinese University of Hong Kong.

Analysis of the functional role of retrograde messenger systems in the honey-bee Apis mellifera by R Maleszka and G L G Miklos with Drs M Regulski, J Yin and T Tully, Cold Spring Harbor, New York, USA.

Studies of differential gene activation pathways in long term memory by R Maleszka and G L G Miklos with Dr M Lehrer, University of Zurich.

Molecular characterisation of specific genes in Microsporidia by R Maleszka with the Molecular Parasitology Group, Center for Disease Control, Atlanta, Georgia, USA.

Cloning and characterisation of genes at the base of the X chromosome of Drosophila melanogaster by R Maleszka and G L G Miklos with Professor H G de Couet, University of Hawaii at Manoa, Honolulu, Hawaii, USA and Dr M Yamamoto, Kyoto Institute of Technology, Kyoto, Japan.

Molecular characterisation of the Drosophila melanogaster homologue of the human S6 kinase gene by G L G Miklos with Professor R Erikson and Dr S Ottolie, Harvard University, Cambridge, Massachusetts, USA; Professor T Vik, Indiana University, Indianapolis, USA; Dr C Bjorbaek, the Harvard Medical School, Boston, Massachusetts; and chromosomal mapping of the human S6 kinase gene with Dr G C Webb, Queen Elizabeth Hospital, Adelaide, SA.

Other Australian universities

Molecular biological analyses of the nervous system of the cephalopod Euprymna scolopes by G L G Miklos with Professor H G de Couet, University of Hawaii at Manoa, Honolulu, Hawaii USA.

Evaluation of the transcriptional and genomic complexity of Drosophila melanogaster by G L G Miklos with Professor G M Rubin, University of California, Berkeley, USA and Dr C Coyle-Thompson, University of California, Los Angeles, California, USA.

Director’s Research Group

Other Australian universities

Photoinhibition of marine macrophytes by L A Franklin and G G R Seaton, with Professor A W D Larkum, University of Sydney.

Time-resolved absorption measurements of the P680+ reduction kinetics of photosystem II in non-aqueous solvents by W Hillier and T Wydrzynski with Dr P Lukins, University of Sydney.

Time-resolved absorption measurements of the P680+ reduction kinetics in super-reduced states of photosystem II by J Messinger and T Wydrzynski with P Lukins, University of Sydney.
Joint research projects undertaken with universities, CSIRO and other institutions

Granule-bound starch synthase in wheat by M K Morell with Dr P Sharp, Plant Breeding Institute, University of Sydney.

Photoprotection in rainforest understorey plants during sunflecks by S A Robinson and C B Osmond with J Watling, James Cook University and Dr I E Woodrow, Melbourne University.

Photo inhibition and photoprotection in Arabidopsis by S A Robinson, L A Franklin, G G R Seaton and C B Osmond with A W Russell and Dr C Critchley, University of Queensland.

Ammonium and glutamate metabolism in a GDH1 null mutant of maize by S A Robinson with Professor G R Stewart, University of Queensland.

Recovery from photoinhibition in green leaves by S A Robinson with S Dawson and Dr C Critchley, University of Queensland.

Taxonomy of algal containing, free living ciliates by J Rohozinski with Professor D J Patterson, University of Sydney.

The protozoan Stentor and its endosymbiotic alga by J Rohozinski and G G R Seaton with Professor J Laybourn-Parry, La Trobe University.

Development of a flash spectrophotometer by T J Wydrzynski with Professor A B Hope, Flinders University.

**CSIRO and other institutions**

Fluorescence analysis of Ulva rotundata by L A Franklin with Dr J Ramus, Duke University Marine Laboratory, USA.

Time-resolved fluorescence measurements of the QA -reoxidation kinetics of photosystem II in non-aqueous solvents by W Hiller and T Wydrzynski with Dr M Seibert, Photoconversion Branch, National Renewable Energy Laboratory, Golden, Colorado, USA.

Measurement of peroxidic intermediates of water catalysis using luminescence by W J Hillier and T J Wydrzynski with Dr V Klimov, Institute of Soil Science and Photosynthesis, Russian Academy of Sciences, Pushchino, Russia and Professor G Renger, Max-Volmer Institute, Technical University of Berlin, Germany.

Temperature effects on chlorophyll fluorescence in Antarctic mosses by C E Lovelock with Dr R Seppelt, Australian Antarctic Division.

Manganese EPR measurements of the super-reduced states in photosystem II by J Messinger and T Wydrzynski with Professors W Lubitz and G Renger, Max-Volmer Institute, Technical University of Berlin, Germany.

Oxygen flash yield measurements of leaf tissue by J Messinger and T Wydrzynski with Dr W S Chow, CSIRO Division of Plant Industry.

Analysis of genetic variation in plants using DNA profiling by M K Morell with Dr R Appels, CSIRO Division of Plant Industry.

Starch biosynthesis and structure in wheat by M K Morell with Drs R Appels, S L Abrahams, S Rahman, I L Batey and M O'Shea, CSIRO Division of Plant Industry.

Studies of the stability of the D1 protein during photo inhibition of genetically engineered Chlamydomonas by C B Osmond with P B Heifetz and Drs J E Boynton and N W Gillham, Duke University, USA.

Photo inhibition and photoprotection in Arabidopsis by S A Robinson, L A Franklin, G G R Seaton and C B Osmond with A W Russell and Dr C Critchley, University of Queensland, and with Drs J M Anderson and W S Chow, CSIRO Division of Plant Industry.

Changes in carotenoid composition in Tradescantia alba acclimated to high and low light by S A Robinson and L A Franklin, with Drs J M Anderson and W S Chow, CSIRO Division of Plant Industry.

Measurement of changes in alternative respiratory pathway flux during greening of soybean cotyledons, using oxygen isotope discrimination by S A Robinson with Dr J A Berry, Department of Plant Biology, Carnegie Institution, Stanford, and with M Ribas-Carbo, L Giles and Dr J N Siedow, Duke University, USA.

Algal viruses by J Rohozinski with Professor J L van Etten, University of Nebraska, USA.

Virus infection cycle by J Rohozinski and G Seaton with Dr K Lee, University of Nebraska, USA.
Marine algal viruses by J Rohozinski with Professor R H Meints and Dr E Henry, Oregon State University, USA.

Tetrameril Structures in RNA and DNA by J Rohozinski with Dr J M Hancock, MRC Clinical Sciences Centre, Royal Postgraduate Medical School, Hammersmith Hospital, London, UK.

Studies of the water oxidizing enzyme of photosystem II in site-directed mutants of Synechocystis PCC 6803 by H Zhang, J Messinger and T Wydrzynski with Dr J Eaton-Rye, Department of Biochemistry, University of Otago, Dunedin, NZ.

Developmental Neurobiology Group

Other Australian universities

Central projections of the trigeminal ganglion in prenatal rats by Stephen Ho with P M E Waite, University of New South Wales.

Time course of development of pathways from periphery to cortex subserving the mystacial vibrissae in the wallaby by L R Marotte, R F Mark and M L Porter with P M E Waite and C Learney, University of New South Wales.

Development of the anterior commissure in the wallaby by L R Marotte and R F Mark with K Ashwell and F Sheng, University of New South Wales.

The brainstem raphe nuclei in the wallaby (Macropus eugenii) by L R Marotte with P M E Waite, C D Hardman and D Vu, University of New South Wales.

Serotonergic innervation of the cortex of the wallaby (Macropus eugenii) by L R Marotte with D Vu and P M E Waite, University of New South Wales.

Other institutions

The auditory brainstem response in the wallaby Macropus eugenii by K Hill with Dr B Cone-Wesson, USC Medical Center, Los Angeles, USA.

Effect of click rate on ABR latency and amplitude in the developing tammar wallaby Macropus eugenii by K Hill and Guang-Bin Liu with Dr B Cone-Wesson, USC Medical Center, Los Angeles, USA.

Neural responses to free-field auditory stimulation in the superior colliculus of the wallaby (Macropus eugenii) by K Hill, R Mark and Guang Bin Liu with Dr D Withington and S Thornton, University of Leeds, UK.

Development of muscle afferents in the wallaby pouch young by S Ho with Dr R V Stirling, Open University, Milton Keynes, UK.

Surface view connectivity patterns of area 18 in cats by B Wimborne with Drs J H Kaas and M W Pospichal, Vanderbilt University, Nashville, USA.

Visual Sciences Group

Other Australian universities

Clinical testing of glaucoma diagnostic methods by T Maddess and A C James with Dr I Goldberg, Prince of Wales Hospital and UNSW.

Multi-region pattern electroretinograms by T Maddess, A C James, S Bedford and M Snowball with K Rouhan, Australian Defence Force Academy, UNSW.

Structure and function of the ENSL amacrine cells of the chicken retina by I G Morgan with Dr M K Boelen, La Trobe University.

Biologically inspired robotics by M V Srinivasan, J Chahl and M Nagle with Dr S Venkatesh, Dr D Kieronska and K Weber, Curtin University.

Other institutions

Dendritic information processing by visual interneurons in the fly by M Egelhaaf with Dr A Borst, Friedrich-Miescher-Laboratorium der Max-Planck-Gesellschaft, Tübingen, Germany.

Neuronal network interactions that allow the discrimination of objects from their background by M Egelhaaf and V Dürr with Dr A Borst and Mr V Gauck, Friedrich-Miescher-Laboratorium
der Max-Planck-Gesellschaft, Tübingen, Germany.

Object vision in brain-damaged humans and comparisons with bees' pattern perception by G A Horridge with Professor M Jeeves, University of St Andrews.

Glaucoma test devices by T Maddess and M Ibbotson with Dr R Newman, A Avedisian and P De Lucia, Welch Allyn New York, USA and Professor H Wood, Rochester Institute of Technology.

The role of the ENSLI and dopaminergic amacrine cells of the chicken retina in the control of eye growth and the development of form-deprivation myopia by I G Morgan with Professor W K Stell, Calgary School of Medicine, Canada; Professor P M Iuvone, Emory University School of Medicine, Atlanta, USA; Dr J A Rada, Eye and Ear Institute of Pittsburgh, USA; Professor F Schaeffel, University Eye Hospital, Tübingen, Germany, and Dr D Troilo, New England College of Optometry, Boston, USA.

Behavioural analysis of movement-detecting mechanisms in insect vision by M V Srinivasan and S W Zhang with Dr M Lehrer, University of Zürich, Switzerland.

Analysis of parallel processing in insect vision by M V Srinivasan and S W Zhang with Dr T Collett, University of Sussex, UK.

Plant Cell Biology Group

Other Australian universities

Endogenous hormones in micropropagated Eucalyptus by DM Cahill with Dr I Bennett, Edith Cowan University.

Antibodies to g-tubulin by B E S Gunning with Dr J Marc, University of Sydney.

Root meristems influenced by cdc genes by P C L John and B E S Gunning with P Webb, RSBS Collaborative Scholar, and Professor J Hamill, Monash University.

Cell cycle proteins interacting with CKS proteins by P C L John with Dr E Williams, Lions Cancer Institute, Royal Perth Hospital.

Cyclin genes of plants by P C L John and U Schuppler with Dr H Richardson, Adelaide University.

Cell division in Spirogyra by B E S Gunning with Professor J D Pickett-Heaps and K McIntosh, University of Melbourne.

High resolution imaging of plant microtubule arrays using field emission scanning electron microscopy by B E S Gunning with Dr M Vesk and P Vesk, University of Sydney.

Signal transduction mechanisms in motile zoospores of Phytophthora cinnamomi by A R Hardham and D M Cahill with J D I Harper, University of Sydney.

Endomembrane transport systems in Oomycete hyphae by A R Hardham with A E Ashford, University of NSW and W G Allaway, University of Sydney.

Molecular analysis of plant and microbial myosins by J Plazinski and R E Williamson with Dr W Shaw, University of the Northern Territory.

Molecular characterisation of symbiotic genes in Anabaena azollae by J Plazinski with Dr W Shaw, Northern Territory University.

Characterisation of the hormonal defects in the sp1 mutant of Arabidopsis by R E Williamson with Dr J Gorst, University of Tasmania.

Other institutions

Confocal microscopy of the internal structure of planktonic algae and their chytrid parasites by A Cleary with Dr G Beakes, University of Newcastle-upon-Tyne, UK.

An analysis of stamen structure in Brunonia australis by A Cleary with Dr T Pescacreta, University of South-western Louisiana.

Microtubule-associated protein by B E S Gunning with A Bessudo, Weizmann Institute, Israel.

Confocal microscopy by B E S Gunning with Professor P K Hepler, University of Massachusetts.

Book writing by B E S Gunning with Professor M W Steer, University College, Dublin.
Chemotaxis of *Phytophthora sojae* zoospores by A R Hardham with B M Tyler and P F Morris, University of California at Davis.

Ultrastructural and functional homologies of cell components in Oomycete zoospores by A R Hardham with G W Beakes, University of Newcastle-Upon-Tyne.

Conserved cell cycle control proteins by P C L John with Dr J Hayles and Professor P Nurse, Imperial Cancer Research Fund Laboratories, London, UK.

Wound wall formation in characean algae by G O Wasteneys with Dr I Foissner, Universität Salzburg, Austria.

Motile properties of the endoplasmic reticulum in characean algae by G O Wasteneys with Dr D Menzel, Max-Planck-Institut für Zellbiologie, Ladenburg, Germany.

Analysis of putative cellulose synthase complexes in the plasma membrane of wild type and mutant plants of *Arabidopsis* by R E Williamson and T Arioli with Dr W Herth and W Wittke, Universität Heidelberg, Germany.

Complementation analysis of radial swelling mutants of *Arabidopsis* by R E Williamson and T Arioli with Dr P Benfey, New York University, USA.

Analysis of radial swelling mutants of *Arabidopsis* for cytoskeletal defects by R E Williamson with Dr T I Baskin, University of Missouri, Columbia, USA.

Characterisation of the hormonal defects in the *spp* mutant of *Arabidopsis* by R E Williamson with Dr T I Baskin, University of Missouri, Columbia, USA.

Plant Microbe Interactions Group

Other Australian universities

Elaboration of molecular structures of fungal toxins by D C Loschke, H C Chen, G Xu and B G Rolfe with Professor J Redmond, Macquarie University.

CSIRO and other institutions

Analysis of *in situ* expression patterns of the developmentally regulated *CHS1* gene in subterranean clover by M A Djordjevic, E Gärtner, S Thomson, J J Weinman and B G Rolfe with L Heath, R F I Kahn and T J Higgins, CSIRO Division of Plant Industry.

Investigation of anthocyanin regulatory genes in legumes by J de Majnik, J J Weinman, M A Djordjevic, B G Rolfe with Drs G Tanner and P Larkin, CSIRO Division of Plant Industry.

Analysis of RLEM resistant subterranean clover strains for enhancement of pathogenesis related proteins induced by RLEM feeding by K Broderick and B G Rolfe with Dr D Gillespie, WA Department of Agriculture.

Molecular Plant Physiology Group

Other Australian universities

Rubisco activase and the regulation of photo-synthesis by T J Andrews, S von Caemmerer, G S Hudson and H J Kane with Dr I Woodrow and Mr E Hammond, RSBS Collaborative Scholar, University of Melbourne.

The mechanism of Rubisco investigated by means of the chemiluminescence associated with the oxygenase reaction in the presence of Mn²⁺ ions by T J Andrews and H J Kane with Associate Professor R McC Lilley and Mr S Cox, RSBS Collaborative Scholar, University of Wollongong.

Study of the structure of Rubisco by means of X-ray crystallography by T J Andrews and H J Kane with Dr P M G Curmi and Mr A Duff, RSBS Collaborative Scholar, University of NSW.

Rubisco from dinoflagellates by T J Andrews, G S Hudson and H J Kane with Dr D Yellowlees and Mr S Whitney, James Cook University.

Cyanobacterial bioenergetics and its relationship to the operation of the CO₂ concentrating mechanism by M R Badger and G D Price with Dr R Ritchie, Sydney University.

Measurements of variation in water-use efficiency, and growth in the field of diverse *Sorghum* genotypes by S von Caemmerer and G D
Farquhar with Dr S A Henderson, University of Queensland.

**CSIRO and other institutions**

The regulation of Rubisco's activity by T J Andrews and H J Kane with Professor A R Portis Jr, US Department of Agriculture, University of Illinois, Urbana, Illinois, USA.


Measurements of variation in water-use efficiency, and growth in the field of diverse *Sorghum* genotypes by S von Caemmerer and G D Farquhar with Drs G L Hammer and L J Wade, Queensland Department of Primary Industries and Dr K T Hubick, Department of Industry, Technology and Commerce, Canberra.

Analysis of inorganic carbon exchange in green algae and lichens by M R Badger with Dr K Palmqvist, University of Umeå, Sweden.

Molecular analysis of the CO2 concentrating mechanism in cyanobacteria by M R Badger, G D Price and J-W Yu with Dr D Siiltemeyer, University of Kaiserslautern, Germany.

Antisense RNA against the Reiske FeS protein of the cytochrome B6/F complex and the subunit of the ATP synthase of the thylakoid membrane by G D Price, M R Badger and J-W Yu with Drs J Anderson and F Chow, CSIRO Division of Plant Industry.

Role of carbonic anhydrase in photosynthesis by M R Badger and G D Price with Dr U Schreiber, University of Würzburg, Germany.

**Environmental Biology Group**

**Other Australian universities**

Effect of CO2 on *Panicum* species by G D Farquhar and S C Wong with S von Caemmerer (Molecular Plant Physiology), Dr J Conroy and Ms O Ghannoum, University of Western Sydney.

Pressure-volume relations of guard cells by P Franks, I R Cowan and G D Farquhar with Dr S Tyerman, Flinders University.

Effect of CO2 on carbohydrate status and water relations of expanding leaves by J Masle, J Ekman and G D Farquhar with Professor E W R Barlow and Dr J Contoy, University of Western Sydney.

Effects of mycorrhizal associations on CO2 responses by J Masle, J Lloyd and G D Farquhar with Dr S Smith, University of Adelaide.

Photosynthesis and respiration of *Acacia auriculiformis* by S C Wong and G D Farquhar with Dr K C Woo, University of Northern Territory.

**Other institutions**

Photosynthesis in relation to leaf nitrogen content by J R Evans with H Poorter, Utrecht University, The Netherlands.

Carbon isotope discrimination and yield of peanuts and other legumes and of C4 crops by G D Farquhar with Dr G Wright and Dr G Hammer, Queensland Department of Primary Industries.

Fluxes of water vapour, carbon dioxide and their isotopes over tropical rainforests in South America and Central Africa by J Lloyd and S C Wong with Professor J Grace and Dr B Kruijt, University of Edinburgh.

Carbon isotopes and the contribution of C4 grasses and C3 shrubs to the productivity of South American savannas by J Lloyd with Dr A C Miranda and Dr H S Miranda, Universidade de Brasilia, Brazil.

Isotopic fractionations associated with CO2 and H2O vapour fluxes over Siberian larch forest by J Lloyd and G D Farquhar with Professor E-D Schulze, University of Bayreuth, Germany.

Growth of citrus species in relation to CO2 concentrations by J Masle, J Lloyd and G D Farquhar with Dr J Syvertsen, University of Florida.

**Ecosystem Dynamics Group**

**Other Australian universities**

Theory of marine benthic communities by P Chesson with Dr A Butler, University of Adelaide.
Maintenance of species diversity in the Australian arid zone by P Chesson with Dr J Facelli, University of Adelaide.

The impact of red land crabs on rainforest regeneration dynamics on Christmas Island, Indian Ocean by P T Green with Dr D O'Dowd and Dr S Lake, Monash University.

Aboriginal sacred sites and the associated flora by H Gitay with Mr D Cooper, University of Northern Territory.

Forest model to predict global change impacts on ecosystem productivity and carbon storage by D King with Dr R McMurtrie, B Medlyn, D Murtie, M Jefferies, S Pongracic, Dr H Comins and Dr R Dewar, University of New South Wales.

Modelling the dynamics of mistletoe populations in fragmented woodlands by S Lavorel with Dr N Reid, University of New England.

**CSIRO and other institutions**

Canopy architecture in relation to photoinhibition along climatic gradients by M Ball and J Egerton with Dr M S McGlone, Landcare Research New Zealand Ltd, Christchurch.

Cold-induced photoinhibition and the regeneration niche in mountain beech, *Nothofagus solandri* by M Ball and J Egerton with Dr M S McGlone, Landcare Research New Zealand Ltd, Christchurch.

Photosynthesis in sub-Antarctic forests of rata (*Metrosideros umbellata*) by M Ball with Dr M S McGlone, Landcare Research New Zealand Ltd, Christchurch.

Regeneration of eucalypt species under natural and altered microclimates by M Ball and J Egerton with Dr R Leuning, CSIRO Centre for Environmental Mechanics.

Density-dependent habitat selection and the storage effect as interacting mechanisms of coexistence in ecological communities by P Chesson with Dr M Rosenzweig, University of Arizona, USA.

Theoretical and empirical studies of communities in stochastic environments by P Chesson with Dr N Huntly, Idaho State University, USA.

Theory of communities in spatially variable environments by P Chesson with Dr A Ives, University of Wisconsin, USA.

Population dynamics in patchy environments by P Chesson with Professor M Hassell, Imperial College of Science and Technology, UK.

Various aspects of community structure in grasslands and dunes by H Gitay with Associate Professor J B Wilson, University of Otago, New Zealand.

Management of tall tussock grasslands under grazing and frequent burning by H Gitay with Dr W G Lee, Landcare Research, New Zealand.

Data bases of some tropical forest species by H Gitay with Dr P Lavarack and Mr M Godwin, Queensland Environment and Heritage.

Remotely sensed data for vegetation mapping by H Gitay with Dr M B Dale, Strie Pty Ltd, Brisbane.

Functional types of rainforest plants by H Gitay, I R Noble and P Dunne with Professor J H Connell, University of California, Santa Barbara, USA.

Forest models to predict global change impacts on ecosystem productivity and carbon storage by D King with Drs M Kirschbaum, J Raison, P Khanna and P Snowdon, CSIRO Division of Forestry.

Modelling the dynamics of mistletoe populations in fragmented woodlands by S Lavorel with Dr M Stafford-Smith, CSIRO Division of Wildlife and Ecology, Alice Springs.

Dynamics of plant species diversity in native and disturbed grasslands by S Lavorel with Dr S McIntyre, CSIRO Division of Tropical Crops and Pastures, Brisbane.

Dynamics of plant species diversity in Mediterranean landscapes by S Lavorel with Dr M Debussche and Dr J Lepart, Centre d'Ecologie Fonctionelle et Evolutive, CNRS, Montpellier, France.

Models of the dynamics of plant communities in patterned habitats by S Lavorel with Drs R H Gardner and R V O’Neill, Oak Ridge National Laboratory, USA.
Joint research projects undertaken with universities, CSIRO and other Institutions

RESTORELAND: a decision support system for land management in western NSW by I R Noble with staff at CSIRO Division of Wildlife and Ecology.

Long-term population dynamics of rainforests by I R Noble, P Green and I Davies with Professor J H Connell, University of California, Santa Barbara, California, USA.

Models of savanna dynamics by I R Noble, J Gignoux with Dr J-C Menaut, Ecole Normale Superiore CNRS, Paris.

Dynamic models of eucalypt forests by I R Noble with Drs M P Austin and J Garcia-Pausas, CSIRO Division of Wildlife and Ecology.

Potential operational use of hyperspectral remote sensing to map and monitor physiological activity of Australian vegetation by J Roden with Drs A Held and D Jupp, CSIRO Division of Water Resources.

Effects of leaf flutter on whole canopy carbon gain by J Roden with Dr R Pearcy, University of California, USA.

Effects of elevated CO₂ on Australian temperate rainforest species of different successional stages by D Wiggins, M Ball and G D Farquhar (Environmental Biology Group) with Dr R Gifford, CSIRO Division of Plant Industry.

The application of new methods to alkaloid synthesis by Professor A L J Beckwith and Mr R T' A Mayadunne with Dr S P Joseph, North Carolina State University, USA.

The preparation of new heterocyclic systems by Professor A L J Beckwith and Mr R Longmore with Dr K Moody of ICI Operations Ltd, Melbourne.

Arene ruthenium complexes by Professor M A Bennett with Professor P Salvadori, Dr P Pertici and Dr G Vitulli, Università di Pisa, Italy.

Magnetic susceptibility and ESR studies of dinuclear ruthenium alkoxides by Professor M A Bennett with Professor P T Manoharan, Indian Institute of Technology, Madras.

Photoelectron spectra of dinuclear organogold complexes by Professor M A Bennett with Professor P T Manoharan, Indian Institute of Technology, Madras.

Metal complexes of cyclophane-alkynes by Professor M A Bennett with Professor A de Meijere, University of Göttingen, Germany.

Organoplatinum and organopalladium complexes of a tripodal oxygen donor ligand by Professor M A Bennett with Professor W Kläui, University of Düsseldorf, Germany.

Metal complexes of fullerenes by Professor M A Bennett with Dr L Pang, CSIRO Division of Energy Technology and Professor Goh Lai Yoong, University of Malaya, Kuala Lumpur, Malaysia.

Organoruthenium complexes with macrocyclic thioethers by Professor M A Bennett with Professor Goh Lai Yoong, University of Malaya, Kuala Lumpur, Malaysia.

Cyclometallated dinuclear gold complexes by Professor M A Bennett with Dr S K Bhargava, Department of Applied Chemistry, RMIT.

Implications of nuclear permutation symmetry for transition state theory by Dr M A Collins with Professor R G Gilbert and Mr A Karas, University of Sydney.

Molecular potential energy surfaces for AX₃ type molecules by Dr M A Collins with Dr J Ischtwan, University of Auckland.

Research School of Chemistry

A theoretical study of diastereoselective radical reactions by Professor A L J Beckwith with Professor A A Zavitsas, Long Island University, USA.

Kinetics of radical coupling by Professor A L J Beckwith and Dr V W Bowry with Dr K U Ingold and Dr Lusztyk, NRC, Ottawa, Canada.

ESR studies of bridgehead radicals by Professor A L J Beckwith and Dr S Brumby with Dr E Della and Dr W Adcock, Flinders University, Adelaide.

The structure and reactivity of free radicals by Professor A L J Beckwith and Mr R W Longmore with Professor D Crich, University of Illinois at Chicago, USA.
Solitary optical pulses near exciton resonances by Drs M A Collins and I B Talanina with Professor V Agranovich, Institute of Spectroscopy, Moscow.

The symmetry of molecular potential energy surfaces by Dr M A Collins with Professor R G Gilbert and Mr K Thompson, University of Sydney.

DNA replication mechanisms by Dr N E Dixon with Dr E Crooke, Department of Biochemistry and Molecular Biology, Georgetown University, Washington DC, and Dr K Skarstad, Department of Biophysics, Institute for Cancer Research, Oslo.

Structure of the *Escherichia coli* DnaB helicase protein by Dr N E Dixon and Mrs N Dammerova with Drs J M Carazo and M C San Martin, Centro Nacional de Biotecnologia, Universidad Autonoma, Madrid.

Structures of *Escherichia coli* chaperonins by Dr N E Dixon and Ms S J Tilley with Dr P Curmi, Department of Physics, University of New South Wales.

Structure and function of the *Escherichia coli* HMP haemoprotein by Dr N E Dixon with Dr S G Vasudevan, Department of Molecular Sciences, James Cook University of North Queensland, and Dr W L F Armarego, John Curtin School of Medical Research, ANU.

Structural basis of regulation of nitrogen metabolism in *Escherichia coli* by Dr N E Dixon, Dr D L Ollis and Mr P Suffolk with Dr S G Vasudevan, Department of Molecular Sciences, James Cook University of North Queensland.

Cleavage of DNA by chromium(V) complexes by Drs N E Dixon and S Moghaddas with Dr P A Lay, University of Sydney.

Overexpression of chicken myosin light chain in *Escherichia coli* by Dr N E Dixon, with Dr G F King, University of Sydney.

Overexpression of human and bacterial prolidase in *Escherichia coli*, by Dr N E Dixon and Mrs P E Lilley, with Dr G F King and Professor H G Freeman, University of Sydney.

Diffusion in shearing fluid mixtures by Professor D J Evans with Professor P T Cummings, Chemical Engineering Department, University of Virginia.

Implications of chaos for thermophysical properties by Professor D J Evans with Professor E G D Cohen, The Rockefeller University, USA; Dr G P Morris, University of New South Wales; and Dr D J Isbister, Australian Defence Force Academy, University of New South Wales.

Thermal conductivity of molecular fluids by Professor D J Evans with Dr S Murad, University of Chicago and Dr H J M Hanley, Thermophysics Division, National Institute of Standards and Technology, Boulder, Colorado.

Techniques for parallel computing in molecular dynamics by Professor D J Evans and Mr D Hansen with Dr L M Hood, Thinking Machines Corporation, Canberra.

Shear induced gelation by Professor D J Evans and Mr D Hansen with Dr H J M Hanley, National Institute of Standards and Technology, Boulder, Colorado.

Transport processes in porous media by Professor D J Evans and Dr B Todd with Professor K E Gubbins, Cornell University, USA.

Electrochemistry of metal dioximes by Dr G A Heath with Professor A M Bond, La Trobe University.

Spectro-electrochemistry of buckminsterfullerene anions by Dr G A Heath with Professor R L Martin, Monash University.

Spectro-electrochemistry of binuclear halide complexes by Dr G A Heath with Dr R Raptis, University of Crete.

Spectro-electrochemistry of binuclear phosphine complexes by Dr G A Heath with Dr L J Yellowlees, Edinburgh University.

Spectro-electrochemistry of dimeric porphyrins by Dr G A Heath with Dr D P Arnold, Queensland University of Technology.

Binuclear ruthenium and osmium compounds; synthesis, electrochemistry and magnetoochemistry by Dr G A Heath with Dr D G Humphrey, University College, London.

Spectro-electrochemistry of tris-acetylacetonato osmium (III) by Dr G A Heath with Dr G M Moran, University of New South Wales.
Joint research projects undertaken with universities, CSIRO and other institutions

Molecular orbital calculations on binuclear nonahalides by Dr G A Heath with Dr R Stranger, University of Queensland and Dr J E McGrady, Imperial College, London.

Molecular orbital calculations on heavy metal compounds by Dr G A Heath with Dr E A Magnusson, Australian Defence Force Academy.

Redox-active rhenium and technetium compounds by Dr G A Heath with Dr J Baldas and Dr G A Williams, Australian Radiation Laboratory.

Water-displacing corrosion inhibitors by Dr G A Heath with Professor D Creagh, Australian Defence Force Academy.

Spectro-electrochemistry of metal nitrosyls by Dr G A Heath with Dr C Glidewell, University of St Andrews, UK.

The Cary 5 spectrophotometer development program by Dr G A Heath with Dr M Archard, Varian Australia Ltd.

Electrolytic aluminium alloy treatments by Dr G A Heath with Mr D L Hallam, Australian War Memorial Laboratories.

Structural studies of drug-DNA complexes and novel DNA structures by Dr M Keniry with Professor R H Shafer, University of California, San Francisco and Dr C Levenson, Roche Molecular Systems, Alameda, California.

Structural studies of a human insulin-like growth hormone by Dr M Keniry and Dr B Gray with Dr J Carver, University of Wollongong and Dr J C Wallace, University of Adelaide.

Experimental studies of frequency-shifted pulses and amplitude modulated pulses by Dr M Keniry with Professor B Sanctuary, McGill University, Montreal, Canada.

Spectroscopy of mixed valence osmium dimers and new osmium complexes by Dr E R Krausz with Dr P Lay, University of Sydney.

Single crystal MCD and raman spectroscopy of single and double excitations in molybdenum dimers by Dr E R Krausz with Dr R Stranger, University of Queensland.

Studies of the quenching of electron transfer processes in complexes with separated donors and acceptors by Dr E R Krausz with Dr G Moran, University of New South Wales.

MCD studies of the mixed valence ruthenium blue systems by Dr E R Krausz with Professor R Armstrong, University of Sydney.

Single crystal spectroscopy of copper(II) complexes with unexpected geometries by Dr E R Krausz with Dr M Hitchman, University of Tasmania.

Spectroscopy of transition metal oxides in unusually low oxidation states by Dr E R Krausz with Professor M Hitchman, University of Tasmania and Dr A Moller and Professor R Hoppe, University of Giessen, Germany.

Spectral hole burning of porphyrins in argon matrices below 4 K by Dr E R Krausz with Professor P Schatz, University of Virginia USA and Dr B Williamson, University of Canterbury, Christchurch NZ.

Narrowing spectroscopy in three dimensional tris-oxalato networks by Dr E R Krausz with Dr A Hauser, University of Berne, Switzerland.

Mass spectrometric and magnetic resonance studies of the path of carbon in photosynthesis by Dr J K MacLeod with Dr J G Collins, Australian Defence Force Academy.

Structures of biologically active plant extracts by Dr J K MacLeod with Dr P B Oelrichs, National Research Centre for Environmental Toxicology, Brisbane.

Structures of natural products from Sri Lankan plants by Dr J K MacLeod with Professor G P Wannigama, University of Peradeniya.

Biosynthetic, structural and metabolic studies on gibberellins by Professor L N Mander and Mr B Twitchin with Professor T Yokota, Teikyo University, Japan.

Biosynthetic, structural and metabolic studies on gibberellins by Professor L N Mander, Dr M Sherburn and Mr B Twitchin with Dr V M Sponsel, Indiana University, USA.

Biosynthetic, structural and metabolic studies on gibberellins by Professor L N Mander, Mr D...
Owen and Mr B Twitchin with Dr M Koshioka, National Research Institute of Vegetables, Ornamental Plants and Tea, Ministry of Agriculture, Forestry and Fisheries, Japan.

Biosynthetic, structural and metabolic studies on gibberellins by Professor L N Mander and Mr B Twitchin with Professor O Junttila, University of Tromsø, Norway.

Biosynthetic, structural and metabolic studies on gibberellins by Professor L N Mander and Mr B Twitchin with Dr Y Kamiya, RIKEN, Wako-Shi, Saitama, Japan.

Biosynthetic, structural and metabolic studies on gibberellins by Professor L N Mander and Mr B Twitchin with Professor R P Pharis, University of Calgary.

Biosynthetic, structural and metabolic studies on gibberellins by Professor L N Mander, Dr H Seto and Mr D Owen with Professor J MacMillan and Dr P Hedden, Long Ashton Research Station, Bristol.

Biosynthetic, structural and metabolic studies on gibberellins by Professor L N Mander, Mr D Owen and Mr B Twitchin with Professor J E Graebe, Pflanzenphysiologisches Institut und Botanischer Garten, Universität Göttingen, Germany.

Biosynthetic, structural and metabolic studies on gibberellins by Professor L N Mander and Mr D Owen with Professor E Eliel, University of North Carolina and Professor S H Wilen, City University of New York.

Promotion of flowering in fruit trees by Professor L N Mander with Dr N E Looney, Agriculture Canada Research Station, Summerland, British Columbia, Canada.

Structural and biosynthetic studies on antheridiogens from fern gametophytes by Professor L N Mander and Mr D Pour with Dr H Yamane, University of Tokyo.

Structural and biosynthetic studies on antheridiogens from fern gametophytes by Professor L N Mander with Professor H Schraudolf, University of Ulm, Germany.

Studies on growth inhibition by Professor L N Mander with Drs L T Evans and R W King, CSIRO Division of Plant Industry and Professor R P Pharis, University of Calgary, Canada.

Studies on the genetics of Pismum by Dr M Sherburn with Professor J B Reid and Dr J J Ross, University of Tasmania.

Studies on the molecular biology of gibberellins by Professor L N Mander and Dr D Camp with Dr P Chandler, CSIRO Division of Plant Industry.

Studies on the molecular biology of gibberellins by Professor L N Mander with Dr C J Schofield, The Dyson Perrins Laboratory, Oxford.

Structural studies of the Pn Protein by Dr D Ollis with Dr S Vasudevan, James Cook University.

Structure function studies of the Pn Protein by Dr D Ollis with Professor A Ninfa, University of Michigan, Ann Arbor, Michigan.

Crystallisation of the Tyr R Protein by Dr D Ollis with Dr B Davidson of the Department of Biochemistry, University of Melbourne.

Structure function studies with esterases by Dr D Ollis with Dr J Oakshot, CSIRO Division of Entomology.

Atmospheric chemistry related to ozone depletion by Professor L Radom and Dr M P McGrath with Dr W J Bonna, CSIRO Division of Atmospheric Research, Melbourne and Professor A Rau, University of Calgary.
Molecular structure determination by Professor L Radom with Dr B J Smith, Biomolecular Research Institute, Melbourne and Professor D Coffey, San Diego State University.

Evaluation of accurate proton affinities by Professor L Radom with Dr B J Smith, Biomolecular Research Institute, Melbourne.

Radical addition reactions by Professor L Radom with Dr M W Wong, University of Queensland; Professor A Pross, University of Sydney and Professor H Fischer, University of Zurich.

Overcrowded molecules by Professor L Radom and Dr A P Scott with Professor I Agranat, Hebrew University, Jerusalem.

Nucleophilic substitution reactions by Professor L Radom with Professor A Pross and Dr M Gloukhovstev, University of Sydney.

Protonation of halogenomethanes by Professor L Radom with Professor A Pross and Dr M Gloukhovstev, University of Sydney; and Professor T B McMahon and Dr J E Szukjo, University of Waterloo, Canada.

Theoretical characterisation of oxirene by Professor L Radom and Dr A P Scott with Dr R H Nobes, ANU Supercomputing Facility and Professor H F Schaefer, University of Georgia, USA.

The C₃H₄O⁺, C₄H₆O⁺ and C₅H₆O⁺ potential energy surfaces by Professor L Radom with Professor M L McKee, Auburn University, USA.

The crystal structure refinement of Pb(SPh)₂, an interesting case of pseudosymmetry allowing stacking faults in which either or both of two inversion related substructures can move by half a unit cell relative to the reference structure by Professor A D Rae with Professor P A W Dean, University of Western Ontario.

The crystal structure refinement of some disordered transition metal complexes by Professor A D Rae with Dr A T Baker of the University of Technology, Sydney.

Development of microbial products for control of soil-borne plant pathogens and root-knot nematodes by Professor R W Rickards, Mrs M G Anderson and Mr T B Jarman with Dr P J Dart, University of Queensland, Dr G R Stirling, Queensland Department of Primary Industries, and Incitec Ltd.

Isomerisation of aryldioxolanes by Professor R W Rickards and Mrs B S Senanayake with Professor R G F Giles, Murdoch University.

Juvenile hormones in higher dipterans by Professor R W Rickards and Mr A J Herlt with Drs S Trowell and P East, CSIRO.

Nematicides from actinomycetes by Professor R W Rickards, Dr M O'Shea and Mrs J M Rothschild with Dr E Lacey, CSIRO, and Ciba-Geigy Ltd.

Non-antibacterial inducers of MLS resistance by Professor R W Rickards and Mr A J Herlt with Dr J Maier, Northwestern University, and Dr J B McAlpine, Abbott Laboratories, Chicago, Illinois, USA.

Agents for the control of fungal plant pathogens by Professor R W Rickards and Mr A J Herlt with Dr P J Dart, University of Queensland.

Structure of an antifungal antibiotic from *Pseudomonas* sp. by Professor R W Rickards with Professor B J Deverall and Mr Y Huang, University of Sydney.

Binding of encapsulated metal ion complexes to oligonucleotides and proteins by Professor A M Sargeson with Dr A Arnold and Dr G Collins, Australian Defence Force Academy.

Electro-spray mass spectrometry studies of coordination complexes by Professor A M Sargeson with Dr M Shiels and Dr S Ralph, University of Wollongong.

Electrochemical studies on macrobicyclic amine complexes by Professor A M Sargeson with Professor A Bond, La Trobe University.

Electrochemistry and redox reactions of metal ion complexes and proteins by Professor A M Sargeson with Professor J Ulstrup, Technical University of Denmark, Lyngby, Denmark.

Electrochemistry of macrobicyclic cobalt(III) complexes by Professor A M Sargeson with Dr G A Lawrance, University of Newcastle and Dr P A Lay, University of Sydney.
Generation of low spin Co(II) hexaamine complexes by Professor A M Sargeson with Professor M C R Symons, University of Leicester, UK.

Investigation of the chirality of triple stranded, helical complexes of Co(II) and Co(III) by Professor A M Sargeson with Professor A Williams, University of Geneva, Switzerland.

Macrocyclic chemistry by Professor A M Sargeson and Mr G W Walker with Dr L F Lindoy, James Cook University of North Queensland.

Medical diagnostic and therapeutic agents by Professor A M Sargeson with Dr M Tweedle, Bristol-Myers Squibb Pharmaceutical Research Institute, New Jersey, USA.

New biological reagents by Professor A M Sargeson with Dr G Holan, CSIRO Division of Chemicals and Polymers.

New imaging and therapeutic reagents by Professor A M Sargeson with Dr S Smith, Australian Nuclear Science and Technology Organisation, Sydney.

New strategies for amino acid syntheses by Professor A M Sargeson with Professor M J Miller, University of Notre Dame, USA and Professor B T Gölding, University of Newcastle, UK.

New synthetic methods for barley toxins and new amino acids by Professor A M Sargeson with Dr A Hammershøi, H C Ørsted Institute, University of Copenhagen, and Professor K-A Jørgensen, Aarhus University, Denmark.

Photochemical, photophysical and energy conversion studies using macrocyclic metal complexes by Professor A M Sargeson, Dr R J Geue and Dr P Osvath with Dr W Sasse and Dr A Mau, CSIRO Division of Chemicals and Polymers, Melbourne, and Dr K Ghiggino, University of Melbourne.

Reaction mechanisms in amine cobalt(III) chemistry by Professor A M Sargeson with Professor W G Jackson, Australian Defence Force Academy.

Role of macrocyclic hexaamines in cell proliferation and mammalian copper metabolism by Professor A M Sargeson with Dr H McArdle, University of Dundee, Scotland.

Spectroscopy of chromium(III) cage complexes by Professor A M Sargeson with Dr G M Moran, University of New South Wales.

Spectroscopy of macrocyclic cage complexes by Professor A M Sargeson with Professor C E Schäffer, University of Copenhagen, and Lektor M Bronson, Technical University of Denmark, Lyngby, Denmark.

Structural and reactivity studies of ruthenium complexes by Professor A M Sargeson with Dr P Bernhard, Ciba-Geigy, Fribourg and Professor H-B Bürgi, University of Bern, Switzerland.

Structural studies of macropolycyclic complexes by Professor A M Sargeson and Dr R J Geue with Dr G J Gainsford, DSIR, New Zealand and Dr W T Robinson, University of Canterbury, New Zealand.

Structural studies of rigid polycyclic complexes by Professor A M Sargeson and Dr R J Geue with Professor I Bernal, University of Houston, USA.

Studies of spin equilibria by Professor A M Sargeson with Dr J Beattie, University of Sydney; Professor R L Martin, Monash University and Dr L I Martin, Flinders University.

Studies on the inactivation of cancer cells using Co(III) amine complexes by Professor A M Sargeson with Dr D Ware, University of Auckland, New Zealand.

Syntheses and structural studies of macrocyclic complexes of transition metals by Professor A M Sargeson and Dr R J Geue with Dr J M Harrowfield and Associate Professor A H White, University of Western Australia.

Synthesis of labelled amino acids for biosynthetic studies in marine sponges by Professor A M Sargeson and Ms D Pearce with Dr M J Garson, University of Queensland.

The mechanism of extrusion of metal ions from the cage complexes by Professor A M Sargeson with Dr A Hammershøi and Ms L Grøndahl, H C Ørsted Institute, University of Copenhagen, Denmark.
Joint research projects undertaken with universities, CSIRO and other institutions

X-ray and neutron diffraction studies of macrobicyclic and polynamine complexes by Professor A M Sargeson and Dr R J Geue with Lektors F Krebs-Larsen and R Hazell, Aarhus University, Denmark.

New materials from Kaolinite intercalates by Dr J G Thompson with Drs I D R Mackinnon, P J R Uwins and Dr A Whittaker, University of Queensland.

A TEM and XRD study of incommensurate misfit layer compounds with the BiS-NbS$_2$ system by Drs S Schmid, Professor A D Rae and Dr R L Withers with Dr L C Otero-Diaz, Complutense University, Madrid.

An X-ray Rietveld refinement of Ca$_5$Y$_4$S$_{11}$ by Drs J G Thompson and R L Withers with Dr L C Otero-Diaz, Complutense University, Madrid.

Diffuse X-ray scattering from disordered crystals by Dr T R Welberry with Dr B D Butler, National Institute of Standards & Technology, Boulder, Colorado, USA.

Study of order and disorder in optically active crystals by Dr T R Welberry with Dr A M Glazer, Clarendon Laboratory, Oxford, UK.

Chiral surfactants for templated zeolite synthesis by Professor J W White and Ms K Edler with Professor S Sternhell, University of Sydney.

Dendrimer and polystyrene surfactant structure by Professor J W White and Mr P Saville, with Dr C J Hawker, University of Queensland, Dr K L Worley and Dr J M J Fréchet, Cornell University, USA.

Structure of C$_{60}$ labelled styrene copolymers by Professor J W White with Dr C Hawker, IBM Research Laboratory, Almaden, California, USA.

Formation of conducting patterns from polybutadiene by Professor J W White with Dr L Dai, Dr H J Griesser, Dr X Hong, Dr A W H Mau, Dr T H Spurling and Dr Y Yang, CSIRO.

12-doping of 1,4-polydienes by Professor J W White with Dr L Dai, Dr A W H Mau, Dr H J Griesser, Dr D Winkler, Dr T Spurling, Dr A Hong, Dr Y Yang, CSIRO.

Isotope effects on microphase separation by Professor J W White and Zhu Pen Wei with Dr E Epperson, Mr D Wozniak, Argonne National Laboratory, Chicago, and Dr R Snyder, University of California, Berkeley, USA.

Kinetics of template action in sodalite synthesis by Professor J W White with Dr L Iton, Dr F Trouw, Argonne National Laboratory, Chicago, and Dr D Hopkins, Amoco Chemical Company, Naperville, USA.

Vibrational dynamics of Rb$_3$C$_60$ by Professor J W White with Dr F Trouw, Argonne National Laboratory, Chicago, USA.

Liquid crystal templates, mechanism of the formation of the new mesoporous silica MCM-41 by Professor J W White with Dr L Iton, Argonne National Laboratory, Chicago, USA.

Microphase separation in C$_{60}$-styrene copolymers by Professor J W White and Mr W Fullagar with Dr C Hawker, Almaden Research Center, San Jose, USA, Mr P Saville, University of Leicester and Dr S King, Rutherford Appleton Laboratory, Oxford, UK.

Microphase separation in paraffin crystals by Professor J W White with Dr D Dorset, Medical Foundation of Buffalo, Dr E Epperson, Argonne National Laboratory, Chicago, and Dr R Snyder, University of California, Berkeley, USA.

Modification of phase separation in n-paraffin solutions by Professor J W White, Dr P Reynolds and Mr E Gilbert with Dr R Heenan, Rutherford Appleton Laboratory, Oxford, UK.

Monomolecular globular linear polystyrene particles by Professor J W White and Ms K Edler with Professor D Napper, University of Sydney, Mr P Saville, University of Leicester and Dr S King, Rutherford Appleton Laboratory, Oxford, UK.

Neutron reflectivity and small angle scattering from monomolecular polymer particles and lattices by Professor J W White with Professor D Napper, University of Sydney.

Neutron small angle scattering instrument for Australia by Professor J W White and Dr J Boldeman, Dr M Elcombe and Dr R Knott, Australian Nuclear Science and Technology Organisation, Dr L Davis, Australian Institute of Nuclear Science and Engineering, and Dr E Gray, Griffith University.
Nucleation of new phases in dendritic macromolecular surfactants by Professor J W White and Ms K Edler with Mr P Saville, University of Leicester and Dr J Webster, Rutherford Appleton Laboratory, Oxford, UK.

Quantum mechanical tunnelling and free rotation in two dimensional ammonia alkali metal solid solutions by Professor J W White and Dr I Jamie with Dr C Carlile, Rutherford Appleton Laboratory, Oxford, UK.

Structure and electrochemical activity of molecular metallic films by Professor J W White with Mr P Saville and Professor R Hillman, University of Leicester, UK.

Synthesis and structure of pillared clays by Professor J W White and Dr K Carrado, Argonne National Laboratory, Chicago, USA.

Template distribution function in modified silicate gels by Professor J W White with Dr L Iton, Dr J Richardson and Dr F Trouw, Argonne National Laboratory, Chicago, USA.

Use of the Research School of Chemistry small angle scattering camera by Professor J W White and Dr I Jamie with Dr R Knott, Australian Nuclear Science and Technology Organisation, and Mr B Leary, Dulux Australia.

X-ray reflectometer for the Research School of Chemistry and Photon Factory, Japan, by Professor J W White, Dr S Downing, and Mr T Dowling with Assistant Professor D Creagh, Australian Defence Force Academy.

Arsine adducts of alanes and gallanes by Dr S B Wild with Professor C L Raston, Griffith University.

Resolution of chiral stannanes by Dr S B Wild with Dr D Dakenieks, Deakin University.

Ruthenium-phosphine catalysed organic reactions by Dr S B Wild with Professor R N Warrener, Rockhampton and Dr C White, University of Sheffield, UK.

A single crystal XRD structure refinement of an n = 2 incommensurate misfit layer compound within the BiS-NbS2 system by Professor A D Rae and Drs S Schmid and R L Withers with Dr L C Otero-Diaz, Complutense University, Madrid.

Low frequency rigid unit modes in SiO2-tridymite by Drs R L Withers and J G Thompson with Drs M Dove and K Hammonds and Professor V Heine, Cambridge University, and Professor R J Kirkpatrick, University of Illinois at Urbana-Champaign.

A HREM study of microdomains within the 'defect fluorite' phase in the CeO2-YO1.5 system by Drs R L Withers and J G Thompson with Dr L A Bursill, University of Melbourne.

An XRD and TEM study of phases within the SrO-UO3 and PbO-UO3 systems by Dr R L Withers with Dr M Sterns, Department of Chemistry, ANU and Dr R Vincent, H H Wills, Physics Laboratory, University of Bristol, UK.

The low temperature phase transition sequence in the halide perovskite tetramethylammonium trichlorogermanate by Drs K Füttener, S Schmid, J G Thompson, R L Withers with Drs N Ishizawa and S Kishimoto, Tokyo Institute of Technology and the Photon Factory, Tsukuba, Japan.

Structure refinement and comparative crystal chemistry of the Sartorite family of minerals by Drs R L Withers and S Schmid with Dr A Pring, Department of Mineralogy, South Australian Museum.

A single crystal X-ray structure refinement of Nb2Zr-x202x+1, x =12 by Drs K Lütterer, S Schmid, J G Thompson, R L Withers with Drs N Ishizawa and S Kishimoto, Tokyo Institute of Technology and the Photon Factory, Tsukuba, Japan.
Research School of Earth Sciences

Collaboration with Australian Universities

A SHRIMP study of inherited zircon in the Pyalong granite, central Victoria, and three of its enclaves by Mr J Anderson, La Trobe University, for two weeks, as part of his PhD, working with Dr I S Williams.

PGE chemistry of Hawaiian picrites by Dr V C Bennett with Dr M Norman, Macquarie University.

Studies of diatoms in Antarctic Lakes by Dr M I Bird with Dr A McMinn, Institute of Antarctic and Southern Ocean Studies, University of Tasmania.

Studies of the carbon-isotope composition of biomarker compounds in sediments from the Great Barrier Reef by Dr M I Bird with Dr D Johnson, James Cook University, Townsville.

The historical input of metals, nutrients and organic matter into the Great Barrier Reef region by Mr S G Blake with Professor C Crossland, CRC for Reef Research, James Cook University, Townsville.

To infer the age of weathering at Jervis Bay using oxygen-isotope measurements by Dr A R Chivas with Associate Professor R W Young and Ms S Cope (BSc Honours student), University of Wollongong.

Investigation of highly nonlinear solitary wave disturbances associated with mid-latitude cold frontal systems by Dr D R Christie with Drs M J Reeder and N J Tapper, Monash University and Professor R K Smith, University of Munich.

Study of the properties of interacting solitary waves in the lower atmosphere by Dr D R Christie with Dr M J Reeder and Professor R Grimshaw, Monash University.

Study of late Quaternary sedimentary evolution of the coast and inner continental shelf bordering the central Great Barrier Reef by Dr M K Gagan with Drs D P Johnson and P Larcombe, James Cook University, and Dr G M Crowley, Monash University. Preliminary documentation of the mid-Holocene monsoon intensity recorded by central Great Barrier Reef corals was completed in cooperation with Professor D H Hopley and Ms S Anker of James Cook University.

Themes of magma genesis in island arcs and the characterisation of primitive magmas in various tectonic settings by Professor D H Green and Dr S M Eggins with Drs A J Crawford, T J Falloon, L Danushevsky and Mr KL Harris at Geology Department, University of Tasmania.

Professor D H Green has continued co-supervision of Mr M Kamperman, a PhD student at University of Tasmania, who is completing a study of high pressure redox equilibria involving ilmenite and rutile in mantle-derived mineral assemblages.

Mr K L Harris, Professional Officer, High Pressure Laboratory, University of Tasmania, has collaborated in a joint project on carbon-solubility in silicate melts under reduced conditions at upper mantle pressures.

An experimental study of non-linear interactions of internal gravity waves in a density stratified ocean by Dr R W Griffiths and Mr A Kiss, an honours year Hales Scholar in the Geophysical Fluid Dynamics group, with Dr D Broutman, School of Mathematics, University of New South Wales.

Drs R W Griffiths, R C Kerr and S A Condie of the Geophysical Fluid Dynamics group participated in a specialist one-day workshop on 'Boundary layers, density currents and the effects of buoyancy' held at the School of Mathematics, University of New South Wales, on 30 September. Griffiths and Condie presented talks on coastal gravity currents and flows of dense waters over the continental shelf and slope.

Study of the age of ophiolitic complexes around New South Wales by Dr T Ireland with Dr J Aitchison, Sydney University.

Study of the age and evolution of the Fiordland Metamorphic block, New Zealand by Dr T Ireland with Dr G Gibson, University of Southern Queensland.

Construction of synthetic seismograms for complex well-log models by Professor B L N Kennett with the Seismic Processing group, Department of Geology, University of Melbourne.
Study of the origin of lamprophyre dykes in the New England Orogen, and their relation with mesothermal Au-Sb veins by Mr A Kent with Drs P Ashley and N Cook, University of New England.

Dr F E M (Ted) Lilley joined a cruise of the *RV Franklin* in April, led by Dr I Suthers, University of New South Wales to conduct sea trials of a marine magnetometer.

Sea trials of an instrument being developed to measure the magnetic field down through the ocean column by Dr F E M (Ted) Lilley with Dr F H Chamalaun, Flinders University of South Australia.

Deployment of recording magnetometers at the 1994 SKIPPY sites in northern Australia by Dr F E M Lilley with Dr F H Chamalaun, Flinders University of South Australia.

Study of the Proterozoic basalts of Central Australia by Dr M McCulloch with Dr W Sivell, University of Western Sydney.

Study of the isotopic characteristics of the Newer Basalts of Victoria by Dr M McCulloch with Dr R Price of La Trobe University.

Dating studies of the Arunta Block, Central Australia by Professor I McDougall with Ms J Mawby, University of Adelaide.

Continued collaborative SHRIMP U-Pb zircon geochronological projects by Dr A P Nutman with Dr P D Kinny, Curtin University of Technology, Perth, on Precambrian crustal evolution of Western Australia.

Technical assistance by Dr A P Nutman to Dr J Vry, Monash University, Melbourne on a geochronology project on the Arunta block, central Australia.

The AMIRA project Cloncurry Base Metals and Gold by Dr C Perkins with Dr P Pollard and his team at the Geology Department and Key Centre in Economic Geology, James Cook University.

A project on peridotite geochemistry by Drs R L Rudnick, S Eggins and W F McDonough with Dr D Ionov, Macquarie University.

Work on glacial deposits of the Lambert Basin, Antarctica by Dr J Stone with Dr M Mabin, James Cook University.

Work on palaeoclimate records in Tasmanian cave deposits by Dr J Stone with Mr A Goede, University of Tasmania.

A project concerning the processing of brown coal by Professor G H Taylor and members of the Organic Petrology Group with a group led by Dr P Redlich, Department of Chemistry, Monash University using light and electron microscopy to characterise changes in the microstructure of coals processed in different ways.

The chronology of plutonism and metamorphism in central Australia by Dr I S Williams with Dr W J Collins, Newcastle University.

The study of the evolution of the Lachlan Fold Belt as recorded in zircons preserved both in the sediments and igneous rocks of the region by Dr I S Williams with Professor B W Chappell, Geology Department, ANU and Professor A J R White, La Trobe University (retired).

Geochemical studies of oceanic plateaus by Drs J Woodhead and M McCulloch with Dr J Hergt, Melbourne University.

Dr G M Yaxley visited the Central Science Laboratory, University of Tasmania in late May, and with the assistance of Dr G Rowbottom, performed some infra-red spectroscopy on quartz-hosted fluid inclusions in quartz+amphibole+rutil veins and segregations in Czech eclogites.

**Cooperation with CSIRO**

Work on numerical modelling of the spatial and temporal distribution of algae in the River Murray by Dr J Braun with Dr M Bormans, CSIRO Centre for Environmental Mechanics.

Tracking the breeding grounds of southern bluefin tuna from eastern Australia using oxygen-isotope measurements of otoliths by Dr A R Chivas with Dr J S Gunn, Division of Fisheries, Hobart.

The application of high precision Sr isotope analyses to sequence stratigraphy of carbonates in New Guinea by Mr C M Fanning with Dr D Whitford, CSIRO Division of Petroleum Resources.

Measuring radionuclide abundances in central Great Barrier Reef shelf sediment cores by Drs M
Joint research projects undertaken with universities, CSIRO and other institutions

K Gagan and M I Bird, with Dr A Murray and Mr P Wallbrink, CSIRO Division of Water Resources, Canberra.

Cooperation regarding coral-based records of the Indonesian Throughflow by Dr Gagan with Drs G Cresswell, S Godfrey, and G Meyers, CSIRO Division of Oceanography, Hobart.

Study of erosion on the Ord River catchment by Dr M McCulloch with Dr R Wasson, Division of Water Resources, CSIRO.

Studies of sediment production and dispersal in the Murrumbidgee and Ord River catchments by Dr J Stone with Drs R Wasson and A Murray and Mr P Wallbrink, Division of Water Resources, Canberra.

Dr P J Sylvester performed commercial ICPMS analyses of rocks and natural waters for scientists at the CSIRO Division of Exploration Geoscience in Perth, AGSO in Canberra and the Sydney-based, Clearwater Filter Systems Pty Ltd.

Professor G H Taylor and members of the Organic Petrology Group collaborated closely in a number of projects with CSIRO, especially the Division of Coal and Energy Technology and the Division of Petroleum Resources.

Professor J S Turner, Dr R W Griffiths and Dr S A Condie, Geophysical Fluid Dynamics Group continued interaction with the Aquatic Processes group of the CSIRO's Centre for Environmental Mechanics. A jointly supervised PhD student, Mr P A Hutchinson, completed and submitted his thesis on the physical processes which mix algae through a water body such as a lake or billabong, and particularly on the stirring of blue-green algae away from the water surface by turbulence generated by small wind waves. A second student who last year commenced a PhD project on the behaviour of buoyant particles in turbulence and the effects of density stratification in the water column, again under joint supervision with CSIRO, withdrew this year in order to take up employment in another division of CSIRO.

Work on comparative microanalysis correction procedures by Mr N G Ware at CSIRO Division of Exploration and Mining.

International Collaboration

Intracrystalline fractionation of oxygen isotopes in kaolinite, and the hydrogen-isotope systematics of gibbsite by Dr M I Bird with Dr F Longstaffe and Dr W S Fyfe, University of Western Ontario.

Work on the fossil and modern corals of the Pitcairn Island Group by Mr S G Blake with Dr J Pandolfi, Smithsonian Research Institute, Panama.

A project to model the dynamics of obliquely convergent orogens by Dr J Braun with Professor C Beaumont of Dalhousie University, Canada.

A project to model the plume-lithosphere interactions by Dr Braun with Dr R Stephenson, Free University of Amsterdam.

Thermal modelling of the Southern Alps constrained by K-Ar, Ar-Ar and fission track dating by Dr J Braun and Mr G E Batt with Dr P Kamp, University of Waikato, New Zealand.

Assessing past climates of the Lake Eyre Basin using the stable isotopes of fossil emu egg-shells by Dr A R Chivas with Professor G H Miller, University of Colorado.

Dr A R Chivas is also on the steering committee of the CLIP (Climates of the Past) Project of the International Union of Geological Sciences and the United Nations Educational, Scientific and Cultural Organization.

Atmospheric Hadley circulation and the dynamics of planetary atmospheres projects by Dr S A Condie with Professor P B Rhines, University of Washington.

Studying the geodynamics of subduction zone processes by Dr M J Cordery with Professor S King, Purdue University using their finite element codes and the adaptive remeshing algorithm which Dr Cordery developed. This collaboration combines Professor King's background of work on the geodynamics of subduction and the influence of the mantle transition zone on mantle dynamics with Dr Cordery's background of numerical modelling of convection and melting at mid-ocean ridges. Dr Cordery and Professor King plan to study some of the factors which may be important in the dynamics of the mantle wedge above subducting slabs.
Continued collaboration on a new numerical procedure for calculating seismic wave motion by Dr P Cummins with Professor R J Geller and Mr N Takeuchi, Department of Earth and Planetary Physics, University of Tokyo.

Using neutron diffraction techniques to investigate the development of lattice preferred orientation in experimentally deformed polycrystalline pyrite by Dr S F Cox with Professor H Siemes, RWTH-Aachen.

Fluid involvement in faulting processes by Dr S F Cox with Professor R H Sibson, University of Otago, New Zealand. The project is supported by the Bilateral Science and Technology Program, Department of Industry, Science and Technology.

Experimental and microstructural studies of deformation processes in simulated fault gouges at hydrothermal conditions by Drs S F Cox and J D Fitz Gerald with Dr K Kanagawa, Chiba University, Japan.

Research on the influence of sedimentary sulfides on the formation of lead-zinc-silver ores at Creede Colorado by Dr C S Eldridge with Dr M A McKibben, University of California, Riverside.

U-Th dating of coral terraces of the Huon Peninsula, New Guinea by Drs T Esat and M McCulloch with Dr A Omura, Kanazawa University, Japan.

A large project concerning the demineralisation of coal by Dr J D Fitz Gerald and Professor G H Taylor with several other laboratories in Australia, Japan and the United States.

Neogene palaeoenvironments in Namibia by Dr M K Gagan with Dr R McMiller, Geological Survey of Namibia, and Dr M K Seely, Namib Desert Ecological Research Unit.

Investigating coral-based records of the dynamics of the Somali Current and seasonal rainfall in East Africa by Dr M K Gagan with Professor S Gaciri and Dr E Odada, University of Nairobi, Kenya.

Extracting late Quaternary climatic histories from raised coral terraces by Drs M K Gagan and A R Chivas, with Dr W Hantoro, Indonesian Institute of Sciences.

Determination of the structure of the CAS-phase by Dr L Gautron with Dr T Irifune, University of Ehime, Japan.

A study of the melting curves of anorthite and kyanite by Dr L Gautron with Professor P Gillet and Dr G Fiquet, Ecole Normale Superieur of Lyon, France.

Studying the dynamics of submarine lava flows and sub-aerial lava domes by Dr R W Griffiths with Professor J H Fink, Geology Department, Arizona State University, and his students. This year the focus has been on extending results of flow morphology to include the effect of sea-floor slopes, and on acquiring new data from recent and continuing eruptions of silicic domes from Mt Unzen and Mt Pinatubo for comparison with their recent theoretical work.

An attempt to bring together ideas and data on mid-latitude ocean phenomena from satellite sensing and laboratory experiments by Dr Griffiths with Professor P Cornillon, Graduate School of Oceanography, University of Rhode Island. The focus is on the behaviour of western boundary currents.

Study of the Katla volcano in southern Iceland by Dr O Gudmundsson with Professor W Menke, Lamont-Doherty Earth Observatory; Ms B Brandsdottir, University of Iceland; and Dr G Sigvaldason, Nordic Volcanological Institute.

Noble gas studies of submarine lavas dredged from the Woodlark Basin, near Papua New Guinea by Dr M Honda and Professor I McDougall with Professor M R Perfit, University of Florida.

The geochronology of New Zealand igneous rocks by Dr T Ireland with Dr S Weaver, Dr R Muir, and Dr J Bradshaw, Canterbury University, New Zealand.

Dating and trace element characteristics of differentiated meteorites by Dr T Ireland with Dr M Bukovanska, Natural History Museum, Prague.

Isotopic and chemical characteristics of interstellar grains by Dr T Ireland with Dr E Zinner, Physics Department, Washington University, St Louis.

Obtaining standards for ion probe analysis by Dr T Ireland with Drs T M Harrison and K McKeegan, University of California, Los Angeles.
The development of techniques for the ultrasonic measurement of elastic wave speeds within multi-anvil high pressure apparatus by Dr I Jackson with Baosheng Li and Professor R C Liebermann, State University of New York at Stony Brook.

The construction of seismic models to fit seismic travel time data by Professor B L N Kennett with Dr E R Engdahl and Dr R Buland at the National Earthquake Information Centre, Golden Colorado.

Research on the timing of Archaean gold mineralisation in Western Australia by Mr A Kent with Dr K Cassidy, University of Saskatchewan, Saskatoon, Canada, and Dr S Hagemann, University of Wisconsin, in Madison.

The effects of interfacial disequilibrium and compositional convection on the growth of mushy layers by Dr R C Kerr with Dr M G Worster, University of Cambridge.

Fluid dynamics and thermodynamics of the ascent of granitic magmas in dykes by Dr R C Kerr with Dr J R Lister, University of Cambridge and Dr N Petford, University of Liverpool.

Lateral propagation of magmas in synsedimentary sills by Dr R C Kerr with Dr J R Lister.

Studies of the tectonics and sea-level change in Greece by Professor K Lambeck, member of NASA's Investigator Team for the Magellan mission to Venus, with scientists from Cambridge University and the National Technical University in Athens.

Studies of the former ice sheets over northern Europe by Professor K Lambeck with scientists from Oslo and Bergen.

Looking at the effects of aspect ratio and cell geometry on centerline (hottest) temperature of rising mantle plumes by Dr A M Leitch with Dr V Steinbach, University of Cologne and Professor D A Yuen, Minnesota Supercomputer Institute.

Dr F E M (Ted) Lilley participated in an international exercise in data interpretation, in which research groups from many countries focused on a single data set, and then compared their interpretations at an international meeting (in Cambridge, UK in August). The data set in this instance is of magnetotelluric data collected by an oil exploration company in Papua New Guinea; a special journal issue is planned to report the results of the meeting.

A study of U and Pb transport in zircons by Dr J K W Lee with Professor A K Sinha, Virginia Polytechnical Institute and State University.

The development of a general mathematical model which successfully explains the presence and spatial distribution of metamictization-induced fractures observed in natural zircon crystals by Dr J K W Lee with Dr J Tromp, Harvard University.

A peridotite geochemistry project by Drs W F McDonough, R L Rudnick and S Eggins (RSES) with Professor F A Frey, Massachusetts Institute of Technology, USA and Dr D Ionov, Macquarie University.

The composition and nature of the continental lithospheric mantle by Drs McDonough and Rudnick with Dr A Brandon, Massachusetts Institute of Technology, USA.

The numerical time scale for evolution of vertebrates in East Africa over the last 10 million years by Professor I McDougall with Professor F H Brown, University of Utah; Dr C S Feibel, Rutgers University, New Jersey and Dr M Leakey, National Museums of Kenya.

Continued collaborative SHRIMP geochronological projects by Dr A P Nutman paid for by the Geological Survey of Greenland (with Dr F Kalsbeek). The main project is the evolution of the Proterozoic Ngaantuqoqidian mobile belt, which also involved field work in Greenland. Work was also carried out on a large Caledonian eclogite province in northeast Greenland, the Proterozoic Ketilidian mobile belt of southern Greenland and the Archaean gneisses of Disko Bugt, west Greenland.

Dr A P Nutman also undertook SHRIMP U-Pb zircon geochronology for several projects in the USA, with and paid for by the United States Geological Survey (Dr J Wooden) and Dr P Mueller, University of Florida, Gainesville. Principal projects continued to be early crustal evolution in the Wyoming Province and (largely from borehole samples) the crustal evolution of Florida and Georgia.
SHRIMP U-Pb zircon geochronology on a rock sample from under the centre of the Greenland Ice Cap, by Dr A P Nutman for the Polar Ice Coring Office, USA, but paid for by the Geological Survey of Greenland.

SHRIMP U-Pb zircon dating was undertaken on Archaean rocks from southern India by Dr A P Nutman with Dr B Chadwick, University of Exeter, UK, and from the Aker Mountains in Antarctica with Dr V Krylov, University of St Petersburg, Russia.

Integrated U-Pb, Hf and Nd isotopic studies of zircons from very ancient rocks by Dr A P Nutman and Dr V C Bennett with Drs J Patchett and J Vervoort, University of Arizona, USA.

Dr A P Nutman also assisted S Mojzsis, Scripps Institution of Oceanography, USA in a study of phosphate phases in very old sediments.

The study of Archaean crustal evolution of the Godthäbsfjord region, southern West Greenland by Dr A P Nutman in long-standing collaboration with Dr C R L Friend, Oxford Brookes University, UK, Dr V R McGregor, Atammik, Greenland and Dr M T Rosing, University of Copenhagen, Denmark.

Dabie ultra high pressure metamorphic terrane of China by Dr A P Nutman with Dr S Maruyama, Tokyo Institute of Technology, Japan.

The differential stress control of a feldspar replacement process by Dr L L Pryer with Professor P-Y Robin, University of Toronto.

Synthesis and measurement of elasticity of high-pressure mantle phases by Dr S Rigden with Professor R C Liebermann and colleagues, State University of New York at Stony Brook, USA. Funding for a further phase of this collaboration has been gained through a successful application for support from the Bilateral Science and Technology Program of the Department of Industry, Science and Technology.

Structure and composition of the continental crust by Dr R L Rudnick with Dr D Fountain, University of Wyoming, USA.

A project concerning the geochemistry of eclogites by Dr R L Rudnick, Dr T Ireland and Professor D H Green with Dr Z Spetsius, Institute of Diamond Industry, Mirny, Russia, and with Drs H St C O'Neill and C McCammon, Bayreuth Institut of Geosciences, Germany on the oxidation state of eclogites.

A chemical engineering project involving electrical impedance tomography by Dr M Sambridge with Dr R T Bonnacaze, University of Texas at Austin.

A project involving geophysical optimization by Dr M Sambridge with Dr K Gallagher, University College London.

A project on non-linear travel time tomography by Dr M Sambridge with Professor R Snieder and Dr J Pulliam, University of Utrecht.

Geochemical and isotopic studies of Quaternary silicic volcanism in the Jemez volcanic field, New Mexico, USA by Dr T Spell with Dr P Kyle, New Mexico Institute of Mining and Technology.

Studies of the interpretation of $^{40}$Ar-$^{39}$Ar age spectra by Dr T Spell with Dr P Copeland, University of Houston.

Dating glacial surfaces and landslide deposits in Scotland by Dr J O Stone with Professor C M Ballantyne, University of St Andrews.

Work on problems in geological fluid mechanics by Professor J S Turner with Professor H E Huppert, Institute of Theoretical Geophysics, University of Cambridge.

Professor J S Turner followed up his visit to Caltech in 1993 by writing a paper on joint work done there with Professor H G Hornung, Director of the Graduate Aeronautical Laboratories, California Institute of Technology.

High frequency wave propagation through subducted lithosphere north of New Zealand by Dr R D van der Hilst with Professor Dr R Snieder, University of Utrecht.

Investigation by Dr R D van der Hilst of the reliability of tomographic images by Professor G Nolet and Dr M Deal, Princeton University.

Numerical modelling of subduction processes by Dr R D van der Hilst using slab structure from seismic imaging by Professor M Gurnis and collaborators at Caltech.

Seismological investigation of the deep structure of subducted slabs below southwest Pacific island
Joint research projects undertaken with universities, CSIRO and other institutions

Dr I S Williams collaborated with Dr S Stowe ANU Electron Microscopy Unit and Dr J S Shah, Wills Physics Laboratory, University of Bristol, during the latter’s six week visit to ANU in improving the scanning electron microscope-based techniques by which the growth structure of sectioned zircon crystals can be imaged in preparation for ion microprobe analysis.

Dr I S Williams collaborated with Dr W A Padgham, Indian and Northern Affairs Canada and Professor H Baadsgaard, University of Edmonton during the latter’s two month visit to RSES in zircon dating of cobbles from conglomerates from the Slave Province, northern Canada.

Study of the distribution of trace elements in inherited zircon grains from the Cowra Granite, southeastern Australia, and its implications for the rates of diffusion of elements in zircon at magmatic temperatures by Dr I S Williams with Mr J Hanchar, a PhD student at Rensselaer Polytechnic Institute.

The use of detrital zircon to establish the age, provenance and depositional environment of the early Palaeozoic turbidites of the Lachlan Fold Belt, southeastern Australia by Dr I S Williams with Dr K A W Crook, Hawaii Undersea Research Laboratory.

Pilot study which is expected to lead to the calibration of SHRIMP-FG for accurate quantitative and isotopic analyses of B, with a particular emphasis on the analysis of B at very low concentrations by Dr I S Williams and Dr C S Eldridge with Professor D M Shaw, McMaster University and Professor W Leeman, Rice University.

Study of the age and evolution of the world’s oldest known rocks, the Acasla gneisses of the Northwest Territories, Canada by Dr I S Williams with Dr S A Bowring, Massachusetts Institute of Technology.

Looking at diapiric ascent of magmas by Dr R F Weinberg with Dr Yuri Podladchikov, Vrije Universiteit, Amsterdam.

An isotope study of volcanogenic sediments from the Western Pacific by Dr J Woodhead with Dr P Floyd of Keele University, UK.

Research School of Information Science and Engineering

Other Australian universities

Symbolic Reasoning Systems (SRS) by R P Gore, R K Meyer, G A Restall and J K Slaney, with University of Adelaide (Department of Philosophy), University of Canberra (Faculty of Information Technology), Griffith University (School of Computing and Information Technology), La Trobe University (Department of Philosophy), James Cook University (Department of Computer Science), The University of Sydney (Basser Department of Computer Science), University of Wollongong (Department of Mathematics), CSIRO (Division of Information Technology), and DSTO (Division of Information Technology).

Development of an Enhanced Ophthalmoscope by T R J Bossmoiaer, with W S Jagger, M H Kahn; Monash University, Supercomputer Facility, ANU.

Development of Software for Parallel Computers by T R J Bossmoiaer, R P Brent, A J Cleary, M Hegland, and P F Price, with M R Osborne, R B Stanton, Fujitsu personnel; School of Mathematical Sciences and Faculty of Science at ANU, Fujitsu Australia Ltd and Fujitsu Research Laboratories, Japan.

Compiler Technology by R P Brent, with P Tang, University of Southern Queensland.

Computational Number Theory by R P Brent, with J Cannon, G Cohen, H TE Riele, P Montgomery, R D Silverman; Sydney University, University of Technology Sydney, Mathematische Centrum in Amsterdam, Mitre Corporation in Massachusetts.
Stability of Fast Algorithms by R P Brent, with D Sweet, F R de Hoog, A Bojanczyk, DSTO, CSIRO, Cornell University.

Ill-Posed Problems by M Hegland, with R S Andersen, CSIRO.

Complexity Theory by E V Krishnamurthy, with B Litow; James Cook University, QLD.

Parallel Programming Environment by E V Krishnamurthy, with V K Murthy, QLD University of Technology.


Australian National Database of Spoken Language by J B Millar, with P Dermody, J M Harrington, J Vonwiller; National Acoustic Laboratories, Macquarie University, University of Sydney.


Controller Reduction by B D O Anderson, with Dr V Sreeram, Department of Mathematics, University of Western Australia.

Riccati Equation Methods by B D O Anderson, with Dr D Clements, Department of Electrical Engineering, University of NSW.

Telephone Traffic by B D O Anderson, with Dr M Frater, Department of Electrical Engineering, ADFA.

Robust Stability by B D O Anderson, with Dr M Fu, Department of Electrical and Computer Engineering, University of Newcastle.

Process Control in the Alumina Industry by R R Bitmead, with Dr M Tade, Department of Chemical Engineering, Curtin University.

Dynamics of Adaptive Systems by R R Bitmead, with Dr M Frater, Department of Electrical Engineering, ADFA.

First Nonlinear Workshop in Australia by I M Y Mareels, with Professor D Hill, Department of Electrical Engineering, University of Sydney.

Sugar Cane Crushing Mill and Optimization by R R Bitmead, and S Crisafulli, with Dr R Peirce, CSR.

Adaptive Speech Coding for Voice Recording by R R Bitmead, S Crisafulli, and H Jones, with Dr D McLean and Mr J Agbinya, CSIRO.

Research, Design and Implementation of Steel Temperature Estimator by R R Bitmead, with Mr R McIntosh and Mr T Ardouin, BHP Slab and Plate Products Division; Mr P Stone, BHP Research and BHP Sheet Coiled Products Division.

Modelling and Control of a Galvanising Line by I M Y Mareels, with Dr P Stone, BHP, Western Port Mill; Mr J Gerula, ANU.

Low Earth Orbit Satellite Communication Systems by R A Kennedy, with Mr J Bos, Mr E Roberts, Auspace Pty Ltd, Canberra.

International collaborations


Area 1 of the ANU’s agreement with Fujitsu (Japan), concerning basic research by J K Slaney, and M D Grundy, with Fundamental Informatics Group, Fujitsu Laboratories, Numazu, Japan.

MEDLAR-2 (Mechanising Deduction in Logics of Practical Reason) Esprit Project by J K Slaney, and M D Grundy, with Imperial College of Science, Technology and Medicine, London; ICL Ltd, Bracknell; Universite Paul Sabatier, Toulouse; Institut d'Informatique et de Mathematiques Appliquees de Grenoble; ONERA-CERT, Toulouse; University of Oslo; Research Institute for Symbolic Computation, Linz; Technische Hochschule Darmstadt; Technical University of Munich; University of Torino (Associate Partners: Agder College, Oslo; University of Leeds; University of Rome; University of Uppsala).

Theories of Colour Vision by T R J Bosmaier, with D Osorio; University of Sussex, UK.
Joint research projects undertaken with universities, CSIRO and other institutions

Artificial Life and Emergent Computation by T R J Bossoimaier, with Z Aleksic; University of Commerce and Business Administration, Nagoya, Japan.

Development of Software for Parallel Computers by T R J Bossoimaier, R P Brent, A J Cleary, M Hegland, and P F Price, with M R Osborne, R B Stanton, Fujitsu personnel; School of Mathematical Sciences and Faculty of Science at ANU, Fujitsu Australia Ltd and Fujitsu Research Laboratories, Japan.

Computational Number Theory by R P Brent, with J Cannon, G Cohen, H Te Riele, P Montgomery, R D Silverman; University of Sydney, University of Technology Sydney, Mathematische Centrum in Amsterdam, Mitre Corporation in Massachusetts, USA.

Stability of Fast Algorithms by R P Brent, with D Sweet, F R de Hoog, A Bojanczyk; DSTO in SA, CSIRO, Cornell University, USA.

Parallel Processing for Image Reconstruction by E V Krishnamurthy, with R Klette; Technical University of Berlin, Germany.

SPHERE (European Union Human Capital and Mobility Network) by J B Millar, with P Green; University of Sheffield, UK.

Adaptive Control by B D O Anderson, with Dr R Kosut, Integrated Systems Inc, Santa Clara, USA.

Identification and System Theory by B D O Anderson, with Professor M Deistler, Technical University of Vienna, Austria.

Identification by B D O Anderson, with Professor A Antoulas, Rice University, USA.

Control and Identification by B D O Anderson, with Professor M Gevers, CESAME, Université Catholique de Louvain, Belgium.

Control and Identification by B D O Anderson, with Professor S Dasgupta, University of Iowa, USA.

Communications by B D O Anderson, with Professor C R Johnson Jr, School of Electrical Engineering, Cornell University, USA.

Riccati Equations by B D O Anderson, with Professor A Laub, University of California at Santa Barbara, USA.

Hf Control by B D O Anderson, with Professor T Mita, Chiba University, Japan; Professor S Hara Tokyo Institute of Technology, Japan; Mr K Kuriyama, Chiba University, Japan.

Robust Control by B D O Anderson, with Professor M Mansour, ETH, Zurich, Switzerland; Dr F Kraus, ETH, Zurich, Switzerland.

Combinatorial Problems in Learning Theory by P L Bartlett, with Dr P M Long, Department of Computer Science, Duke University, USA.

Approximation, Interpolation and Learning by P L Bartlett, with Dr M Anthony, Mathematics Department, London School of Economics, UK; Dr J Shawe-Taylor, Computer Science Department, University of London, UK.

Models of Learning with Dependent Examples by P L Bartlett, with Dr P Fischer, Computer Science Department, University of Dortmund, Germany.

Convergence Properties of Neural Network Learning Algorithms by P L Bartlett, with Professor S Dasgupta, Department of Electrical and Computer Engineering, University of Iowa, USA.

Learning Changing Problems by P L Bartlett, with Dr D Helmbold, Department of Computer Science, University of California at Santa Cruz, USA.

Iterative Control System Design and System Identification by R R Bitmead, with Dr M Jesus, CESAME, Université Catholique de Louvain, Belgium.

Model-free Controller Performance Assessment by R R Bitmead, with Dr V Wertz, CESAME, Université Catholique de Louvain, Belgium.

Adaptive Systems in Communications by R R Bitmead, with Professor C R Johnson Jr, School of Electrical Engineering, Cornell University, USA.

Control of Autonomous Underwater Vehicles by R R Bitmead, with Dr C Samson, and Dr A Santos, INRIA, France.
Nonlinear Risk Sensitive and H_\infty Control by M R James, with Professor J S Baras, Institute for Systems Research, University of Maryland, USA; Professor J W Helton, University of California, USA; Professor W H Fleming, Brown University, USA.

Adaptive Systems by I M Y Mareels, with Professor J W Polderman, Department of Applied Mathematics, Technical University of Twente, The Netherlands.

Robotic Vision and Grasping Systems by J B Moore, with Professor Hasimoto and Dr M Buss, Institute of Industrial Science, University of Tokyo, Japan.

Hidden Markov Model Estimation and Control via Reference Probability Methods (textbook and research papers) by J B Moore, with Professor R J Elliott, and Mr L Aggoun, Department of Statistics and Applied Probability, University of Alberta, Canada.

Aircraft Nonlinearities Representation by J B Moore, with Dr L Dailey, Boeing Defence and Space Group, Seattle, USA.

Nonlinear Finite Dimensional Control by J B Moore, with Professor J S Baras, Institute for Systems Research, University of Maryland, USA.

Nonlinear Optimization by J B Moore, with Professor L Faybusovich, University of Notre Dame, USA.

High Performance Control (textbook) by J B Moore, and I M Y Mareels, with Dr T T Tay, Department of Electrical and Electronic Engineering, University of Singapore, Singapore.

Characterisation of Learnability of Real Valued Functions by R C Williamson, and P L Bartlett, with Dr P Long, Department of Computer Science, Duke University, USA.

Analysis of Genetic and Other Related Algorithms by R C Williamson and P L Bartlett, with Dr W A Sethares, Department of Electrical and Computer Engineering, University of Wisconsin at Madison, USA.

Soft Quantizer Feedback Structures by R A Kennedy, with Professor Z Ding, Auburn University, USA.

Suboptimal MLSE for Multiple Access Channels by R A Kennedy, with Dr W Sauer-Greff, University of Kaiserslautern, Germany.

Effects of Input Data Correlation on Equalizer Convergence by R A Kennedy, with Professor C R Johnson Jr, Cornell University, USA; Mr J LeBlanc, Cornell University, USA.

Convex Methods in Blind Equalisation by R A Kennedy, with Professor S Verdu, Princeton University, USA; Dr S Vembu, Qualcomm, San Diego, USA.

Initialisation Strategies for Blind Equalisation by R A Kennedy, with Professor Z Ding, Auburn University, USA.

Joint Estimation of Trellis Coded Data and Channels using the M-Algorithm by R A Kennedy, with Dr Bauer, Siemens Laboratory, Munich, Germany.

Coupled Approach to ADPCM Adaption by R A Kennedy, with Dr S Crisafulli, Cooperative Research Centre for Robust and Adaptive Systems, ANU; Dr G Rey, MOOG, USA; Professor C R Johnson Jr, Cornell University, USA.

Reduced State Sequence Estimation by R A Kennedy.

John Curtin School of Medical Research

Division of Biochemistry and Molecular Biology

Enzyme inhibition by Pterins and related compounds by Dr W Armarego with Professor C J Suckling, University of Strathclyde, UK.

Kinetics of E Coli haemoglobin by Dr W Armarego with Dr S G Vasudevan, James Cook University.

Molecular Biology of Dihydropteridine Reductase by Dr W Armarego with Dr R G H Cotton, Royal Children’s Hospital, Melbourne.
Joint research projects undertaken with universities, CSIRO and other institutions

Glyceryl-ether mono oxygenase by Dr W Armarego with Professor H Taguchi, Kyoto Women’s University, Japan.

Structure of P-F1-ATPase subunits by X-ray crystallography by Professor G Cox with Dr M Guss, University of Sydney.

ATP-binding cassette membrane transporters by Professor G Cox with Dr A J Howells, Biochemistry and Molecular Biology, The Faculties, ANU, and Professor R K Poole, Kings College, London.

ATP-synthase mechanism by Professor G Cox with Professor A E Senior, University of Rochester, USA.

Proton-energised membrane transporters by Professor G Cox with Professor A J Pittard, University of Melbourne.

*Signal transduction processes which control airway secretions and reactivity by Dr P Foster with Professor M J Berridge, University of Cambridge, UK.

* Initiated as an Australian Academy of Science and Royal Society Travelling Fellowship.

Characterisation of the mechanisms mediating endothein-induced contraction of airways by Dr P Foster with Dr D W P Hay, Smith Kline Beecham Pharmaceuticals, USA.

Characterisation of proteins involved in Ca2+ signalling of skeletal muscle by Dr P Foster with Dr N Ikemoto, Harvard Medical School, Harvard and Boston Biomedical Research Institute.

Application of Ins (1,4,5)P3 structural analogue affinity chromatography to the isolation of proteins involved in the phosphoinositide Ca2+ signalling pathway by Dr P Foster with Professor S Ozaki, Ehime University, Japan.

Application of Ins (1,4,5)P3 structural analogue affinity chromatography to the isolation of proteins involved in the phosphoinositide Ca2+ signalling pathway by Dr P Foster with Professor B V L Potter, University of Bath, UK.

Kinetic characterisation of inhibitors of inositol polyphosphate metabolism. Development of highly selective and potent inhibitors of Ca2+ signalling processes by Dr P Foster with Professor B V L Potter, University of Bath, UK.

Molecular characterisation of genes involved in Ca2+signalling processes by Dr P Foster with Dr C Mitchell, Monash University.

Chromosomal localisation of genes involved in Ca2+signalling processes by Dr P Foster with Professor G Sutherland, Women’s and Children’s Hospital, SA.

Role of nuclear localisation of the p13sucl subunit of the cdc2-kinase complex in the cell cycle by Dr D A Jans with Dr E Williams, Lions Cancer Institute, Royal Perth Hospital.

Nuclear localisation of the interferon induced IF16 protein by Dr D A Jans with Dr J Trapani, Austin Research Institute, Melbourne.

Gene targeting of interleukin genes by Dr K I Matthaei with Dr M Kopf and Professor G Köhler, Max Planck Institut fr Immunbiologie, Germany.

Structure/function of milk proteins by Dr D Shaw with Dr M Messer, University of Sydney; and Drs K R Nicholas and P H Bird, CSIRO Division of Wildlife and Ecology.

Proteins from marine organisms by Dr D Shaw with Professor D Yellowlees, James Cook University.

Human lens proteins by Dr D Shaw with Professor R J W Truscott, University of Wollongong.

Phosphorylation on nucleosome spacing by HMGs 14 and 17 by Dr D Tremethick with Dr M Bustin, NIH, Bethesda, USA.

Stimulation of transcription from different RNA polymerase II promoters by high mobility group proteins 1 and 2 by Dr D Tremethick with Dr P L Molloy, CSIRO Division of Biomolecular Engineering.

The transcription complex of the 5S RNA gene, but not TFIIIA alone, prevents nucleosomal repression of transcription by Dr D Tremethick with Dr K Zucker and Dr A Worcel, University of Rochester, USA.
Partial purification, from Xenopus laevis Oocytes, of an ATP-dependent Activity Required for Nucleosome Spacing in Vitro by Dr D Tremethick with Dr M Frommer, Royal Prince Alfred Hospital, NSW.

HMGs 14 and 17 can Space Nucleosomes in Vitro by Dr D Tremethick with Dr H Drew, CSIRO Division of Biomolecular Engineering.

The mechanism by which a transcription complex forms on the mouse dihydrofolate reductase promoter when the promoter is assembled in chromatin by Dr D Tremethick with Dr P Farnham McArdle, University of Wisconsin, USA; and Dr J Wells, The biology of the histone H2A variant H2AZ, University of Adelaide.

The expression of interleukin-3, interleukin-5 and their receptors in the mouse brain, using in situ hybridisation by Dr S Ymer with Dr B D Shivers, Park Davis, Ann Arbor, USA.

Human low molecular weight B cell growth factor by Dr I G Young with Dr E M Benson, Westmead Hospital, NSW.

Nuclear localisation of granzyme _SYMBOL 98 v "Symbol"_ by Dr I G Young with Dr J Trapani, Austin Research Institute, Melbourne.

Receptor- and Signal-Mediated Targeting of Plasmid-DNA and Photosensitiser Molecules to the Nucleus of Specific Cell Types with Application in Gene Therapy and Cancer Phototherapy by Dr I G Young with Professor A Sobolev, Research Center for Molecular Diagnostics and Therapy, Moscow.

Nuclear localisation of the mUBF transcription factor by Dr I G Young with Professor M Muramatsu, Saitama Medical School, Japan.

Division of Cell Biology

Studies on the structure of CD4 on human T lymphocytes by Drs J G Altin and C R Parish with Drs G Lynch and A Cunningham, Westmead Hospital, NSW.

Evolutionary origin of germline V genes in immune system by Professor R V Blanden with Dr E J Steele and Mr H Rothenfluh, University of Wollongong; and Professor A J Gibbs and Dr G Weiller, Research School of Biological Sciences, ANU.

Definition of p53 promoter elements activated by adenovirus E1a by Dr A W Braithwaite with Dr M Oren, Weizmann Institute, Israel.

Role of p53 and retinoblastoma genes in SV 40-induced immortalisation of human cells by Dr A W Braithwaite with Dr R Reddel, Children’s Medical Research Institute, Westmead, NSW.

Functional characterisation of Xenopus laevis p53 by Dr A W Braithwaite with Dr T Soussi, Institut de Genetique Moleculaire, Paris.

Studies of functional domains within mouse p53 by Drs A W Braithwaite and P Jackson with Dr M Reed, State University of New York, New York, USA.

Identification of p53-responsive elements within the PCNA promoter by Drs A W Braithwaite and P Jackson with Dr G Morris, Tulane Medical Center, USA.

Identification of a novel p53-response element in the MCK promoter by Drs A W Braithwaite and P Jackson with Drs J Buskin and S Hauschka, University of Washington, USA.

Mapping of E3 proteins responsible for the down-regulation of adenovirus by Drs A W Braithwaite and A Müllbacher with Dr W S M Wold, E1a St Louis Medical Center, School of Medicine, USA.

Involvement of cytokines and nitric oxide in the side-effects of diethylcarbamazine in filariasis patients by Drs I A Clark and K A Rockett with Dr P Turner, James Cook University.

Induction of cytokines and nitric oxide by molecular components of malaria parasites by Drs I A Clark and K A Rockett with Drs D Kwiatkowski and C Bate, John Radcliffe Hospital, Oxford.
Joint research projects undertaken with universities, CSIRO and other institutions

Interaction of TNF, nitric oxide, and the chemo-attractant cytokine, CP10 by Drs I A Clark and K A Rockett with Dr C Gezcy, Heart Research Institute, Sydney.

Possible role of nitric oxide in Dengue and Typhoid (with Erin O'Neill) by Drs I A Clark and K A Rockett with Dr S McGladdery, NAMRU, Jakarta.

Interactions of ethanol with nitric oxide in the central nervous system by Drs I A Clark, W B Cowden and K A Rockett with Dr F Widmer, Peptide Technology, Sydney.

The influence of cytokines on nitric oxide production by human endothelial cells by Drs I A Clark, W B Cowden and K A Rockett with Dr L Belov, Peptide Technology, Sydney.

Cytokines and nitric oxide in filariasis patients treated with diethylcarbamazine by Drs I A Clark, W B Cowden and K A Rockett with Dr P Turner, James Cook University.

Roles of lymphotoxin in malarial pathology by Drs I A Clark, W B Cowden and K A Rockett with Dr B B Aggarwal, M D Anderson Cancer Center, Houston, USA; and Dr A Ferrante, University of Adelaide.

Involvement of nitric oxide in the pathogenesis of cerebral malaria by Drs I A Clark, W B Cowden and K A Rockett with Professor M Friedlander, University of Alabama at Birmingham, USA; and Dr D Kwiatkowski, John Radcliffe Hospital, Oxford, UK.

Induction of cytokines and nitric oxide by molecular components of malaria parasites by Drs I A Clark, W B Cowden and K A Rockett with Dr C Bate, University of London; and Dr P Jakobsen, University Hospital, Copenhagen.

Role of Fra-1 in insulin-dependent cell growth by Dr D Cohen with Professor E Englesberg, University of Santa Barbara, USA.

Regulation of fra-1 expression following insulin stimulation by Dr D Cohen with Dr M Alexander-Bridges, Harvard Medical School, Boston, USA.

Structure of the mouse fra-2 gene by Dr D Cohen with Dr H Iba, University of Tokyo.

Role of AP-1 family members in corticotrope cells by Dr D Cohen with Dr D Autelitano, Baker Medical Research Institute, Prahan, Vic.

Adjuvant activity of gamma inulin by Dr P Cooper with Dr E Steele, University of Wollongong; Dr J Cox, Commonwealth Serum Laboratories, Vic; Professor P Carnegie and Dr H Deol, Murdoch University; Dr P Goldwater, Adelaide Children’s Hospital; Professor I Frazer and Dr R Tindle, Princess Alexandra Hospital, Brisbane; Dr R Chevis, Chevis Agricultural Services, Oakdale, NSW; Dr R Gupta, Massachusetts Public Health Biological Laboratories, Boston, USA; Professor A B Dalgleish, St George’s Hospital, London; Professor A Erdei, Lorand Eötvös University, Göd, Hungary; Dr F Vogel, AIDS Vaccine Research Branch, NIH, Bethesda, USA; Dr G Cerini, Lederle-Praxis Biologicals, NY, USA; Dr T Spithill, Victorian Institute of Animal Science; Dr M J Newman, Apollon Inc, Malvern, USA; Dr P Fuentes, Univerisat Autonoma de Barcelona, Spain; Dr G Guillen, Centre for Genetic Engineering and Biotechnology, Havana, Cuba; Dr J House, University of California, USA; Dr R Rappoli, Istituto Ricerche Immunobiologiche, Siena, Italy; Dr W Donzig, Vétoquinol Biotechnologie, Magny-Vernois, France; Dr R Hjorth, Wyeth-Ayerst Research, Radnor, USA; and Dr H Snippe, Utrecht University, The Netherlands.

Novel approaches to vaccine technology by Dr W B Cowden with Dr B Moss, Peptide Technology Ltd, Sydney.

Design and synthesis of novel immunological adjuvants by Dr W B Cowden with Drs B Moss, F Widmer and P Schober, Peptide Technology Ltd, Sydney.

An approach to inhibition of atherogenic monocyte migration across the endothelium by Dr W B Cowden with Professor R T Dean and Dr J Dawes, Heart Research Institute, Sydney.

Small peptide inhibitors of tumour necrosis factor by Drs W B Cowden, K A Rockett and I A Clark with Drs D Rathjen and R Aston, Peptide Technology Ltd, Sydney.

The sensitivity of "anergic" B cells to T cell stimulation by Dr P D Hodgkin with Professor A Basten and Dr J Eris, University of Sydney.
The use of T cell membranes to separate events in T cell–B cell collaboration by Dr P D Hodgkin with Dr M R Kehry, Boehringer Ingelheim Pharmaceuticals, Connecticut, USA.

Design, construction and immunobiological testing of recombinant fowlpox vectors encoding cytokine genes by Mr K H Leong, Drs A J Ramsay and I A Ramshaw with Dr D Boyle, CSIRO, AAHL.

Protective immune responses in mice vaccinated with recombinant vectors expressing flavivirus genes by Dr M Lobigs with Drs R A Hall and I S Mackenzie, University of Western Australia

CL2DMP liposome elimination of Marginal Zone Macrophages by Dr A B Lyons with Dr N van Rooijen, Free University, Amsterdam, The Netherlands.

Investigation of the behaviour of transferred transgenic B lymphocytes using fluorescent probes by Drs A B Lyons and C R Parish with Dr D Fulcher, Ms S Korn and Professor A Basten, University of Sydney.

Construction of an adenovirus vector coding for the outer-surface protein of Borrelia burgdorferi by Dr A Müllbacher with Dr M Simon, Max Planck Institute für Immunobiologie, Freiburg, Germany; and Dr R Wallich, Deutsches Krebsforschungszentrum, Heidelberg, Germany.

Construction of Adenovirus vaccine vectors by Dr A Müllbacher with Dr G Both, Division of Biomolecular Engineering, CSIRO.

The role of T cell serine proteases in cell cytotoxicity and viral pathogenesis by Dr A Müllbacher with Dr M Simon, Max Planck Institute für Immunobiologie, Germany.

Cloning and sequencing of Syrian Hamster peptide transporter genes by Dr A Müllbacher and Dr M Lobigs with Dr H Rothenfluh, University of Wollongong.

Polymorphism of syrian hamster class I MHC peptide transporters by Drs A Müllbacher and M Lobigs with Dr M Simon, Max Planck Institute für Immunobiologie, Germany.

The immune response to scabby mouth pox virus by Drs A Müllbacher and M Lobigs with Dr J Chin, NSW Department of Agriculture.

Polyanion binding sites on CD2 by Dr C R Parish with Dr E Reinhertz, Dana Farber Cancer Institute, Boston, USA; and Dr M Recny, Procept Inc, Boston, USA.

Searching for CD2 ligands by Dr C R Parish with Dr M Sandrin, Austin Research Institute, Melbourne; and Associate Professor I. Harrison, Walter and Eliza Hall Institute, Melbourne.

Role of CD45 in cell adhesion by Dr C R Parish with Dr D Coombe, WA Research Institute for Child Health.

Poylanions as anti-HIV agents by Dr C R Parish with Dr A Cunningham, Westmead Hospital, NSW; and Dr D Coombe, WA Research Institute for Child Health; and Dr C Rider, Royal Holloway and Bedford New College, London.

Degradation of basement membranes by leukocytes and tumour cells by Dr C R Parish with Dr C Geczy, Heart Research Institute, Sydney.

Modulation of T cell immunity by Dr C R Parish with Dr B Fazekas de St Groth, University of Sydney.

Analysis of cell adhesion molecules on human T lymphocytes by Drs C R Parish and J Altin with Dr H Warren, Woden Valley Hospital, ACT.

Immunobiology of recombinant adenovirus vectors encoding cytokine genes by Dr A J Ramsay with Professor J Gauldie and Dr F Graham, McMaster University, Canada.

Immunobiology of recombinant Salmonella vectors encoding cytokine genes by Dr A J Ramsay with Dr R Strugnell, University of Melbourne.

Antiviral immunity in cytokine gene knockout mice by Dr A J Ramsay with Dr Manfred Kopf and Professor Georges Kohler, Max-Planck-Institut für Immunobiologie, Germany; and Professor A Husband, University of Sydney.

Design of viruses for the biological control of vertebrate populations by Dr I A Ramshaw with Drs P Jackson, P Kerr, M Bradley and C H Tyndale-Biscoe, Division of Wildlife and Ecology, CSIRO.
The use of vaccinia virus expressing IL-2 in the treatment of melanoma by Dr I A Ramshaw with Professor P Hersey, Royal Newcastle Hospital.

Construction and testing of recombinant vaccinia viruses expressing genes of M leprae by Dr I A Ramshaw with Professor A Basten and Dr W Britton, University of Sydney.

Investigation into immunogenicity of naked DNA vaccines by Dr I A Ramshaw with Professor H Robinson, University of Massachusetts, USA.

Development and testing of HIV vaccines by Dr I A Ramshaw with Dr J Salk, Salk Institute, San Diego, USA.

Role of cowpox 'viroceptors' in immune response to viruses by Dr J Ruby with Dr D Pickup, Duke University Medical Centre, Durham, NC.

Role of myxoma 'viroceptors' in immune response to viruses by Dr J Ruby with Dr G McFadden, University of Alberta, Canada.

Role of chemokines in immune response to viruses by Dr J Ruby with Dr S McColl, University of Adelaide.

Role of CD40 in virus infection by Dr J Ruby with Drs H Kikutani and T Kishimoto, Osaka University, Japan.

Role of CD40L and related molecules in virus infection by Drs J Ruby and I A Ramshaw with Drs M Widmer, M Spriggs, D Lynch and J Peschon, Immunex Corporation, Seattle, USA.

Division of Clinical Sciences

Investigation of risk factors for coronary heart disease by Dr N G Ardlie with Dr D A McGill, Woden Valley Hospital, ACT.

Role of ubiquitin-specific proteases in cancer by Dr R Baker with Associate Professor D A Gray, University of Ottawa, Canada.

Ubiquitin-specific proteases in Drosophila eye development by Dr R Baker with Dr J Vize, University of Texas, USA.

Ubiquitin-specific proteases of Saccharomyces cerevisiae by Drs R Baker with M Watson, Durham University, UK.

Ubiquitin-ribosomal fusion proteins from rat and yeast by Dr R Baker with Dr R Wettenhall, University of Melbourne.

Molecular genetics and structure of the glutathione S-transferases by Professor P Board with Professor B Mannervik, Uppsala University, Sweden.

Structural analysis of glutathione S-transferase by Professor P Board with Dr M Parker, St Vincents Medical Research Institute, Melbourne.

Role of CD40L and related molecules in virus infection by Drs J Ruby and I A Ramshaw with Drs M Widmer, M Spriggs, D Lynch and J Peschon, Immunex Corporation, Seattle, USA.

Structural properties of glutathione transferase P1 by Professor P Board with Dr G Chenavix-Trench, Queensland Institute of Medical Research.

Mapping human genes by Professor P Board with Dr G Webb, Queen Elizabeth Hospital, Adelaide.

Glutathione conjugate transport and drug resistance by Professor P Board with Professor R Wolf, University of Dundee, Scotland, UK.

Budesonide Trial by Dr G Buffinton and Professor W F Doe, Mr S McKenzie and Dr P Pavli with Woden Valley Hospital, ACT; and Ms E Whithead, Astra Australia, Sydney.

Activation of cytokine release by bacterial lipopolysaccharides by Professor W F Doe with Dr R Ulevitch, Scripps Research Foundation, California, USA.

Reticulate evolution of genes on X-chromosomes and autosomes by Dr S Easteal with Dr H Dahl, Murdoch Institute, Melbourne; and Dr J Fitzgerald, University of California, USA.

Analysis of spatial patterns of genetic variation by Dr S Easteal with Dr B Guinand, Villeurbanne Cedex, France

Molecular evolutionary rates in mammals by Dr S Easteal with Dr C Collet, Division of Wildlife and Ecology, CSIRO.

Molecular genetics of immune response genes in non-human primates by Dr S Easteal with Dr T Ishida, Tokyo University.

Population distribution of fragile X-associated trinucleotide repeats by Dr S Easteal with
Professor G Sutherland, Adelaide, SA; and Dr R Richards, Adelaide Children’s Hospital.

HLA-association with aspirin-sensitive asthma by Drs S Easteal and X Gao with Professor P Thompson, University of Western Australia.

Nucleotide sequence polymorphism of HLA class I genes in Aboriginal Australians: implications for Aboriginal health by Dr X Gao with Professor J McClusky, Flinders Medical School, Australian Red Cross Blood Transplantation Transfusion Service, South Australia Division; and Professor B Boerther, Newcastle University; and Dr A Veale, National Centre for Epidemiology and Population Health, ANU; and Dr B Currie, Menzies School of Health Research, Darwin.

Molecular analysis of HLA class I blank antigens and the implication for clinical transplantation by Dr X Gao with Professor J McClusky, Flinders Medical School, Adelaide.

HLA association with hepatitis C infection by Dr X Gao with Professor J Bradley, Flinders Medical School, Adelaide.

Diversity of HLA-B27 in Chinese patients with ankylosing spondylitis by Dr X Gao with Professor F H Kong, Chinese Academy of Medicine, China.

Development of Epstein-Barr virus vaccine by Dr X Gao with Dr A Suhribier and Dr M Sherritt, Queensland Institute of Medical Research.

Transfection of murine class II molecules in HLA-DM defective cell lines by Dr A Gautam with Professor J McCluskey, Flinders Medical Centre, Adelaide.

Generation of transgenic mice carrying mutated invariant chain "knock out" mice by Dr A Gautam with Dr D Mathis, University of Strasbourg, France.

Characterisation of antigen processing mutant cell lines transfected with murine MHC Class II molecules by Dr A Gautam with Dr E Mellins, University of Pennsylvania, USA.

Myb transformed cell lines as models for in vitro haematopoiesis by Dr A Hapel with Dr T Gonda, IMVS, Adelaide.

Purification of gp120 (HIV) by Dr A Hapel with Dr B Kemp, St Vincent’s Institute of Medical Research, Melbourne.

Purification of IL-3 plus M-CSF responsive stem cells from bone marrow by Dr A Hapel with Dr I Bertoncello, Peter MacCallum Cancer Institute, Melbourne.

T-cell receptor genes in differentiating myeloid progenitor cells by Dr A Hapel with Dr W Cook, University of Melbourne.

Genetic susceptibility to human colorectal cancer by Dr M Kohonen-Corish and Professor W F Doe with Dr J St John and Dr F Macrae, Royal Melbourne Hospital.

Molecular genetic analysis of a chromosome 18 deletion by Dr M Kohonen-Corish with Dr Vapinder Jammu, Woden Valley Hospital, Canberra; and Dr J Overhauser, Thomas Jefferson University Philadelphia, USA.

Development of the brain in the thyroidectomised foetal lamb by Dr P McCullagh with Dr S Rees, University of Melbourne.

Appearance of Langerhans cells in foetal lamb skin by Dr P McCullagh with Dr S McClure, CSIRO McMaster Laboratory.

T-cell usage in autoimmunity by Dr C Olive with Professor P Gatenby, Woden Valley Hospital, ACT.

T-cell response in malaria infection by Dr C Olive with Dr C Rzepczyk, Queensland Institute of Medical Research.

T-cell usage in multiple sclerosis by Dr C Olive with Dr B Bennett, Westmead Hospital; and Dr G Stewart, University of Sydney.

The effect of oxidized low density lipoprotein on isolated rat heart by Drs M L Selley and N G Ardlie with Dr R Willis, Griffith University.

Studies on the role of trace metals in the pathogenesis of atherosclerosis by Drs M L Selley
Joint research projects undertaken with universities, CSIRO and other institutions

and N G Ardlie with Dr F Watt, Oxford University, UK.

LC/MS analysis of aldehyde end-product of lipid peroxidation by Drs M L Selley and N G Ardlie with Mr J Smith, Woden Valley Hospital, ACT.

Structure of the urokinase receptor gene by Dr Y Wang and Professor W F Doe with Dr L Johnson, Vice-President, Salix Pharmaceuticals, Palo Alto, USA.

Transcriptional regulation of the urokinase receptor gene expression by Dr Y Wang with Dr D Boyd, The University of Texas, USA.

Direct evidence as to whether uPAR or PAI-1 acts as invasion-promoting/inhibition genes by Dr Y Wang with Professor M Shuman, The University of California, San Francisco, USA.

Interleukin-5 secretion by human killer cells by Dr H Warren with Drs L Lanier and J Phillips, DNAX Research Institute of Molecular and Cellular Biology, Palo Alto, California, USA.

Division of Neuroscience

Synthesis and testing of new novel antimalarial drugs by Dr G B Barlin with Professor K Rieckmann and Mrs B Kotecka, Army Malaria, Research Unit, Ingleburn.

Synthesis, testing and structure activity relationships of nitrogen heterocycles as ligands for central and peripheral benzodiazepine receptors by Dr G B Barlin with Dr L P Davies, Vision Research Group, Research School of Biological Sciences, ANU; and Dr P Matyus, Department Institute for Drug Research, Budapest.

Cable analysis of hippocampal neurons in cell culture by Dr J M Bekkers with Dr C F Stevens, Salk Institute, La Jolla, USA.

Kinetic modelling of the AHP current in hippocampal neurons by Dr J M Bekkers with Dr P Sah, University of Newcastle.

Activity of novel baclofen agonists by Professor D R Curtis and Dr G Lacey with Drs D I B Kerr and J Ong, University of Adelaide.

Structure activity relationships of phosphinic derivatives of baclofen by Professor D R Curtis and Dr G Lacey with Drs W Froestl and S J Mickel, Ciba-Geigy Ltd, Basle.

Immunogold localisation of the ryanodine receptor in skeletal muscle by Drs A F Dulhunty and P R Junankar with Mr T M Lewis, University of Adelaide.

Characterisation of a brain polypeptide which crossreacts with a monoclonal antibody to the skeletal ryanodine receptor–calcium release channel by Drs A F Dulhunty and P R Junankar with Dr P Sah, University of Muscle, Newcastle.

Virus proteins as proton channels by Professor P Gage with Associate Professor D Cook, University of Sydney.

Plasmodium falciparum multi-drug resistance protein by Professor P Gage with Dr A F Cowman, Walter & Eliza Hall Institute, Melbourne.

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Deep Radio Continuum Imaging of Southern Seyfert Galaxies by Mr M Allen with Dr Tsvetanov, Johns Hopkins University and Dr Morganti, Australia Telescope National Facility, CSIRO.

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Joint research projects undertaken with universities, CSIRO and other institutions

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Post-Asymptotic Giant Branch Evolution in the Magellanic Clouds by Professor M A Dopita, Dr S Meatheringham and Dr P Wood with Professor H C Ford, Johns Hopkins/STScI; Dr E Vassiliadis, and Dr Ralph Bohlin, STScI; Professor P Harrington, University of Maryland; and Dr T Stecher and Dr S Maran, NASA Goddard Space Flight Center.

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The Physical Conditions in the Extended Emission-Line Regions of Nearby Seyfert Galaxies by M Allen, Professor M A Dopita and Dr G V Bicknell with Z Tsetsanov, Johns Hopkins University.

Determination of the Emission Mechanism in LINERS and Seyferts by Professor M A Dopita and Dr G V Bicknell with Dr A P Koratkar and Dr I N Evans of the Space Telescope Science Institute; Dr E M Sadler, Dept of Physics and Astronomy, University of Sydney, and Dr R S Sutherland, Joint Institute for Laboratory Astrophysics, University of Colorado.

A Definitive Test for the Excitation Mechanism of LINERs by Professor M A Dopita and Dr G V Bicknell with Dr A P Koratkar, Space Telescope Science Institute, Dr E M Sadler, Dept of Physics & Astronomy, University of Sydney, Dr R S Sutherland, Joint Institute for Laboratory Astrophysics, University of Colorado, and John F Hawley, Virginia Institute for Theoretical Astronomy, University of Virginia.

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The MACHO Project by Professor A Rodgers, Dr P Quinn, Dr B Peterson, Dr T Axelrod and Professor K Freeman with the MACHO Team, Lawrence Livermore National Laboratory, University of California, University of Washington.

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N-body dynamical and hydrodynamical techniques on parallel supercomputers. by Dr P Quinn Dr J Salmon at the Caltech Concurrent Supercomputing Facility. These models have been used to examine the evolution of large scale structure and velocity fields in COBE normalised CDM universes.
Galaxy formation using the Los Alamos Advanced Computer Facility by Dr P Quinn with Dr W Zurek and Dr M Warren at Los Alamos National Laboratory are conducting research on parallel computers at Los Alamos and Caltech, which are being used to study the formation of individual galaxy-sized potential wells and hence infer the properties of dark matter halos around current epoch galaxies.

N-body experiments on Globular Cluster Evolution, Globular Cluster Formation in Mergers and Galaxy-Satellite Interactions by Dr P Quinn with Dr L Hernquist and Dr C Grillmair at UC Santa Cruz.

The search for Dark Matter by gravitational lensing of background starlight by Dr P Quinn, Professor A Rodgers, Professor K Freeman and Dr B Peterson with Drs C Alcock, T Axelrod, R Allsman, D Bennett, K Cook, C Stubbs, K Griest and W Sutherland, University of California, Berkeley and Lawrence Livermore National Laboratory.

Investigation of Faint Optical Hydrogen Emission Lines from Plasma outside the Optical Radii of Spiral Galaxies by Dr P Quinn with Dr J Bland-Hawthorn from the Anglo-Australian Observatory.

The MACHO Collaboration—the search for Dark Matter by gravitational lensing of background starlight by Professor A Rodgers, Dr P Quinn, Professor K Freeman and Dr B Peterson with Drs C Alcock, T Axelrod, R Allsman, D Bennett, K Cook, C Stubbs, K Griest and W Sutherland, University of California, Berkeley and Lawrence Livermore National Laboratory.

High Resolution Spectroscopy of Symbiotic Stars by Dr H M Schmid with Dr U Münser, Dr H Schild and Dr W Schmutz, ETH Zürich.

Spectropolarimetric Monitoring of Symbiotic Stars by Dr H M Schmid with Dr H Schild, ETH Zürich.

HST Observations of the Symbiotic Star RW Hya by Dr H M Schmid with Dr U Münser, Professor H Nussbaumer, Dr H Schild, Dr W Schmutz, Dr M Vogel and Dr R Walder, ETH Zürich.

Probing the Mass Loss of Red Giants in Symbiotic Systems by Dr H M Schmid with Dr R E Schulte-Ladbeck, University of Pittsburgh and Dr B Espey, Johns Hopkins University.

ORFEUS far UV Spectroscopy of Symbiotic Stars by Dr H M Schmid with Dr J Krautter and Dr R Wichmann, University of Heidelberg and Dr H Schild, ETH Zürich.

Confirmation Analysis of High Velocity Binary Pulsars by B W Stappers with Dr M Bailes, Dr R N Manchester, Australia Telescope National Facility and Professor A G Lyne, Manchester University.

Luminosity Function for the Large Magellanic Cloud using HST images by B W Stappers and Professor J R Mould with Dr J Gallagher, University of Wisconsin.

Spectroscopy of Candidate Be/X-ray Binaries in the Small Magellanic Cloud by Mr B W Stappers and Mr J F Bell with Dr M van der Kruit, Caltech and Dr M Bailes, ATNF Optical Spectroscopy and Radio timing of the SMC pulsar J0045-7319 Binary system by Mr J F Bell, Dr M S Bessell and Mr B W Stappers with Dr V M Kaspi, Princeton, Dr M Bailes and Dr R R Manchester, ATNF.

Radiative Transfer in Finite Atmospheres with special reference to the Greenhouse Effect by Professor D W N Stibbs with Dr Rainer Wehrse, Institut f. Theoretische Astrophysik der Universität Heidelberg, Germany.

Determining Accurate Distances to Virgo and Fornax Clusters by Dr N Visvanathan with Ms A Schroder and Professor G Tamman, University of Basel.

Visual-infrared Color Gradients of cD galaxies in Abell clusters by Dr N Visvanathan with Dr R F Peletier, ESO, Dr D Carter, RGO, Dr G Mackie, CFA, Cambridge and Dr A Pickles IfA, University of Hawaii.

Internal Velocity Dispersion and Line Strength of Elliptical Galaxies in Compact Groups by Dr N Visvanathan with Dr P Hickson, University of British Columbia and Dr C L M Oliveria, ESO.

IRAS Galaxies behind the Southern Milky Way by Dr N Visvanathan with Dr T Yamada, Kyoto University.

Optical Polarimetry Studies in NGC 1313 by Mr B Wells and Professor Ron Ekers and Professor
Ken Freeman with Dr Mike Scarrott, Durham University, England.

The Long-period Variables in the SMC by Dr P R Wood and Dr M S Bessell with G Moore, University of Wollongong.

Stellar Evolution and Nucleosynthesis on the AGB by Dr P R Wood with Dr J Lattanzio and Ms C Frost, Monash University.

Deep Searches for Planetary Nebulae in the Northern Large Magellanic Cloud, and the Tilt of the Large Magellanic Cloud as a Function of the Age of the Stellar Population by Dr P R Wood with S M G Hughes, Royal Greenwich Observatory.

Dust-enshrouded AGB Stars in the Bar of the Large Magellanic Cloud by Dr P Wood with Dr N Reid, Caltech.

Cepheid Variables and Stellar Evolution in Intermediate Mass Stars by Dr P R Wood and Mr. K Sebo with Professor C Chiosi, University of Padua.

OH/IR Star Variability at the Galactic Centre by Dr P R Wood and Dr P J McGregor with Professor H Habing, Leiden Observatory.

A Study of Dome Seeing at the Anglo-Australian Telescope by Dr P Wood with Dr Ryan, Anglo-Australian Observatory.

CO Observations of Short-period Mira Stars by Dr P R Wood with Dr P te Lintel Hekkert, Australia Telescope National Facility, CSIRO and Ms N van der Bliek, Leiden Observatory.

Analysis of grain in Indonesia by Dr R Trewin with Dr T Tomich, Harvard Institute of International Development; analysis of Indonesian meat market prospects through Dr C Findlay, University of Adelaide; some initial analysis of the Indonesian dairy industry which will be the basis of joint research with Dr P Reithmuller, University of Queensland.

Collaboration by Dr D Etherington with Dr K Forster of Southern Cross University on the Chinese tea project.

Various aspects of coconut oil as fuel project by Dr D Etherington with Dr I White and Mr S Zegelin, CSIRO Centre for Environmental Mechanics; Dr D Hagen, Energy Stewards Pty Ltd, Canberra; Mr O Kennedy, University of Wollongong; Dr G Simpson, KGiDP, WNB, PNG; Professor D Hilton, University of Southern Queensland.; Rev M Maeliau, DSC Outrigger, Solomon Islands.

Agriculture’s decline as a share of GDP and total employment in the market economies of East Asia by Professor P Warr and Dr W Martin with the World Bank.

Regional development theory and its appreciation between Professor B Higgins and Dr D Sovie, Director, Canadian Institute for Research on Regional Development.

Cooperation between Professor R Garnaut and Murdoch University’s Asia Centre Advisory Council.

A budgetary and economic analysis of the North American Free Trade Agreement by Professor W McKibbin with Dr J Manchester, US Congressional Budget Office.

Economic development and arms trade by Professor W McKibbin with Professor L Klein, University of Pennsylvania.

Research on the global costs of policies to reduce greenhouse gas emissions by Professor W McKibbin with Dr P Wilcoxen, The Brookings Institute for US Environmental Protection Agency.

Research on economic reforms in India by Drs K Kalirajan and R Shand with Dr A Gulati, National Council of Applied Economic Research, New Delhi.
Research on production efficiency in Bangladesh rice production by Drs K Kalirajan and R Shand with Dr M Alauddin, University of Queensland.

Research on measuring disguised unemployment by Dr K Kalirajan with Dr G Shantakumar, National University of Singapore.

Research on temporal variation in technical efficiency in the Chinese iron and steel industry in the 1980s by Dr K Kalirajan with Dr Cao Yong, Nanyang Technological University, Singapore.

Research on new export arrangements for Australia by Professor P Drysdale, Professor R Garnaut and Dr A Elek with Dr Hadi Soesastro and Dr Mari Pangestu, Jakarta; Professor Tai-Ying Liu, Professor Ron-G Wu and Dr Ching-Mai Wu, Taiwan Institute of Economic Research.

East Asian steel industry by Professor P Drysdale, Associate Professor C Findlay and Dr J S Kang with Keidanren (Japan Federation of Economic Organisations), the Korea Development Institute and Pohang Iron and Steel Corporation Research Institute; Professor M Itoh, University of Tokyo, T Waring, ABARE (Australian Bureau of Agricultural and Resource Economics), and P Crowley, Minerals and Energy Forum of PECC.

The changing structure of the Northeast Asian textile industry: strategies for exporters and an Australian trade and investment package for the China wool market by Professor P Drysdale, Associate Professor C Findlay, Dr Y Huang, Mr W Lu and Mr K Sun, with Professor M Itoh of Tokyo University, Ms W Yu of the International Trade Research Institute, Ministry of Foreign Economic Relations and Trade, Beijing, Dr Y Sung, Chinese University of Hong Kong, Dr Y Park, Inha University, Korea, Mr B Bora, Flinders University, Dr H Wu, Adelaide University, Dr C Brown, Queensland University, Mr C Short, ABARE, Ms S McCann, Australian Wool Research and Promotion Organisation, and Dr A Watson.

Australian, Indonesian and Japanese Approaches Towards APEC by Professor P Drysdale, Dr A Elek, Mr T Terada with Professor I Yamazawa, Hitotsubashi University, Mr M Inouchi, Institute for International Policy Studies, Japan, and Dr H Soesastro, Centre for Strategic and International Studies, Indonesia.

Research on population growth and employment projections to 2010 in the Islands/Australia research program on agriculture, urbanisation, education, particularly women’s education, and motivation behind remittances in Tonga, Western Samoa, Kiribati, Tuvalu and Niue by Mr R V Cole; on health services by Dr P M Thomas with Professor R Taylor, University of Sydney and Dr A Larson, University of Queensland.

Evaluation of the structure and functioning of existing global economic institutions and how they may be modified to better facilitate risk management in developing countries by Professor R Duncan with Professor C L Gilbert, Queen Mary and Westfield College.

Research into the impact of trade reform and growth in developing countries on real factor returns in developed countries, as compared to labour-saving technological change in the developed countries by Professor R Duncan with Dr R Tyers (Economics, The Faculties) and Dr R Falvey (Economics, The Faculties).

Research into reforming fiscal federalism and global competition by Dr C Fletcher with the Federalism Research Centre (FRC) and the University of Alberta.

An economic profile of the Pitgantgatyanan community by Dr C Fletcher with C Walsh, University of Adelaide.
Research into Australian federalism and European Economic Union by Dr C Fletcher with the University of Fribourg, Switzerland.

An analysis of an environmental health survey conducted in 1991–92 for the Tharawal Aboriginal Health Service in Cambelltown by Dr A Gray with Dr G Henderson (Australian Institute of Aboriginal and Torres Strait Islander Studies).

Continuing research into the dead and dying languages of Papua New Guinea by Dr S Holzknecht with Professor H Fischer; and research into the Austronesian languages of Papua New Guinea by Dr S Holzknecht with Professor S Wurm and UNESCO.

Research into the macroeconomic performance of the Vietnamese economy and foreign direct investment and trade in Vietnam by Dr S Leung and Ms B Headon with the National Economics University, the Central Institute for Economic Management in Hanoi and the University of Economics in Ho Chi Minh.

Research into a land tenure project in Papua New Guinea by Dr P Larmour with Professor R Crocombe, University of Hawaii, Professor B Clarke, University of Canterbury, Dr M Macintyre, University of Melbourne and Dr A Lakau, University of Technology, Lae.

Research on South Pacific governance by Dr P Larmour with Professor Y Ghai, University of Hong Kong, Professor T Wolfers, University of Wollongong and Dr B MacDonald, Massey University.

Research into the social and demographic situation in Eastern Indonesia by Dr P A Meyer with The Demography Program (RSSS) and The Indonesian Institute of Sciences.

Review of Asia-Pacific trade relations in the post-Uruguay Round circumstances by Dr D Robertson with the Asia-Pacific Trade Group-Gaston Sigur Center for East Asian Studies at the George Washington University, the Japan Institute of International Affairs and the Institute of Southeast Asian Studies.

Investigation into the appropriateness of the sustainable development concept for future planning for Australian Aboriginal communities by Dr E Young with Dr H Ross, CRES, ANU and Ms J Davies, UNSW, ADFA.

Technology-based competitiveness and strategic linkages between large and small firms in Britain and Japan: the case of multimedia by Professor M Dodgson and Dr M Sako, London School of Economics.

Effective innovation policy by Professor M Dodgson with Professor J Bessant, University of Brighton.

Preparation of The Cambridge History of Pacific Islanders by Professor D Denoon with Professor S Firth, Macquarie University, Professor Malama Meleisea, University of Auckland, Dr K Nero, University of California, Irvine and Auckland and Professor J Linnekin, University of Hawaii.

Compendium of Korea Project by Dr Y H Choe-Wall with scholars from many universities.

Cooperative research project on the link between religious and commercial institutions in French territories by Dr D Shineberg and J-M Kohler, ORSTOM, Paris.

Modern Pacific history by Dr B J Lal with Dr K Howe, Massey University and Dr R C Kiste, Center for Pacific Studies, University of Hawaii.

Research project on Managing Diversity in Multicultural Societies by Dr T Morris-Suzuki with Professor K Kingo, Tsuda Women’s University, Japan.

Cooperation with Institute of Economics, Academia Sinica, Taipei and East China Normal University, Shanghai.

Modern Economic History of Southeast Asia Project by Professor A Reid with scholars from six other Australian universities and many overseas.

Indonesian Heritage: Early Modern History by Professor A Reid and others from RSPAS and the Faculty of Asian Studies with Professor C Trocki, Queensland University of Technology, Dr R Knight, Adelaide University and Dr P Riddell, World Vision, and many overseas authors.

The Last Stand of Autonomous States Project funded for three years by Toyota Foundation.
Recent rural history in north Vietnam by Professor B Kerkvliet with Mr Nguyen Quang Ngoc, Centre for Cooperative Vietnamese Studies, University of Hanoi and Professor Dao The Tuan, Vietnam Institute for Agricultural Sciences, Hanoi.

East and Southeast Asian Socialist Reforms in Comparative Perspective (China and Vietnam), by Professor B Kerkvliet and Associate Professor C Thayer with the East-West Center, Honolulu.

Regime Change and Regime Maintenance in Asia and the Pacific by Dr R J May and Dr H Crouch, with Associate Professor C Thayer, on secondment from the Australian Defence Force Academy, and 19 project associates from other Australian and overseas universities.

Comparative study on economy, society, and development by Dr R J May with Professor L Diamond, Hoover Institution, and associates.

Research into managing diversity: governments and ethnicity in Southeast Asia and the Pacific by Drs R J May, H Crouch, S Henningham and B Lal, and with Drs D Brown and Chua Beng Huat, National University of Singapore, Dr F Loh Kok Wah, Universiti Sains Malaysia, Dr A Renard, Payap University, Thailand.

Research into Papua New Guinea electoral politics by Dr R May and Dr W Standish with Professor Yaw Saffu, University of Papua New Guinea.

Research into political violence in Papua New Guinea by Dr W Standish with Dr Wari Jamo, PNG National Research Institute, Port Moresby.

United Nations Peacekeeping Operations in Cambodia by Associate Professor C Thayer with Professor R C Thakur, University of Otago, Dunedin, New Zealand.

Research on Indian economic, political and strategic outlook by Dr A Gordon with Monash University.

Research on groundwater nitrate in Java by Professor J J Fox with Dr G Smith, Division of Biochemistry and Molecular Biology, The Faculties and the Division of Public Health, School of Medicine, Gadjah Mada University, Yogyakarta.

Eastern Indonesian Fishing Communities by Professor J J Fox and Dr Y Raharjo, Indonesian Institute of Sciences, Jakarta.

Collaborative research between Dr K Ram and Ritu Menon of Kali Womens Press, New Delhi on Indian state policies regarding maternity.

Research on maternity and sexuality in Asia and the Pacific by Dr M Jolly and Professor L Manderson, Tropical Health Program, University of Queensland Medical School and Departments of Sociology, University of Newcastle and Flinders University.

Research on Asian and Pacific women as migrants by Dr M Jolly and Dr K Ram with Dr V Mackie and Dr M Stives, Gender Studies Unit, University of Melbourne, Dr N Weerakor, APDC Kuala Lumpur, Professor A Kassim, University of Malaya and Dr J Cabigon, Philippines.

New Zealand loess chronology by Dr B J Pillans with Dr A S Palmer, Massey University and Dr G W Berger, Desert Research Institute, Reno.

Pleistocene sequence stratigraphy by Dr B J Pillans with Professor R M Carter, James Cook University.

Magnetosratigraphy of Pleistocene and Pliocene deposits near Adelaide by Dr B J Pillans with Associate Professor R P Bourman, University of South Australia.

Soil and landscape history in semi-arid North Queensland by Dr B J Pillans with Dr R J Coventry, CSIRO Division of Soils, Townsville and Associate Professor R J Stephenson, James Cook University.

Amino acid dating of shell and wood by Dr B J Pillans with Dr C Murray-Wallace, University of Wollongong and Professor D Q Bowen, University of Wales, Cardiff.

Radiocarbon dating of the House of Taga excavations, Tinian, Mariana Islands and establishment of a Mariana Islands shell dating standard by Dr M Spriggs with Professor M Graves, University of Hawaii.

Radiocarbon dating of early East Polynesian sites by Professor A Anderson and Dr M Spriggs with Professor M Graves, University of Hawaii.
Joint research projects undertaken with universities, CSIRO and other institutions

Historical research on the Aneityum numeral system by Dr M Spriggs with Professor J Lynch, University of the South Pacific (Port Vila campus).

‘Project Maui’ on aspects of Angophone research in the Pacific and on making available French translations of English language work on the Pacific by Dr M Spriggs with Dr S Dunis, French University of the Pacific, Tahiti.

Research into palaeoenvironments and prehistory of the Lake Eyre Basin by Mr J Magee with Dr J Lilly, James Cook University and Dr S Webb, Queensland.

Late quaternary floras and vegetation of northern Australia by Dr M Macphail with Dr D J Bowman, Conservation Commission of the Northern Territory and Mr G Weare and Yolnu Rangers, Dhimurru Aboriginal Land Management Corporation, Nhulunbuy, Northern Territory.

Research into the potential of dating rock art using luminescence methods by Dr R G Roberts and Professor R M Jones with Dr M Morwood, University of New England.

Geochronological and geomorphological research at the Cuddie Springs megafauna site, northern New South Wales by Dr R G Roberts and Professor R M Jones with Ms J Furby, University of New South Wales.

Niue island research project by Professor A Anderson with Dr R Walter, University of Otago, Dunedin, New Zealand.

Shag River research project by Professor A Anderson with Dr I Smith, University of Otago, Dunedin, New Zealand.

Research into the complex landform assemblages of the Todd River in semi-arid central Australia by M Bourke with Dr G Pickup, Centre for Arid Zone Research, CSIRO, Alice Springs, Northern Territory.

Research on preservation of starch grains on tool surfaces and in sediments by Mr T H Loy with Dr R Fullagar, The Australian Museum, Sydney.

Research on amplification and sequence analysis of ancient DNA by Mr T H Loy with Dr K Matthaei, JCSMR and Dr K Reed, Centre for Agricultural Biotechnology, Queensland Department of Primary Industries, University of Queensland.

Geomorphological variability in mangrove response to rising sea-level, North Queensland by Dr J C Ellison with the Australian Institute of Marine Science, Townsville.

Dating of aeolian and fluvial sediments on the Riverine plain by Professor J Chappell and Dr N A Spooner with Dr X-Y Chen, University of Canberra.

Dating of marine and fluvial terraces, Japan by Dr N A Spooner with Drs K Tanaka and R Hataya, Central Research Institute of the Electric Power Industry, and Professor K Ohmura, Daiwa Geological Laboratory Inc.

Dating of ‘unknown’ interlaboratory test samples by Dr N A Spooner with Professor J R Prescott, University of Adelaide and Professor D J Huntley, Simon Fraser University, Canada.

Ongoing study of the anomalous fading of luminescence from feldspars by Dr N A Spooner with Professor R Visocekas, University of Paris, France.

Continued development of the Elsec Automated Optical Dating System by Dr N A Spooner with Professor E I Hall and W D Hall, Littlemore Scientific Instruments, Oxford, United Kingdom.

Research into coral reef history of Abrolhos Islands by Mr E Wallensky with Dr L Collins, Curtin University and Dr K-H Wyroll, University of Western Australia.

Research into central Australian fluvial geomorphology by Mr E Wallensky with Dr G Nansen, University of Wollongong.

Research into southern Australian palynological history by Mr E Wallensky with Dr M Longmore, University of Adelaide.

Research into the history of Lake Woods, Northern Territory by Professor J Chappell, Dr N A Spooner and Mr J Magee with Dr D Yin Foo, Northern Territory Power and Water Authority.
Research on simulation of post climatic changes with the CSIRO family of general circulation models by Professor J Chappell jointly with Dr J Syktus at CSIRO Division of Atmospheric Research.

Research into past episodes of rapid gully formation by Professor J Chappell with Dr I Prosser, University of New South Wales.

Research into past episodes of alluviation in the Murray-Murrumbidgee floodplain by Professor J Chappell with Dr X Y Chen, University of Canberra.

Research into Late Cenozoic history of cave deposits and fossil faunas at Barrow Island and Northwest Cape by Professor J Chappell with Drs K Aplin and A Baines, Museum of Western Australia.

Research into Quaternary climatic changes in Australia by Professor J Chappell with the Environmental Geology Group, Australian Geological Survey Organisation.

Research on Quaternary sea level changes, seismic uplift events and landslides recorded on the Huon Peninsula, PNG, by Professor J Chappell and Dr C Campbell in collaboration with the University of Papua New Guinea, Cornell, Cambridge, Tongji, Nagoya, Tokyo, Yokohama and Wellington Universities, the California Institute of Technology, and the Institute of Geography, Moscow.

Study of vegetation dynamics and history in New Caledonia, by Dr G Hope with Dr J Read, Monash University and Centre Technicale Forestiere Tropicale, Noumea.

Southern Forest Archaeological Project by Mr J Magee with Professor J Allen, LaTrobe University.

Work on CSIRO Student Research Scheme by Ms G Atkin.

Late Quaternary sea levels and coral diagenesis by Professor J Chappell with Dr Z Zhu, Curtin University.

Palaeomonsoons of China and Australia by Professor J Chappell with Professor An Zhisheng, Xian Institute of Loess and Quaternary Geology.

Palaeoseismicity, landslides and sea level changes at Huon Peninsula, Papua New Guinea by Professor J Chappell with Professor Yoko Ota, Yokohama National University.

Variations in the intensity of the southwest Monsoon: Palaeoclimatic reconstructions from Australia and India over the last 125ka by Dr J Croke with Associate Professor G Nanson and D Price, University of Wollongong and Dr A K Singhvi, Earth Science Division, Physical Research Laboratory, Ahmedabad, India.

Late Quaternary environments in Tasmania by Dr G S Hope, Dr M Macphail with Professor E A Colhoun, University of Newcastle and Dr P Augustinim, University of Tasmania.

Regeneration strategies of plants on ultrabasic substrates by Dr G Hope, Mr S McCoy, Dr J Ash and Mr Tanguy Jaffre, ORSTOM, Noumea.

Vegetation and climate in Maluku by Dr G Hope and Mr Pusat Studi Lingkungun, Universitas Pattimura, Ambon, Indonesia.

Groundwater Recharge Investigation Project by Mr P Lane and Dr N Nanda Kumar, Dr R Vertessy and Dr E O'Loughlin, CSIRO Division of Water Resources.

Cenozoic palynostratigraphy of the eastern margin of Australia by Dr M Macphail with Dr C Jenkins, Ocean Sciences Institute, University of Sydney, Dr R Helby, consultant, Sydney, Mr A D Partridge, LaTrobe University and Dr P Quilty, Antarctic Division, Hobart.

Cenozoic palynostratigraphy of the northern margin of Australia by Dr M Macphail with Dr C Jenkins, Ocean Sciences Institute, University of Sydney, Dr R Helby, consultant, Sydney, Mr A D Partridge, LaTrobe University, Dr E M Truswell, Australian Geological Survey Organisation and Professor R S Hill, University of Tasmania.

Quaternary floras and vegetation of southern Australia by Dr M Macphail with Professor R S Hill and Drs G Jordan, P Augustinus, University of Tasmania and Mr A D Hope, LaTrobe University.

Paleogene floras and vegetation of southern Australia by Dr M Macphail with Professor R S Hill and Dr M Pole, University of Tasmania, Dr
E M Truswell, Australian Geological Survey Organisation and Dr J Pickett, NSW Mines.

Drought in the Australian outback: Milankovich and anthropogenic forcing of the Australian monsoon (NSW funded project) by Mr J Magee with Professor G H Miller, University of Colorado.

Southern Forests Archaeological Project by Mr J Magee with Professor J Allen and Dr N Stern, La Trobe University.

Research on agricultural systems in Papua New Guinea by Drs B J Allen, R L Hide and R M Bourke with Mr E Sitipai and B Wayi, PNG Department of Agriculture and Livestock, Drs M Levett and G Sem, Geography Department, UPNG.

Project on land tenure in the Pacific Islands by Professor R G Ward with Professor M Rodman, York University, Canada, Drs A Hooper and K James, East-West Center, Honolulu, and Dr J T O'Meara, Melbourne University.

Research on environmental criticality in Asia by Emeritus Professor H.C Brookfield and Ms Y Byron with Dr L M Potter, University of Adelaide.

The new spatial economy of China by Professor G J R Linge with Professor D K Forbes, Flinders University of South Australia.

The development of China's Northeast region by Professor G J R Linge and Professors Chin Cai, Yuan Shuren and Li Wang of Northeast Normal University, Changchun, China.

The development of regional planning policy in China by Professor G J R Linge and Professor Wang Huijiong and Dr Li Shantong of State Council of China.

Local impact of global transformation with special reference to social development issues by Professor G J R Linge and Professor J Walmsley, University of New England.

Work on future directions for research in industrial geography by Professor G J R Linge with Professor G A van der Knapp, Economic Geography Institute, Erasmus University, Rotterdam.

Research on finance, institutions and industrial change by Professor G J R Linge with Professor E Schamp, Johann Wolfgang Goethe-Universität, Frankfurt am Main.

Project on internationalisation of Japan and its spatial integration by Dr P J Rimmer with Professor Cheung Chi-wai, Tokuyama University, and Masao Takayama, Osaka University for Foreign Studies.

Research on multimodal transport by Dr P J Rimmer with Professor Toru Koyama, Gifu Institute of Technology and Saitama University.

Research on Indonesian telecommunications with G Siboro, PT INDOSAT, Jakarta.

Research on Australian integration in a dynamic Asia-Pacific economy by Dr P J Rimmer with Dr H Dick, University of Newcastle.

Research on planning and fiscal relations between provincial and local levels of government in the context of economic liberalism by Dr D J Porter with Mr Nguyen Dinh Khoi, Centre for Rural Planning and Development, Da Nang, Vietnam and Dr L Kullenberg, Director, PSE Unit UN Capital Development Fund, New York.

Research on cross-border developments and the spread of HIV/AIDS in the Golden Triangle by Dr D J Porter with Associate Professor Mya Than, Institute of Economics, Yangon.

Atlas of Languages of Intercultural Communication in the Greater Pacific Area by Dr D Tryon with Professor S Wurm, Australian Academy for the Humanities and Dr P Mühlhäusler, University of South Australia.

Research on knowledge and use of wild plants among the Kalam of Madang Province, PNG and the people of Waya Island, Fiji by Professor A Pawley and Dr R Gardner, Auckland Museum.

Papuan Linguistics Project by Professor A Pawley and Dr M Ross with Professor W Foley, University of Sydney.

History of Bislama by Dr D Tryon with Dr J-M Charpentier, Centre National de la Recherche Scientifique, Paris.
Research into the genetics of early humans by Dr A Thorne and Mr T Loy with Drs J Peacock and E Dennis, Division of Plant Industry, CSIRO.

Collaborative project on palaeoanthropology and prehistory of eastern Indonesia and northern Australia by members of Department of Prehistory with Professor Teuku Jacob, Gadja Madah University, Indonesia.

Research into the application of obsidian hydration dating and site thermometry by Mr W R Ambrose, with Dr R Torrence, The Australian Museum, Sydney; Dr Douglas Sutton and Dr P Sheppard, The University of Auckland; and Dr C Stevenson, Archaeological Research Consultants, Columbus, Ohio.

Research into the feasibility of freeze-drying large waterlogged wooden structures at bases in the Australian Antarctic Territory by Mr W R Ambrose, with Dr I Godfrey, the West Australian Maritime Museum, Fremantle.

Analysis of soils excavated from sites in Greece by Dr B L Fankhauser, with G Rapp, Archaeometry Laboratory at the University of Minnesota-Duluth, USA.

Analysis of archaeological artefacts for kava and other foods by Dr B L Fankhauser, with R Rechtman of the University of California at Los Angeles, USA.

Analysis of stains on teeth from burials excavated in the Mariana Islands by Dr B L Fankhauser, with J Craib, Craib and Associates, Queensland.

Analysis of certain types of pottery from Tonga for kava by Dr B L Fankhauser, with Professor R Green, University of Auckland, New Zealand.

Spectral analysis of quartz by Dr R G Roberts, with Dr H M Rendell, Geography Laboratory, University of Sussex, UK.

Laboratory beta source calibrations by Dr R G Roberts, with D Stoneham, Research Laboratory for Archaeology and the History of Art, Oxford University, UK.

Radionuclide analysis of sediments by Dr R G Roberts, with Dr A S Murray, and J M Olley, Division of Water Resources, CSIRO.

Optical and U-series dating comparison by Dr R G Roberts, with Professor P W Williams, Department of Geography, University of Auckland, New Zealand.

Archaeological investigations in the Kimberleys by Dr R G Roberts and Professor R Jones, with Dr S O'Connor, Centre for Archaeology, University of Western Australia.

Early human occupation of Cape York by Dr R G Roberts and Professor R Jones, with B David, Department of Anthropology and Sociology, University of Queensland and Dr M J Morwood, Department of Archaeology and Palaeoanthropology, University of New England.

Archaeological research in the Simpson Desert by Dr M A Smith, with Mr P M Clark, Western Lands Commission, Buronga.

Dating ratite eggshell from Pleistocene sediments by Dr M A Smith and Dr G F van Tets and Dr M McCulloch, Research School of Earth Sciences, with Professor G Miller, University of Colorado.

Archaeological investigations on the Adelaide River floodplains by Dr M A Smith, with Ms C J Brockwell, Northern Territory University.

Taiwan area studies by Drs J Unger, Dr D De Glopper and Mr H Z Wang with Dr O K Tam, Australian Defence Forces Academy.

Correlation of several dating techniques using coral collected from raised beaches, Huon Peninsula, PNG by Dr R Grün, Mr J Head and Dr J Chappell with Dr M McCulloch, Research School of Earth Sciences and Dr C Tuniz, ANSTO.

Multidating of archaeological and palaeo-anthropological sites in South Africa by Dr R Grün and Mrs L Taylor with Dr J Bink, National Museum, Bloemfontein and Dr P Beaumont, McGregor Museum, Kimberley.

TL dating of palaeo-lake sequences in Western New South Wales by Dr R Grün and Mr N Hill and Dr J Ferguson, AGSO; and of sand dunes near Lake Victoria by Dr Grün and Mr N Hill with Professor G Miller, University of Colorado.

ESR dating of cave bear evolution of the Iberian Peninsula by Dr R Grün and Mrs L Taylor with
Joint research projects undertaken with universities, CSIRO and other institutions

Professor T de Torres, Universidad Politecnica de Madrid.

AMS dating of samples with anomalous ESR results by Dr R Grün, Mr M Abeyratne and Mr J Head with Dr C Tuniz, ANSTO.

TL and 14C dating intercomparison at the Piritjarra Rockshelter, NT by Mr M J Head and Dr M Smith with Professor J R Prescott, University of Adelaide.

Joint CSIRO/ANU collaboration on dating of organic material from soils by Mr M J Head with Dr G Bowman, CSIRO Division of Soils, Canberra.

Correlation of 14C ages of chemical components of selected soil samples by Mr J Head with Dr J Skjemstad, CSIRO Division of Soils, Adelaide.

Evaluation of the chemical components of stickrat middens from central Australia by Mr M J Head with Dr J Quade, University of Arizona.

Evaluation of the feasibility of dating tufa deposits from the streams within and close by the Lawn Hill National Park, north western Queensland by Mr M J Head with Dr D Gillieson and Mr R Drysdale, ADFA.

14C chronology of loess/palaeosol sequences from the Loess Plateau in northern China by Mr M J Head with Professor An Zhisheng and Assistant Professor Zhou Weijian, Academia Sinica, Shaanxi Province, China.

14C dating of organic lake sediments in New Zealand by Mr M J Head with Dr M Mabin, James Cook University, Townsville.

Pretreatment of samples and preparation of graphite targets for 14C Accelerator Mass Spectrometry by Mr M J Head with Dr C Tuniz, ANSTO, Lucas Heights.

Dating of Late Pleistocene charcoal under Australian humid tropical forests by Mr M J Head with Dr M Hopkins and Dr A Graham, Tropical Forest Research Centre, Division of Wildlife and Ecology, CSIRO and Dr J Ash, Department of Botany, Faculty of Science.

AMS dating of physical and chemical fractions of lake sediments from Lake Barrine by Dr J Head and Professor D Walker with Dr C Tuniz, ANSTO.

Dating of palaeosols by Mr J Head with Dr W Zhou, Dr M Zhou and Professor Z An, Xian Laboratory of Loess and Quaternary Geology, Academia Sinica, China.

14C activity measurements on rainforest trees by Mr J Head, Professor D Walker and Dr J Ash (Botany, The Faculties) with Dr W Zhou, Xian Laboratory of Loess and Quaternary Geology, Academia Sinica, China.

Evaluation of Quartz counting vials for liquid scintillation 14C spectrometry by Mr S Robertson with Dr A Hogg, University of Waikato, New Zealand.

Research into the historical role of Chinese entrepreneurship for the development of Southeast Asia’s economy by Professor J A C Mackie with Dr M Godley, Department of History, Monash University.

Study of the transformation of communist systems by Drs D Marr, J Unger, R Miller, B McCormick, A Chan (China Centre, FAS) and Professor H Rigby (RSSS) with the East-West Center, Hawaii.

Appropriate forms of land-holding and representative bodies by Dr P Sullivan in association with the Kimberley Land Council.

Technology-based competitiveness and strategic linkages between large and small firms in Britain and Japan: the case of multimedia by Professor M Dodgson and Dr M Sako, London School of Economics.

Effective innovation policy by Professor M Dodgson and Professor J Bessant, University of Brighton.
Research School of Physical Sciences and Engineering

Applied Mathematics

Waste Water Treatment (based at UNSW) by D A Atkins with R M Pashley, Chemistry Faculties and CRC.

Surface Force Measurements Using Silica and Modified Silica by Dr H K Christenson with Professor R G Horn, School of Applied Physics and Chemical Technology, University of South Australia.

Self-Assembly of Block Copolymers by Dr S T Hyde with Professor T Hashimoto and Dr H Hasegawa, Kyoto University, Japan.

Domain Structure of Clays by Dr S T Hyde with Professor J P Quirk, University of Western Australia.

Mesostructured Silicates by Dr S T Hyde and Mr R Corkery with Dr Z Blum and Dr V Alfredsson, Inorganic Chemistry, Lund University, Sweden.

Three-Periodic Nets by Dr S T Hyde and Mr K Dale with Professor M O'Keeffe, Arizona State University, USA.

Spectroscopic Studies of Complex Iron Oxides by Dr W A Kaczmarek with Professor S J Campbell, ADFA, University of New South Wales.

Force measurements in Microstructured Fluids by Dr P Kekicheff with Dr P Richetti, CNRS Bordeaux, France.

Computational Studies of Flow in Porous Media by Dr M A Knackstedt with Professor M Sahimi, Department of Chemical Engineering, University of Southern California, USA.

Fracture and Transport in Coal Seams by Dr M A Knackstedt and Mr X Zhang with Associate Professor D Y C Chan, Department of Mathematics, University of Melbourne.

Transport in Sedimentary Rocks by Dr M A Knackstedt and Mr X Zhang with Dr S L Painter and Dr L Paterson, Division of Petroleum Resources, CSIRO, Mt Waverley, Vic.

Diffusion in Model Disordered Media by Dr M A Knackstedt and Professor B W Ninham with Dr M Monduzzi, Chemistry Department, University of Cagliari, Italy.

Templating of New Materials in Reverse Micelles by Professor B W Ninham with Professor M-P Filen, University of Paris IV, France.

Mechanisms of Restricted Enzyme Action by Professor B W Ninham with Dr N Sidozova, National Institute of Health, USA.

The Hydrophobic Interaction by Professor B W Ninham and Dr P Kekicheff with Dr O Spalla and Dr L Belloni, Centre Energie Atomique, Saclay, Paris, France.

Phase Transition in Lamellar Phases by Professor B W Ninham with Dr T Zemb, Centre Energie Atomique, Saclay, Paris, France.

Ion Binding and Specificity by Professor B W Ninham with Dr P Claesson and Dr P Weissenhorn, YKI Surface Chemistry Institute, Stockholm, Sweden.

Novel Surfactant Syntheses by Professor B W Ninham with Professor K Holmberg, YKI Surface Chemistry Institute, Stockholm, Sweden.

Electrolyte-Interface Interactions by Professor B W Ninham with Professor H Wennerström, Physical Chemistry 1, Chemical Center, University of Lund, Sweden.

Mechanisms of Phermone Action by Professor B W Ninham with Dr Z Blum, Inorganic Chemistry 1, Chemical Center, University of Lund, Sweden.

Mechanism of Light Transduction by Professor B W Ninham with Professor P Brown, University of Arizona, USA.

Extraction of Rutile from Ilmenite via Novel Ball Milling Techniques by Professor B W Ninham with Professor J Williams and Dr A Calla, Electronic Materials Engineering, Joint with Westralian Sands.

Gelation of Proteins-Phospholipid-Water Systems by Professor B W Ninham with Dr T Nylander and Professor K Larsson, Food Technology Chemical Center, University of Lund, Sweden.
Mechanisms of Film Formation in Lattices by Professor B W Ninham with Professor R M Pashley, Chemistry, The Faculties, funded by Rhon and Haas, Australia Pty Ltd.

Atomic and Molecular Physics Laboratories

Energy transfer in electron excited molecular systems by Dr M J Brennan with Dr A B Wedding, University of South Australia.

Dielectric barrier discharges by Dr M J Brennan with Dr D S Newman, Central Queensland University.

Transport coefficient calculations by Dr M J Brennan with Dr K F Ness, Townsville.

Instrument commercialisation by Dr S J Buckman with ANUTECH.

Electron-molecule scattering by Dr S J Buckman with Dr M J Brunger, Flinders University of South Australia, Professor M A Morrison, University of Oklahoma, and Professor P D Burrow, University of Nebraska, USA.

Electron scattering from metal vapours by Dr S J Buckman with Dr P J O Teubner, Flinders University of South Australia, and Dr D S Newman, Central Queensland University.

Electron scattering from excited atoms by Dr S J Buckman with Dr B Lohmann, Griffith University.

Palaeoatmospheric evolution by Professor J H Carver with Professor I M Vardavas, University of Crete.

Rotational excitation of N2 by Dr M T Elford and Professor R W Crompton with Dr T F O'Malley, San Jose, USA.

Low energy scattering of electrons in N2 by Dr M T Elford and Professor R W Crompton with Professor M A Morrison, University of Oklahoma, USA.

The mobility of K+ ions in helium by Dr M T Elford with Professor H R Skullerud, University of Trondheim, Norway.

The \(4p_{\text{su}}^1\) \(1\text{P}_u\) Rydberg state of O2 by Dr J P England and Dr B R Lewis with Professor M L Ginter, University of Maryland, USA.

Electronic potential energy curves for O2 by Dr S T Gibson, Dr J P England and Dr B R Lewis with Professor M L Ginter, University of Maryland, USA.

Lineshape asymmetry sum rules by Dr B R Lewis and Dr S T Gibson with Dr I. Torop, University of Adelaide.

Numerical study of the spectrum of IC1 by Dr B R Lewis and Dr S T Gibson with Professor R J Donovan, University of Edinburgh, UK.

Comparative studies of ultra-high resolution spectroscopic techniques by Dr B R Lewis, Dr S T Gibson and P M Dooley with Dr K Yoshino, Harvard-Smithsonian Center for Astrophysics, Massachusetts, USA, and Dr P C Cosby, SRI International, California, USA.

The \(1\text{vi}^+\) valence state of O2 by Dr B R Lewis, Dr S T Gibson and Dr J P England with Dr S L Guberman, Institute for Scientific Research, Massachusetts, USA.

The \(3\text{Pu}^2\) states of O2 by Dr B R Lewis, Dr S T Gibson and Dr J P England with Dr H Partridge, NASA-Ames Research Center, California, USA.

Electron momentum spectroscopy of solids by Professor E Weigold with Professor I E McCarthy, Dr Y Cai, Dr P Storer, Dr M Vos, Flinders University of South Australia.

Electron momentum spectroscopy of atoms and molecules by Professor E Weigold with Dr M J Brunger, Professor I E McCarthy, Dr A Kheifets, Flinders University of South Australia, and Professor W von Niessen, University of Braunschweig, Germany.

\((e,2e)\) collisions with laser excited atoms by Professor E Weigold with Professor H Klar, University of Freiburg, Germany.

Scattering of polarized electrons by Professor E Weigold with Professor I E McCarthy, Flinders University of South Australia and Professor H Klar, University of Freiburg, Germany.

Post collision effects in two-electron final states by Professor E Weigold with Dr M J Brunger, Dr A
Kheifets, and Ms O Samardzic, Flinders University of South Australia.

Electron impact induced autoionisation processes by Professor E Weigold with Professor V Balashov, Moscow State University, Russia.

Thermodynamic and transport properties of liquid mixtures near the critical solution temperature by Dr L A Woolf with Dr R Malhotra, University of Tennessee (until October) and Professor W A Wakeham, Imperial College of Science and Technology, London, UK.

Solvation of ions in solution by Dr L A Woolf with Dr W E Price, University of Wollongong.

Isotope ratio determination by Fourier transform infra-red spectroscopy (FTIR) by Dr L A Woolf with Dr W E Price, University of Wollongong and Dr A V Edge, ADFA, University of New South Wales.

**Electronic Materials Engineering**

Mossbauer spectroscopy of nanostructured materials by Dr A Calka with Professor S J Campbell and Dr K D Jayasuriya, ADFA, University of New South Wales.

Neutron scattering of nanostructured materials by Dr A Calka with Professor A Czaraj, Nuclear Institute, Warsaw, Poland.

Nanostructured materials for laser coatings by Dr A Calka with Professor R Varin, University of Waterloo, Canada.

Nano-analysis of ball-milled materials by Dr A Calka with Dr M Kujek, RMIT.

Analysis of thermodynamic properties of nonequilibrium states in nanostructured materials by Dr A Calka with Professor H Matyja, Warsaw University of Technology, Warsaw, Poland.

Resistivity and thermoelectric measurement of nanocrystalline materials by Dr A Calka with Dr M Pekala, Institut of Physics, Warsaw, Poland.

Mechanical properties of nanostructured materials by Dr A Calka with Dr J Wolska, University of Twente, The Netherlands.

Synthesis and thermal properties of glassy and nanostructured materials by Dr A Calka with Dr C Conde, University of Sevilla, Spain.

Specific surface and particle size measurement by Dr Y Chen with Professor J Y Zhang, Beijing Iron and Steel Research Institute, China.

Mechanosynthesis of Intermetallic NaTiAl by Dr Y Chen with Dr G Martin and Dr L Chaffron, Sackl Research Centre, France.

Ball milling and magnetic properties of magnetic materials by Dr L M Di with Dr J B Dunlop, CSIRO Division of Applied Physics.

Ion-beam-induced phase transformations in semi-conductors by Dr R G Elliman with Professor G Carter and Dr M Nobes, Salford University, UK.

Optimisation and characterisation of the growth of thin-film optoelectronic materials using ion-beam analytic techniques by Dr R G Elliman with S P Russo and Dr P N Johnson, RMIT.

Ion-beam processing of semiconductor materials by Dr R G Elliman with Dr S Pearton and Dr A Katz, AT&T Bell Laboratories, USA.

Ultrasonic transducers; wave propagation in non-destructive testing by Professor N H Fletcher with Dr S Thwaites, CSIRO Division of Applied Physics.

Development of high-energy-density ceramic capacitors by Professor N H Fletcher with Dr B Ricketts, CSIRO Division of Applied Physics and Dr J Woolgrey, ANSTO.

Acoustics of the mole cricket singing burrow by Professor N H Fletcher with Dr Bennet-Clark, Oxford University and A Daws, Melbourne University.

Hearing in amphibians by Professor N H Fletcher with Dr A Elepfandt and Dr B Schmitz, University of Konstanz, Germany.

Design of middle-ear prostheses by Professor N H Fletcher with Dr R Goode, Stanford Medical Center, Stanford, USA.

Development of stable mettallizations for Ferroelectric Random Access Memory applications by Dr C Jagadish and Dr R G
Joint research projects undertaken with universities, CSIRO and other institutions

Elliman with Dr K Sreenivas, Ecole Polytechnique Federale de Lausanne, Switzerland.

Erbium ion implantation into silicon for light emission by Dr C Jagadish and Dr R G Elliman with Dr J Linnros, Dr B G Svensson and J Lalita, Royal Institute of Technology, Stockholm, Sweden.

Optical characterisation of III-V compound semi-conductors by Dr C Jagadish, Dr R J Egan, A Clark, G Li, H H Tan, and Professor J S Williams with Dr M Gal, University of New South Wales.

Growth and characterisation of 2DEG structures of GaInP/GaAs by Dr C Jagadish and Dr N Hauser with Dr C C Hsu, Chinese University of Hong Kong.

Phonon emission from low dimensional semiconductor systems by Dr C Jagadish, Dr P Hawker and Dr N Hauser with Dr A J Kent, Nottingham University, UK.

Electrical, Optical and Structural Characterisation of As and Ga Implanted Semi-insulating GaAs by Dr C Jagadish and H H Tan with Professor M Kaminska, Institute of Experimental Physics, Warsaw University, Poland.

Ultrafast Spectroscopy Study of Non-stoichio-metric GaAs by Dr C Jagadish and H H Tan with Professor A Krotkus, Semiconductor Physica Institute, Vilnius, Lithuania.

Electron Microscopy Study of Defects in Ion Implanted Semiconductors by Dr C Jagadish, Mr H H Tan, S Fatima and Professor J S Williams with Professor D Cockayne, Dr C T Chou and Dr Jou Zin, University of Sydney.

Study of MeV ion implantation induced defect generation in silicon by Dr C Jagadish, Dr N Hauser and Professor J S Williams with Dr B G Svensson and J Lalita, Royal Institute of Technology, Stockholm, Sweden.

Sub-threshold damage in ion implanted and annealed silicon by Dr C Jagadish, S Fatima and Professor J S Williams with Dr P Kringhoj, Aarhus University, Denmark.

Recrystallisation of Si-Ge Alloy Layers by Dr P Kringhoj with A Nylandsted Larsen, Institute of Physics and Astronomy, Aarhus University, Denmark.

Study of MeV ion implantation induced defect generation in silicon by Dr P Kringhoj with Dr B G Svensson, Royal Institute of Technology, Stockholm, Sweden.

The production of high grade TiO2 product by the cold milling of ilmenite in the presence of organic chemicals by Dr P Miller, Dr N Welham, T Hwang, Professor J S Williams, Professor B H Ninham and T R Purdy with N G Bernard, Westralian Sands Ltd.

Ion beam mixing by Dr M Petravi with Dr B V King, University of Newcastle.

Depth resolution during sputter profiling by Dr M Petravi with Dr B G Svensson, Royal Institute of Technology, Stockholm, Sweden.

O2 SIMS by Dr M Petravi with Dr B G Svensson, Royal Institute of Technology, Stockholm, Sweden.

ESD from semiconductor surfaces by Dr M Petravi with Dr A Hoffman, Israel Institute of Technology, Hafia, Israel.

Oxidation of Si by low energy oxygen beams by Dr M Petravi and Professor J S Williams with Dr B G Svensson, Royal Institute of Technology, Stockholm, Sweden.

Metallization of strained GeSi1-x layers by Dr M C Ridgway with J-M Baribeau, National Research Council of Canada.

Doping of InP by MeV ion implantation by Dr M C Ridgway with S Shiryaev and A Nylandsted-Larsen, Aarhus University, Denmark.

Implantation-induced electrical isolation of optoelectronic devices by Dr M C Ridgway with P C Kemeny, Telecom Research Laboratories, Melbourne and M Davies, National Research Council of Canada.

Recrystallisation of amorphized metal silicides by Dr M C Ridgway with A Vantomme and M Van Bavel, Leuven University, Belgium.

Novel alloy formation by high-dose ion implantation of metals by Dr M C Ridgway with...
L Clapham and J L Whitton, Queen’s University, Canada.

Waveguide formation in silica by Ge ion implantation by Dr MC Ridgway with P Leech, Telecom Research Laboratories.

Processing of electronic materials by Professor J S Williams and Dr R G Elliman with Special Research Centre on Advanced Surface Processing, RMIT.

Visible fibre lasers by Professor J S Williams, Dr C Jagadish, Dr R J Egan, and A Clark with Universities of Sydney, NSW and Royal Melbourne Institute of Technology.

Ion beam processing of compound semiconductors by Professor J S Williams with Associate Professor M Austin, RMIT.

Metal-semiconductor interface properties by Professor J S Williams with Associate Professor G Nyberg, La Trobe University.

Microindentation of silicon by Professor J S Williams with Dr M Swain, Division of Applied Physics, CSIRO.

Ion implantation induced gettering of metals in silicon by Professor J S Williams with Drs J Poate, D Jacobson and D Eaglesham, AT & T Bell Laboratories and Drs S M Myers and D Follstadt, Sandia National Laboratories, USA.

Implantation into group III nitride by Professor J S Williams with Professor S J Pearton, Florida State University, Gainsville, USA.

Ion implantation of ceramics by Professor J S Williams and A J Watt with Dr V Gurarie, University of Melbourne.

**Laser Physics Centre**

Measurement of He 1S-2S Transition by Dr K Baldwin with Professor G Opat, Dr A Roberts, Dr R Scholten, J Murphy, University of Melbourne.

Atom Gravitational Cavity and Quantum Chaos by Dr K Baldwin with Professor G J Milburn, University of Queensland.

Multiphoton Ionisation of Atoms by Dr K Baldwin with Professor B W Boreham, Dr S D Newman, Dept. of Applied Sciences, University of Central Queensland.

Theoretical Model of Creation of new Allotrope of Carbon (Fullerene C60) by Dr E Gamaly and Professor L Chadderton with Dr J Lowke, Division of Applied Physics, CSIRO, Visiting Fellow ANU.

Model for Carbon Nanotubes Formation in an Arc Discharge by Dr E Gamaly with Dr T W Ebbesen, NEC Research Institute, Princeton, NJ, USA.

Surface Wave Propagation along the Interface of Nonlinear and Anisotropic Media by Dr E Gamaly with Professor D Anderson, Advanced Technology Laboratory, University of Iowa, USA.

Photorefractive Waveguides by Dr W Krolikowski with Professor M Austin, Royal Institute of Technology, Melbourne.

Solitons in Fibre Arrays by Dr W Krolikowski with Professor M Cronin-Golomb, Tufts University, Medford, USA.

Polymer Nonlinear Waveguides by Professor B Luther-Davies with Professor P L Chu, Australian Photonics Cooperative Research Centre, University of New South Wales.

Spectroscopy of Pink Diamond by Dr N Manson with Dr J Pilbrow, Dr D Hutton, C Noble, Dept of Physics, Monash University.

Spectroscopy of Laser Crystals by Dr N Manson with Dr Dawes, S French, School of Physics, Macquarie University.

Square-Channel Array Optics for X-Ray Focusing by Dr A Rode with Professor K A Nugent, University of Melbourne.
Joint research projects undertaken with universities, CSIRO and other institutions

Focusing of Synchrotron X-ray Radiation with Cylindrically Curved Array of Reflectors by Dr A Rode with Dr D P Siddons, Brookhaven National Laboratory, USA.

High Power Lasers with Applications to High Harmonic and Hard X-Ray Generation by Dr A Rode with Dr M Perry, Livermore National Laboratory, USA.

Experimental Test of X-ray Collimators using Laser-produced Plasma as an X-ray Source by Dr A Rode with Professor M Richardson, Centre for Research in Electro-Optics and Lasers, University of Central Florida, USA.

Array of Reflectors as a Solar Collector for Sky-Light Enhancement by Dr A Rode with Professor J Smith, University of Technology, Sydney.

Measurement of Nonlinear Optical Properties of Materials by Dr M Samoc with Dr M Paley, NASA, G C Marshall Space Flight Centre, Alabama, USA.

**Nuclear Physics**

Perturbed Angular Correlation Studies of Ion Implanted Semiconductor Materials by Dr A P Byrne with Dr R Vianden, ISKP, University of Bonn, Germany.

Radioactive Ion Implanter by Dr A P Byrne with Dr D Chaplin, University College UNSW, Professor H H Bolotin, University of Melbourne.

Spectroscopy of Neutron-Deficient Pb Isotopes by Professor G D Dracoulis, Dr A M Baxter and Dr A P Byrne with Dr R V F Janssens and the FMA Group, Argonne National Laboratory, Illinois, USA.

Spectroscopy of Po, Rn and Ra Isotopes by Professor G D Dracoulis with Professor A R Poletti, University of Auckland, NZ.

High-K Isomers in the N=74 Region by Professor G D Dracoulis with Dr A Bruce, University of Brighton, UK.

High-K Isomers in the Mass 180 Region by Professor G D Dracoulis with Dr P M Walker, University of Surrey, UK.

$^{36}$Cl in Groundwater from Aquifers in Styria, Austria by Dr L K Fifield and Dr R Cresswell with Dr J N Andrews, University of Reading, UK.

$^{36}$Cl in Groundwater from the Pyrenees, France by Dr L K Fifield and Dr R Cresswell with Dr J L Michelot, Université de Paris-Sud, Orsay, France.

$^{36}$Cl in Groundwater from Kanto Region, Japan by Dr L K Fifield and Dr R Cresswell with Dr Kunio Araki, CKC Corporation, Japan.

Aluminium Speciation in Blood Proteins by Dr L K Fifield and Dr R Cresswell with Dr J P Day and S J King, University of Manchester, UK.

Uptake of Aluminium from Drinking Water by Dr L K Fifield and Dr R Cresswell with Dr J P Day, University of Manchester and Dr B Moore, University of Newcastle, UK.

The Effect of Silicate on Aluminium Excretion by Dr L K Fifield and Dr R Cresswell with Dr J P Day, University of Manchester and Dr N B Roberts and J Bellia, University of Liverpool, UK.

Development of $^{41}$Ca and $^{32}$Si AMS for Biomedical Applications by Dr L K Fifield and Dr R Cresswell with Dr J P Day and S J King, University of Manchester, UK.

Development of Plutonium AMS for Biomedical Applications by Dr L K Fifield and Dr R Cresswell with Dr N D Priest, Harwell, and Dr J P Day, University of Manchester, UK.

$^{36}$Cl map of the Murray Darling Basin by Dr L K Fifield and Dr R Cresswell with J D Kellett, AGSO.

Ages of Groundwaters in the Amadeus Basin by Dr L K Fifield and Dr R Cresswell with Dr G Jacobsen, AGSO.

Ages of Groundwaters in the Great Artesian Basin by Dr L K Fifield and Dr R Cresswell with Dr M A Habermehl, AGSO.

Measurements of Erosion in Catchments at Different Scales by Dr L K Fifield and Dr R...
Cresswell with Dr R Wasson and Dr A Murray, CSIRO, Division of Water Resources.

Present, Versus Past Erosion Rates in the Ord River Catchment, NT by Dr L K Fifield and Dr R Cresswell with Dr R Wasson, CSIRO, Division of Water Resources.

Fission Dynamics Using Langevin Techniques by Dr D J Hinde with Professor Y Abe, Yukawa Hall, Kyoto University and Dr T Wada, RIKEN, Japan.

a-Emitting Medical Radioisotopes by Dr J R Leigh with Dr B J Allan and Dr H Meriarty, ANSTO.

Threshold Effects in the Reaction of $^{16}\text{O} + ^{58}\text{Ni}$ by Dr J R Leigh, Dr M Dasgupta and Dr D J Hinde with Dr J S Lilley, Dr N Keeley and Dr J X Wei, University of Manchester and Dr B Fulton, University of Birmingham, UK.

Fusion of Heavy Nuclei by Dr J R Leigh and Dr M Dasgupta with Dr N Rowley, University of Manchester and University of Surrey, UK.

High resolution studies of Rutherford back scattering by Professor I R Ophel with Dr D J O'Connor, Z Fang and Q Yang, University of Newcastle.

High Angular Momentum States in Cd, Ag and Pd Isotopes by Dr P H Regan and Dr A E Stuchbery with Dr V P Janzen, Dr A Galindo-Uribarri, Dr D Ward and Dr D C Radford, AECL, Chalk River, Ontario and Dr S M Mullins and Dr G Hackman, McMaster, Ontario, Canada.

Measurement of Nuclear g-factors and Investigation of Transient Magnetic Fields by Dr A E Stuchbery with Professor H H Bolotin, University of Melbourne.

Nuclear Moments by Dr A E Stuchbery with Professor F Brandolini, Professor P Pavan and Dr N Medina, INFN and University of Padova, Italy.

Composition and Evolution of the Continental Crust by Dr S R Taylor with Professor S M McLennan, State University of New York, USA.

Optical Sciences Centre

Nonlinear waves produced by multi-mode interactions by Dr Yu Kivshar with Professor R Grimshaw, Monash University, Melbourne.

Modelling of the DNA dynamics by Dr Yu Kivshar with Dr M Salerno, University of Salerno, Italy.

Suppression of chaos by Dr Yu Kivshar with Dr M Benner, Technische Hochschule, Darmstadt, Germany.

Dynamics of the Frenkel-Kontorova model by Dr Yu Kivshar with Professor O M Braun, Institute of Physics, Kiev, Ukraine.

Localized modes on discrete models by Dr Yu Kivshar with Professor K H Spatschek and Dr S K Turitsyn, University of Düsseldorf, Germany.

Gap solitons by Dr Yu Kivshar with Dr O M Usatenko, University of Kharkov, Ukraine, Dr A S Kovalev, Institute for Low Temperature Physics and Engineering, Kharkov, Ukraine, Dr O A Chubykalo, Department of Physics, Univeristidad Comlutenense, Madrid, Spain.

Soliton-based models of nonlinear switching by Dr Yu Kivshar with Professor F Lederer and Dr I Uzunov, University of Jena, Germany.

Second-harmonic generation and nonlinear surface waves in solids by Dr Yu Kivshar with Professor D Parker, University of Edinburgh, UK.

Spatial solitons by Dr Yu Kivshar and Dr V V Afanasjev with Dr S J Aitchison, University of Glasgow, UK.

Nonlinear c$^{(2)}$ couplers by Dr Yu Kivshar and A V Buryak with Dr G Town, University of Sydney.

Solitons due to competing nonlinearities by Dr Yu Kivshar and A V Buryak with Dr S Trillo, Fondazione Ugo Bordoni, Rome, Italy.

Asymmetric, multimode Y-junction splitters by Dr J D Love with Dr W Henry, La Trobe University, Melbourne.

Propagation in depressed-cladding fibres by Dr J D Love with Dr R H Stolen, AT&T Bell Laboratories, New Jersey, USA, and Dr W M Henry, La Trobe University, Melbourne.
Fibre characterisation and modelling by Dr J D Love with Dr I M Bassett, University of Sydney.

Chirped fibre gratings by Dr J D Love with Dr P Krug, University of Sydney.

Bend losses in multimode waveguides by Dr J D Love with Dr S Burke, University of Wales, College of Cardiff, UK.

Flat TV screen by Dr J D Love with Mr D Thorncraft, University of Sydney, Ramasoft 3, Sydney.

Silica planar optical waveguides by Dr J D Love and Dr A Durandet with Dr M Austin, Royal Melbourne Institute of Technology, Melbourne, Dr P Kemeny, Telecom Research Laboratories, Melbourne, and T Ash, Ericsson Australia Pty Ltd, Melbourne.

Planar GRIN lens by Dr J D Love, Dr A Durandet and D Beltrami with Dr C Cogswell, University of Sydney.

Grating effects in finite-cladding fibres by Dr J D Love and Dr S J Hewlett with Dr G Melz and Dr W W Morey, United Technologies Research Center, Hartford, Connecticut, USA.

Multicore optical fibre devices by Dr J D Love and Dr P L Chu, University of New South Wales, Sydney and B Gillhoff and J W Arkwright, Siemens Ltd, Melbourne.

Planar waveguide devices by Dr J D Love and Dr F Ladouceur with Dr D Moss and Dr F Ouellette, University of Sydney, Professor P L Chu, University of New South Wales, Sydney; B Gillhoff and J W Arkwright, Siemens Ltd, Melbourne; Dr P Kemeny, Telecom Research Laboratories, Melbourne.

Application of fused-taper couplers to confocal microscopy by Dr J D Love and R W C Vance with Dr W M Henry, La Trobe University, Melbourne.

Polarisation domain solitons by A Sheppard with Dr M Haelterman, Université Libre de Bruxelles, Brussels, Belgium.

Polarisation effects in soliton interaction by A Sheppard with Dr S Trillo and Dr S Wabnitz, Fondazione Ugo Bordoni, Rome, Italy.

Plasma Research Laboratory

Development of new plasma sources by Dr R W Boswell with LAM Research Corporation, USA.

Silica deposition and diagnostics by Dr R W Boswell with Université de Nantes (CNRS), France.

Dusty plasmas, optical diagnostics by Dr R W Boswell with Université d’Orléans (CNRS), France.

Plasma diagnostics by Dr R W Boswell with Université Joseph Fourier de Grenoble (CNRS), France.

Etching of GaAs by Dr R W Boswell with Royal Melbourne Institute of Technology.

III-V etching by Dr R W Boswell with AT&T Bell Laboratories, USA.

Etching of InP by Dr R W Boswell with Thomson-CSF, France.

Non-linear diffusion in Hamiltonian systems by Professor R L Dewar and Dr H J Gardner with University of Queensland; University of Sydney.

Equilibrium and stability of Heliac plasma by Professor R L Dewar and Dr H J Gardner with Centre for Plasma Research, Ecole Polytechnique, Lausanne, Switzerland, CIEMAT, Madrid, Spain, Max Planck Institute for Plasma Physik, Garching, Germany; National Institute for Fusion Science, Japan; Kyoto University, Japan; New York University, USA.

Neoclassical transport studies for H-1 by Dr H J Gardner with CSIRO, Division of Petroleum Resources, Melbourne.

Surface modification of wool fibre by Professor S M Hamberger with CSIRO, Division of Wool Technology, Geelong.

Drift waves in toroidal plasma by Professor S M Hamberger and Dr B D Blackwell with University of Manchester Institute of Science and Technology, UK.

Tomographic imaging of plasmas by Dr J Howard with University of California, Los Angeles, USA, University of Texas, Austin, USA.
Interferometric measurements of electron density by Dr J Howard with University of Sydney.

Ion microprobe tomography by Dr J Howard with University of Melbourne.

Real-time processing system for tomographic analysis on the H-I Heliac by Dr J Howard and Dr B D Blackwell with Central Queensland University.

**Theoretical Physics**

Gravitational wave detection by Dr N A Ansari with Professor V I Man'ko, Lebedev Institute of Physics, Moscow, Russia and Professor S Solimeno, University of Naples, Italy.

Resonant scattering of $^{19}$Ne and $^{15}$F beams on hydrogen targets by Dr F C Barker with Professor W Galster and Professor L Leleux, Université Catholique de Louvain, Belgium.

$^{16}$N b-decay by Dr F C Barker with Dr R E Azuma, University of Toronto, Canada and Dr L Buchmann, TRIUMF, Vancouver, Canada.

String structure of Bethe Ansatz equations for solvable lattice Ising model in a field by Dr V V Bazhanov with Professor B Nienhuis and Dr O Warnaar, University of Amsterdam, The Netherlands.

Study of solvable lattice models in three dimensions and the chiral Potts model by Dr V V Bazhanov with Professor N Reshetikhin, University of California, Berkeley, USA.

Review of three-dimensional solvable models by Dr V V Bazhanov and Dr V V Mangazeev with Professor Y G Stroganov and Professor S M Sergeev, Institute for High Energy Physics, Protvino, Russia.

Model Schwinger-Dyson and Bethe-Salpeter equations by Dr C J Burden with Dr C D Roberts, Argonne National Laboratory, USA.

Strong electron correlations in metals and insulators by Dr M P Das with Professor S N Behera, Institute of Physics, Bhubaneswar, India.

High Tc superconductivity by Dr M P Das with Dr T C Choy, Monash University.

Magnetic properties of high Tc superconductors by Dr M P Das with Professor S X Dou, University of Wollongong.

Collective electronic excitations in fullerenes by Dr M P Das with Dr M T Michalewicz, CSIRO, Melbourne.

Electron crystallisation by Dr M P Das with Professor D Neilson, University of New South Wales.

Study of nanostructures by Dr M P Das and Dr W Xu with Professor P Vasilopoulos, Concordia University, Montreal, Canada and Professor F Peeters, University of Antwerp, Belgium.

Contribution of possible charged Higgs particle to the decays of heavy quarks by Dr A J Davies with Professor T Hayashi, University of Kogakkan, Japan; Professor M Matsuda, Aichi University, Japan and Professor M Tanimoto, University of Ehime, Japan.

Quantum inference by Dr A J Davies with Dr K R W Jones, University of Queensland.

Meson properties in quantum electrodynamics by Dr A J Davies with Dr C D Roberts, Argonne National Laboratory, USA and Dr M J Thomson, University of Melbourne.

MHD ballooning mode stability of the H-I heliac by Professor R L Dewar and Dr H J Gardner with Dr W A Cooper, Centre de Recherches en Physique Plasmas, Lausanne, Switzerland.

Design of a new stellarator fusion reactor by Dr H J Gardner with Professor P R Garabedian, New York University, USA.

Evolution of magnetic islands in the H-I heliac by Dr H J Gardner with Dr T Hayashi, National Institute for Fusion Science, Japan.

Drift waves in the H-I heliac by Dr H J Gardner, J V Lewandowski and Dr M Persson with Dr H Nordman, Chalmers University of Technology, Göteborg, Sweden.

Application of interacting boson model to subbarrier fusion by Dr S Kuyucak with Professor A B Balantekin, University of Wisconsin, Madison, USA.
Application of interacting boson model to superdeformed nuclei by Dr S Kuyucak with Professor T Otsuka, University of Tokyo, Japan.

Gyro-kinetic calculations in 3-dimensional plasmas by J V Lewandowski and Dr M Persson with Dr R E Waltz, General Atomics, San Diego, USA.

Application of a hybrid quark-hadron model to pion-alpha scattering by Professor J-F Liu and Dr B A Robson with Professor Y S Zhang, Guangxi Normal University, China.

Influence of plasma rotation on resistive tearing modes by Dr M Persson with Dr E K Maschke and Dr G Urquijo, Commissariat à l'Energie Atomique, France.

Formation of astronomical objects from superstrings by Dr L J Tassie with Professor P Brosche, Observatorium Hoher List der Universitätsternwarte, Bonn, Germany.

Effect of superstrings on the origin of the elements by Dr L J Tassie with Professor T Kajino, Tokyo Metropolitan University, Japan.

Electron scattering from hydrogen by Dr K Unnikrishnan with Professor J Callaway, Louisiana State University, Baton Rouge, USA.

Optical properties of nanostructures by A Vagov with Professor G B Smith, University of Technology of Sydney.

Photodisintegration of the deuteron by Dr W S Woolcock with Professor W Jaus, University of Zürich, Switzerland.

Electromagnetic corrections to hadronic processes by Dr W S Woolcock with Professor G Rasche and Ms U Moor, University of Zürich, Switzerland.

Optical absorption in low-dimensional semiconductor systems by Dr W Xu with Dr V W L Chin and Professor T L Tansley, Macquarie University.

High field magnetophonon resonance in GaAs-GaAlAs heterojunctions by Dr W Xu with Professor F Peeters, University of Antwerp, Belgium and Dr D R Leadley and Professor R J Nicholas, University of Oxford, UK.

Research School of Social Sciences

Centre for Economic Policy Research

Economics of crop insurance by Dr J C Quiggin with Professor R Just, University of Maryland.

New edition of Agricultural Decision Analysis by Dr J C Quiggin with Drs J Anderson, J Dilon and B Hardaker, University of New England.

International agreement on global warming by Dr J C Quiggin with Professor J Horowitz, University of Maryland.

A critical review of the contingent valuation method by Dr J C Quiggin with Professor C P Harris, James Cook University.

Finance theory with generalised expected utility by Dr J C Quiggin with Professor M Ormiston, University of Arizona.

Two-stage referendum methods by Dr J C Quiggin with Professor T Cameron, University of California, Los Angeles.

Production under uncertainty by Dr J C Quiggin with Professor R Chambers, University of Maryland.

The axiomatic basis of anticipated utility by Dr J C Quiggin with Dr P Wakker, University of Nijmegen.

Probability transformations and generalised expected utility theory by Dr J C Quiggin with Professor E Schlee, Arizona State University.

Policy for full employment by Dr J C Quiggin with Mr J Langmore MHR.

Demography

Aboriginal family and environmental health survey by Dr A Gray with Dr G Henderson, Australian Institute of Aboriginal and Torres Strait Islanders and staff of Tharawal Aboriginal Health Service.

Eastern Indonesia Population and Development Research Project by Professor G Jones, Dr A Gray and Dr A Hayes with numerous staff members of
the Centre for Population and Manpower Studies, Indonesian Academy of Sciences, under the leadership of Dr Yulfita Rahardjo.

**Director’s Section**

Analytic Foundations of the Liberal Constitution by Professor G Brennan with Dr A Hamlin, University of Southampton.

The Intellectual Legacy of J M Buchanan, and The Theory of Inter-Governmental Grants by Professor G Brennan with Professor J J Pincus, University of Adelaide.

Trust in Economic Relations by Professor G Brennan with Dr H Kliemt, University of Duisburg.

Book on consequentialism by Professor P Pettit with Professors M Neave, University of Illinois, and M Slote, University of Maryland.

**Economic History**

Indian environmental history by Dr R Grove with Dr P Vitebsky, Scott Polar Research Institute, Cambridge, and Dr D Kumar, National Institute of Science, Technology and Development Studies, India.

Living standards in Australia c 900–40 by Dr R Jackson with Dr M Thomas, University of Virginia.

The Cambridge economic history of Australia by Professor G D Snooks with Dr R V Jackson, University of Queensland.

Was the industrial revolution necessary? by Professor G D Snooks published by Routledge, with contributors from the universities of Rochester, Oxford, New South Wales, Melbourne and Queensland.

**Economics**

Capital goods prices and the measurement of the Solow residual by Dr S Dowrick with Dr E Fisher, Ohio State University.

Investment intentions and realisation in Australian manufacturing by Dr S Dowrick with Dr C Driver, Imperial College, London.

Economic growth—a review by Dr S Dowrick with Professor P Sheehan, Victoria University of Technology.

Homothetic rank dependent expected utility by Dr S Grant with Dr A Kaji, University of Pennsylvania and Dr J Quiggin, ANU.

Bargaining theory with non-expected utility by Dr S Grant with Dr A Kaji, University of Pennsylvania.

Love of information and Blackwell’s theorem for non-expected utility by Dr S Grant with Dr A Kaji, University of Pennsylvania and Dr B Polak, Yale University.

Dynamically consistent preferences with quadratic beliefs by Dr S Grant with Dr J Eichberger, Universities of Melbourne and Saarbruecken.

Information externalities, stock-based incentives and managerial behaviour by Dr S Grant and Dr S King with Dr B Polak, Yale University.

Incidence analysis of an income/sales tax switch by Dr S Grant and Dr S King with Dr G Garvey, University of Sydney.

Short term market manipulation and optimal management compensation by Dr S Grant and Dr S King with Dr G Garvey, University of Sydney.

Analysing optimal contracts for fund managers by Dr S Grant and Dr S King with Dr J Eichberger, Universities of Melbourne and Saarbruecken.

Growth by Professor R G Gregory with Professor P J Sheehan, Victoria University of Technology.

Impact of internationalisation on the welfare state by Dr D Mitchell with Dr G Garrett, Stanford University.

Seasonal integration by Professor A R Pagan with Professor S Hylleberg, Aarhus University, Denmark.

Term structure of interest rates by Professor A R Pagan with Dr V Martin, University of Melbourne and Dr T Hall, Bond University.
Joint research projects undertaken with universities, CSIRO and other institutions

History of Australian labour markets, and migration and unemployment by Professor D Pope with Professor G Withers, office of EPAC and La Trobe University.

Myths of immigration by Professor D Pope with Dr P N Junankar, ANU, and Dr C Kapuscinski, University of Canberra.

Modern perspectives on the gold standard: Canadian and Australian experience by Professor D Pope with Professor J Floyd, University of Toronto.

**Philosophy**

Meaning by Dr J O'Leary-Hawthorne with Professor M Lance, Georgetown University.

Leibniz on Individuation by Dr J O'Leary-Hawthorne with Professor J Cover, Purdue University.

Annotated Logics by Dr R Sylvan with Dr J Ahe, University of Sao Paulo, Brazil.

Computability by Dr R Sylvan with Dr J Copeland, University of Canterbury, New Zealand.

Connectionism and the Systematicity of Cognition by Dr T J van Gelder with Dr L Niklasson, University of Skövde, Sweden.

The Dynamical Conception of Cognition by Dr T J van Gelder with Dr R Port, Indiana University.

**Sociology**

The social and temporal bases of class structures and their socio-cultural implications by Drs J Baxter and M Western with Professor J Western and Associate Professor D C Chant, University of Queensland.


Gender attitudes in Australia by Dr M D R Evans with Professor K O Mason, East-West Population Institute, Hawaii.

Public attitudes towards people with AIDS by Drs M D R Evans and J Kelley with Associate Professor B Headey, University of Melbourne.

The use of fetal tissue in medical research and treatment by Drs M D R Evans and J Kelley with Dr E Zanjani, US Veteran's Hospital.

Patterns of ethnic intermarriage in Australia by Professor F L Jones with Professor Ruud Luijks, Tilburg University, The Netherlands.

Immigrant melting pot by Professor F L Jones with Professor R Holton, Flinders University and
Professor Y Shavit, European University, Florence, Italy.

National Social Science Survey by Drs J Kelley, C Bean and M D R Evans with Dr K Zagorski, University of Melbourne.

International Social Survey Program by Drs J Kelley and M D R Evans with Dr K Zagorski, University of Melbourne; M Haller, Karl-Franzens University of Graz, Austria; P Mateju, Academy of Sciences of Czech Republic; J Harkness, Zentrum für Umfragen, Methoden und Analysen, Mannheim; C Ward, Social Science Research Centre, Dublin; R Jowell, Social and Community Planning Research, London; T Tsuji, NHK, Broadcasting Culture Research Institute, Tokyo; J Becker, Sociaal en Cultureel Planbureau, The Netherlands; G Guiderossi, EURISKO, Milan; K K Skjåk, Norwegian Social Science Data Services, Bergen; M Mangahas, Philippine Social Science Centre, Quezon City, Philippines; L Khakhulina, Center for Public Opinion and Market Research, Moscow; S Svalfors, University of Umeå, Sweden.

Professions in Australia by Dr T Makkai with Professor J Western, University of Queensland.

Social class, labour market structure and earnings determination in cross-national perspective by Dr M Western with Dr W Martin, Flinders University of South Australia.

The comparative project on class structure and class consciousness by Drs M Weston and J Baxter with some 15–20 national project teams around the world.

Urban Research Program/ Administration, Compliance and Governability Program

Incentives for Biodiversity Conservation by Dr P N Grabosky with Dr M Young, CSIRO Wildlife and Ecology.


Faculty of Arts

Department of Classics

Familial structures in a multicultural society: methodology for the analysis of Roman imperial society by Professor B Rawson and Professor P R C Weaver with Dr P Gallivan, Classics, University of Tasmania.

Department of History

Encyclopaedia of the Pacific, begun by Dr B V Lal with M Quanchi, Queensland University of Technology for Polynesian Press of Auckland and University of Hawaii Press.


Joint research projects undertaken with universities, CSIRO and other institutions


Department of Philosophy

Dr Deutscher received an ARC Grant for work on Irigaray's 'Politics of the Symbolic' (interpreting the proposals for legal, religious and linguistic reform in the recent work of Luce Irigaray).

Dr Roepor continued his joint research with Professor H Leblanc, University of Quebec at Montreal on probability semantics.

Professor Tennant was the recipient of an ARC grant for Computer Implementations of Constructive and Relevant Systems of Logic.

Department of Political Science

Dr J J Pettman, member, advisory committee for and participating in the 'Innovative self-directed Student Workshops in Race Relations' Innovative and Quality Enhancement Project, coordinated by Faculty of Aboriginal and Islander Studies at the University of SA.

Project on professionalisation of political life in Australia and Canada by Dr M J Simms with Dr L Erickson, Simon Fraser University.

International comparative project on legislative recruitment by Dr M J Simms headed by Dr P Norris, Harvard University.

Department of Sociology

Project on emotional climates by Dr J Barbalet with Professor J de Rivera, Department of Psychology, Clark University, MA, USA.

Concord Hospital Colorectal Project by Dr O Dent with Associate Professors P H Chapuis and R Newland and Professor E L Bokey, Concord Hospital and Sydney University.

Neuropsychiatric follow-up of former prisoners of war in old age by Dr O Dent with Professor A Broe of Concord Hospital and Sydney University, Professor C C Tennant of Royal North Shore Hospital and Sydney University, and Dr A F Jorm, NH&MRC Social Psychiatry Research Unit, ANU.

Survival in inflammatory bowel disease by Dr O Dent with Dr J Andrews of Concord Hospital, Dr I Norton of Prince of Wales Hospital, and Professor K J Goulston, Royal North Shore Hospital and Sydney University.

Workforce in internal medicine and paediatrics in Australia by Dr O Dent with the Royal Australasian College of Physicians.

Patterns of prosecution for occupational health and safety offences around Australia by Dr A Hopkins with the Victorian Occupational Health and Safety Authority.

HIV/AIDS in homeless youth in Portland, Oregon by Dr A Klovdahl with colleagues at the Oregon Research Institute in Eugene Oregon.

Social networks of minority youth at risk for HIV/AIDS by Dr A Klovdahl with colleagues at the Battelle Research Institute, Seattle, Washington, the University of Hawaii at Manoa, the University of Puerto Rico and the Moorhouse School of Medicine in Atlanta.

Tuberculosis and HIV infection in IV drug users by Dr A Klovdahl with colleagues at the School of Public Health, Johns Hopkins University.

Tuberculosis spread in drug users by Dr A Klovdahl with colleagues at the Baylor School of Medicine, Houston Texas.

Molecular evolution and STD transmission by Dr A Klovdahl with colleagues at the School of Medicine, Johns Hopkins University in Baltimore.

Evaluation of the Aboriginal and Torres Strait Islander Cultural Awareness Program by Dr S Mugford with Brian Williams of the Australian Institute of Criminology.

Decennial Evaluation of the Office of Government Information and Advertising by Dr S Mugford with J Martin, Faculty of Management, University of Canberra.

Uses of Education Research Findings by School Principals in Australia and the United States by Dr L Saha with B Biddle, Center for Research in Social Behaviour, University of Missouri, Columbia.
Faculty of Economics and Commerce

Department of Commerce

Auditors' Perceptions of Inherent Risk by Mr G Shailer with Professor R Willett, University of Otago; Dr K Yap, KPMG Peat Marwick/Desa Megat and Co, Kuala Lumpur; and Ms M Wade, University of Canberra.

Attitude Towards Auditors’ Liability, by Mr G Shailer with Professor R Willett, University of Otago; Dr K Yap, KPMG Peat Marwick/Desa Megat and Co, Kuala Lumpur; and Ms M Wade, University of Canberra.

Recent accounting reform in China by Mr A Tran with Ms Haoping Chen, Hangzhou Institute of Commerce, Hangzhou, China.

Alignment of taxable income with accounting profit by Mr A Tran with Professor T Porcano, Miami University, Ohio, USA.

Time varying volatility estimates in option pricing: can superior estimates be obtained by Mr B Oliver with Dr T Brailsford, University of Melbourne.

Empirical research design issues in finance: beta estimation by Mr B Oliver with Dr R Faff, Monash University and Dr T Brailsford, University of Melbourne.

Volatility smiles in futures options by Mr B Oliver with Dr T Brailsford, University of Melbourne.

Electronic Data Interchange (EDI) in International Trade: Frameworks for the Strategic Analysis of Ocean Port Communities by Mr R Clarke with Professor C Wrigley, McGill University, Montreal, and Professor R Wagenaar, Erasmus University, Rotterdam.

Asia-Pacific Directory of Information Systems Academics by Mr R Clarke with Professor G Gable, previously of National University of Singapore, now of the Queensland University of Technology.

Faculty of Engineering and Information Technology

Department of Computer Science

High performance parallel computing, joint research between Department and DIT CSIRO involving a number of academics and scientists from both institutions.

Ramsey Theory by Dr B McKay with S Radziszowski, Rochester Institute of Technology, USA.

Random Graphs by Dr B McKay with N Wormald, Melbourne University.
Asymptotic Enumeration by Dr B McKay with Wang Xiaoji, University of NSW; R Canfield and R Robinson, University of Georgia, USA and E Bender, University of California at San Diego, USA.

Cycles in Graphs by Dr B McKay with D Holton, University of Otago, NZ and R Aldred, University of Otago, NZ.

Constructive Enumeration of Combinatorial Objects by Dr B McKay with G Royle, University of Western Australia; W Myrvold, University of Victoria, Canada and G Brinkmann, University of Bielefeld, Germany.

Combinatorial Matrix Theory by Dr B McKay with I Kaplansky, University of Berkeley, USA; J Seidel and F Bussemaker, University of Eindhoven, The Netherlands.

On the Refinement Calculus by Dr T N Vickers and Dr C C Morgan, Oxford University (joint editors).

The development of a generic program refinement tool by Dr T N Vickers and Dr D A Carrington, Dr I J Hayes, and Professor J Walsh, University of Queensland, and K Robinson, University of New South Wales.

The development of high level language facilities for the Fujitsu AP1000 distributed memory multiprocessor computer by Dr C W Johnson with Dr M R Osborne, School of Mathematical Sciences, ANU; Dr S Roberts, SMS; and Professor R B Schnabel University of Colorado at Boulder, Colorado, USA.

Compiler Technology for Parallel Supercomputing, ARC Project by Dr P Tang with Professor R P Brent at Computer Science Laboratory in Research School of Physical Sciences and Engineering, ANU.

Specification and Design of a Kernel for an Extensible DBMS by Dr J Yu with Dr K Yamaguchi, University of Tokyo and Dr K Furuie, Richo Co, Japan.

Faculty of Law

Joint research project on human rights teaching by Professor P Alston, Centre for International and Public Law, and Professor H Steiner, Harvard Law School.

A project, with Professor P Alston as Director, funded by the Ford Foundation and the Swedish International Development Authority (US$120,000), to examine the desirability and feasibility of establishing an International Human Rights Policy Research Institute. In July 1994, Professor Alston organised a meeting for this purpose, jointly with the University of Cambridge, Research Centre for International Law (42 page report distributed in December 1994).

Department of Engineering

The assembly of flexible materials by Dr B J McCarragher with Dr G Dodds, Electrical Engineering Department, Queens University of Belfast.

Intelligent control by Dr B J McCarragher with Dr Sheng Liu, Department of Mechanical Engineering, MIT.

Cooperative Research on Robust and Adaptive Systems project de-interleaving pulse trains by Dr I M Y Mareels with V Clarkson, Dr J Perkins and Professor D Gray, DSTO.

Nonlinear control by Dr I M Y Mareels with Professor G Bastin and Dr G Campion, Department of Systems Engineering (Unite Auto), University of Louvain La neuve, Belgium.

Adaptive control by Dr I M Y Mareels with Professor J W Polderman, Department of Applied Mathematics, University Twente, The Netherlands.

Cooperative Research on Robust and Adaptive Systems project beamforming and array shape estimation by Dr I M Y Mareels with M Goris and Dr D McClean, CSIRO.

Experiments on time optimal controls of industrial robots by Dr J Kieffer with M W M G Dissanayake, Department of Mechanical Engineering, University of Sydney.
Cooperation between Dr J Behrens and Professor B Boer, University of Sydney in the writing of a book on the implementation of the World Heritage Convention in Australia.

Professor T Campbell and Professor W Sadurski, University of Sydney, have jointly been awarded a large ARC Grant for research on Freedom of Communication in Australia.

Administrative Review in Australia and Indonesia by Professor J Disney with the University of Indonesia, Gadjah Mada University, and University of Melbourne.

Professor N Cunningham from the Centre for Environmental Law with the Australian Institute of Criminology, edited Crime and Environment.

Environmental Sustainability Law by Professor N Gunningham with the University of Adelaide and University of Sydney, through Australian Centre for Environmental Law.

Professor D Hambly with Professor Luntz, University of Melbourne, Luntz & Hambly, published the fourth edition of their book Torts: Cases and Commentary.

Dr R Moles: DEET funding and Ministerial Appointment, jointly awarded $350,000 by the Committee for the Advancement of University Teaching (CAUT)—a committee of DEET—through a National Priority Reserve Fund Grant—to set up a National Electronic Clearinghouse in Law, together with the National Coordinating Centre to coordinate the work of a number of Clearinghouses; appointed by the Minister for Education to be the Academic Director of the Law Clearinghouse.

Mr C Rowland, started working with the Law Office of the ACT Government and the Queensland Law Reform Commission on the administration of estates part of the Uniform Succession Laws Project for Australia (with the main responsibility for administration of estates part of the project). As part of the project it is planned, by making comparison with United States procedures, to develop a more effective method by which Australia could prepare and get widespread acceptance of uniform draft legislation.

In collaboration with academics from Queensland University and Melbourne University, Ms P Spender is working on a project to produce a casebook on Australian Civil Procedure.

Faculty of Science

Division of Biochemistry and Molecular Biology

Metabolism in trichomonads by Dr C A Behm with Dr M R Edwards and Associate Professor P J Schofield, School of Biochemistry and Molecular Genetics, University of New South Wales.

Molecular biology of nematodes by Dr C A Behm with Dr D Miller, Department of Molecular Sciences, James Cook University, and Dr W Grant, CSIRO Division of Animal Health, Armidale.

Entomopathogenic nematode Steinernema carpocapsae by Dr C A Behm with Drs S Trowell and J Curran, CSIRO Division of Entomology.

An investigation into the molecular mechanisms of cholestasis by Dr F L Bygrave with Dr Y Hamada, National-Nishi Sapporo Hospital, Sapporo, Japan and Tokyo Tanabe Pharmaceutical Company, Tokyo, Japan.

Involvement of cytokines and nitric oxide in the side-effects of diethylcarbamazine in filariasis patients by Dr I A Clark with Dr P Turner, James Cook University, Townsville.

Induction of cytokines and nitric oxide by molecular components of malaria parasites by Dr I A Clark with Drs D Kwiatkowski and C Bate, Institute of Molecular Medicine, John Radcliffe Hospital, Oxford, UK.

Interaction of TNF, nitric oxide, and the chemo-attractant cytokine, CP10 by Dr I A Clark with Dr C Gecezy, Heart Research Institute, Sydney.

Possible role of nitric oxide in dengue and typhoid with Dr I A Clark with Dr S McGladdery, NAMRU, Jakarta and E O'Neill.

Analysis of alternative oxidase in tobacco by Dr D A Day and Dr J Whelan with Dr L MacIntosh, Michigan State University, USA.
Induction of alternative oxidase synthesis in cultured sycamore cells by Dr D A Day and Dr J Whelan with Professor R Douce and Dr R Bligny, Grenoble, France.

Import of proteins into isolated plant mitochondria by Dr D A Day and Dr J Whelan with Dr E Glaser, University of Stockholm.

Metabolite transport across the peribacteroid membrane of legume nodules by Dr D A Day with Dr A Puppo, University of Nice, France.

Transport of iron across symbiotic membranes of soybean nodules by Dr D A Day with Dr M-L Guerinot, Dartmouth College, New Hampshire, USA.

Patch-clamping studies of the peribacteroid membrane of soybean symbiosomes by Dr D A Day with Dr L Whitehead, Dr S Tyerman, Flinders University, South Australia.

Regulation of alternative oxidase activity in plants by Dr D A Day with Mr H Millar, Dr O Atkin and Professor H Lambers, University of Utrecht, Netherlands.

Regulation of alternative oxidase in plant mitochondria by Dr D A Day with Dr J T Wiskich, University of Adelaide and Dr J Siedow, Duke University.

Characterisation of the redox centres of plant mitochondria by Dr D A Day with Mr R I Menz, Dr R Pace, Chemistry, ANU and Dr J Wiskich, University of Adelaide.

Characterisation and application of Hobo-like transposable elements in the blowfly *Lucilia cuprina* and on molecular characterisation of genes involved with sex determination in the blowfly *Lucilia cuprina* by Dr A J Howells with Dr P Atkinson, CSIRO Division of Entomology, Canberra.

Biological control of vertebrate pest populations by Dr P A Janssens with staff of the CSIRO Division of Wildlife and Ecology, the Agricultural Protection Board of Western Australia, the Department of Conservation and Land Management, Western Australia, and of the John Curtin School of Medical Research, ANU.

Cloning a serotonin receptor gene in *Lucilia cuprina* by Dr P A Janssens with Dr P East, CSIRO Division of Entomology.

Immunity to parasites by Dr K S Ovington with Dr N C Smith, Queensland Institute of Medical Research.

Nitrate in Indonesian groundwaters by Dr G D Smith and R Wetselaar with Professor J Fox (Research School of Pacific and Asian Studies) have collaborated with members of the Faculty of Medicine at the University of Gadjah Mada in Yogyakarta, Indonesia.

Salmonella vector system by Dr N K Verma with Professor B Stocker and Associate Professor G Schoolnik, Dept Microbiology and Immunology, Stanford University School of Medicine, California.

Salmonella-HIV by Dr N K Verma with Professor J Berzofsky, NIH, Bethesda.

Development of vaccine against shigellosis by Dr N K Verma with Professor A Lindberg and Dr A Karnell, Karolinska Institute, Sweden.

Cellular immune response to T-cell epitope in TCR transgenic mice by Dr N K Verma with B Fazekas, Centenary Institute of Cancer Medicine and Cell Biology, Sydney.

Salmonella as a delivery vector for Fox sperm antigens, biological control of vertebrate pest populations by Dr N K Verma with Dr M Bradley, CRC, CSIRO.

Genetic variants of Ross River virus by Dr R C Weir and Dr L Dalgarno with Dr R Kuhn, Purdue University, USA and Dr J Strauss, California Institute of Technology, USA.

Epitopes of Murray Valley encephalitis virus by Dr R C Weir and Dr L Dalgarno with Dr J Roehrig, Centre for Vector-borne Infectious Diseases, Fort Collins, USA.

Isolation of antigenic variants of Barmah Forest virus by Dr R C Weir and Dr L Dalgarno with Dr G Burgess, James Cook University, Townsville.

Growth of Ross River virus in vector mosquitoes by Dr R C Weir and Dr L Dalgarno with Dr I D
Division of Botany and Zoology

Rainforest dynamics, Tropical Rainforest CRC, by Dr J Ash with Dr M S Hopkins, CSIRO
Rainforest Research Centre, Atherton.

Control of *Echium*, PhD and Grad Dipl Sci projects by Dr J Ash with Dr R Groves CSIRO
Plant Industry, Dr D Briese, and Dr A Shepherd, CSIRO Entomology, Canberra.

Fungal infestation of grasses, PhD project by Dr J Ash with Dr J Burdon, CSIRO Plant Industry,
Canberra.

Tree hydrology by Dr J Ash with Dr J Walker CSIRO Water Resources.

Succession on ultramafics, PhD project and research by Dr J Ash with Dr T Jaffre,
ORSTOM, Noumea.

Body size and foraging in honey bees by Dr P Cooper with Dr S L Buchmann, USDA-ARS
Carl Hayden Bee Research Laboratory, Tucson, Arizona, USA.

Investigation of the occurrence of opioid-like peptides in insects and their role in control of
feeding and digestion by Dr P Cooper with Dr P East, CSIRO Entomology.

Malpighian tubule function in black field crickets, *Teleogryllus oceanicus* by Dr P Cooper with Dr A
T Marshall, La Trobe University.

Molecular phylogeny of a group of Australian shrub legumes by Dr M D Crisp with Dr R Appels,
CSIRO Division of Plant Industry, Canberra.

Biogeography of plants in Australia and the southern hemisphere by Dr M D Crisp with Dr P
Linder, University of Cape Town, South Africa.

Cladistic biogeography of Waratahs and their allies (*Embothrieae: Proteaceae*) across the
Pacific by Dr M D Crisp with Dr P H Weston, Royal Botanic Gardens, Sydney.

Editing *Advances in Legume Systematics, Part 7 Phylogeny* by Dr M D Crisp with Dr J J Doyle,
Cornell University, Ithaca, USA.

Phylogenetic relationships of the family *Axinellidae* (*Porifera: Demospongiae*) by Dr M
D Crisp with B Alvarez de Glasby and Dr J Hooper, Queensland Museum, and Dr J Curran,
Division of Entomology, CSIRO.

Temperature adaptation in *E coli* by Dr D Gordon with Professor R Lenski, Center for
Microbial Ecology, Michigan State University.

Role of rhizopines in *Rhizobium* ecology by Dr D Gordon with Dr P Murphy, Department of Crop
Protection, Waite Campus, University of Adelaide.

Interactions between colicogenous and lysogenous in bacteria by Dr D Gordon with Dr M Riley,
Department of Biology, Yale University.

A taxonomic revision of the Australasian Iceryine Margarodidae (*Hemiptera: Coccoidea*) by Dr
Gullan with Dr D J Williams, The Natural History Museum, London.

Ant-Coccid interactions in Myrmecophytic *Macaranga* in south-east Asia by Dr Gullan with
Mr P Heckroth, Johann Wolfgang Goethe-Universität, Frankfurt, Germany and Dr
B Fiala, Theodor-Boveri-Institut, Würzburg, Germany.

An histological study on reproduction in the Banana Bat (*Pipistrellus nanus*) in Malawi by Dr
D C D Happold with Dr R Bernard, Rhodes University, South Africa.

A taxonomic study on the shrews of Malawi by Dr D C D Happold with Dr R Hutterer,
Alexander Koenig Museum, Bonn, Germany.

Taxonomic studies on *Scotoecus and Pipistrellus* species in central Africa by Dr D C D Happold
with Dr V van Cakenberghe, University of Antwerp, Belgium.

Validation of orange roughy age by radiocarbon dating by Dr J Kalish with Dr G S Burr, US
National Science Foundation-University of Arizona AMS Facility and the New Zealand
Fishing Industry Board.

Estimation of age, growth, mortality, and recruitment variability of orange roughy by Dr J
Kalish with Drs C Francis, D Tracey, and P Horn, New Zealand Ministry of Agriculture and
Fisheries.
Age determination of smooth and black oreos by Dr J Kalish with Drs P McMillan, A Hart, and I Doonan, New Zealand Ministry of Agriculture and Fisheries.

Blue grenadier stock separation determined from otolith chemistry by Dr J Kalish with Drs M Livingston and K Schofield, New Zealand Ministry of Agriculture and Fisheries.

Validation of daily and annual increments in the otoliths of Australian salmon by Dr J Kalish with Dr D Stevens, New Zealand Ministry of Agriculture and Fisheries.

Age and growth of *Dissostichus eleginoides* and *Dissostichus mawsoni* by Dr J Kalish with Dr R Williams, Australian Antarctic Division and Dr A DeVries, University of Illinois.

Retrospective determination of ocean radiocarbon and application to studies of carbon flux, ocean circulation, and fish ageing by Dr J Kalish with Dr S Rintoul, CSIRO Division of Oceanography.

Determination of carbon flux in the Barents Sea based on cod (*Gadus morhua*) otolith radiocarbon by Dr J Kalish with R Nydal, Norwegian Institute of Technology and Dr K Nedreaas, Norwegian Institute of Marine Research.

Designing RAPD primers for identification of biological control bacteria in the soil by Dr M Nayudu with Professor B Tyler at the University of California, Davis, USA.

Biological control of take-all by Dr M Nayudu with Mr D Pottie, Mr J Whiteley, Mr P Wong, NSW Department of Agriculture.

Biological control of chocolate spot of Faba bean by Dr M Nayudu with Mr A Watson, Yanco Agricultural Institute, NSW Department of Agriculture.

Global diversity project by Dr W Nicholas, International Association of Meiobenthologists coordinated by Plymouth Marine Laboratory.

Comparisons of RAPD and allozyme variation in natural populations of Buffalo grass by Dr R Peakall with Dr D R Huff and Professor P E Smouse, Rutgers University, New Jersey, USA (completed May 1994).

Evolution of the Australian Onychophora by Dr D Rowell with Drs Tatt, Briscoe and Reid, Macquarie University.

Effects of light interception and carbon dioxide concentration on crop photosynthesis by Professor J Warren Wilson with Dr D W Hand, Horticulture Research International, Littlehampton, UK.

Growth of rice with and without natural levels of solar UV radiation by Dr M Whitecross with Dr I Lewin, NSW Department of Agriculture.

Effects of UV-B radiation on photosynthesis of higher plants by Dr M Whitecross with Dr J M Anderson and Dr W S Chow, CSIRO Division of Plant Industry.

Control of expression of seed storage protein genes in transgenic plants by Dr M Whitecross with Dr T J Higgins, CSIRO Division of Plant Industry.

**Department of Chemistry**

Lichenological and chemotaxonomic projects by Professor J A Elix with a number of national and international researchers including Dr K L Gaul (CSIRO, Division of Animal Health, Parkville, Victoria), Mr H Streimann (Cryptogamic Herbarium, Australian National Botanic Gardens, Canberra), Dr P M McCarthy (ABRS, Canberra), Dr A W Archer, Herbarium, National Botanic Gardens of NSW, Sydney; Dr G Kantvilas, Tasmanian Herbarium, University of Tasmania and Dr I W Brodo, National Museum of Science, Botany Section, Ottawa, Canada, Dr K Kalb (Lichenologisches Institut, Neumarkt, Germany), Dr S Huneck (Institut für Biochemie der Pflanzen, Halle, Germany), Dr H T Lumbsch & Professor G B Feige (Fachbereich 9/Botanik, Universität Essen, Germany), Dr H Mayrhofer (Institut für Botanik, Karl Franzens Universität, Graz, Austria), Dr L Ferraro (Universidad Nacional del Nordeste, Corrientes, Argentina), Professor T H Nash (Department of Botany, Arizona State University, Tempe, AZ, USA), Dr Feeya David and Dr Kan Chanthrapromma (Prince of Songkla University, Hat Yai, Thailand), Dr Kansri Boonpragob (Ramamkhaeng University, Bangkok, Thailand), Associate Professor Mohd Wahid bin Samsudin, Associate Professor Laily bin Din (Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia)
and Dr M T Adler (Universidad de Buenos Aires, Ciudad Universitaria, Buenos Aires, Argentina).

Single vibronic level fluorescence spectra and electronic and vibrational relaxation of benzene by Dr G Fischer with W D Lawrance of School of Physical Sciences, Flinders University, South Australia.

Electronic spectroscopy and \textit{ab initio} molecular orbital studies of the azabenzenes and azanaphthalenes by Dr G Fischer with Dr P Wormell, University of Western Sydney.

\textit{Ab initio} calculations of Franck-Condon factors in electronic spectra of aromatic molecules by Dr G Fischer with Professor Y Haas, Hebrew University of Jerusalem, Israel.

Organometallic materials for optical technology by Dr M G Humphrey with Dr G Stone, Telecom Research Laboratory, Melbourne.

Structural and mechanistic studies on the cyt b/f complex found in plant thylakoid membranes, using electron spin resonance and biochemical modifications by Dr R J Pace with Dr J Anderson, CSIRO, Plant Industry. The design and development of a novel biosensing technology using synthetic ion channels contained in a specifically engineered, solid substrate supported bilayer membrane. An CRC funded project (Centre for Molecular Sensing and Engineering) with Dr R J Pace involving CSIRO Division of Food Processing, Sydney University and several industrial partners. Dr Pace is involved as an Independent Associate.

Professor R M Pashley, immediate past president, RACI, ACT Branch; editorial board member of Colloids and Surfaces; collaborative research projects with Rohm and Haas (Aus) on the film formation properties of latex paints; with Memtec (NSW) on the fouling of membranes; with CSR on the foaming of sugar liquors and with the CRC for Waste-water Treatment, UNSW.

\textit{Ab initio} molecular orbital studies of aspects of Hard-Soft Acid-Base theories in organic chemistry and variable geometry SN2 transition states in enolate alkylations by Dr R Rasmussen with Professor P v R Schleyer, Institut für Organische Chemie, Universität Erlangen—Nürnberg.
Joint research projects undertaken with universities, CSIRO and other institutions

Development of neural network and hybrid models for predicting forest resources using remotely sensed and ancillary spatial data by Dr Turner with Dr Skidmore of the Centre for Remote Sensing and GIS at UNSW, funded by ARC.

Farm forestry project feasibility investigation by Dr Turner with the Lachlan Catchment Management Committee funded under the National Landcare Program.

Department of Geography

Post fire erosion hazards in the Royal National Park, NSW by Dr R Greene with the CRC for Catchment Hydrology, Department of Chemical Engineering, Monash University.

The effects of management on physico-chemical properties of irrigated soils, Gascoyne Region, WA by Dr R Greene with Department of Agriculture, WA.

Soil genesis in a longitudinal dune-swale landscape, NSW, Australia by Dr R Greene with USDA Soil Conservation Service.

The effects of stubble burning on soil hydraulic properties by Dr R Greene with the Department of Conservation and Land Management, NSW.

Dr Greene was awarded the following research grants: A three year grant ($11,600) with the Department of Agriculture, WA from the Rural Industries Research and Development Corporation to work on Soil and land management systems for the diversification of pastoral land in the Gascoyne Horticultural Districts.

A three year grant ($23,900) with the Department of Agriculture, WA from the National Landcare Program to work on Land and water resources for horticulture.

Dr B Lees, leader, joint ANU/CSIRO project, on behalf of NASA and the IGBP, to assemble a database of global landcover, climate and sea surface temperature data with The Environmental Resources Information Network.

Dr B Lees collaborated with the Japanese National Institute for Environmental Studies on its global land cover mapping project.

Research on the National Wilderness Inventory by Mr R Lesslie on behalf of the Commonwealth Government.

Adapting wildland assessment techniques for international use by Mr R Lesslie with the Australian Heritage Commission.

Research on the Bioenvironmental Indices Project examining tradeoffs between the conservation of biodiversity and wood production in the forests of Ontario by Dr B Mackey with Dr D McKenney, Canadian Forest Service.

Potential habitats of migratory birds in northwestern Ontario by Dr B Mackey with Dr R Sims, Canadian Forest Service and Dr D Welsh, Canadian Wildlife Service.

Spatially distributed landscape modelling by Dr B Mackey with Dr A Lewis, Department of Conservation and Natural Resources, Victoria.

Population geography of Thailand by Dr L Sternstein with the Institute of Population and Social Research, Mahidol University, Thailand.

Dr L Sternstein, member, Executive Committee and Board of Management, Spatial Information Infrastructure for Asian Studies in Australia Project (SIIASA) which comprises a consortium of Australian universities under an ARC Mechanism "C" grant.

Department of Geology

Redox controls on determining ore element ratios in intrusion-related mineralisation by Dr P L Blevin with Professor P A Candela, University of Maryland, USA.

Textural and chemical evidence for the exsolution and transport of volatiles in felsic magmas by Dr P L Blevin with Professor P A Candela, University of Maryland, USA.

Vertebrate fossils from Gogo by Professor K S W Campbell, Dr R E Barwick, Dr P A Pridmore and Dr J Long, Western Australian Museum.

Rhipidistian fishes from the early carboniferous of Queensland by Professor K S W Campbell, Dr R E Barwick, Professor R Fox, University of Alberta, and Dr J A Long, Western Australian Museum.
Caledonian granites by Dr B W Chappell with Dr W E Stephens, University of St Andrews, Scotland.

Granites in south eastern Australia by Dr B W Chappell with Emeritus Professor A J R White, La Trobe University.

X-ray spectrometry by Dr B W Chappell with Dr K Norrish, CSIRO Soils Adelaide.

Granites of the American Cordillera by Dr B W Chappell with Professor L T Silver, California Institute of Technology, USA.

Island-arc rocks by Dr B W Chappell with Dr R W Johnson, Bureau of Mineral Resources.

Dolomite lakes of western Victoria by Dr P De Deckker with Professor W M Last, University of Manitoba, Canada.

The history of saline lakes from New Mexico by Dr P De Deckker with Dr R M Forester, US Geological Survey.

Quaternary deep-sea cores from the Tasman Sea by Dr P De Deckker with Professor C S Nelson, University of Waikato, New Zealand.

Quaternary deep-sea cores from the southeast Indian Ocean, Tasman Sea and Southern Ocean by Dr P De Deckker with Drs L Labeyrie and M Labracherie, CNRS, France.

Quaternary history of the Nile and lakes in Egypt by Dr P De Deckker with Professor M A J Williams, Monash University.

Ostracoda from the Cretaceous/Tertiary boundary from Alaska by Dr P De Deckker with Dr E M Brouwers, US Geological Survey.

Bauxite by Dr R A Eggleton with Comalco Ltd.

Structures of Mn Fe-layer silicates by Dr R A Eggleton with Professor S Guggenheim, University of Illinois, Chicago.

Caldera moat sediments were studied to learn the range of sulfur isotopic variability by Dr C S Eldridge, P M Bethke, USGS, Reston VA, R O Rye, USGS Denver, and M A McKibben, University of California, Riverside.

Witwatersrand sulfides were examined isotopically by Dr C S Eldridge, G N Phillips and R E Meyers, both from the Economic Geology Research Unit, James Cook University, Townsville.

Metamorphosed sulfides from New South Wales were investigated isotopically by C S Eldridge and P K Seccombe, University of Newcastle.

Sediment-hosted copper mineralisation in Western Australia was studied jointly by Dr C S Eldridge and scientists from Western Mining Corporation.

CO₂ fluid movement through the crust by Dr D J Ellis with Dr Y Hiroi, Chiba University, Japan.

Ion-probe studies of Antarctic and Japanese metamorphic rocks by Dr D J Ellis with Dr K Shiraishi, National Institute of Polar Research, Japan, Dr Y Hiroi, Chiba University, Japan and Dr M Fanning, RSES.

Geochemistry of Antarctic metasediments and igneous rocks by Dr D J Ellis with Dr J W Sheraton, Bureau of Mineral Resources.

Geochemical and isotopic study of Antarctica syenites and charnockites by Drs D J Ellis and J-X Zhao with Dr K Shiraishi, National Institute of Polar Research, Japan, Dr J W Sheraton, AGSO and Dr M T McCulloch, RSES.

Mineralogy of the Soroako (Indonesia) Ni-ore by Dr M Le Gleu with Dr J P Ambrosi, Université d’Aix-Marseille III, France, and PT INCO Indonesia.

A ‘Reference Section’ at Cismon, Italy for the APTICORE Program by Dr B N Opdyke with The University of Rhode Island, The University of Florida, The University of Michigan, Brown University and The University of Milano: funded by the US (NSF) and Italian (CRNS).

Geochemical study of a Great Barrier Reef deep core by Dr B N Opdyke with Drs P Wilson and H Elderfield of Cambridge University, funded by The NERC.

Metallogenic epochs of the Tasman Orogen, Eastern Australia using ⁴⁰Ar/³⁹Ar dating facilities at RSES, also collaboration with AGSO by Dr C Perkins with Dr J L Walsh, Dr I McDougall.

Cloncurry base metals and gold using ⁴⁰Ar/³⁹Ar dating facilities at RSES by Dr C Perkins in
Joint research projects undertaken with universities, CSIRO and other institutions

collaboration with Dr P Pollard, James Cook University of North Queensland.

Submerged walking in lepidosirenid lungfishes by Dr P A Pridmore with Dr P Bartsch, Eberhard-Karls-Universität, Tübingen, Germany.

Structure and mineralisation of Cowara Gold Mine, NSW, by Dr M J Rickard with Dr K McQueen, University of Canberra.

Palaeoenvironmental studies of the Monaro by Professor W D L Ride with Dr G Taylor, University of Canberra.

Evolution and stratigraphic distribution of late Tertiary and Quaternary marsupial faunas in eastern Australia by Professor W D L Ride with Dr R T Wells, Flinders University, and Mr A Spate, National Parks and Wildlife Service, NSW.

Sulfur-isotope studies using the ion-microprobe by Dr J L Walshe and Dr C S Eldridge with Dr R Both, Adelaide University.

Study of Brown's Creek Gold Deposit, NSW by Dr J L Walshe with Newcrest and CSIRO, North Ryde.

Study of Porgera Au deposit, PNG by Dr J L Walshe with CSIRO.

Study of Lake Cowal Au deposit, NSW by Dr J L Walshe, AGSO and CSIRO.

Geochemical and isotopic study of Proterozoic dyke swarms in central-southern Australia by Dr J-X Zhao with Dr M T McCulloch, RSES, and Dr R J Korsch, AGSO.

SHRIMP zircon U-Ph dating, and trace element and isotopic study of Proterozoic ophioliths in south China by Dr J-X Zhao with Dr Xian-hua Li, Institute of Geochemistry, Academia Sinica, and Professor W Compton, Dr M T McCulloch, and Mr C M Fanning, RSES.

ICP-MS and Sr-Nd isotopic analysis of Late Proterozoic Charnockites from East Antarctica and Central Australia by Drs J-X Zhao and D J Ellis with Dr M T McCulloch, RSES and Dr J W Sheraton, AGSO.

Department of Mathematics

Hughes-like properties in finite groups by Dr R A Bryce with Drs V Fedri and L Serena, Mathematics Department, University of Florence.

Pattern formation in Laplacian fields by Dr M T Batchelor with Dr B I Henry, School of Mathematics, University of New South Wales.

Critical behaviour of the fully packed loop model on the square lattice by Drs M T Batchelor and C M Yung with Dr H W J Blote, Lab voor Technische Natuurkunde, Technische Universiteit Delft and Professor B Nienhuis, Instituut voor Theoretische Fysica, Universiteit van Amsterdam.

Uniqueness of norm for Banach algebras with finite-dimensional radical by Dr R J Loy with Professor H G Dales, University of Leeds.

Amenability of second conjugate Banach algebras by Dr R J Loy with Professor F Ghahramani, University of Manitoba, and Dr G A Willis, University of Newcastle.

Amenability of Banach and C*-algebras on locally compact groups by Dr R J Loy with Professor A T-M Lau, University of Alberta and Dr G A Willis, University of Newcastle.

Banach algebra amenability and its applications by Dr R J Loy with Dr G A Willis, University of Newcastle.

Amenability of operator algebras by Dr R J Loy with Professor P C Curtis, University of California, Los Angeles.

Department of Physics and Theoretical Physics

SCRAMJET testing in free piston shock tunnel by Dr A F P Houwing, Dr T J McIntyre and Professor R J Sandeman with Professor R J Stalker Dr A Paull, University of Queensland.

Laser-induced fluorescence in shock tunnel flows by Dr A F P Houwing, Dr T J McIntyre and Professor R J Sandeman with Associate Professor H Rubinsztein-Dunlop, University of Queensland.
Planar laser-induced fluorescence imaging of transient shock structures and thermometry of quasi-steady shock layer flows by Dr A F P Houwing with Professor R K Hanson, High Temperature Gasdynamics Laboratory, Stanford University, USA.

Wall catalytic effects in hypersonic high enthalpy flow by Professore R J Sandeman with Associate Professor S L Gai and Dr N R Mudford, Australian Defence Force Academy.

Computational fluid dynamics code validation by Dr A F P Houwing with Professor Hirschell and Dr C Mundt, Deutsche Aerospace, Germany.

Modelling of the flow in the high enthalpy shock tunnel by Dr T J McIntyre with Dr J R Maus and Dr M L Laster, Arnold Engineering Development Corporation, USA and Dr G Eitelberg, Institut für Strömungsmechanik, DLR Göttingen, Germany.

Structure of high-K isomeric states in hafnium isotopes by Dr A P Byrne with Dr P M Walker, University of Surrey, UK.

Studies of near-spherical lead and mercury nuclei by Dr A P Byrne with Professor A R Poletti, University of Auckland, NZ.

Structure of high-spin states in the N=74 region by Dr A P Byrne with Dr A M Bruce, University of Brighton, UK.

Nuclear spectroscopy of very neutron-deficient lead nuclei by Dr A M Baxter and Dr A P Byrne with Professor G D Dracoulis, Research School of Physical Sciences and Engineering, ANU and Dr R V F Janssens, Dr M P Carpenter and others, Physics Division, Argonne National Laboratory, USA.

Hyperfine interaction studies of III-V semiconductors by Dr A P Byrne and Dr R Vianden, ISKP, University of Bonn.

Studies of high spin states in mercury isotopes by Dr A P Byrne and Professor Hübel, ISKP, University of Bonn and the EUROGAM, Strassbourg.

Decay studies of 54Mn by Dr A P Byrne and Dr E Norman, Lawrence Berkeley Laboratory, USA.

Coulomb excitation of 180Ta by Dr A P Byrne and Dr E Norman, Lawrence Berkeley Laboratory, USA.

Interferometric detection of gravitational waves by Professor R J Sandeman, Dr H-A Bachor and Dr D E McClelland with groups at University of Western Australia, University of Adelaide, CSIRO, Lindfield, AWA Defence Industries, VIPAC Engineers and DYNACV.

Interferometric detection of gravitational waves by Dr D E McClelland and Professor R J Sandeman with VIRGO Project, through University of Paris, Orsay, France, and University of Pisa, Italy.

Interferometric detection of gravitational waves by Dr D E McClelland, Dr H-A Bachor and Professor R J Sandeman with LIGO Project, through Caltech and MIT, USA.

Injection locking with diode pumped CW Nd:YAG ring Laser by Dr H-A Bachor, Dr T Ralph and C C Harb with Professor H Welling, Laser Zentrum Hannover, Germany.

Generation of squeezed light in frequency doublers by Dr H-A Bachor and A White with Professor J Mlynek, Universität Konstanz, Germany.

Quantum noise of self-frequency-doubling lasers by Dr H-A Bachor with Dr F Laeri, Technische Universität Darmstadt, Germany.

Magneto-optic trap for sodium by Dr H-A Bachor and Dr I Littler with Professor W Wandel and Dr R Ballagh, University of Otago, NZ.

Optical noise properties of fibre lasers, by Dr H-A Bachor and Dr T Ralph, with the Optical Fibre Technology Centre, University of Sydney.
Joint research projects undertaken with universities, CSIRO and other institutions

Detection of non-classical light by Dr H-A Bachor with U Leönhardt, Max Planck Institute für Nichtklassisches Licht, Berlin, Germany.

Interacting electric double layers by Dr P Attard with Dr S Mlikavic, Lund University, Sweden.

Long-ranged attraction between hydrophobic surfaces by Dr P Attard with Dr J Parker and Dr P Claesson, Royal Institute of Technology, Sweden.

Optimal shape of bubbles by Dr P Attard with Professor J Eriksson, Dr S Ljugren, and Dr P Claesson, Royal Institute of Technology, Sweden.

Division of Psychology

Cognitive neurpsychological studies of Chinese language processing with normal and brain impaired readers by Dr M J Chen and Dr B S Weekes, University of Kent at Canterbury.

The role of eye movements in stereopsis, the sources of information in the resolution of binocular size and egocentric distance, and the basis of Panum's limiting case in stereopsis by Dr M L Cook with Professor B Gillam, University of New South Wales.

The resolution of global motion of textured stimuli—a study of the Ouchi illusion by Dr M L Cook with Dr T Hine, Griffith University.

The effects of cognitive load on stereotyping by Dr S A Haslam with Dr R Spears, University of Amsterdam; together with Dr P J Oakes he has also been involved in this work and additional research into group variability judgements with B Doosje at the same institution.

Human computer interaction by Dr D P Mahar with the Research School of Physical Sciences and Engineering as part of the TRUST Project.

An investigation of stereotype formation: beyond illusory correlation by Dr C A McGarty with Dr A M de la Haye, University of Paris.

Investigating psychological essentialism and perceptions of group homogeneity by Dr P J Oakes with Dr B Simon, University of Muenster; together with Dr S A Haslam she has also conducted similar joint research with B Doosje, University of Amsterdam.

The social psychology of interdependence by Professor J C Turner with Professor R Bourhis and Dr A Gagnon at the University of Montreal.

Centre for Information Science Research

Chief Executive Officer of the Cooperative Research Centre for Advanced Computational Systems which includes two projects of the Research Data Network CRC. Partners in these CRCs include CSIRO Division of Information Technology, Digital Equipment Corporation Australia, Fujitsu Australia and Sun Microsystems Australia.

Contributor to the establishment of the ARC-funded Australian Cooperative Supercomputer Facility by a consortium consisting of ANU, CSIRO Division of Information Technology; DSTO Information Technology Division; Flinders University of South Australia; Macquarie University; University of Adelaide; University of New South Wales; University of Sydney, University of Technology, Sydney; and University of South Australia.

Centre for Resource and Environmental Studies

Australian attitudes to wildlife by Ms H Aslin et al with Research School of Social Sciences, ANU and Faculty of Applied Science, University of Canberra.

A natural-science approach to transforming the culture of resource and environmental management institutions by Mr T Barry et al with Faculty of Applied Science, University of Canberra.

Resource and environmental economics by Mr M-S Common et al with Department of Environmental Economics and Environmental Management, University of York.

Antarctica by Dr J W Handmer with Cambridge University.
Economic benefits of disaster mitigation by Dr J-W Handmer with Middlesex University.

Regional and global water cycle and climate modelling by Dr A J Jakeman et al with Purdue University, USA.

Methods for inverse problems in the environment by Dr A J Jakeman et al with University of Birmingham, UK, University of Georgia, USA and Wageningen Agricultural University, The Netherlands.

Sources of phosphorus and sediment: the Liverpool Plains and Eastern Uplands of the Murray-Darling Basin by Dr A J Jakeman et al with Department of Statistics, ANU, Griffith University, University of Newcastle (Australia), CSIRO Division of Water Resources and Australian Defence Force Academy.

General circulation modelling by Dr J Larson and Dr J A Taylor with Universities of North Carolina, Purdue and Yale.

Relationships between the viability of wildlife populations, forest management options and land-use allocation by Dr D B Lindenmayer and Dr T W Norton with Department of Applied Mathematics, University of Adelaide and Department of Forestry, University of Melbourne.

Impacts of forestry operations on wildlife and ecologically sustainable forest management by Dr D B Lindenmayer and Professor H A Nix with Department of Statistics, Division of Biochemistry and Molecular Biology, ANU and Department of Applied Mathematics, University of Adelaide.

Wildlife corridors for fauna conservation in wood production areas by Dr D B Lindenmayer et al with Department of Statistics, ANU, Department of Applied Mathematics, University of Adelaide, Brookfield Zoo, Chicago, CSIRO Division of Water Resources.

Habitat modelling and the prediction of wildlife distribution by Dr D B Lindenmayer and Professor H A Nix with Department of Statistics, ANU, CSIRO Division of Water Resources and the Victorian Department of Conservation and Natural Resources.

Effect of fragmentation on eucalypt forest ecosystems: roads and the movement of feral predators in south-east NSW by Ms S A May et al with Department of Applied Mathematics, University of Adelaide.

Global atmospheric CFC-11 flux estimation by Mr J Mulquiney et al with CSIRO Division of Mathematics and Statistics.

Habitat models for predicting species richness and the distribution of ground-dwelling mammals in south-east NSW by Dr H Neave et al with Department of Statistics, ANU and CSIRO Division of Water Resources.

Adequacy of sampling in vegetation surveys by Mr J Neldner with Environmental Resources Information Network, Department of Environment, Sport and Territories.

Assessment of predictive models for determining the distributions of plant species and community types by Mr J Neldner and Professor H A Nix with CSIRO Division of Wildlife and Ecology, Atherton.

Vegetation survey of Far Northern Queensland by Mr J Neldner with Queensland Herbarium, Mareeba.

Pure and applied ecology for biodiversity conservation and the sustainable management of terrestrial ecosystems by Dr T W Norton and others with various researchers in ANU, other Australian Universities, CSIRO, Tantawangalo Catchment Protection Association, the Australian Museum and NSW Parks and Wildlife Service.

Deriving relationships between catchment scale hydrologic response and physical catchment attributes by Mr D Post and Dr A J Jakeman with the Hydrologic Laboratory, USA and Department of Environmental Sciences, University of Virginia.

Impacts of modernisation and urbanisation in Bangkok by Dr A H Ross and Ms S Punpuing with Mahidol University with other Thai collaborators.

Agricultural technology adoption, information flows and mental models by Dr A H Ross with University of Canberra.

Potential impact of climate change on runoff and water availability for irrigation by Mr S Schreider and Dr A J Jakeman with Division of
Joint research projects undertaken with universities, CSIRO and other institutions

Atmospheric Research and Division of Water Resources, CSIRO.

Geological factors contributing to dryland salinity by Mr G Tassell and Professor H A Nix with Department of Geography, SREM, ANU and CSIRO Division of Water Resources.

NCAR climate models on the Supercomputer by Dr J A Taylor with other researchers from ANU, CSIRO and research institutions in USA.

Global natural VOC emissions: an IGAC-GEIA inventory and assessment of uncertainties by Dr J A Taylor with the National Center for Atmospheric Research USA.

A simulation of methane and methyl chloroform using the NIRE Global Three-dimensional Tracer Transport Model by Dr J A Taylor with the National Institute for Research and Environment, Japan.

Climatic effects on streamflow, soil moisture and evapotranspiration in Australian benchmark catchments by Mr W Ye and Dr A J Jakeman with CSIRO Division of Water Resources.

Production of the handbook Investigation of Food and Waterborne Disease Outbreaks by Ms M Beers with the Food Legislation Unit, South Australian Health Commission.

Food chain reservoir of S Enteritidis PT4 by Ms M Beers with Dr C Cargill, Northfield Pig Research Unit; Mr C Murray, Chief Scientist, Australian Salmonella Reference Laboratory and Mr K Critchley, Animal Health Group, Department of Primary Industry, South Australia.

Proposal submitted to the national longitudinal study of women's health focussing on mental and emotional health of women following life transitions by Drs D Broom, B Sibthorpe, G Bammer, L Roberts and A Plant with Professor B Raphael, Department of Psychiatry, University of Queensland; Key Centre for Women's Health in Society, University of Melbourne; Social Psychiatry Research Unit; Centre for Mathematics and its Applications; Australian Bureau of Statistics; Australian Institute of Health and Welfare; the Association of Non-English Speaking Background Women of Australia; the Consumers' Health Forum; and key players in Aboriginal women's health.

A continuing major study of the social context of AIDS in Africa by Professor J C Caldwell and Mrs P Caldwell with Professor I O Ombuloye, Ondo State University, Nigeria; Dr J Anarfi, University of Ghana; Professor D Agyeman and Dr K Awusabo-Asare, University of Cape Coast, Ghana; and Professor J Ntozi and Dr J Mukiza-Gapere, Makerere University, Uganda.

A study of health transition (the cultural, social and behavioural determinants of health) throughout Nigeria by Professor J C Caldwell and Mrs P Caldwell with Professor I O Ombuloye, Ondo State University, Nigeria; the Nigerian Institute for Social and Economic Research (NISER); and six other universities across Nigeria.

A study of adolescents' body image, weight concerns and weight-control practices by Mr D Crawford with Ms M Nowak, Anton Breinl Centre, James Cook University.

A follow-up study of adults' weight-control practices by Mr D Crawford with Dr D Broom; Dr N Owen, Department of Community Medicine, University of Adelaide; Dr M Worcester, Dr G Oliver, and Dr A Goble, Heart Research Centre.
Examination of microscopic pathological information about babies who had died suddenly and unexpectedly in Western Australia by E T d'Espaignet with Dr P McFeeley, Assistant Chief Medical Examiner, State of New Mexico and Associate Professor, School of Medicine, University of New Mexico, Albuquerque, USA.

Study to determine the prevalence of HIV among pregnant women in slum areas of New Delhi by Dr S Kant with the Emmanuel Hospital Association, New Delhi and Macfarlane Burnet Centre for Medical Research, Melbourne.

Report of cancer among Australian immigrants by Dr E Kliewer with Dr G Giles, Anti-Cancer Council of Victoria and Mr P Jelfs, Australian Institute of Health and Welfare; two papers relating to breast and ovarian cancer among immigrant populations in Australia and Canada with Dr K Smith, University of Utah.

Study of Aboriginal definitions of health by Dr S J Kunitz with Ms M Brady and Dr D Nash, Australian Institute of Aboriginal & Torres Strait Islander Studies.

Comparative study of health services for American Indians and Aborigines by Dr S J Kunitz with Ms M Brady, Australian Institute of Aboriginal & Torres Strait Islander Studies.

A text for health sociology by Dr D Legge with Dr A Petersen, Sociology Program, Murdoch University, Western Australia.

A cost-benefit study of contact tracing for tuberculosis by Dr R MacIntyre with Dr J Butler, University Of Newcastle and Dr A Plant.

Dubbo Study of the Health of the Elderly by Dr J McCallum with Associate Professor L Simons and Mrs J Simons, Lipid Research Centre, St Vincent's Hospital, University of New South Wales.

Disability and SF-36 work programs by Dr J McCallum with Dr C Mathers, Head, Health Monitoring Division, Australian Institute of Health and Welfare.

Continuum of Care and Health Outcomes Project by Dr J McCallum with Dr B Shadbolt, Epidemiology and Population Health Unit, ACT Health.

Research on elder abuse by Dr J McCallum with Dr S Kurrle and Mr P Sadler, Rehabilitation and Geriatric Service, Hornsby and NSW Office on Ageing.

Planning session on 'Research on Ageing' for the International Sociological Association intercongress meeting by Dr J McCallum with Dr C Russell, Faculty of Health Sciences, University of Sydney.

Study of chronic illness management in general practice by Dr C Martin with Dr J Daly, La Trobe University, Department of Sociology.

Study on the immunogenicity and tolerability of the Haemophilus influenzae b conjugate vaccine (meningococcal protein conjugate, 'PedvaxHIB') in Aboriginals in the Northern Territory by Dr M Patel with Dr S Guthridge, Department of Health and Community Services, Darwin; and Dr P Torzillo, Royal Prince Alfred Hospital, Sydney.

Establishment of the National Neisseria Network of Laboratories, and work to improve the understanding of the epidemiology of Neisseria meningitidis in Australia by Dr M Patel with Drs J Tapsall and R Munro, Prince of Wales Hospital, Sydney and Liverpool Hospital, Sydney respectively.

Study of recreational exposure to blue-green algae by Dr L Pilotto with Drs S Cameron and Ms M Beers, South Australian Health Commission; Mr M Burch, Engineering and Water Supply Department, South Australia; Dr S Corbett and Ms C Cowie, NSW Department of Health; Dr S Corbett and Ms C Cowie, NSW Department of Health; Dr G Rouch, Mr M Kirk, and Ms P Robinson, Department of Health and Community Services, Victoria.

Health outcomes in the Northern Territory by Dr A Plant with Dr J Condon, Northern Territory Department of Health & Community Services and Dr G Durling, Gypsy Data Management.

Public health aspects of tuberculosis in Australia by Dr A Plant with Professor C Kerr, University of Sydney.

Study examining the use of the annual risk of tuberculosis infection by Dr A Plant with Dr R McDermott, Menzies School of Health Research.

Study of hospital access for Aborigines by Dr A Plant with Dr R McDermott, Menzies School of Health Research.
Joint research projects undertaken with universities, CSIRO and other institutions

Health Research and Professor G Mooney, University of Sydney.

Studies on masculinities, sexual identity, sexual risk and gay men by Dr D Plummer with Mr D Ridge and Dr V Minichiello, La Trobe University.

Studies on the sexuality of older people by Dr D Plummer with Dr V Minichiello, La Trobe University.

Studies on sexually transmitted diseases in the Asia Pacific region by Dr D Plummer with Dr T Brown, East-West Center, Hawaii; Dr B Mulhall, The University of Sydney and Dr W Sittitrai, Thai Red Cross Society.

Survey of 32 divisions of general practice to determine infrastructure spending and staffing activities by Dr G Ranmuthugala with Dr C McGuiness in the ACT and their respective supervisors.

Dr B Sibthorpe is a co-investigator on the ACT Health Care Continuum and Health Outcomes Project.

Ongoing project on the international comparison of health care cost containment strategies by Dr L Smith with Dr J Deeble.

Study of the limits of the mortality transition by Dr L Smith with Dr J Olshansky, University of Chicago and Dr B Carnes, Argonne National Laboratory.

Study of the impact on women and their families of having and caring for premature and sick infants by Dr J Thompson with Dr J Keaney, Woden Valley Hospital.

NHMRC Social Psychiatry Research Unit

The Psychogeriatric Assessment Scales by Dr A F Jorm with Associate Professor A J Mackinnon, Mental Health Research Institute, Melbourne.

The validity of the CIDI-A in an acute psychiatric inpatient service by Mrs A E Korten and Dr H Christensen with Dr S J Rosenman and Ms C Levings, Woden Valley Hospital, Canberra.

Occupational exposures and Alzheimer's disease by Professor A S Henderson, Dr A F Jorm and Mrs A E Korten with Dr R Gun, Department of Community Medicine, University of Adelaide, Professor G A Broe and Dr H Creasey, Department of Geriatric Medicine, Concord Hospital, NSW.

Rates of forgetting in Alzheimer's disease by Dr H Christensen with Dr M Kopelman and Dr N Stanhope, Academic Psychiatry, St Thomas' Hospital, London, UK.

Neuropsychological and psychiatric functioning in former prisoners of war by Dr A F Jorm with Mrs R Sulway, Professors G A Broe and C Tennant, Department of Geriatric Medicine, Concord Hospital, NSW and Dr O Dent, Department of Sociology, The Faculties, ANU.

WHO Cognitive Impairment Project by Professor A S Henderson with the Division of Mental Health, World Health Organization, Geneva, Switzerland.

WHO Collaborative Project on Psychological Problems in General Health Care by Mrs A E Korten with the Division of Mental Health, World Health Organization, Geneva, Switzerland.

The analysis of the results from the international field trials on the Diagnostic Criteria for Research for ICD-10 Mental and Behavioural Disorders (ICD-10 DCR) by Mrs A E Korten with the Division of Mental Health, World Health Organization, Geneva, Switzerland.

A survey of the Elderly in Switzerland by Professor A S Henderson with Professor J-P Michel and Dr F Herrmann, Institutions Universitaires de Gériatrie de Genève, Geneva, Switzerland.

Studies of depression from the Kungsholmen Project by Dr A F Jorm with Dr Y Forsell and Ms P Hillerås, Stockholm Gerontology Center, Stockholm, Sweden.

Childhood development risk factors for adult schizophrenia by Dr B Rodgers with Dr P Jones, Professor R Murray, Institute of Psychiatry, University of London and Professor M Marmot, University College London Medical School, London, UK.
Special Issue of 'Epidemiologic Reviews' by Professor A S Henderson, with Professors J C Anthony and W W Eaton, Department of Mental Hygiene, Johns Hopkins School of Hygiene and Public Health, Baltimore MD, USA.

Study of young adolescents from divorced families by Dr B Rodgers with Drs G Patton and M Hibbert, Centre for Adolescent Health, University of Melbourne.

Study of older adolescents from divorced families by Dr B Rodgers with Professor B Raphael, Department of Psychiatry, University of Queensland, Brisbane and Dr J Cubis, Calvary Hospital, Canberra.

Study of young adults from divorced families by Dr B Rodgers with Dr C Power, Institute of Child Health, University of London and Dr K. Kiernan, London School of Economics, University of London, UK.

Visual Sciences Group

Dendritic information processing by visual interneurons in the fly by M Egelhaaf with Dr A Borst, Friedrich-Miescher-Laboratorium der Max Planck-Gesellschaft, Tübingen.

Neuronal network interactions that allow the discrimination of objects from their background by M Egelhaaf and V Dürr with Dr A Borst and Mr V Gauck, Friedrich-Miescher-Laboratorium der Max-Planck-Gesellschaft, Tübingen.

Object vision in brain damaged humans and comparisons with bees' pattern perception by G A Horridge with Professor M Jeeves, Department of Psychology, University of St Andrews.

Glaucoma test devices by T Maddess and M Ibbotson with Dr R Newman, Mr A Avedian and Mr P De Lucia, Welch Allyn NY, USA and Professor H Wood, Rochester Institute of Technology.

Clinical testing of glaucoma diagnostic methods by T Maddess and A C James with Dr I Goldberg, Prince of Wales Hospital and UNSW.

Multi-region pattern electroretinograms by T Maddess, A C James, S Bedford and M Snowball with K Rouhan, Australian Defence Force Academy, UNSW.

The role of the ENSLI and dopaminergic amacrine cells of the chicken retina in the control of eye growth and the development of form-deprivation myopia by I G Morgan with Professor W K Stell, Lions Fight for Sight Center, University of Calgary School of Medicine, Calgary, Alberta, Canada; Professor P M Iuvone, Department of Pharmacology, Emory University School of Medicine, Atlanta, GA, USA; Dr J A Rada, Department of Ophthalmology, Eye and Ear Institute of Pittsburgh, Pittsburgh, PA, USA; Professor F Schaeffel, Experimental Ophthalmology Laboratory, University Eye Hospital, Tübingen, Germany; and Dr D Troilo, Department of Bioscience, New England College of Optometry, Boston, MA, USA.

Structure and function of the ENSLI amacrine cells of the chicken retina by I G Morgan with Dr M K Boelen, Centre for Research on Ageing and Health, Latrobe University, Bendigo.

Behavioural analysis of movement-detecting mechanisms in insect vision by M V Srinivasan and S W Zhang with Dr M Lehrer, University of Zürich.

Analysis of parallel processing in insect vision by M V Srinivasan and S W Zhang with Dr T Collett, University of Sussex.

Biologically inspired robotics by M V Srinivasan, J Chahl and M Nagle with Dr S Venkatesh and K Weber, Curtin University.
Degrees and Diplomas Conferred

Associate Diploma in Policy Studies

Geoffrey Wesley Arney
Pauline Frances Bygraves
Leanne Robyn Caflisch
Wayne Patrick Gallagher
Peter Anthony Gentry
Margaret Anne Johnson
Danielle Lisa Morris
Michael Anthony Nash
Gregory Forde Rimes
Malcolm Thomas Skelly
Victoria Therese Smith
Roger Stewart

Bachelor of Arts

Khairil Hafizi Skymmar A Moein
Louise Carmel Anderson
Lucy Catherine Anderson
Michael Peter Anderson
Philip Ronald Anderson
Rachel Helen Andrew
Shane Michael Armfield
Clare Elizabeth Armstrong
Kate Sian Ashburner
Jennifer Jean Aylan-Parker
Heidi Anne Badgery
Mary Philomena Badman
Robert Peter Badman
Katherine Frances Bagnall
Robyne Bancroft
Chanaka Bandarage
Jennifer Rebecca Bandler
Ricky Scott Banfield
Tanya Maree Barden
Keith Reginald Barnes
Benjamin Bruce Barrack
Rebecca Kathleen Hannah Barry
Ivana Yvonne Bartos
Maria Baveas
Kara Simone Baxter
Bianca Elizabeth Bayliss
Barbara Rose Bayliss
Kathleen Joy Beech
Sarah Laurie Beech
Penny Kathleen Bell
James Robin Bennett
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Paul Henry Berkelouw
Johanna Mary Berryman
Sarah Louise Bilney
Georgina Bird
Warren Grant Bitner
Caroline Jane Blackmore
Katherine Emma Blue
Ruth Rewa Bohill
Belinda Anne Brandon
Victoria Anne Bray
Rory Aloysius Brennan
Michael Sean Brill
Norma Grace Beatrice Briscoe
Lorraine Browitt
Wayne Andrew Browne
Peter Nicholas Brudenall
Elfriede Jadwiga Budd
Paul Gerald Butler
Stacey Rebecca Butler
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Penelope Kaye Campbell
Fiona Jane Canham
Sarah Jacqueline Carr
Geraldine Leona Carter
Amber Chloe Carvan
Aniva Cavanagh
Andrew Nathaniel Chalmers
Marigo Chalvatzi
Sarah Aileen Chan
Shuk-Ping Vean Chan
Wai Kit Chan
Yuko Kawano Chanthanao
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Gioia Cortese
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Catherine Maree Crouch
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Petrina Dianne Daniel
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Sophie Victoria David
Tyrrell Ann Davidson
Tamsin Jane Davies
Tamsin Amy Elizabeth Davy
Peta Linda Dawson
Melanie Debenham
Liliana Norma Del Pozo
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Rhea Diacopoulos
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Nahdi Rachel Dunn
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Sophie Dwyer
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Margaret Egan
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Antony Charles Etterl
Heather Ann Evans
John Richard Thomas Fairhall
Simon Francis Charles Feirclough
Vanessa Louise Fielding
Emma Anne Finlay
Jason Robert Philip Finley
Julian David Fitzgerald
Damian Richard Flanagan
Avril Caroline Ford
Lars Francis Ford
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Andrew William Fox
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Magdalene Ann Keaney
Justine Kemp
Robert George Kemp
Robyn Louise Kennedy
Lillace Mary Kenta
Gregory Ronald Kerr
Susan Sanyu Kilukumusoke
Belinda Gaye Kilcullen
Jeremy Kevin Kirk
Barbara Kitney
Damon Matthew Kitney
Julia Adriana Komma
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<td>Paul Ernest Krejci</td>
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Mark Clifton Roberts
Mary Marguerita Rose Roberts
Timothy Justin Roberts
Angela Mary Robinson
Karen Jan Rochfort
David Robert Rockawin
David Patrick Rogers
Katherine Louise Ross
Craig Cecil Rossiter
Jill Danielle Rubenstein
Kelly Maree Russell
Vanessa Gaye Sargeant
Jane Sarvaas
Bronwen Elisabeth Scully
Duncan Stewart Searle
Kate Adele Senior
Angela Louise Sharpe
Justine Clare Shelton
Lisa Victoria Singleton
Andrew Bede Sloane
Morgan Henry Sloper
Megan Louise Smith
Nadine Joanna Smith
Penelope Helen Smith
Kristianne Louise Spilstead
Cameron Thomas Stack
Trudy Melinda Stone
Tania Michelle Sultan
David James Sullivan
Ranita Swamy
Skye Swan
Ameer Tadros
Christopher Jason Talay
Giulia Francesca Taliaco
Helen Tiaooli Tanielu
Christopher Michael Taylor
Nicola Wendy Taylor
Richard John Taylor
Alan Ross Thomas
Meredith Helen Thompson
Rachel Joanne Thorne
Georgina Kate Tidswell
Catherine Tighe
Martin Philip Toman
Jennifer Gaul Lambert Tracey
Michelle Francis Tracey
Margaret Jean Tregurtha
Rowena Lyall Trindall
Catherine Louise Turner
Joanne Kelly Twible
Paulina Elisabeth van der Linden
Kees Cornelis Adrianus Van Gool
Katelijne Rita Van Landeghem
Kieran Margaret Vaughan
Nigel Robert Vise
Zika Vuletic
Catherine Therese Wall
Adam Dennis McLaren Walmsley
Camilla Wayland
Jennifer Monica Weaver
Sharyn Lee Weckert
Kathryn Elizabeth Weir
Kim Werner
Sinclair Whitbourne
Emily Margaret White
Narelle Wigney
Megan Joy Williams
Nicola Sigrid Williams
Susan Lorraine Williams
Margaret Mary Wilson
Danielle Deanne Windley
Mong Chyn Wong
Shelley Dorothy Woods
David Keith Woolcock
Allan John Robert Wylie
Yuka Yamada
Hendricus Cornelis Zaal
Vladislav Vitalyevich Zhukov
Matthias Zierholz
Marnix Hayco Zwankhuizen

Bachelor of Arts
degree with honours

Alison Gita Aggarwal
Mari-Antoinette Assenza
Mark Dominic Bailey
Louise Jane Jeannette Frances Baldwin
Alison Elizabeth Batterham
Jennifer Leigh Beard
Mary Christina Besemeres
Genevieve Anne Bessell
Susan Alice Blake
Gaida Valda Blenkinsop
Nola Bolonkin
Elizabeth Anne Bourke
Samantha Maree Bunney
Patrick Arthur Thomas Campbell
Christine Gillian Cannon
Felicia Mary Carr
Stephen John Carter
Dennis William Churchill
Elizabeth Burns Coleman
Simon Travis Coles
Kimberley Anne Cooper
Brendan Michael Corrigan
Gillian Margaret Cosgrove
Sara Jean Cousins
Stephen Cox
Degrees and Diplomas Conferred

Emily Anne Craven
Chantal-Marie Crowe
Eve Marion Cuthbertson
Stephen Westley Davey
Nicole Barbara Delaney
Richard William Douglas
Patricia Mary Downes
Penelope Jane Duckworth
Alison Joy Dunton
Nadia Louise Fabris
Amanda Caroline Fajak
Jennifer Livingston Falconer
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Catriona Louise Hyslop
Philip Michael Iacono
Nova Arabella Inkpen
Heidi-Ann James
Dianne Michele Johnson
Sarah Teresa Jolly
Stephanie Jillian Jones
Peter Rimgaudas Kabaila
Geoffrey Paul Kerrigan
Peter James Lamb
Meng Loong Lee
Gavin James Loughton
Hugh McIntosh McDonald
Colin Christopher MacDougall
Alexander Duncan McKay
Mary Josephine McKenzie
Gaylene Frances Mansfield-Smith
Jennifer Avriel Martiniello
Michael John Matuschka
Kim Duckmanton Meredith
Vivianne Marie Meszes
Luisa Miceli
Gerard Oakes
Siobhan Judith Okely
Jayne Neroli Pilkinton
Edward Riley Radclyffe
Rebecca Pepame Robinson
Tonya Joy Rooney
Sally Elizabeth Rudd
Kirsty May Ferguson Ruddock
Helen Ann Seidel
Robyn Jane Shannon
Catherine Sarah Smith
Catherine Anne Styles
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Angela Helen Terrill
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Tasman Henry Turner
Belinda Jane Tyrrell
Joanne Varughese
Damian John Verdnik
Surinder Kaur Verick
Heather Catherine Wallace
Fiona Margaret Webster
Fiona Stephanie Wilkinson
Andrew Sean Wimhurst
Catherine Ann Winter
Hugh Thomas Morse Withycombe
Chun Wai Jimmy Wong
Emma Victoria Yarrow

Bachelor of Arts (Art History and Curatorship)

Julie Kathleen Davies
Anne Zilla Garzoli
Philippa Jane Hore
Thomas Alexander Middelfoot
Lisa Kathleen Priddle

Bachelor of Arts (Art History and Curatorship)

degree with honours

Jennifer Kristie Orr
Melissa Mary Pippen

Bachelor of Arts (Asian Studies)

Peter John Arnaudo
Richelle Rae Bambling
Lisa May Barnard
Jamie Mark Beck
Tracie Ann Carlsund
Jane Ayesha Macarthur Carson
Paul Albert Ciesiolka
Elissa Anne Colvin
Peter Sinclair Cutter
Kazuyuki Peter Campbell Czinege
Michael Powell Dixon
Marcus Joshua Stanley Dunn
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Rachel Louise Groenhout
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Watana Hongkrisdakorn
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Elke Nicola Huygens
Hoyoung Hwang
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Riemke Kampen
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Peter Lawrence Richardson
Henry John Menzies Scott
Shireen Sekhon
Louise Sullivan
Dragan Tucic
Karen Michelle Yates
Song-Kong Yong

Bachelor of Arts (Australian Studies)
Simon Andrew Kelly

Bachelor of Arts (Development Studies)
David Graham French
Sophie Read-Hamilton
Caroline Ruth McLean
Virginia Jo Sarah

Bachelor of Arts (Development Studies) degree with honours
Ralph John Regenvanu
Patrick Anthony Rooney
Glen Paul Ryan

Bachelor of Arts (European Studies)
Patricia Baudry

Bachelor of Arts (European Studies) degree with honours
Andjelija Dragosavljevic

Bachelor of Arts (Policy Studies)
Adam Paul Jewell
Christopher Lachlan Reid
Lisa Jane Richards
Jeffrey Alfred Riethmuller
Phillip John Taylor
Dani Louise White

Bachelor of Asian Studies (Korean)
Sasha Marker
Bachelor of Asian Studies (Thai)

degree with honours

Gareth Baker

Bachelor of Chinese Studies

Michelle Karen Bitner
James John Cox
Katherine Joy Lord
Nicole Diane Willock

Bachelor of Commerce

Christopher John Anderson
Seng Chuen Au
Nicole Elizabeth Barrett
Diana Bazon
Amanda Louise Blake
Clayton Wade Brown
Susan Louise Bruce
Giles Fergus Raymond Carroll
Michael Mason Castleman
Wai Hung Chan
Lock Yee Chang
Eva I-Huei Chen
Guo Chun Chen
Chen Yau Voon
Lap Kei Cheung
Sze Mun Trixie Cheung
Tze Jen Chia
Chok Loon Chin
Chong Chiang Jen
Dee Gan Chong
Chong Kwang Meng
Lee Ying Chong
Emmaline Wei Wei Chua
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Emily Grace Condoleon
Andrew Patrick Copping
Linda Masa Crnevic
Margaret Roslyn Darby
Lisa Renee Davidson
Victor Dean De Bortoli
Bruno Giuliano De Michiel
Angela Diamond
Jure Marko Domazet
Robyn Louise Donda
Timothy Richard Drown
Scott Anthony Easton
Yoav Eliasaf
Scott Joseph Elwin
Tanya Nicole Evans
Ka-Cheong Fan

Paul Andrew Felice Fabris
Garry David Fleming
Hiu Ying Christina Fok
Gary Kwok Wai Fung
Christine Gabiola
Peter Gabriel
Garry Chakwan Gold
Michael Andrew Gunasekera
Sonia Chetna Gupta
Erik Hagstrom
Tanvir Muhammad Haque
Gregory Mark Harmston-Jones
John Andrew Harris
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Trudy Amanda Hart
Owen John Hayford
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Hendrikus Herman
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Vinci Hon Wing-Sze
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Fiona Maree Howe
Hao Hua
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Yih Lin Hwang
Ka Hung Ip
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Yan Yan Elain Kam
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Heeki Kim
Daniel Sie Hie King
Natasha Koina
Hing Ki Henry Kong
Nardi Joel Kroon
Salena Lavinia Anuradha Kulkarni
Simon Nicholas Kurylowicz
Bosco Kwong
Hon Kee Lau
Rebecca Julie Lawrence
Mei Lin Amy Lee
Pak Sing Lee
Chuk Ping Christina Li
E-Luan Lim
E-Min Lim
Stephen James Lucas
Jack Tuan Thieu Ly
Stuart McDonell
Nicole Louise McKinnon
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The Australian National University

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Simon Oliver
Pai Chun Patty Pang
Aksheeta Dinker Patel
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Stephen Roger Peak
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Meng Seng Tan
Sylvia Katharyn Tarchalska
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Boon Sien Thio
Katy Merrin Thomas
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Nan Wang
Melina Gai Waters
Genevieve Rose Watson
Amanda Louise Webb
John Henry Williams
Ann Wilson
Stephen Wong
Chee Hin Yap
Pheng Pheng Yap
Chai Hoon Yeo
Lay Tuan Yeoh

Bachelor of Commerce
degree with honours

Sameer Chopra
Elizabeth Ann McCall
Tan Kheng Soon Sidney

Bachelor of Economics

Georgina Adams
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Tanya Maree Barden
Jane Margaret Barrett
Natalie Eliza Baxter
Katherine Elizabeth Beaton
Russell William Beattie
Leigh McPherson Bentley
Warren Grant Bitner
Simon Warwick Blakers
Dimitry Mark Blasi
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Karen Louise Bozic
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Brandon Michael Brown
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Bridget Mary Butler
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Claudia Camarotto
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Ka Chun Alan Chan
Chin Mei Lan
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Michael Powell Dixon
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Ming Tim Wilson Lam
Tun Lung Lam
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Josephine Yousef

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degree with honours

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Darren Brady Nelson
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Bachelor of Engineering

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degree with honours

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Bachelor of Information Technology

Chiu Wai Alice Chau
Tanu Shree Chopra
Ching Wan Choy
Dean Stuart Cording
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Darwin Hou
Hoi Wing Jim
Kai Wing Lam
Henry Leong
Vincent Liu
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Tin Choi Tony Ng
Yew Wai Shum
Paul Carl Singh Balgir
Siew Yoong Soo
Kok Meng Andrew Tan
Justin Mark Trentini

Bachelor of Japanese Studies

Catherine Cummings
Alys Höhnen
Sarah Jane Marshall
Mei Ling Ng
Grace Emelia Titioka

Bachelor of Japanese Studies
degree with honours

Melinda Louise Smith

Bachelor of Laws

Luke Paul Aiken
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Cho Kheong Yeoh
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Kerstin Sumana Wijeyewardene
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Millie Li-Fah Yee

Bachelor of Science

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Ross Paul Burden
Brendan Allan Burke
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Lydia Anne Burns
Vanessa Jane Bushell
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Sallie Louise Cairnduff
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Tomasz Celinski
Ka Fai Albert Chan
Tak-Kwan Chan
Sarah Elizabeth Chapman
King Fai Danny Cheung
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Hang Hing Chiu
Chuen Kit Peter Choi
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Melissa Compagnoni
Ann Connolly
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Simon Mark Cordina
Carissa Maree Coulston
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Tom Denman
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Jeremy Gans
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Sarah Jane Grealy
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Martin Nicholas Hanneman
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James Augustine Hazel
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Debbie Lynette Kirchner
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Sione Koula Koloi
Adrya Lisabeth Kovarch
Thomas Henry Landon-Smith
Vivienne Laynne
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James Read Leitch
Ka Man Leung
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Andrew Tjay Kwie Lim
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Arianne Rachel Lowe
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Duncan Edward Lyall
Stephen David Lyon
Jonathan Robert Wolsey McCabe
Maurice William McDonald
Nicole Louise McKinnon
Alina McMaster
Christopher Michael McNamara
Reiner Mangulabnan
Inigo Amadeus Merriman
Trevor Wayne Mettam
Katrina Jane Milbourne
Aaron David Minney
Fiona Jean Mitchell
Josephine Margaret Moloney
Damienne Louise Mor
Tara Helen Munro
Francesca Sofia Nastri
Jeremy Shane Naumann
The Australian National University

Victoria Louise Neil
Rachel Ann Nelson
Le Ng¢ Nguyen
Michael Bengt Nielsen
Mark Andrew Nolan
Grant Vincent O'Farrell
Geoffrey William Osborne
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Jane Elizabeth Pepper
Helen Marija Philippa
Tania Gail Pietrzak
Johanna Podlesak
Joanne Mary Potts
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Melanie Ann Price
Bradley James Ptolemy
Tracey Sandra Rand
Gary John Reid
Caroline Lucy Shearer
Joseph Shieh
Gillian Janet Sinclair
Annette Amy Singh
Narda Lee Skelton
Benjamin Anthony Slater
Dianna Gigi Smith
Kathryn Florence Smith
Louise Nicolé Smith
Megan Louise Smith
Paulius Gediminas Stepanas
Christopher Stolarek
Marguerite M F Stone
Mirja Streimann
William John Strickland
Julia Louise Stuart
Gordon James Sutton
Jennifer Fook Chun Tai
Rohanshah Talip
Ling Hui Tan
John Paul Taubenschlag
Rachel Joanne Thorne
David Ian Thornely
Wayne Michael Threlfall
Caroline Tjengdrawira
Dougal James Torrance
Cindy Lee Trewin
Anita Maree Van Hilst
Daryl Lawrence Scott Van Straaten
David Gerard Van Boekmeer
Iwan Johannes Elisabeth Van Tilburg
Saowapha Viravong
Julia Anne Visser
Naomi Waizier
David John Warnock
Lee Weissel
Michelle Ruth White
Lisa Maree Whitehorn
Kirthisri Rajatha Wijeweera
Ayasha Evelyn Williams
Judith Megan Williams
Michelle Pauline Winter
Joan Juliano Wong
Nathaniel Alexander Wong
Thiag Harn Wong
Wai Fong Wong
Steven John Woodward
Lai Wan Lorraine Yan

Bachelor of Science
degree with honours

Carmel Mary Allen
Lisa Marie Alleva
Jason Brian Andrews
Anthony Dean Arthur
Timothy Banks
Linda Baracioli
Kate Amanda Barrelle
Stephan Bayer
Kirsty Alison Blair
Louise May Blundell
Jason John Bobbin
Lyndall Jane Briggs
Allison Frances Britt
Damian Piers Buck
Jenny Rebecca Carnell
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Anne Stacey Chan
Lam Seng Cheah
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Nigel Cook
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Leanne Patricia Currie
Kathryn Elizabeth Cutler
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Malini Devadas
Melissa Jane Dowse
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Jodie Manderson Evans
Paul Anthony Fischer
John Alexander Fleming
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Degrees and Diplomas Conferred

Kylie Anne Elizabeth Groom
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Ashley Willoughby Leedman
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Scott Hanson Murray
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Caroline Dorothy Playford
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Anna Ralph
Ian Arthur Reid
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Clinton Andrew Rivers
Jason Troy Semitecolos
Maryanne Veronica Shoobridge
Miles Leon Simon
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David Sitsky
Felicity Mary Smith
Michael John Bowen Smith
Warwick James Sommerville Smith
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Samuel Roger Taylor
Blair Christian Trewin
Kym-Marie Turnbull
Isabella Alice Urbanek
Thomas Lijie Uren

Brian Whelan
Jacqueline Wicks
Gareth John Williams
Bronwyn Alice Witham
Allison Margaret Wyndham

Bachelor of Science (Forestry)

Elspeth Monica Millicent Baalman
Penelope Paula Heather Baalman
Brent James Bailey
Roberto Fermin Bernabe
Craig Anthony Busby
David James Bush
Mark James Chaplin
Daniel Cook
Tom Denman
Alexander Matthew Downey
Benjamin Charles Lewis Drouyn
Michael John Elix
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Peter Alexander Green
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Martin Francis Linehan
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Katherine Elizabeth Semple
Roland Warmund Simpson
Nicholas Charles Stephens
Noa Vakacegu
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Leonie Alison Walsh
Nicholas Westman
Jeremy Leigh Wilson

Bachelor of Science (Forestry) degree with honours

Emma Janelle Gray
Dylan Kendall
Gai Legan
Michael John Parsons
Brett James Shields
Bachelor of Science (Resource and Environmental Management)

Helen Leslie Adams
Rachael Jane Bailey
Peter Edwin Beard
Judd Selwyn Boeker
Maire Bryannah
Leonard Jonathan Burrough
Roslyn Anne Chivers
Karen Louise de Plater
Stephen Michael Dempsey
Tamesin Elliott
Mandy Emma Flaxman
Elizabeth Naomi Giffin
Jodi-Lee Nicole Green
Brian James Grinter
Jane Frances Halliburton
Stephen John Handbury
Tara Louise Harris
Glen Alexander Harvey
Gregory Vincent Healy
Jennifer Peta Hewitson
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Geoffrey Stuart Burton Hudson
Bradley John Imhoff
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Morgan Neville Alyosha Janson
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Sharon Louise Kilgour
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Andrew Lawrence Meeny
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Alexander Mellis Napier
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Darren Philip Robey
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Elizabeth Josephine Scoular
Niki Shane Shepherd
Liam David Graham Smith
Susan Jane Smith
Daniel Tomislav Spelic
Fiona Kirsty Spier
Nina Stahl
Christine Ann Tarjavaara
Robert van der Hoek
Kanesapillai Somasundaram Venugoban
Matthew Christopher White
Charles Hubert Williams
Melissa Suzanne Wood

Bachelor of Science (Resource and Environmental Management) degree with honours

Olivia Jane Bush
Ian Alexander Gaze
Stephen John Moore
Hazel Rath
Susan Streatfield
Christoph Zierholz

Bachelor of Letters

Peter Roman Slobodian, BA Adel.
Kathryn Jane Wells, BA WAust.
William Gordon Williams, BA CanberraCAE

Graduate Certificate in Demography

Genevieve Mary Dooley, BA

Graduate Certificate in Economics of Development

Somphao Phaysith, MSc Donietsk

Graduate Certificate in Public Policy

Andrew David Hayes Baker, BA NSW
Noela Jean McDonald, BA DipEd Melb.
Helen Alexandra Morgan, BA W5yd.
Jennefer Nicholson, GradDipInfMgmt NSW, BA
Monica Kathleen Wolf, BA Adel., GradDipHealthEd. SydneyCAE

Graduate Diploma in Accounting

Damian Angus Dinnar, BComm
Wan Chung Ho
Kevin Clarence Jeffery, BComm
Blair Murray McQuade, BComm
Matthew Garth McQuade, BComm
Kam-Kuk Cindy Shih, BSocSc. HongKong
Hoden Wan, BComm

Graduate Diploma in Applied Linguistics

Julia Phyllis Carter, DipEd. Syd., BA
Chi Shing Ma, BA ChineseUnivHongKong
Graduate Diploma in Arts

Thomas Reginald Baker, BEd
Catherine Grace Broad, BS Qld
GradDipLibrarianship Canberra
Eileen Joyce Cameron, BSc Syd
Areta Helen Charters, BA Auckland
Johannes Elizabeth Clark-Walker, BA Syd
TchgCert Southview Coll
Susan Bridget Cooper, BA
Gregory Kendall Cruy, BA Augusta Coll
Agnes de Bray, BA
Catherine Louise Dunin, BA (Visual)
Jillian Edwards, BA NSW
Derek Field, BA (AdultEd) Canberra
Marlene Pamela Joy Greenwood, BEd Canberra
Sandra Alice Greville, BA Canberra CAE
Jane Anne Hardy, BA NSW
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Glenis Ann Israel, DipArtEd Sydney CAE, BA
(Ed) Alexander Mackie CAE
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Bryan Morris Kelly, BA Syd, BA
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Thelma Anne Love, BA
Patricia Anne McAuley, BA Canberra CAE
Deirdre Mary Mahoney, BA Qld
Renée Mason, BEd Canberra CAE
Janet Anne Meaney, TchgCert SACAE, BA FineArts
Erika Françoise Mordek, BA
James Howard Murray, BEd
Christian Alexander Parvey, BAppSc Canberra CAE, BA
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Jeffrey Thomas Read, BA
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Angela Regan, BA WAust
Margot Jane Reynolds, BEd MEd WAust, BA
Robert Winston Robilliard, BA
Sylvia Sajler, BA
Lisa Therese Annette Simone, BA
David Barrington Slater, BSc BEng, Syd
GradDipCompSt Canberra CAE, BA (Asian Studies)
Gregory Ralph Southwell, BA Canberra
June Margaret Steele, BA
Samantha Ari Wardhana, Sarjana Prabuangan Bandung
Jan McKinley Wilson, BA MEd Harv.
Minwei Yang, BA Peking

Graduate Diploma in Asian Studies

Hiroko Miyano Hudson, BA Aoyama Gakuin, GradDipAppLing

Graduate Diploma in Demography

Simon Archdall Baker, DipEd Canberra CAE, BA
Dina Bisara, DipMedicine Kristen
Soma Chowdhroy Biswas, BSc MSc Dhaka
Geoffrey Corner
Kabi Raj Khanal, DipDemog Cairo Demog Centre, BA MA Tribhuvan
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Anna Joel Mwasha, BSc Dares Salaam
Chilumba Nalwamba, BA with Education Zambia, GradDipPopDev Nehru
Vilimaina Likiivalu Rakaseta, BA Pacific
Aisha Alison Louise Speight, BA (Asian Studies)
Pioni Willie, BA PNG
Richard Leigh Woods, BA Tas.

Graduate Diploma in Development Administration

Sunya Prasad Adhikari, BA MA Tribhuvan
Madiu Andrew, BEd PNG, DipEconPolicyAnalysis PNG IASER
Maria Jacinta A Arquisola, BA (Political Science) Philippines
Kukunda Elizabeth Bacwayo, BA SWSA Makerere
David Andrew Broughton, BA (Asian Studies)
Ngoc Son Bui, BEd Hanoi
Arturo Lumabas Cebuma, Jr, BSc (MechEng) City of Manila
Ophelia Lagunday De La Cerna, BA (Secretarial Sciences) Lourdes Coll
Diosdado Dela Cruz, BA Republic Central Coll
Kinken Clarkson Dinkepin, BA PNG
Lingling Ding, BEd Unit Int Bus & Econ
Ngoc Phuong Ho, BEd Ag Cand EcSc Timiriazev Agric Acad Moscow
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Yuko Ikeda, BA (History) Keio
Mark Andrew Kelly, BComm Canberra
Mohammad Khalid, BA MA (Econ) Punjab
Riaz Ahmad Khan, BA MA (Econ) Peshawar
Petimara Maua
Vaigalo Maua, BSc Canterbury
Jaime Lasig Olmos, BA (Social Sciences) Philippines
Yolanda Porschitz, BA Central Philippine Univ
Lourdes Raymundo So, BS BAA Philippines
Shireen Sandhu, BSocWork NSW
The Australian National University

Rajlachumanan Thevar, BEc Syd.
Henry Vira, BA Canterbury
Joseph Wagatam
Yuhong Wang, BSc UnivIntBus&Econ
Kandelyamo Kerry Wapea, DipMinistryDev
TheologicalCollNZ, Dip GorokaTechColl

Graduate Diploma in East Asian
Studies

Helen Josephine McClure, BA

Graduate Diploma in Econometrics

Susan Maree Hauser, BEc Macq.

Graduate Diploma in Economic
History

Amanda Kylie Goodban, BEc
Barbara Jane Whitlock, BSc Qld, GradDipEc

Graduate Diploma in Economics

Man Hon Chan, BSc
Tina Yiping Chen, BEng Zhejiang
Amy Yuki Ling Cheung, BSc
Robert Curtotti, BSc
Kieran Douglas Davies, BSc UNE
Michelle Felicia Gotch, BSc Ntle
Henry Boscawen Leveson-Gower, BA Bristol
John Lieber, BSc
Xuan-Hoan Nguyen, BSc
Cedomir Filipovic, BSc Belgrade
John Christopher Rooney, BSc Syd.
Philippa Jillian Spence, BSc Tas.
Steve Adrian Wilson, BSc
Yingsen Yang, BSc UnivIntBus&Econ

Graduate Diploma in Economics of
Development

Quang Tuan Bui, BSc MoscowStateUniv
Javaid Iqbal Khalid, MA (Econ) MA (PolSci) Punjab
Sharifa Khan, BSc MSc Bangladesh
Maria Laureen Laurito, BS Philippines(LosBanos)
Sirisena Liyanage, BSc (SpecialBusAdmin)
Srijayawardenepura
Muhammad Sulton Mawardi, BSc BogorAgricUniv
Van Ngai Nguyen, BSc UnivAgric&Forestry

Xuan Tu Nguyen, BSc MoscowInstEconMgmt
Thi Lan Huong Pham, BA MoscowUnivEcon
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MA(Econ) Philippines
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BSc(DeptBusAdmin) Tokyo
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Graduate Diploma in Environmental
Law

Rachael Jane Greshaw, BA
Fiona Louise Lucas Matthews, BA LLB
Robert Henry Thompson

Graduate Diploma in Environmental
Management and Development

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Poh Ping Lim, BA NatUnivMalaysia
Roger Harvey McIntyre, BAAppSc(SysAgric)
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Graduate Diploma in Finance

Brett Anthony Wilesmith, BEc

Graduate Diploma in Foreign Affairs and Trade

Barrie James Blackburn, BEc WAust.
John Charles Blount, BA Syd.
Heidi Catherine Bootle, BComm Tas.
Kevin John Beatie Brisbane, BEng Woll., MBA Nde, MDefStud ADEA
Glen Oliver Conroy
Katrina Anne Cooper, BA LLB
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Ann Jacqueline Harrap, BA LLB Qld
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William Chimwemwe Kantayeni, BSocSci Malawi
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Rowena Leslie Thompson, BA (SecretaryalStudies) Canberra
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Nicholas Peter Turner, BA Syd.
Heidi Venamore, BA LLB Qld
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Graduate Diploma in Public Policy
Leon Anthony Allen, BA Griffith
Christine Maria Teresa Archer, BEc
Judith Allwyn Pabian, BA
Monica Elizabeth Pham, DipAppSc WSyd., GradDipSpecialEd Canberra
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Graduate Diploma in International Law

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Christopher Jeremy Bleakley, BSc(For)
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Anne Louise Faulkner, BA (Asian Studies)
Monique Anne Fienberg, BA Qld, MDefStuds ADEA
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Robert Sayers, BA MA Amsterdam
Beris Lillian Simpson, BA JamesCook
Kerry Leigh Stephen, BA Qld

Graduate Diploma in International Relations

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Graduate Diploma in Legal Practice

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Stephen James Byron, BComm LLB
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Jason Andrew Denisenko, B Comm LLB
Richard Robert Macfie Doyle, BComm LLB
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Laura Fennell, BA LLB
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Valentina Josifovski, BComm LLB
Elizabeth Jane Keith, BA LLB
Grant Brendan Kennealy, BA LLB
Li Lu Kho, BComm LLB
James Sinnet King, BA WAust., LLB
Kerry Jane Knowler, BSc LLB
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Wai Chin Raymond Lam, LLB
Ivar Lenfield, BA LLB
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Nancye Louise Whybrow, LLB
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Allison Mary Will, BA LLB Tas.
Kelly Jane Williams, BA LLB Tas.
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Graduate Diploma in Population Health
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Fazel Haq Saikal, MHPed NSW, BSc Kabul
Tuck Meng Soo, BA MA Camb., MBBS Lond.

Graduate Diploma in Public Economic Policy
Bruce Leslie Sainsbury, BA Canberra
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Graduate Diploma in Public Law
Margaret Lesley Alexander, BA
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Graduate Diploma in Public Policy
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Graduate Diploma in Resource and Environmental Management
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Graduate Diploma in Science

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Graduate Diploma in Scientific Communication

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Master of Clinical Psychology
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Graduate Diploma in Southeast Asian Studies

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Graduate Diploma in Statistics

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John Lawrance, BSc
Chee Shan Leung, BSc
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Susanne Louise Meeny, BSc BEd
Anthony Robinson, BComm Cant.

Graduate Diploma in Strategic Studies

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Diane Nash, BSc PhD Adel.

Master of Applied Epidemiology

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John Grant Scott, MBBS Qld

Master of Arts

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Karl Claxton, BA Cant.
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Sione Lanivia Faka'osi, BA AteneiInst
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Alan John Hinge, BSc
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Herman Joseph Santos Kraft, BA Philippines
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Widya Kirana Widodo, Sarjana GadjahMada
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Zulkifli, BA RadenFatahStateIslamicInst

Master of Arts (Asian Studies)
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Suprodjo Rita Fitrati, Sarjana Sastra Indonesia

Master of Clinical Psychology
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Master of Commerce
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Ying Ying Sophia Soo-Tho, BComm GradDipActng

Master of Development Administration
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Setariki Cula, BEd Monash, DipEd SPacific
Vani Fore, DipPubAdmin AdminCollPNG, GradDipDevAdmin
Lorna Kaggwa BA Dar-es-Salaam, GradDipDevAdmin
Medelina Kusharwanti, Doctorandus Diponegoro
Anne Emmanuel Mazalla, AdvDipEcPlanning InstDevPMgmt, PostgradDip
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Wilarno Setiawan, SarjanaAdminNegara
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Mali Siaaro, BA Silpakorn, EducPlanningDevCountries LondInstEd
Degrees and Diplomas Conferred

Tauasa Taafaki, DipDevAdmin SDevonTechColl, CertProgPlan&Mgmt IntTrainingInst, GradDipDevAdmin
Viliami Tehi Tiseli, BA S Pacific
Moaekei Maltepo Toma, BA Auck.
Emmanuel Concepcion Torrente, BS (CommunityDev) Philippines(Diliman)
Thi Nhung Tran, BA ForLangTchTrngColl
Wahdi Salasi April Yudhi, Doctorandus (IntRel) GadjahMada

Master of East Asian Studies

Yuen-Ching Bellette Lee, BA HongKong
Takashi Terada, LLB Doshiba, GradDipIntRel

Master of Economics

John Alan Chisholm, BEc LaT.
Melinda Ann Cilento, BA BEc Flinders
Brendan Patrick Flynn, BEc LaT.
Wimolmas Luitanonda, BBusStud Massey
Mary Jane Melanie, BEc Syd.
Annette Olesen, BSc Copenhagen
Christopher Douglas Short, BEc GradDipEc
Leanne Julie Taylor, BEc Tas.
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Master of Economics of Development

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(Econ) Srijayawardenapura, GradDipEc Colombo, GradDipEcDev
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Tuong Nhu Che, BSc HanoiPolytechUniv
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Hazel Honey Fabricante Lim, BA Ateneo de Manila, GradDipEc
Thomas Benjamin Babasa Marcelo, BSc Philippines, GradDipEcDev
Abu Taher Mollik, BComm MComm Dhaka
Huy Duc Ngo, BEc RostovStateUniv, GradDipEcDev
Tuan Dung Nguyen, DipEngEc
LeningradEngEchInst, GradDipEcDev
Pradono, BSc Doctorandus(Econ&DevStudies) GadjahMada
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Master of Environmental Management and Development

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DipGeothermalEnergyTechnology GeothermalInst.Auckland
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Master of Forestry

Philip Gibbons, BApp VicColl, GradDipSc
Laxmi Rawat, BSc MSc PhD Kumaun
Zhimin Wu, BA Zhejzhou, GradDipRes&EnvMan

Master of International Law

Mathias Harald Bendull, DipLaw Friedrich-AlexanderUniv
Eliza Kaczynska-Nay, BEc LaT., MA
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Master of Public Law

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Master of Public Policy

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Phillipa Mary Lowrey, BSc
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Peter Brendan Tapsall, BBus QUT
Kim Christopher Terrell, BA

Master of Science

Paris Nicholas Alexiou, BSc
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Gary John Hancock, BSc Adel.
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Master of Statistics

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Master of Letters

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Anne Marie Ribas, BA LaT.
Broughton John Robertson, BA Auck.
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Doctor of Philosophy

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Abid Azhar, BSc PostgradDiplStat MSc Karachi
Mark Richard Ernest Bartlett, BSc
Richard Arthur Bigwood, LLB Auckland
Francis Robert Borgiono, BA Melb.
Peter Borgs, BSc MSc Toronto
Peter Francis Bourke, BSc DipEd Monash
Kathryn Joanna Isabel Brown, BSc
Margaret Eleanor Burns, BA
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Denis Richard Byrne, BA MA Auck.
Helen Juliet Cabalu-Mendoza, BA Philippines, GradDipEcDev MEdDev
Peter Malcolm Campbell, BSc
Soonthorn Chaiyindeeupum, BSc(AgricEcon) Kasetsart, MA (Econ) Thammasat,
GradDipEcDev MEdDev
Pakorn Sae Chan, BSEE KingMongkutInstTech, MEgn AsianInstTech, GradDipSc

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Degrees and Diplomas Conferred

David Anthony Collings, BSc. Syd.
Jacqueline Mary Courtenay, BA
Anna Isabel Cowan, BSc
Robert Charles James Edmondson, BSc
Jonathan Patrick Ennis-King, BSc. Melb.
Peter Alleine Fletcher, BSc
Jacqueline Erica Fritschi, MBBS. Qld
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Chinese Academy of Sciences, Graduate School of Development Economics.
Reynaldo L. Garcia, BS. Philippines
John Douglas Gillies, BA, MA. UNE, MPhil. Oxf.
Athol Bon Gray, BSc Ed. Dip. Teach. N’dle.
Min-Xin Guan, BSc. Hangzhou.
Robert James Gulley, BSc. Qld
Kiyohito Hanai, BA, MA. Hitotsubashi
Paul Jerome Johnston, BSc. Syd.
Alan Anthony Jones, BA. Syd.
Yue-Kun Ju, Undergrad Dip Med. MMedSc.
Asthma and Allergy Med Coll, Dip. Intensive English.
Xian For LangInst.
Jong-Soon Kang, BSc. Dong-A, Grad Dip. Ed. MEd.
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Flinders.
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Univ. Agric. Faisalabad.
Rozanna Lucy Lilley, BA, Syd.
Keyu Liu, BSc. Shandong Oceanography Coll, MSc.
Syd.
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Stephan Konrad Matthäi, Diplom Geology.
Tübingen.

Anthony Alan Millar, BSc. Syd.
Yimei Mo, BA. Changsha Railway Inst, MA
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Roger Leslie Morton, BSc(Agric). Syd.
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Naila Rahman, BSc. MSc. Dhaka.
Timothy Cameron Ralph, BSc. Macq.
Shuping Ran, BE. MSc. Mexico.
Ziqiang Rao, BEng. MEng. Tsinghua.
Nicholas John Reynolds, BA. Flind.
Gary Phillip Richards,
Canberra CAE, BSc.
Iain Jeffrey Rourke, BSc. UNE.
Sarah Louise Rumney, BSc. W. Aust.
Stuart David Ryder, BSc. Canterbury.
Irsa Samit, BSc. Chiangmai, MSc.
Timothy John Senden, BSc.
Md. Shahidullah, BSc. Dhaka, MA.
Dharmendra Prakash Sharma, BSc.
Postgrad Dip. Maths. MSc. SPacific.
Roger George Skirrow, BSc. W. Aust., Grad Dip. Sc.
N’dle, MSc. Carleton.
Heather Joy Smith, BSc. Qld.
John Anthony Smith, BSc.
Wendy June Solomon, BA. Syd.
Ligang Song, BA People'sUnivChina, MA
IntUnivJapan
Matthew John Spillane, BSc Syd.
Donald Stephen Staudte, BSc Melb.
Diane Lesley Stone, BA Murdoch, MA
Jürgen Erich Streit, Diplom-Vorprüfung Mainz
Ninghu Su, BSc NingxiaCollAgric, MAgSc
NWInstSoileWaterConservn, Cas
Sujatmiko, BA Sarjana Jember, MA(IntRel) Woll
Borut Telban, BSc Ljubljana, MSc Zagreb
Helen Lee Topliss, BA Melb., MA
CourtauldInst, UnivLond.
Nualnoi Treerat, BA Thammasat, GradDipEcDev
MEcDev
John William Henry Trueman, BSc(SocSc)
Bristol, MA Lanc., GradDipSc
Bruce Robert Vaughn, BA AmericanUniv, MA
Carleton
Antony John Veale, MBBS Adel., FRACP
Suvathana Vibulsresth, BA(PolSci) MA(Demog)
Chulalongkorn, MSc LSE
Mark Alan Walker, BA SimonFraser, MA
WOntario
Jinxian Wang, BSc MSc Zhongshan
Kangmei Wang, BSc MSc Tongji
Jian Xin Wei, BSc MS Hunan
Xingyan Wen, BA Fudan, MA
Kenneth Patrick Wessen, BSc Syd.
Robyn Lynette White, DipTchg SydTchColl, BA
Craig Anthony Wilcox, BA NSW
Anthony James Willis, BSc
Roslyn Valerie Woodward, BA GradDipSc
En-Cheng Yang, BSc NatChung-HsingUniv
Ji You, BA Beijing, BA Vic.(Well.), MA
Kerong Zhang, BSc MSc Fudan
Kong Nan Zhao, Dip MS ZhejiangAgricUniv
Dan Zhou, BEng MSc NortheastUnivTech
Peng Wei Zhu, BSc Zhejiang

Doctor of Science

James Christopher Briden, BA MA Oxon., PhD

Honorary Doctor of Laws

His Excellency Kocheril Raman Narayanan, BSc (Econ) LSE, MA Travancore
Emeritus Professor Leslie Zines, LLB Syd., LLM Harv.

Honorary Doctor of Letters

Leslie Allan Murray AO, Poet
Prizewinners

Undergraduate Awards

University Medal
Georgina Adams, LLB  Law
Jennifer Elizabeth Anderson, LLB  Law
Anthony Dean Arthur, BSc  Biochemistry/Molecular Biology
Susan Jane Bennett, BSc  Physics
Mary Christina Besemeres, BA  English
Ellen Louise Gardner, BA (Asian Studies)  Asian Studies
Stephen James Hardy, BSc  Theoretical Physics
Joseph James Hope, BSc  Theoretical Physics
Stephanie Jillian Jones, BA  English
Dylan Kendall, BSc (For)  Forestry
Jeremy Kevin Kirk, LLB  Law
Kwong Joo Leck, BSc  Psychology
Mary Josephine McKenzie, BA  English
Brett Andrew Melbourne, BSc  Botany/Zoology
Andrew Harvey Millar, BSc  Biochemistry/Molecular Biology
Scott Hansen Murray, BSc  Mathematics
Drew Francis Parsons, BSc  Chemistry
David Sitsky, BSc  Computer Science
Melinda Louise Smith, BA (Asian Studies)  Asian Studies
Blair Christian Trewin, BSc  Geography
Belinda Jane Tyrrell, BA  English

Adrien Albert Honours Chemistry Prize
Sharon Anne Elix

The Allen, Allen & Hemsley International Trade Law Prize
Jennifer Elizabeth Anderson
Owen John Hayford

The Alliance Française de Canberra Prize
Sophie Dwyer

Andersen Consulting Prize in Information Technology
David Jacob Horne  Information Systems C51 & C52

Applied Computing Technology Prize
Lam Seng Cheah

Archaeology and Anthropology Prize—Peter May Prize
Stephen Cox  (shared)
Peter Rimgaudas Kabaila  (shared)

Australian Bureau of Statistics Prize
Shelley Lee French

Australian Capital Territory Bar Association Prize
Beatrice Caitlin Tormey

Australian Federation of University Women—ACT Prize
Barbara Elizabeth Nelson  (shared)
Melinda Louise Smith  (shared)

Australian Finance Conference Prize
Damien Sean Eldridge  Monetary Economics

Australian Psychological Society Prize
Kwong Joo Leck

Australian Society of Certified Practising Accountants Prize
Lock Yee Chang  Accounting Major

The B C Meagher Prize for Commonwealth Constitutional Law
Jeremy Gans

Blackburn Medal for Research in Law
Jennifer Elizabeth Anderson
Gillian Catherine Dempsey

Butterworths Book Prize
Karl John Richard Alderson  Practice & Procedure
Jennifer Elizabeth Anderson  *Principles of International Law*
Robert Charles Claxton  *Income Tax*
Jeremy Kevin Kirk, LLB  *Selected Topics in Torts*

Daphne Olive Memorial Prize in Legal Theory
Padma Priya Raman

David Campbell Prize
Sara Jean Cousins

Economic Society Prize
Stephen Joseph Corcoran  *Economics IV(H)*

Ernst & Young Prize
Melissa Anne Colman  *Accounting C02*

Freehill, Hollingdale and Page Prize for Commercial Studies
Georgina Adams

The Friends of Ireland Society Prize
Mary Josephine McKenzie

George Knowles Memorial Prize
Jeremy Kevin Kirk, LLB

The Goethe Society Prize
Nicole Barbara Delaney  *fourth year*
Sophie Dwyer  *third year*

The Grahame Johnston Prize in Australian Literature
Mary Christina Besemeres

Hanna Neumann Prize for Mathematics
Scott Hanson Murray  *Mathematics IV(H)*

Institute of Advanced Studies Prize for Economic History
Adrian Clive O'Brien  *later year unit at Honours Level*

The Institute of Wood Science Prize
Mark James Chaplin

Institution of Radio and Electronics Engineers Australia (Canberra Division) Prize
Ian Robert Boreham

J B Were & Son Prize
Stephen Joseph Corcoran

Janet Elspeth Crawford Prize
Mary Rose Cooney  *(shared)*
Leanne Cherie Foley  *(shared)*

Kate North Prize
Vladislav Vitalyevich Zhukov

L D Pryor Prize
Margaret Ann Hurst

The L F Crisp Memorial Prize in Political Science
Chun Wai Jimmy Wong

The Leslie Holdsworth Allen Memorial Prize
Mary Christina Besemeres  *(shared)*
Belinda Jane Tyrrell  *(shared)*

Macphillamy Cummins and Gibson Prize for Commercial Law
Georgina Adams

The Mick Williams Prize in History
Catherine Sarah Smith

Permanent Trustee Company Limited Prize
Kerstin Sumana Wijeyewardene  *Equity and Trusts*

Quentin Gibson Prize in Philosophy
Damian John Verdnik

Richard B Davis Prize
Colin Christopher MacDougall
Prizewinners

Schlich Memorial Trust Prize
Michael John Elix

SoftLaw Prize in Computer Studies
David James Austin

The Statistical Society of Australia (Canberra Branch) Prize
James Lea Stewart Allnutt

The Supreme Court Judges’ Prize
Jeremy Kevin Kirk, LLB

Jeremy Kevin Kirk, LLB

Timbind Utilization Prize
Mark James Chaplin

Postgraduate Prizewinners

J G Crawford Prizes

The J G Crawford Prizes were established in 1973 to recognise Sir John Crawford’s outstanding contribution to the University successively as Director of the Research School of Pacific Studies for seven years and as Vice-Chancellor for five years. The prizes take the form of medals, and three are available for award each year. Two are for doctoral graduates and one for a master degree graduate whose courses of study have been composed of or included research and the presentation of a thesis. The main criterion is academic excellence as demonstrated in the thesis.

PhD Prize
Benjamin Hardwick Andrews, BSc PhD School of Mathematical Sciences
David Roe, BA University of New South Wales, PhD

Master Prize
Margrit Davies, BA, MA

Vice-Chancellor’s Award for Excellence in Teaching
Dr Richard Pascal, AB Notre Dame, MA Virginia, PhD Cornell
University Public Lectures
sponsored by ANUTECH Pty Ltd

Single Public Lectures

The Hon. Paul Keating
Reshaping Australian Institutions
22 February

Professor Philip Pettit
Our Republican Heritage
1 March

Ms Heather Carmody
Work, Women, and Institutions of the Future
8 March

Professor J Rowlinson
How Does Matter Stick Together?
5 May

Professor Kathleen E Mahoney
Women and War in Bosnia: Do They Have Rights?
3 May

Emeritus Professor John Passmore
The End of Philosophy?
29 July

Professor Christian Boitard
Insulin Dependent Diabetes: A 'New' Disease for New Medicine
14 August

Professor Ruediger Voigt
The European Nation State—Decline or Revival?
6 September

Professor Gert Schmidt
The Change of Industrial Relations in Eastern Europe
12 September

Mrs Elisa Vargas Lugo
The Art of New Spain
13 September

Mr Luis Ortiz Macedo
Mexican Architecture During the 19th and 20th Centuries
13 September

Professor Howard Morphy
Aboriginal Art as World Art
14 September

Professor David Grinberg
Jews in Poland—Yesterday, Today and Tomorrow
6 October

Dr Morris West
On the Control of Media and its Consequences
6 October

Professor Lynne Billard
Equality of Opportunity for Women in Academia—Myth or Reality?
11 October

Professor Paul Dibb
A New Balance of Power in Asia
3 November

Professor Andy Fabian
X-rays, Active Galaxies and Black Holes
22 November

Dr Anne Ehrlich
Critical Masses: Why Cairo Counts
5 December

Inauguration Lectures

Professor Jeremy Mould
The Expanding Universe: Measuring Hubble's Constant
17 March

Dr Kevin Lafferty
How do we find a cure for Diabetes?
27 April
Named Lectures

AJ Birch Lecture
Professor J Rowlinson
*Entropy and Information*
10 May

The Florey Lectures
Not held in 1994

The Basham Lecture
Dr Amareswar Galla
*From the Classical to the Contemporary: Rethinking the Asian Cultural Context of Australia*
7 September

The DA Brown Lecture
To be given next in 1995

The Jack Beale Lecture
Dr Graham Allison
*The 'New Age' of Water Management—Does Research Have a Role?*
27 October

The John Curtin Memorial Lecture
The Rt Rev Archbishop Peter Hollingworth
*The End of Ideology—The Beginning of What?*
18 October

The Menzies Lecture
To be given next in 1995

The 55th Morrison Lecture
Professor Ramon Myers
*The Socialist Market Place in China: Fact or Fiction?*
8 November

The Mulvaney Lecture
Ms Sharon Sullivan
*Loving the Ancient in Australia and China*
13 October

The Russell Mathews Lecture
Emeritus Professor Russell Mathews
*Fiscal Equalisation: Political, Social and Economic Lynchpin of Federation*
11 May

The Yencken Lecture
Professor Chalmers Johnson
*The Developmental State Revisited*
15 November
The University is indebted to those organisations and individuals who make grants and donations for use in research and other activities. Such funds play an important role in the ongoing activities of the University. The following list includes grants and donations reported to Council during 1994.

<table>
<thead>
<tr>
<th>Donor</th>
<th>Purpose</th>
<th>Amount</th>
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<tr>
<td>Aboriginal and Torres Strait Islanders Commission</td>
<td>For Ongoing Operation of the Centre For Aboriginal Economic Policy Research</td>
<td>$500,000</td>
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<tr>
<td>ACT Cancer Society</td>
<td>For Role of Ubiquitin-Specific Proteases in Tumourogenesis</td>
<td>$20,000</td>
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<td>ACT Department of Education and the Arts</td>
<td>For Music Program to Campbell High School</td>
<td>$51,000</td>
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<td>ACT Department of the Environment, Land And Planning</td>
<td>For the Taxonomic Investigation of the Striped Earless Dragon Tymanocryptus lineata pinguicola</td>
<td>$8,500</td>
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<tr>
<td>ACT Department of Health</td>
<td>For the Support of an Epidemiologist</td>
<td>$68,792</td>
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<td>ACT Division of General Practice</td>
<td>For Consulting Services to the ACT Division of General Practice</td>
<td>$8,000</td>
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<td>ACT Electricity &amp; Water</td>
<td>For Engineering Scholarship For Women</td>
<td>$9,300</td>
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<td>Allen &amp; Unwin</td>
<td>For Inside the War Cabinet, A Book Based on the Australian Archives Holding of War Cabinet and Associated Material to Mark the 50th Anniversary of the End of the War in the Pacific</td>
<td>$10,000</td>
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<td>American Cyanamid Company</td>
<td>For the Development of an Oral Live Polyvalent Vaccine For Shigellosis</td>
<td>$133,901</td>
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<td>Ampolex Limited</td>
<td>For Support of the Workings of the Centre of Middle Eastern and Central Asian Studies</td>
<td>$10,000</td>
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<td>Anonymous</td>
<td>For Identification of Susceptibility in Hereditary Non-polyposis Colorectal Cancer</td>
<td>$319,503</td>
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<td>Australia-India Council</td>
<td>For Economic Liberalisation in South Asia Conference</td>
<td>$18,550</td>
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<td>For Partial Funding of The Asia-Pacific Magazine</td>
<td>$6,000</td>
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<td>Australian Centre For International Agricultural Research</td>
<td>For Analysis of Policies Affecting the Indonesian Agricultural Sector</td>
<td>$75,386</td>
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<td>For Epidemiology and Control of Echinococcus in Australia and China</td>
<td>$19,927</td>
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**Australian Institute of Aboriginal & Torres Strait Islander Studies**

- For Project on Anthropology and Photography in Arnhem Land (Ngalarramba Encounter 1952) 17,125
- For Topsy Secretary (Juwaning) Biography 5,000
- For Prehistoric Tasmanian Aboriginal Mutton bird Exploitation 17,341
- For Groote Eylandt Archaeology Project 25,287
- For Documentation of Photographs 5,000

**Australian International Development Assistance Bureau**

- For Population Related Research—Development Planning and Development Assistance Project in Indonesia 1,440,358
- For Economic Liberalisation in South Asia Conference in Canberra 30 Nov–2 Dec 1994 16,350
- For Comciam Data Development Workshop, Harare Zimbabwe 117,646
- For Vietnam Update Conference 1994 20,000

**Australian Nature Conservation Agency**

- For Metapopulation Viability Analysis For Leadbeater’s Possum 15,000
- Australian Biological Resources Study For Systematics and Biogeography of Pittosporaceae 23,190
- For Molecular Evolution and Systematics Group, Flora and Delta Accounts of Chloridoideae, Poaceae and Panicoideae 51,439
- For Systematics and Biogeography of Pittosporaceae 23,619

**Australian Nuclear Science & Technology Organisation**

- For Gamma-ray Spectroscopy of 187 Pb Using a Fragment Mass Analyser and Germanium Detector Array 11,584
- For Access to Major Research Facilities Program: Visit by Professor J W White to Rutherford Appleton Laboratory UK and Argonne National Laboratory, USA 12,000
- For Access to Major Research Facilities Program: Visit by Dr P Reynolds to Rutherford Appleton Laboratory, UK and Argonne National Laboratory, USA 12,000
- Major Research Facilities Program—For Access to Rutherford Appleton Laboratory, UK 12,000
- For Access to Argonne National Laboratory, USA 7,998
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<th>Organisation</th>
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<tr>
<td>Australian Sociological Association</td>
<td>For NEXUS Publication 1994/95</td>
<td>6,000</td>
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<td>Australian Telecommunications and Electronics Research Board</td>
<td>For Postgraduate Scholarship—Optical Fibre Non-Linearity</td>
<td>11,500</td>
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<td>Australian Telecommunications and Electronics Research Board</td>
<td>For Postgraduate Scholarship on New Techniques in Signal Coding</td>
<td>11,000</td>
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<tr>
<td>Australian Telecommunications and Electronics Research Board</td>
<td>For Postgraduate Scholarship on Adaptive Hidden Markov Signalling Processing</td>
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<td>Australian Tobacco Research Foundation</td>
<td>For Identification of Cellular Genes Whose Expression is Dependent on the P53 Tumour</td>
<td>94,000</td>
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<td>Australian Tobacco Research Foundation</td>
<td>For the Development, Implementation and Prospective Evaluation of Smoking Prevention</td>
<td>45,000</td>
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<td>Australian Wool Research and Promotion Organisation</td>
<td>For Processing of Wool by Low Temperature Plasma</td>
<td>44,470</td>
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<td>Australian Wool Research and Promotion Organisation</td>
<td>For An Australian Trade and Investment Package For the China Wool Market</td>
<td>70,000</td>
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<td>Broken Hill Proprietary Limited</td>
<td>For Calculating Signal Propagation Loss from Ground Based Transmitters</td>
<td>14,400</td>
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<td>Bureau of Immigration and Population Research</td>
<td>For Consultation on the Links Between Population and the Environment</td>
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<td>Canadian Centre For Global Security</td>
<td>For International Training Workshop on the Nuclear Non-Proliferation Treaty</td>
<td>27,559</td>
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<td>Clive and Vera Ramaciotti Foundations</td>
<td>For The Mechanistic Role of Protein-Protein Interactions in the Regulation of Nuclear</td>
<td>40,000</td>
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<td>Commonwealth Staff Development Fund</td>
<td>For The Progressive Upgrading of Academic Staff Qualifications</td>
<td>30,000</td>
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<td>Commonwealth Staff Development Fund</td>
<td>Prize Funds For Applying New Technologies to Teaching and Research</td>
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<td>Commonwealth Staff Development Fund</td>
<td>For Upgrading of Academic Staff Qualifications</td>
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<td>Communication Concepts</td>
<td>For Production of Prototype Compact Disc</td>
<td>14,000</td>
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<td>Conservation Commission of the Northern Territory</td>
<td>National Estate Grants Program For A Social and Natural History of Kulaluk</td>
<td>21,000</td>
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<td>Cotton Research and Development Corporation</td>
<td>For Postgraduate Scholarship on the Genetics of Esterase Resistance</td>
<td>23,104</td>
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<td>Cotton Seed Distributors Ltd</td>
<td>For Identification of the Cellulose Synthesis Genes in Arabidopsis and Then Alter</td>
<td>225,000</td>
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<td>Department of Defence—Material Research Laboratory</td>
<td>For an Investigation of the Effects of Fatigue on Glass Fibre Reinforced Composite</td>
<td>6,000</td>
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<td>Department of Defence—Material Research Laboratory</td>
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</table>
Principal Grants and Donations

Department of Employment, Education and Training

For Magmatic and Hydrothermal Evolution on Intrusive Related Gold Deposits 100,000

Research and Development Internships Program for The On-line Training of Robotic Assembly Lines 22,984

For Teacher Competency and Teacher Education Courses 46,000

For Experimental Design in Process Quality Control 15,000

For Conference—'Costs and Quality in School Education' 25,000

For Teaching Development Grant For Bangkok Streets: Communication, Inference and Decision in a Cross-Cultural Context 43,440

For An Ethnoarchaeological Study of Body Art in Australia, Asia and North America 149,577

For A National Clearing House For University Teaching Coordinating Centre and a Clearing House in Law 340,000

For International Conference on 'Economic Liberalisation in South Asia' 10,000

For Year in Asia 1994—Thailand, Korea and Indonesia, and Faculty of Law Exchange Project—Japan 60,000

Australian Postgraduate Research Award (Industry) for New Molecular Techniques for Investigating Clonal Structure and Genetic Diversity in Rare Plants 30,000

Australian Research Council

For Advanced Cluster Chemistry Research Fellowships 334,235

For Magma Genesis and Tectonics in Western Pacific Island Arcs 256,000

For Ocean Drilling Project 79,400

For Data Collection for the Joint Australia Research Council/ANU Review of the Institute of Advanced Studies 43,644

For 1995 Review of Institute of Advanced Studies 550,000

For Advanced Cluster Chemistry Research 90,000

For Dish Concentrator Photovoltaic System 125,000

For Minimisation of Light Losses in Encapsulated Silicon Solar Cells 40,000

For Atom and Quantum Optics 270,000

For Molecular Analysis of Plant Mitochondria 223,000

For The Role of Bacteriocins in the Ecology of Bacteria 151,000
For The Time and Mode of Origin of Modern Humans A Palaeontological and Molecular Genetic Investigation
For Fracture Resistance and Damage Tolerance of Fibre Reinforced Composites with Process Control and Engineered Interfaces
For The Learning of Manipulation For Robotic Control
For Development of a Device For the Study of the Interaction Forces Between Colloids
For Clonal Structure and the Genetic Consequences of Clonality in Plants
For An Investigation of the Immune Mechanisms which Enable Some Species of Host to Resist Reinfection with the Liver Fluke Fasciola Hepatica
For A New Macedonian-English Dictionary
For The Connections Between Situation Semantics & Non-Classical Logics
For Two Dimensional and Multiplex Degenerate Four Wave Mixing in Shock Layer Flows
For Analysing and Forecasting Taiwanese Exchange Rates Against the US Dollar and Integrating Time Series Methods and Neural Networks
For Analysis and Geometry on Manifolds
For A Scholarly Translation of the Eleventh-Century Tale of Genji, the Greatest Masterpiece of Japanese Literature
For Regulation of Nitrate Transport in Plants
For Theory of Learning Systems
For 70 new and continuing Small Research Grants
For Farming Systems Under Stress—For a Study of Agro diversity in the Developing Tropics and Subtropics
International Fellowship for Investigation of the Mechanism of Phosphorylation-mediated Regulation of Nuclear Protein Transport
Postdoctoral Fellowship for Metal-Ion Directed Syntheses of Amino Acids & Related Compounds
Postdoctoral Fellowship for Combined High Precision Sr/Ca and Oxygen Isotope Measurements on Co-Occurring Aragonitic Coral Reef Species to Reveal Changes in Past Sea Water Temperatures & Size of Polar Ice Caps
Postdoctoral Fellowship for The History of Sumatra

125,000
100,000
83,000
169,500
105,000
40,000
32,000
147,657
172,300
60,000
360,000
129,000
90,000
124,000
1,016,100
99,000
57,500
152,696
157,731
147,657

220
Postdoctoral Fellowship for An Investigation of the Application of Impurity Induced Layer Disordering to the Isolation & Operation of Multiple Quantum Well Layer Devices

Postdoctoral Fellowship for Atomic Optics and Manipulation Using Laser Light

Postdoctoral Fellowship for Literature For a Nation—'The Development of Modern Vietnamese Literature, 1900–1945'

Postdoctoral Fellowship for Lifetime Reproduction in Peregrine Falcons

Postdoctoral Fellowship for Functional Microcircuitry of Visual Cortex

Postdoctoral Fellowship for Making the Beginning, The Structure & Function of Primase, an Enzyme Curial in DNA Replication

Postdoctoral Fellowship for Social Process & Dzogchen 'an Ethnographic Study of a Lay Spiritual Community in the Region of the Kekong, Yangtze & Yalung Rivers'

Postdoctoral Fellowship for Characterisation of Sporulation-Specific Proteins in Phytophthora Cinnamoni, and Investigations of their Role in the Infection of Host Plants

Postdoctoral Fellowship for Australian Women Artists 1900–1940—Their Background & Their Influence

Postdoctoral Fellowship for All-Optical Circuits & All-Optical Waveguide Switches Formed by Dark Spatial Solutions

QEII Research Fellowship for Chemical Synthesis of High-Purity Medicinal Compounds

QEII Research Fellowship for Growth and Characterisation of Device Quality InP Thin Films on Novel InP Substitutes

QEII Research Fellowship for Adaptive Estimation Techniques For Hidden Markov Models

QEII Research Fellowship for Liquid Crystal Polymers, Complex Fluids & Molecular Beam Epitaxy

Senior Research Fellowship for Linguistic Subcategorization Devices in Typological Perspective

Senior Research Fellowship for Australian Cultural Studies in Music

Mechanism C Infrastructure Award for Co-operative Supercomputer Facility

Special Research Initiatives Program for Theoretical Physics Workshop
The Australian National University

**National Priority (Reserve) Fund**

For Vietnam Networking and Database Development Program 98,870

For the Preparation of an Australian National Report on Development in Education 30,000

For South Asian Studies Posts 450,000

For Review of the Indian Ocean Centre For Peace Studies, WA 30,000

For Federated Doctoral Program in the Area of Housing and Urban Development 125,000

For Committee For the Advancement of University Teaching 200,000

For Feminist Legal Academics' Workshop Conference—Gender Bias in Law Curricula 10,000

For The Modern Vice-Chancellor Conference 6,700

For Assessment of Strategic Prospects in North East Asia and the Development of Regional Linkages 200,000

Department of Environment, Sport and Territories

For Climate Change and Land Use Study 51,117

For One-day symposium on Fire and Bio diversity—Country in Flames 10,493

For Feedbacks to the Climate System—from the Terrestrial Biosphere 30,000

National Greenhouse Gas Inventory Research Grant for New Technology to Monitor Sources and Sinks of CO2 106,500

Department of Foreign Affairs and Trade

For Australia—Indonesia Administrative Law Seminar 25,000

For East Asian Trade Policy and China's Entry to the General Agreement on Tariff and Trade (GATT) 5,000

For study of The Political Economy of Economic Reform and Liberalisation in South Asia 120,000

For the Australian National Committee of the Council For Security Co-operation in the Asia Pacific 60,000

For A Report on The Chinese Steel Industry—Potential Opportunities For Australia For Minerals and Energy Forum 87,500

**Australia and Asia Institutional Linkages (AAIL) Program**

For Women's Migration in the Asia-Pacific Region 40,000

For Thailand Update Conference 1994 & ANU Thai Studies Group Conference 1994 11,000
<table>
<thead>
<tr>
<th>Department &amp; Description</th>
<th>Details</th>
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<tbody>
<tr>
<td>Department of Housing and Regional Development</td>
<td>For National Local Government Environmental Resources Network Project 197,000</td>
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<tr>
<td>Department of Human Services and Health</td>
<td>For T Cell Immunity to Predicted T Cell Epitopes of Env and Cag Proteins of HIV 151,216</td>
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<td>For Technical Advisory Services For the General Practice Evaluation Program 318,037</td>
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<td>For Research Scholarship—Ms Phyllis Dance 21,666</td>
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<td>For Commonwealth Aids Research Grant Postdoctoral Fellowship 46,093</td>
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<td></td>
<td>For Body Weight and it's Control in Adults 8,902</td>
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<td>For 1994 Commonwealth AIDS Research Postgraduate Scholarship 20,366</td>
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<td>For Study to Assess the Change Over Time of General Practitioner Satisfaction with their Work and Patient Satisfaction with General Practice 21,200</td>
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<td>For extension of Master of Applied Epidemiology Course to Pilot General Practice Evaluation Program 1,524,540</td>
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<td>For the General Practice Evaluation Program—Work in Progress Conference 128,000</td>
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<tr>
<td>Department of Industrial Relations</td>
<td>For Management of a Search Conference Hosted by the Institution of Engineers 16,000</td>
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<tr>
<td>Department of Industry, Science &amp; Technology</td>
<td>For Development and Operation of a Search Conference 16,000</td>
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<td>For The Production Of High Grade Ti02 Product By The Cold Milling Of Ilmenite In The Presence Of Organic Chemicals 660,000</td>
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<td>For Photo Stabilisation Of Wood By Grafting Modified Benzophenone UV Absorbers To Activated Wood Surfaces 29,569</td>
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<td>For Best Practice—Search Conference, University of Adelaide 24,000</td>
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For Research And Education Programs In Areas Relating To Communications Network Technologies, Applications, Services and Network Infrastructure Development
3,000,000

For Development of Educational Management Case Studies Based on National Industries Extension Service (NIES) Case Histories
10,000

Bilateral Science and Technology Collaboration Program

Support For Dr C. Pickering to take up a US National Science Foundation Grant—Diversity Maintenance in Variable Environments
5,000

For Gallium Arsenide Layers For Photo Detectors
10,000

For Collaboration with the Kurchatov Institute, Moscow, on Non linear Processes In Plasmas
6,600

For Regulation of Respiration of Transgenic Plants
6,300

For Macho Project: Search For Baryonic Dark Matter
13,000

For Isotopic Studies of Aluminium Toxicology Using Aluminium-26
6,700

For Atmospheric Molecular Laser Spectroscopy
7,420

For Perturbed Angular Correlation (Pac) Studies of Ion Im planted Semiconductor Materials
6,270

For Mechanisms of Chemotaxis of Phytophthora Sojae Zoospores Towards Host Isoflavonoids
9,200

For Diversity Maintenance in Variable Environments
11,500

For Pattern Recognition by Honeybees
6,000

Department of Justice and Attorney-General
For Consultancy to the Queensland Government on the British Background to Colonial Policy Making
6,000

Department of Primary Industries and Energy
For A Survey of Non-Structural Floodplain Management
75,000

Department of Social Security
For Aboriginal Economic Policy Research
315,000

Department of Supply and Services, Canada
For Spatial Modelling of Potential Vegetation Distributions and Geo-Referenced Predictive Model of Potential Vegetation Types
31,712

Department of the Environment, Sports and Territories
For Retrospective Determination of Ocean Radiocarbon and Application to Studies of Carbon Flux, Ocean Circulation and Fish Ageing
26,000

For Lead Authors—Intergovernmental Panel on Climate Change—Second Assessment Report
30,000
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<td>For Systematic Study of Endangered Language Situation and Some Endangered Languages of Eastern Indonesia and Parts of Irian Jaya and the Endangered Language Mussau in the St Mathias Islands, Papua New Guinea</td>
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(total excluding Grants through Anutech Pty Ltd)
Freedom of Information Act 1982 Statement

This statement has been prepared in compliance with Section 8 of the Freedom of Information Act 1982 and is correct to 31 December 1994. More detailed information is available in two public documents entitled—University Legislation and Administrative Guide.

1. Functions of the University’s decision-making Council and Boards are as follows:

**Council**

In accordance with section 18 of the Australian National University Act 1991 the Council is the governing authority of the University. Section 9 of the Act provides that, subject to this Act and the Statutes, the Council has the entire control and management of the University and is to act in all matters concerning the University in such manner as appears to be best calculated to promote the interests of the University.

The membership of the Council is set out in section 10 of the Act. It is chaired by the Chancellor and comprises 22 members which include elected officers of the University and other ex-officio members, representatives of both Houses of Parliament, persons appointed by the Governor-General, persons appointed by the Chief Minister of the ACT, representatives of various groups of the University’s academic staff, representatives of the general staff, graduate and undergraduate students as well as convocation, and one other person at the discretion of Council.

**Committees of the Council**

Council is assisted by the following committees:

- The Standing Committee considers any matter relating to the University referred to it by the Council or, if Council is not sitting, transacts the business of the University except for matters solely within the competence of the Council.

- The Finance Committee makes recommendations and decisions concerning financial and accounting matters of the University.

- Other continuing committees of Council are—Appeals Committee, Audit Committee, Buildings and Grounds Committee, Committee Against Sexual Harassment, Committee on Child Care, Committee on Conditions and Appointment of the Vice-Chancellor and Deputy Vice-Chancellors, Emergency Appointment (Vice-Chancellor) Committee, Equal Employment Opportunity Committee, General Services Fee Committee, Honorary Degrees Committee, University Fellowships Committee and Public Affairs Committee.

**Board of the Institute of Advanced Studies**

The function of the Board is to advise the Council on any matter relating to education, learning, research and other academic work of the University; it makes recommendations on the establishment of additional research schools in the Institute; the abolition, combination or subdivision of those research schools or departments of the research schools; the promotion of persons to academic offices in the Institute; the enrolment of students for courses of study or research in the Institute; the requirements of courses of study in the Institute; the granting of degrees, diplomas, certificates, honours and scholarships; and on academic matters pertaining to the Institute.

The Board of the Institute of Advanced Studies comprises a chairperson appointed by the Council from among the professors in the Institute, the Vice-Chancellor, the Deputy Vice-Chancellors, the head of each research school, four heads of departments in each research school chosen by the respective faculty board, one member chosen by
the faculty of each research school, the Chairperson and one other member of the Board of The Faculties, two members elected by and from the graduate students of the Institute and such other persons as the Council appoints. The Institute of Advanced Studies comprises the John Curtin School of Medical Research and the Research Schools of Biological Sciences, Chemistry, Earth Sciences, Pacific Studies, Physical Sciences and Engineering, and Social Sciences. It incorporates the Mount Stromlo and Siding Spring Observatories, the National Centre for Epidemiology and Population Health and a number of mainly multidisciplinary academic centres.

The Board is assisted by the following committees:

- Committee on General Policy
- Promotions Committee
- Strategic Developments Committee.

**Board of The Faculties**

The function of the Board is to make recommendations to the Council on the academic development of the University; the establishment, abolition, combination and subdivision of faculties and of departments and other bodies within The Faculties (other than the Institute of the Arts); the promotion of persons to academic positions in The Faculties; the assigning of any staff (academic and non-academic) to a department or faculty or to another body within The Faculties; the admission of students to the University and to courses and parts of courses; examinations; scholarships for courses of study and research; the granting of degrees, diplomas, certificates and honours; the discipline of students; and other academic and related matters.

The Board of The Faculties comprises a chairperson appointed by the Council from among the professors in The Faculties, the Vice-Chancellor, the Deputy Vice-Chancellor, the Dean of each faculty within The Faculties, the Dean of Students, the President of The Australian National University Students’ Association, the Chairman and one other member of the Board of the Institute of Advanced Studies, heads of departments and divisions, heads of centres in the Faculty of Asian Studies, three professors of law, other representatives of academic staff and students and such other persons as the Council appoints from time to time. The Faculties offer undergraduate and graduate courses in arts, Asian studies, economics and commerce, engineering and information technology, law, and science.

The Board is assisted by the following committees:

- Steering Committee
- Resources Committee
- The Faculties Research Grants Committee
- Academic Progress Appeals Committee
- Admissions Committee
- Committee on Consultation
- Faculties Computing Committee
- electoral committees for academic posts
- Postgraduate Scholarships Committee
- Promotions Committee
- Standing Committee of Tenure Committee
- Prospective Students Liaison Committee
- Undergraduate Awards Committee

**Joint Committees of the Academic Boards**

The two academic boards have the following three major joint committees:

- Graduate Degrees Committee
- Joint Committee on Postgraduate Awards
- Board of Management, Centre for Continuing Education
2. The functions of the University’s statutory officers are as follows:

Chancellor

The Chancellor presides at all meetings of Council and on all ceremonial occasions when available to do so. The Chancellor signs the Annual Report of the University to the Governor-General.

Pro-Chancellor

The Pro-Chancellor chairs meetings of the Standing Committee and, in the absence of the Chancellor, presides at meetings of the Council and on ceremonial occasions.

Vice-Chancellor

The Vice-Chancellor is the Chief Executive Officer of the University and has such powers and duties as the Statutes prescribe or, subject to the Statutes as the Council determines. The Vice-Chancellor’s role is to control and manage the affairs and concerns of the University including the control and management of real and personal property vested in or acquired by the University. The Vice-Chancellor has, and may exercise, such powers as are necessary or desirable to discharge those duties. The Vice-Chancellor also represents and acts for the University in its relations with the Commonwealth Government and other bodies.

Deputy Vice-Chancellors

The two Deputy Vice-Chancellors generally assist in all aspects of the Vice-Chancellor’s work, but particularly advise on the academic affairs of the University and deputise for the Vice-Chancellor in that officer’s absence. One Deputy Vice-Chancellor is also Director of the Institute of Advanced Studies.

Pro-Vice-Chancellor (Finance and Fabric)

The Pro-Vice-Chancellor (Finance and Fabric) advises the Vice-Chancellor on all matters concerning management of the University’s finances and fabric.

Pro-Vice-Chancellor (Planning and Administration)

The Pro-Vice-Chancellor (Planning and Administration) advises the Vice-Chancellor on the effective administration of the University, on matters of concern to students and staff and on the University’s relationship with the community.

3. Powers of the University

The University’s powers are based on the Australian National University Act 1991. Under this legislation the University has made statutes, rules and orders.

Statutes

Council has made 31 statutes under section 27(1) which are valid at present—

Affiliation (Canberra Institute of the Arts) Statute
Board of The Faculties Statute
Board of the Institute of Advanced Studies Statute
Chancellorship Statute
Computing Services Statute
Convocation Statute
Courses and Degrees Statute
Default Certificate Statute
Deputy Vice-Chancellorship Statute
Discipline Statute
Faculties and Faculty Boards (Institute of Advanced Studies) Statute
Faculties (The Faculties) Statute
Fees Statute
Halls of Residence Statute
Institute of the Arts Statute
Interpretation Statute
Library Statute
Liquor (Affiliated Colleges) Statute
Liquor (Halls of Residence and University Union) Statute
Liquor (University Arts Centre) Statute
Liquor (University House) Statute
Membership of the Council Statute
Parking and Traffic Statute
Pro-Chancellorship Statute
Professoral Board Statute
Residential Colleges (Affiliation) Statute
Staff Superannuation Statute
Superannuation Funds (Investment and Management) Statute
University House Statute
University Seal Statute
Vice-Chancellorship Statute

Institute of the Arts Statutes preserved under Section 57—
Academic Progress Statute
Admission Statute
Affiliation (ANU) Statute
Courses and Awards Statute
Elected Members of Council Statute
Fees Statute
Granting of Advanced Standing Statute
Interpretation Statute
Library Statute
Scholarship Statute
Student Conduct Statute
Traffic Statute

4. Documents or publications produced by the University

Documents available for purchase by the public or otherwise accessible in terms of the Freedom of Information Act 1982 are—
Council statutes, rules and orders
Annual Report of the ANU to Parliament
Annual reports of schools, faculties, centres and units to the Council
Faculty Handbook
Rules (a companion volume to the former)
Graduate School Handbook
Institute of the Arts Annual Report
Institute of the Arts Handbook
Institute of the Arts Prospectus
Undergraduate Prospectus
Statistical Handbook
Administrative Guide
Purchasing Policy and Procedures
University Mail
Accounting Manual
Radiation Safety Handbook
Ionizing Radiation Safety
Occupational Health and Safety Unit Information Manual

Documents which are customarily made available to the public otherwise than under the Freedom of Information Act, free of charge, upon request are—
ANU Reporter, National Graduate, Staff News, periodic listing of visitors by their university and area of interest. Information pamphlets and booklets on courses and academic requirements in various disciplines, leaflets on academic appointments in the Institute of Advanced Studies and in The Faculties, Library Guides, Directory of services for students, and Student accommodation booklet.

Internal working documents include internal user manuals, Financial Authorisations, Personnel and Payroll (General), Stores and Purchasing Systems Manuals and other policy and procedural documents.

Facilities for access

A reading room is available at University Public Affairs office. Limited facilities for the perusal of
documents applicable to individual areas are also available at the Personnel Office and/or Student Administration.

**FOI procedures and initial contact points**

Applications for access to documents under the Freedom of Information Act 1982 should be lodged in writing with the Secretary or the Registrar of the University. Applications should include the application fee or a request for its remission, an address to which notices may be sent and, to facilitate contact with the applicant, a telephone number effective during normal business hours. Properly lodged applications for access to documents will be acknowledged and a decision notified to the applicant as quickly as possible. In accordance with the provisions of section 23 of the Freedom of Information Act 1982 the Vice-Chancellor, the Deputy Vice-Chancellors, the Pro-Vice-Chancellors; the Registrar, the Secretary, the Head, Buildings and Grounds Division; and the Head, Finance and Accounting Division, are authorised to grant or refuse access to documents. Inquiries regarding freedom of information and access to documents may be made at—

- **Public Affairs Division**
  28 Balmain Crescent
  Tel: (06) 249 2229

- **The Personnel Office**
  Chancelry Building
  East Road
  Tel: (06) 249 4735

- **Student Administration**
  Chancelry Annex
  Ellery Circuit
  Tel: (06) 249 3339

Telephone inquiries may also be directed to the FOI Officer
Tel: (06) 249 3324
Auditor-General's Report
2 June 1995

Professor The Honourable P. E. Baume
Chairman of the Council of the University
Australian National University
P. O. Box 4
CANBERRA ACT 2600

Dear Professor Baume

AUSTRALIAN NATIONAL UNIVERSITY - FINANCIAL STATEMENTS 1994

Please find enclosed the signed financial statements for the University for the year ended 31 December 1994, together with a copy of the audit report on the financial statements pursuant to subsection 49(2) of the Australian National University Act 1991.

The audit report on the financial statements has been forwarded to the Minister for Employment, Education and Training, together with a signed copy of the financial statements.

Yours sincerely

D. S. Lennie
Executive Director

Centenary House, 19 National Circuit, Barton, ACT 2600. Telephone (06) 203 7300 Facsimile (06) 203 7777
Ref:

INDEPENDENT AUDIT REPORT

To the Minister for Employment, Education and Training

Scope

I have audited the financial statements of the Australian National University for the year ended 31 December 1994. The financial statements include the consolidated financial statements of the economic entity comprising the University and the entity it controls at the year’s end or from time to time during the year. The statements comprise:

- Statement of Revenues and Expenses of the University and of the economic entity
- Statement of Financial Position of the University and of the economic entity
- Statement of Cash Flows of the University and of the economic entity
- Certificate of the Vice-Chancellor and the Pro Vice-Chancellor (Finance and Development), and
- Notes to and forming part of the financial statements.

The Council of the University is responsible for the preparation and presentation of the financial statements and the information they contain. I have conducted an independent audit of the financial statements in order to express an opinion on them to the Minister for Employment, Education and Training and the Chairman of the Council of the University.

The audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards, to provide reasonable assurance as to whether the financial statements are free of material misstatement. Audit procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the financial statements, and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion whether, in all material respects, the financial statements are presented fairly in accordance with Australian accounting concepts and standards and statutory requirements so as to present a view which is consistent with my understanding of the University and the economic entity’s financial position, the results of their operations and their cash flows.
I have not acted as the auditor of the subsidiary company ANUTECH Pty Limited. I have, however, received sufficient information and explanation concerning this subsidiary to enable me to form an opinion on the economic entity's financial statements.

The audit opinion expressed in this report has been formed on the above basis.

Qualification

As stated in Note 1 under Basis of Accounting, the University departed from the requirements of the Australian Accounting Standards on Profit and Loss or other Operating Statements (AAS 1) and Accounting for Revaluation of Non-current Assets (AAS 10), in respect of the funds invested in the Commonwealth Superannuation Account (CSA) to provide for the employer funded part of pensions paid by the Australian Government for University employees.

The University accounts as revenue the changes in market value of assets of the CSA between the beginning and end of each period, irrespective of whether the gains (or losses) are realised. This treatment is the same as provided for under the Australian Accounting Standard on Financial Reporting by Superannuation Plans (AAS 25). However the CSA is not a superannuation plan in terms of the definition in AAS 25. The University believes that the Standards AAS 1 and AAS 10 are not appropriate for the superannuation funds.

The accounting treatment adopted by the University is contrary to the requirements of AAS 10 for revaluation of non-current assets in that the increment has not been taken to an investment revaluation reserve for unrealised gains. The treatment is also contrary to AAS 1 in that the financial result has been determined after accounting for revenue from unrealised gains in the Operating Statement.

The Guidelines for Financial Statements of Public Authorities and Commercial Activities require the University to comply with the accounting standards. The Guidelines also provide that where the University believes that financial statements so prepared do not show fairly the financial transactions and the state of affairs of the University, it should supply additional information and explanations so as to show fairly those matters. As stated by the University in Note 1, the effect of the departures from the standards is to decrease the surplus for the year by $36,551,746.

Qualified Audit Opinion

In accordance with subsection 49(2) of the Australian National University Act 1991, I now report that the statements are in agreement with the accounts and records of the University and the economic entity, and in my opinion, except for the effects on the financial statements of the matter referred to in the qualification paragraph:

the statements are based upon proper accounts and records
the statements show fairly in accordance with Statements of Accounting Concepts and applicable Accounting Standards the financial transactions and cash flows for the year ended 31 December 1994 and the state of affairs of the University and the economic entity at that date.

the receipt, expenditure and investment of moneys, and the acquisition and disposal of assets, by the University during the year have been in accordance with the Australian National University Act 1991, and

the statements are in accordance with the Guidelines for Financial Statements of Public Authorities and Commercial Activities and with the Instructions for the Preparation of Annual Financial Reports by Australian Higher Education Institutions.

D. S. Lennie
Executive Director
Australian National Audit Office
Canberra

2 June 1995
Financial Statements
CERTIFICATE

In our opinion the accounts for the University and the consolidated accounts for the Economic Entity are drawn up to show fairly the:

operating results for the financial year ended 31 December 1994;

financial position as at 31 December 1994; and

cash flows during the financial year ended 31 December 1994.

The statements have been made out in accordance with the Guidelines for Financial Statements of Public Authorities and Commercial Activities approved by the Minister for Finance except as indicated in Note 1.8, and the Instructions for the Preparation of Annual Financial Reports by Australian Higher Education Institutions issued by the Department of Employment, Education and Training.

R D TERRELL
Vice- Chancellor

A D BARTON
Pro Vice-Chancellor
(Finance & Development)

2 June 1995
# Statement of Revenues and Expenses for the Year Ended 31 December 1994

## Consolidated University

<table>
<thead>
<tr>
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<tr>
<td><strong>Operating Revenues (before abnormal items)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commonwealth Government grants</td>
<td>2</td>
<td>242,918</td>
<td>220,144</td>
<td>234,460</td>
</tr>
<tr>
<td>Higher Education Contribution Scheme</td>
<td>3</td>
<td>17,173</td>
<td>13,731</td>
<td>17,173</td>
</tr>
<tr>
<td>State Government grants</td>
<td>4</td>
<td>6,197</td>
<td>5,586</td>
<td>5,705</td>
</tr>
<tr>
<td>Other research grants and contracts</td>
<td></td>
<td>20,491</td>
<td>22,347</td>
<td>11,236</td>
</tr>
<tr>
<td>Scholarships and prizes</td>
<td></td>
<td>116</td>
<td>271</td>
<td>116</td>
</tr>
<tr>
<td>Donations and bequests</td>
<td></td>
<td>2,047</td>
<td>6,683</td>
<td>2,048</td>
</tr>
<tr>
<td>Investment income</td>
<td></td>
<td>927</td>
<td>75,634</td>
<td>(9,443)</td>
</tr>
<tr>
<td>Fees and charges</td>
<td>6</td>
<td>13,970</td>
<td>12,855</td>
<td>12,940</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>35,771</td>
<td>40,875</td>
<td>33,132</td>
</tr>
<tr>
<td><strong>Total operating revenues (before abnormal items)</strong></td>
<td></td>
<td>339,610</td>
<td>398,126</td>
<td>307,367</td>
</tr>
<tr>
<td><strong>Operating Expenses (before abnormal items)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic activities</td>
<td>8</td>
<td>221,449</td>
<td>218,842</td>
<td>208,234</td>
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<tr>
<td>Libraries</td>
<td>9</td>
<td>14,461</td>
<td>10,812</td>
<td>14,473</td>
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<tr>
<td>Other academic support services</td>
<td>10</td>
<td>18,804</td>
<td>20,091</td>
<td>11,882</td>
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<tr>
<td>Student services</td>
<td>11</td>
<td>22,036</td>
<td>20,062</td>
<td>22,063</td>
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<tr>
<td>Public services</td>
<td>12</td>
<td>2,134</td>
<td>1,714</td>
<td>2,136</td>
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<tr>
<td>Administration and other general institutional services</td>
<td>14</td>
<td>48,117</td>
<td>38,780</td>
<td>36,631</td>
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<tr>
<td>Other expenses</td>
<td>15</td>
<td>(10,384)</td>
<td>65,507</td>
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<tr>
<td><strong>Total operating expenses (before abnormal items)</strong></td>
<td></td>
<td>331,835</td>
<td>391,937</td>
<td>300,258</td>
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<tr>
<td><strong>Excess of operating revenues over expenses before abnormal items</strong></td>
<td></td>
<td>7,775</td>
<td>6,189</td>
<td>7,109</td>
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<tr>
<td><strong>Abnormal items</strong></td>
<td>17</td>
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<td></td>
<td>7,251</td>
<td>6,189</td>
<td>7,958</td>
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<tr>
<td><strong>Outside Interests and Transfers</strong></td>
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## University

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## Accumulated Revenues Less Expenses at Beginning of Financial Year

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</tr>
<tr>
<td><strong>Accumulated revenues less expenses at beginning of financial year</strong></td>
<td>242,090</td>
<td>235,175</td>
<td>238,978</td>
<td>232,069</td>
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<tr>
<td><strong>Aggregate of amounts transferred from reserves</strong></td>
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<td>1,977</td>
<td>3,641</td>
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<tr>
<td><strong>Total available for appropriation</strong></td>
<td></td>
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<tr>
<td><strong>Aggregate of amounts transferred to reserves</strong></td>
<td>18</td>
<td>4,108</td>
<td>2,915</td>
<td>3,324</td>
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<tr>
<td><strong>Accumulated revenues less expenses at end of financial year</strong></td>
<td>$247,210</td>
<td>$242,090</td>
<td>$244,560</td>
<td>$238,978</td>
</tr>
</tbody>
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### Statement of Financial Position as at 31 December 1994

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<tr>
<td><strong>Current Assets</strong></td>
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<tr>
<td>Cash</td>
<td>65,761</td>
<td>66,477</td>
<td>62,309</td>
<td>63,048</td>
</tr>
<tr>
<td>Receivables</td>
<td>22,342</td>
<td>17,765</td>
<td>18,385</td>
<td>15,369</td>
</tr>
<tr>
<td>Investments</td>
<td>33,222</td>
<td>9,865</td>
<td>33,222</td>
<td>9,865</td>
</tr>
<tr>
<td>Inventories</td>
<td>795</td>
<td>251</td>
<td>216</td>
<td>167</td>
</tr>
<tr>
<td>Other</td>
<td>4,413</td>
<td>12,495</td>
<td>1,538</td>
<td>1,536</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
<td>126,533</td>
<td>106,853</td>
<td>115,670</td>
<td>89,985</td>
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<tr>
<td><strong>Non-Current Assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receivables</td>
<td>1,389</td>
<td>1,633</td>
<td>1,389</td>
<td>1,633</td>
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<tr>
<td>Investments</td>
<td>375,482</td>
<td>319,256</td>
<td>377,466</td>
<td></td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>260,138</td>
<td>748,100</td>
<td>254,849</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>100,204</td>
<td>92,832</td>
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<td></td>
</tr>
<tr>
<td><strong>Total Non-Current Assets</strong></td>
<td>1,173,231</td>
<td>730,085</td>
<td>1,068,745</td>
<td>633,948</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>1,299,764</td>
<td>836,938</td>
<td>1,184,415</td>
<td>723,933</td>
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<tr>
<td><strong>Current Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creditors</td>
<td>62,193</td>
<td>78,714</td>
<td>59,955</td>
<td>78,358</td>
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<tr>
<td>Provisions</td>
<td>19,944</td>
<td>25,363</td>
<td>19,521</td>
<td>25,072</td>
</tr>
<tr>
<td>Other</td>
<td>6,697</td>
<td>12,955</td>
<td></td>
<td></td>
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<tr>
<td><strong>Total Current Liabilities</strong></td>
<td>88,834</td>
<td>117,032</td>
<td>79,476</td>
<td>103,430</td>
</tr>
<tr>
<td><strong>Non-Current Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrowings</td>
<td>12,000</td>
<td>4,001</td>
<td>12,000</td>
<td>4,001</td>
</tr>
<tr>
<td>Provisions</td>
<td>331,243</td>
<td>346,400</td>
<td>331,125</td>
<td>346,295</td>
</tr>
<tr>
<td>Other</td>
<td>100,982</td>
<td>93,700</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Non-Current Liabilities</strong></td>
<td>444,225</td>
<td>444,101</td>
<td>343,125</td>
<td>350,296</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>533,059</td>
<td>561,133</td>
<td>422,601</td>
<td>453,726</td>
</tr>
<tr>
<td><strong>Net Assets</strong></td>
<td>$766,705</td>
<td>$275,805</td>
<td>$761,814</td>
<td>$270,207</td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserves</td>
<td>519,495</td>
<td>33,715</td>
<td>517,254</td>
<td>31,229</td>
</tr>
<tr>
<td>Accumulated results of operations</td>
<td>247,210</td>
<td>242,090</td>
<td>244,560</td>
<td>238,978</td>
</tr>
<tr>
<td><strong>Total Equity</strong></td>
<td>$766,705</td>
<td>$275,805</td>
<td>$761,814</td>
<td>$270,207</td>
</tr>
</tbody>
</table>
## Statement of Cash Flows for Year Ended 31 December 1994

<table>
<thead>
<tr>
<th></th>
<th>Consolidated</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1994 $'000</td>
<td>1993 $'000</td>
</tr>
<tr>
<td><strong>CASH FLOWS FROM OPERATING ACTIVITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student payments</td>
<td>9,971</td>
<td>18,118</td>
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<tr>
<td>Higher Education Trust Fund</td>
<td>2,220</td>
<td>1,853</td>
</tr>
<tr>
<td>Research grants</td>
<td>27,613</td>
<td>4,530</td>
</tr>
<tr>
<td>Interest and other investment earnings</td>
<td>33,720</td>
<td>25,217</td>
</tr>
<tr>
<td>Dividends received</td>
<td>8,056</td>
<td>6,533</td>
</tr>
<tr>
<td>Other receipts</td>
<td>59,908</td>
<td>73,564</td>
</tr>
<tr>
<td><strong>Outflows</strong></td>
<td>(214,793)</td>
<td>(202,461)</td>
</tr>
<tr>
<td>Payments to employees</td>
<td>(2,615)</td>
<td>(2,638)</td>
</tr>
<tr>
<td>Direct investment expenses</td>
<td>(37,403)</td>
<td>(28,816)</td>
</tr>
<tr>
<td><strong>NET CASH USED BY OPERATING ACTIVITIES</strong></td>
<td>(194,390)</td>
<td>(185,414)</td>
</tr>
<tr>
<td><strong>CASH FLOWS FROM INVESTING ACTIVITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proceeds from sales of property, plant and equipment</td>
<td>3,616</td>
<td>3,968</td>
</tr>
<tr>
<td>Loan repayments</td>
<td>303</td>
<td>1,534</td>
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<tr>
<td>Proceeds from sale and maturity of investments</td>
<td>82,044</td>
<td>78,923</td>
</tr>
<tr>
<td>Interest on technology licence funds</td>
<td></td>
<td>9,234</td>
</tr>
<tr>
<td><strong>Outflows</strong></td>
<td>(96,188)</td>
<td>(125,209)</td>
</tr>
<tr>
<td>Acquisition of investments</td>
<td>(37,403)</td>
<td>(28,816)</td>
</tr>
<tr>
<td><strong>NET CASH USED BY INVESTING ACTIVITIES</strong></td>
<td>(47,628)</td>
<td>(60,366)</td>
</tr>
<tr>
<td><strong>CASH FLOWS FROM FINANCING ACTIVITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loan from bank</td>
<td>8,000</td>
<td></td>
</tr>
<tr>
<td><strong>Outflows</strong></td>
<td>(854)</td>
<td></td>
</tr>
<tr>
<td><strong>NET CASH PROVIDED BY FINANCING ACTIVITIES</strong></td>
<td>7,146</td>
<td></td>
</tr>
<tr>
<td><strong>CASH FLOWS FROM GOVERNMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commonwealth Government grants</td>
<td>192,870</td>
<td>207,580</td>
</tr>
<tr>
<td>New South Wales Government grant</td>
<td>409</td>
<td>319</td>
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<tr>
<td>Victoria Government grant</td>
<td>117</td>
<td>192</td>
</tr>
<tr>
<td>Queensland Government grant</td>
<td>81</td>
<td>33</td>
</tr>
<tr>
<td>Northern Territory Government grant</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Tasmania Government grant</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Western Australia Government grant</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>Australian Capital Territory Government grant</td>
<td>4,893</td>
<td>4,806</td>
</tr>
<tr>
<td>Other</td>
<td>35,874</td>
<td>45,590</td>
</tr>
<tr>
<td><strong>Outflows</strong></td>
<td>(139)</td>
<td>(42)</td>
</tr>
<tr>
<td><strong>NET CASH FROM GOVERNMENT</strong></td>
<td>234,156</td>
<td>258,325</td>
</tr>
<tr>
<td><strong>NET INCREASE/DECREASE IN CASH HELD</strong></td>
<td>(716)</td>
<td>12,545</td>
</tr>
<tr>
<td>Cash at beginning of reporting period</td>
<td>66,477</td>
<td>53,932</td>
</tr>
<tr>
<td><strong>CASH AT END OF REPORTING PERIOD</strong></td>
<td>65,761</td>
<td>66,477</td>
</tr>
</tbody>
</table>
NOTES TO AND FORMING PART OF THE ACCOUNTS
31 DECEMBER 1994

1. SIGNIFICANT ACCOUNTING POLICIES

1.1 Basis of Accounting

The financial statements have been prepared in accordance with the historical cost convention, except for some assets which are reported at valuation.

The financial statements accord with the requirements of the Guidelines for Financial Statements of Public Authorities and Commercial Activities (the Guidelines) approved by the Minister for Finance except as indicated in Note 1.8. During 1994 the Department of Employment, Education and Training issued Instructions for the Preparation of Annual Financial Reports by Australian Higher Education Institutions (the Instructions). The Instructions contain the specifications for data required in the annual financial reports. The Department of Employment, Education and Training has indicated to the University its acceptance of the Guidelines in lieu of the Instructions for the University's financial statements.

The financial statements are presented on an economic entity basis. The statements include consolidated reporting for the Australian National University and its wholly and beneficially owned subsidiary company ANUTECH Pty Ltd incorporated in Australia.

The accounts for ANUTECH Pty Ltd have been prepared for the same reporting period as the University using consistent accounting policies. Balances, transactions and unrealised profits arising from intra-entity transactions have been eliminated.

The University has adopted a market value basis for the investments held on behalf of the Commonwealth Superannuation Account and has followed the disclosure requirements of the Australian Accounting Standard on Financial Reporting by Superannuation Plans (AAS 25) for investment revenue as if it were a superannuation plan. The University accounts as revenue the changes in market values of assets of the Commonwealth Superannuation Account between the beginning and the end of each reporting period, irrespective of whether the gains (or losses) are realised. The effect of disclosing unrealised gains and losses in revenue rather than in an Unrealised Gains Reserve is to decrease the surplus for the year by $36,551,746. This treatment of unrealised gains and losses represents a departure from the requirements of Australian Accounting Standards on Profit and Loss Statements (AAS1) and Accounting for the Revaluation of Non-Current Assets (AAS10).

These departures from the Australian Accounting Standards (AAS1 and AAS10) have been made because, in the opinion of the University, the standards are not appropriate for the Commonwealth Superannuation Account. The University considers that its accounting policy accurately discloses the financial performance and position of the Commonwealth Superannuation Account.

Comparative figures in the Statement of Revenues and Expenses, Statement of Cash Flows and the Notes have been restated from the 1993 accounts to reflect format changes.
NOTES continued

1. SIGNIFICANT ACCOUNTING POLICIES continued

1.2 Investments

Funds are invested using guidelines approved by the Council of the University in the following categories:

- Bank accepted bills
- Certificates of deposit
- Convertible notes
- Corporate bonds
- Debentures
- Government and semi-government stocks and bonds
- Overseas managed investment funds
- Managed investment funds
- Promissory notes
- Properties
- Shares and share options
- Short term money market
- Stapled securities

1.3 Cash Flows

Cash for the purposes of the Statement of Cash Flows, includes cash on hand, deposits held at call with banks and money market investments readily convertible to cash.

1.4 Inventories

Inventories are valued at the lower of cost or net realisable value. Costs are assigned to inventories using last purchase cost on a first in first out basis.

1.5 Property, Plant and Equipment

1.5.1 Depreciation and Amortisation

Depreciation and amortisation are calculated on a straight line basis on all property, plant and equipment other than freehold land and works of art. Rates are calculated to allocate the cost or value of the assets against revenue over the useful life of the assets.

1.5.2 Valuation of Assets

Assets are stated at accumulated historical cost except for campus buildings, properties donated to the University, investments, land and dwellings held on behalf of the Housing Operation and non-electronic musical instruments. The valuation of non-electronic musical instruments at replacement cost was undertaken by Institute of the Arts officers, who are considered to be experts in this field, as at 8 February 1988. Non electronic musical instruments acquired after that date are valued at cost.

Campus buildings were valued by the University at current reproduction cost on 30 June 1994 using building price indices for the ACT region. The revaluation increment was credited directly to the asset revaluation reserve.

All land and buildings gifted to the University are assessed by independent qualified valuers and revalued in the University's books of account. The last independent valuation was performed in 1993 by Egan, Wilkinson and Swinbourne, registered valuers.
NOTES continued

1. SIGNIFICANT ACCOUNTING POLICIES continued

1.5.2 Valuation of Assets (cont)

During 1993 land and dwellings held on behalf of the Housing Operation were valued independently at current market prices by Egan, Wilkinson and Swinbourne, registered valuers. All valuations are estimates of the amounts for which the assets could be exchanged between a knowledgeable willing buyer and a knowledgeable willing seller in an arm's length transaction at the valuation date. These assets are revalued every three years.

Investment assets of the Commonwealth Superannuation Account are stated at market value. Market value in relation to investments has been determined as:

Land and buildings - all valuations are estimates of the amounts for which the assets could be exchanged between a knowledgeable willing buyer and a knowledgeable willing seller in an arm's length transaction at the valuation date. The most recent independent valuations of land and buildings were performed in 1993 by registered valuers Finch Freeman of Melbourne and Ray L Davis Pty Ltd of Canberra;

Shares in public companies, stapled securities and convertible notes - the official market quotation price as listed by the Australian Stock Exchange at the close of business on 31 December 1994;

Government and semi-government stocks and bonds - independent valuation provided by the Short Term Group of Melbourne. Capital Indexed Government Bonds - independent valuation provided by SBC Australia Limited of Sydney; and

Overseas managed investment funds - valuation supplied by the fund management groups.

1.6 Employee Entitlements

The University makes provision for employee recreation leave other than for members of academic staff. It provides for long service leave after seven years continuous service for all employees.

1.7 Deferred Research and Development Costs

Research and development costs at ANUTECH are expensed as incurred except where future benefits are expected, beyond any reasonable doubt, to exceed those costs. Where research and development costs are deferred such costs are amortised over future periods on a basis related to expected future benefits. Unamortised costs are reviewed at each balance date to determine the amount that is no longer recoverable and any amount so identified is written off.

1.8 Guidelines for Financial Statements of Commonwealth Entities

Pursuant to clause 6 of Schedule 2 to the Guidelines, the delegate of the Minister for Finance has varied the form of The Australian National University financial statements for the financial year ending 31 December 1994 so that:

the University sites at Acton campus and Mt Stromlo received free of charge by lease in perpetuity and on restricted use for the University activities, need not be brought to account but a description of those sites shall be included in the notes to the financial statements;

the operating statement format 'Statement of Revenues and Expenses' be adopted by The Australian National University for the year ending 31 December 1994 in lieu of the operating statement format set out in the Guidelines.
NOTES continued

2. COMMONWEALTH GOVERNMENT GRANTS

The following Commonwealth Government grants were received by the University in the reporting period:

Pursuant to the Higher Education Funding Act 1988:

<table>
<thead>
<tr>
<th>Operating purposes (excluding HECS)</th>
<th>186,715</th>
<th>178,537</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special research assistance:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large research grants</td>
<td>3,284</td>
<td>2,594</td>
</tr>
<tr>
<td>Small research grants</td>
<td>946</td>
<td>601</td>
</tr>
<tr>
<td>Collaborative research grants</td>
<td>147</td>
<td>44</td>
</tr>
<tr>
<td>Research infrastructure grants</td>
<td>740</td>
<td>839</td>
</tr>
<tr>
<td>International reciprocal fellowships</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Research fellowships</td>
<td>4,503</td>
<td>4,029</td>
</tr>
<tr>
<td>Postgraduate awards</td>
<td>3,588</td>
<td>3,470</td>
</tr>
<tr>
<td>Postgraduate awards (industry)</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Overseas postgraduate research scholarships</td>
<td>1,008</td>
<td>765</td>
</tr>
<tr>
<td>Special overseas postgraduate fund</td>
<td>33</td>
<td>43</td>
</tr>
</tbody>
</table>

Sub-total Higher Education Funding Act 1988 $201,080 $190,922

Other Commonwealth Government Grants:

<table>
<thead>
<tr>
<th>Human Services and Health</th>
<th>Operating and Research</th>
<th>22,593</th>
<th>21,345</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment, Education and Training</td>
<td>Research</td>
<td>338</td>
<td>558</td>
</tr>
<tr>
<td>Defence</td>
<td>Research</td>
<td>427</td>
<td>443</td>
</tr>
<tr>
<td>Environment, Sports and Territories</td>
<td>Research</td>
<td>281</td>
<td>168</td>
</tr>
<tr>
<td>Foreign Affairs and Trade</td>
<td>Research</td>
<td>1,376</td>
<td>678</td>
</tr>
<tr>
<td>Industrial Relations</td>
<td>Research</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Industry, Science and Technology</td>
<td>Collaboration</td>
<td>2,629</td>
<td>2,949</td>
</tr>
<tr>
<td>Primary Industries and Energy</td>
<td>Land Management</td>
<td>80</td>
<td>19</td>
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<tr>
<td>Transport</td>
<td>Operating and Research</td>
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<td>20</td>
</tr>
<tr>
<td>Prime Minister and Cabinet</td>
<td>Cooperative Research Centres</td>
<td>2,475</td>
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</tr>
<tr>
<td>Social Security</td>
<td>Research</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Housing and Regional Development</td>
<td>Research</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Research and Scholarships</td>
<td>3,162</td>
<td>2,742</td>
</tr>
</tbody>
</table>

TOTAL COMMONWEALTH GOVERNMENT GRANTS $234,460 $220,144

The information provided in this note is only relevant to the University and so consolidated figures are not provided.
2.2 AMOUNTS PROVIDED

Revenue provided pursuant to the Higher Education Funding Act 1988 is reconciled to the amounts provided by the Commonwealth in respect of the reporting period as follows:

**Operating Purposes (excluding HECS)**

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant received in previous period:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>advance payment received in previous period</td>
<td>28,573</td>
<td>755</td>
</tr>
<tr>
<td>carry-over from previous period</td>
<td>(404)</td>
<td>308</td>
</tr>
<tr>
<td>sub-total amount received in previous period</td>
<td>28,169</td>
<td>1,063</td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>177,433</td>
<td>205,643</td>
</tr>
<tr>
<td>Less amount attributable to future period:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>advance payment received in respect of next period</td>
<td>16,033</td>
<td>28,573</td>
</tr>
<tr>
<td>under-expenditure in reporting period</td>
<td>2,854</td>
<td>(404)</td>
</tr>
<tr>
<td>sub-total amount attributable to future period</td>
<td>18,887</td>
<td>28,169</td>
</tr>
<tr>
<td>Grant provided in respect of this period</td>
<td>$186,715</td>
<td>$178,537</td>
</tr>
</tbody>
</table>

**LARGE RESEARCH GRANTS**

<table>
<thead>
<tr>
<th></th>
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<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant received in previous period:</td>
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<td></td>
</tr>
<tr>
<td>advance payment received in previous period</td>
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<td></td>
</tr>
<tr>
<td>carry-over from previous period</td>
<td>547</td>
<td></td>
</tr>
<tr>
<td>sub-total amount received in previous period</td>
<td>707</td>
<td></td>
</tr>
<tr>
<td>Grants received in this period</td>
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<td>3,301</td>
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<tr>
<td>Less amount attributable to future period:</td>
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<td></td>
</tr>
<tr>
<td>advance payment received in respect of next period</td>
<td>138</td>
<td>160</td>
</tr>
<tr>
<td>under-expenditure in reporting period</td>
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<td>547</td>
</tr>
<tr>
<td>sub-total amount attributable to future period</td>
<td>908</td>
<td>707</td>
</tr>
<tr>
<td>Grant provided in respect of this period</td>
<td>$3,284</td>
<td>$2,594</td>
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</table>

**SMALL RESEARCH GRANTS**

<table>
<thead>
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<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant received in previous period:</td>
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</tr>
<tr>
<td>advance payment received in previous period</td>
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<td></td>
</tr>
<tr>
<td>carry-over from previous period</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td>sub-total amount received in previous period</td>
<td>348</td>
<td></td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>935</td>
<td>949</td>
</tr>
<tr>
<td>Less amount attributable to future period:</td>
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<td></td>
</tr>
<tr>
<td>advance payment received in respect of next period</td>
<td>82</td>
<td>182</td>
</tr>
<tr>
<td>under-expenditure in reporting period</td>
<td>255</td>
<td>166</td>
</tr>
<tr>
<td>sub-total amount attributable to future period</td>
<td>337</td>
<td>348</td>
</tr>
<tr>
<td>Grant provided in respect of this period</td>
<td>$946</td>
<td>$601</td>
</tr>
</tbody>
</table>

The information provided in this note is only relevant to the University and so consolidated figures are not provided.
NOTES continued

<table>
<thead>
<tr>
<th>COLLABORATIVE RESEARCH GRANTS</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1994</td>
</tr>
<tr>
<td>$'000</td>
<td></td>
</tr>
<tr>
<td>Grant received in previous period</td>
<td></td>
</tr>
<tr>
<td>advance payment received in previous period</td>
<td></td>
</tr>
<tr>
<td>carry-over from previous period</td>
<td></td>
</tr>
<tr>
<td>sub-total amount received in previous period</td>
<td></td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>284</td>
</tr>
<tr>
<td>Less amount attributable to future period</td>
<td></td>
</tr>
<tr>
<td>advance payment received in respect of next period</td>
<td>137</td>
</tr>
<tr>
<td>under-expenditure in reporting period</td>
<td></td>
</tr>
<tr>
<td>sub-total amount attributable to future period</td>
<td>137</td>
</tr>
<tr>
<td>Grant provided in respect of this period</td>
<td>$147</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESEARCH INFRASTRUCTURE GRANTS</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1994</td>
</tr>
<tr>
<td>$'000</td>
<td></td>
</tr>
<tr>
<td>Grant received in previous period</td>
<td></td>
</tr>
<tr>
<td>advance payment received in previous period</td>
<td>79</td>
</tr>
<tr>
<td>carry-over from previous period</td>
<td>956</td>
</tr>
<tr>
<td>sub-total amount received in previous period</td>
<td>1,035</td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>2,036</td>
</tr>
<tr>
<td>Less amount attributable to future period</td>
<td></td>
</tr>
<tr>
<td>advance payment received in respect of next period</td>
<td>68</td>
</tr>
<tr>
<td>under-expenditure in reporting period</td>
<td>2,263</td>
</tr>
<tr>
<td>sub-total amount attributable to future period</td>
<td>2,331</td>
</tr>
<tr>
<td>Grant provided in respect of this period</td>
<td>$740</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INTERNATIONAL RECIPROCAL FELLOWSHIPS</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1994</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Grant received in previous period</td>
<td></td>
</tr>
<tr>
<td>advance payment received in previous period</td>
<td></td>
</tr>
<tr>
<td>carry-over from previous period</td>
<td></td>
</tr>
<tr>
<td>sub-total amount received in previous period</td>
<td></td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>58</td>
</tr>
<tr>
<td>Less amount attributable to future period</td>
<td></td>
</tr>
<tr>
<td>advance payment received in respect of next period</td>
<td></td>
</tr>
<tr>
<td>under-expenditure in reporting period</td>
<td>45</td>
</tr>
<tr>
<td>sub-total amount attributable to future period</td>
<td>45</td>
</tr>
<tr>
<td>Grant provided in respect of this period</td>
<td>$13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESEARCH FELLOWSHIP</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1994</td>
</tr>
<tr>
<td>$'000</td>
<td></td>
</tr>
<tr>
<td>Grant received in previous period</td>
<td></td>
</tr>
<tr>
<td>advance payment received in previous period</td>
<td>841</td>
</tr>
<tr>
<td>carry-over from previous period</td>
<td>104</td>
</tr>
<tr>
<td>sub-total amount received in previous period</td>
<td>945</td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>4,031</td>
</tr>
<tr>
<td>Less amount attributable to future period</td>
<td></td>
</tr>
<tr>
<td>advance payment received in respect of next period</td>
<td></td>
</tr>
<tr>
<td>under-expenditure in reporting period</td>
<td>317</td>
</tr>
<tr>
<td>sub-total amount attributable to future period</td>
<td>156</td>
</tr>
<tr>
<td>Grant provided in respect of this period</td>
<td>$4,503</td>
</tr>
</tbody>
</table>

The information provided in this note is only relevant to the University and so consolidated figures are not provided.
### POSTGRADUATE AWARDS

Grant received in previous period:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance payment received in previous period</td>
<td>667</td>
<td></td>
</tr>
<tr>
<td>Carry-over from previous period</td>
<td>280</td>
<td></td>
</tr>
<tr>
<td>Sub-total amount received in previous period</td>
<td>947</td>
<td></td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>3,375</td>
<td>4,417</td>
</tr>
</tbody>
</table>

Less amount attributable to future period:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance payment received in respect of next period</td>
<td>302</td>
<td>667</td>
</tr>
<tr>
<td>Under-expenditure in reporting period</td>
<td>432</td>
<td>280</td>
</tr>
<tr>
<td>Sub-total amount attributable to future period</td>
<td>734</td>
<td>947</td>
</tr>
</tbody>
</table>

Grant provided in respect of this period

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3,588</td>
<td>3,470</td>
</tr>
</tbody>
</table>

### POSTGRADUATE AWARDS (Industry)

Grant received in previous period:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance payment received in previous period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carry-over from previous period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total amount received in previous period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>132</td>
<td></td>
</tr>
</tbody>
</table>

Less amount attributable to future period:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance payment received in respect of next period</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Under-expenditure in reporting period</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Sub-total amount attributable to future period</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

Grant provided in respect of this period

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>103</td>
<td></td>
</tr>
</tbody>
</table>

### OVERSEAS POSTGRADUATE RESEARCH SCHOLARSHIPS

Grant received in previous period:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance payment received in previous period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carry-over from previous period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total amount received in previous period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>1,066</td>
<td>765</td>
</tr>
</tbody>
</table>

Less amount attributable to future period:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance payment received in respect of next period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under-expenditure in reporting period</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Sub-total amount attributable to future period</td>
<td>58</td>
<td></td>
</tr>
</tbody>
</table>

Grant provided in respect of this period

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,008</td>
<td>765</td>
</tr>
</tbody>
</table>

### SPECIAL OVERSEAS POSTGRADUATE FUND

Grant received in previous period:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance payment received in previous period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carry-over from previous period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total amount received in previous period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grants received in this period</td>
<td>33</td>
<td>43</td>
</tr>
</tbody>
</table>

Less amount attributable to future period:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance payment received in respect of next period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under-expenditure in reporting period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total amount attributable to future period</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grant provided in respect of this period

<table>
<thead>
<tr>
<th>Description</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33</td>
<td>43</td>
</tr>
</tbody>
</table>

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2.3 ACQUITTAL OF COMMONWEAL TH GOVERNMENT GRANTS

The following Commonwealth Government grants were under-expended in the reporting period:

Pursuant to the Higher Education Funding Act 1988:

<table>
<thead>
<tr>
<th>Grants available for this period</th>
<th>University 1994</th>
<th>University 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grantees</td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td>Operating purposes (including HECS)</td>
<td>206,743</td>
<td>203,889</td>
</tr>
<tr>
<td>Large Research Grants</td>
<td>4,054</td>
<td>3,284</td>
</tr>
<tr>
<td>Small Research Grants</td>
<td>1,201</td>
<td>946</td>
</tr>
<tr>
<td>Collaborative Research Grants</td>
<td>147</td>
<td>147</td>
</tr>
<tr>
<td>Research Infrastructure Grants</td>
<td>3,003</td>
<td>740</td>
</tr>
<tr>
<td>International Reciprocal Fellowships</td>
<td>58</td>
<td>13</td>
</tr>
<tr>
<td>Research Fellowships</td>
<td>4,659</td>
<td>4,503</td>
</tr>
<tr>
<td>Postgraduate Awards</td>
<td>4,020</td>
<td>3,588</td>
</tr>
<tr>
<td>Postgraduate Awards Industry</td>
<td>123</td>
<td>103</td>
</tr>
<tr>
<td>Overseas Postgraduate Research Scholarships</td>
<td>1,066</td>
<td>1,008</td>
</tr>
<tr>
<td>Special Overseas Postgraduate Fund</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Other Commonwealth Government Grants:</td>
<td>22,592</td>
<td>22,106</td>
</tr>
<tr>
<td>Human Services and Health</td>
<td>338</td>
<td>183</td>
</tr>
<tr>
<td>Employment, Education and Training</td>
<td>427</td>
<td>386</td>
</tr>
<tr>
<td>Defence</td>
<td>281</td>
<td>193</td>
</tr>
<tr>
<td>Environment, Sports and Territories</td>
<td>1,376</td>
<td>1,175</td>
</tr>
<tr>
<td>Industry, Science and Trade</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Industrial Relations</td>
<td>2,629</td>
<td>1,910</td>
</tr>
<tr>
<td>Primary Industries and Energy</td>
<td>80</td>
<td>51</td>
</tr>
<tr>
<td>Transport</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Prime Minister and Cabinet</td>
<td>2,475</td>
<td>1,904</td>
</tr>
<tr>
<td>Other</td>
<td>3,162</td>
<td>2,504</td>
</tr>
<tr>
<td></td>
<td>253</td>
<td>253</td>
</tr>
</tbody>
</table>

(1) All under-expenditure is to be carried forward except for $30,000 of under-expended Research Fellowships which represent refundable Research Support Grants.

The information provided in this note is only relevant to the University and so consolidated figures are not provided.

3. HIGHER EDUCATION CONTRIBUTION SCHEME

Higher Education Contribution Scheme revenue was collected by the University as follows during the reporting period:

<table>
<thead>
<tr>
<th>Source</th>
<th>University 1994</th>
<th>University 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received from the Higher Education Trust Fund</td>
<td>14,981</td>
<td>11,972</td>
</tr>
<tr>
<td>Received from students</td>
<td>2,192</td>
<td>1,759</td>
</tr>
<tr>
<td></td>
<td>$17,173</td>
<td>$13,731</td>
</tr>
</tbody>
</table>

The information provided in this note is only relevant to the University and so consolidated figures are not provided.
NOTES continued

4. STATE GOVERNMENT GRANTS

ACT Government grants for the following purposes were received by the University during the reporting period:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy for three nursing projects</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campbell High School music program</td>
<td>47</td>
<td>75</td>
<td>47</td>
<td>75</td>
</tr>
<tr>
<td>Services to the ACT</td>
<td>4,841</td>
<td>4,750</td>
<td>4,841</td>
<td>4,750</td>
</tr>
<tr>
<td>Federalism Research Centre</td>
<td>9</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support for 'Aids Art Exhibition'</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Project</td>
<td>2</td>
<td>14</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Support for promotion of Art Fair</td>
<td></td>
<td>8</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>ANU/TECH</td>
<td>3</td>
<td>4,847</td>
<td>4,910</td>
<td>4,847</td>
</tr>
<tr>
<td>Other State Government Grants</td>
<td>1,284</td>
<td>739</td>
<td>795</td>
<td>739</td>
</tr>
<tr>
<td></td>
<td>$6,197</td>
<td>$5,586</td>
<td>$5,705</td>
<td>$5,586</td>
</tr>
</tbody>
</table>

5. INVESTMENT INCOME

Dividends                                      | 7,944 | 5,808 | 7,944 | 5,808 |
Interest                                       | 25,984| 24,972| 15,614| 15,713|
Income from unit trusts                         | 907   | 1,091 | 907   | 1,091 |
Rentals from investment properties             | 6,575 | 8,388 | 6,575 | 8,388 |
Net foreign exchange gains & losses            | (56)  |       | (56)  |       |

Changes in net market value

<table>
<thead>
<tr>
<th>Investments held at balance date</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Convertible notes</td>
<td>(1,853)</td>
<td>761</td>
<td>(1,853)</td>
<td>761</td>
</tr>
<tr>
<td>Corporate bonds</td>
<td>(1,454)</td>
<td>210</td>
<td>(1,454)</td>
<td>210</td>
</tr>
<tr>
<td>Government and semi-government securities</td>
<td>(10,996)</td>
<td>3,443</td>
<td>(10,996)</td>
<td>3,443</td>
</tr>
<tr>
<td>Shares and share options</td>
<td>(15,797)</td>
<td>29,179</td>
<td>(15,797)</td>
<td>29,179</td>
</tr>
<tr>
<td>Properties</td>
<td>2,357</td>
<td>(2,875)</td>
<td>2,357</td>
<td>(2,875)</td>
</tr>
<tr>
<td>Units in unit trusts</td>
<td>(3,918)</td>
<td></td>
<td>(3,918)</td>
<td></td>
</tr>
<tr>
<td>Stapled securities</td>
<td>(1,376)</td>
<td></td>
<td>(1,376)</td>
<td></td>
</tr>
<tr>
<td>Overseas managed investment funds</td>
<td>(5,691)</td>
<td>7,890</td>
<td>(5,691)</td>
<td>7,890</td>
</tr>
<tr>
<td>Managed investment funds</td>
<td>(1,742)</td>
<td>1,827</td>
<td>(1,742)</td>
<td>1,827</td>
</tr>
</tbody>
</table>

Investments realised during the period

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate bonds</td>
<td>(828)</td>
<td>306</td>
<td>(828)</td>
<td>306</td>
</tr>
<tr>
<td>Properties</td>
<td>395</td>
<td></td>
<td>395</td>
<td></td>
</tr>
<tr>
<td>Government and semi-government securities</td>
<td>(1,683)</td>
<td>909</td>
<td>(1,683)</td>
<td>909</td>
</tr>
<tr>
<td>Shares and share options</td>
<td>384</td>
<td>733</td>
<td>384</td>
<td>733</td>
</tr>
<tr>
<td>Managed investment funds</td>
<td>28</td>
<td></td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Transferable certificate of deposits</td>
<td>(227)</td>
<td></td>
<td>(227)</td>
<td></td>
</tr>
<tr>
<td>Direct investment expenditure</td>
<td>(1,916)</td>
<td>(3,118)</td>
<td>(1,916)</td>
<td>(3,118)</td>
</tr>
<tr>
<td></td>
<td>$927</td>
<td>$75,634</td>
<td>($9,443)</td>
<td>$66,375</td>
</tr>
</tbody>
</table>
6. FEES AND CHARGES

Fees and charges were collected from the following sources during the reporting period:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing education</td>
<td>2,736</td>
<td>2,284</td>
<td>2,741</td>
<td>2,284</td>
</tr>
<tr>
<td>Full fee paying overseas students</td>
<td>9,207</td>
<td>9,601</td>
<td>9,250</td>
<td>9,601</td>
</tr>
<tr>
<td>Fees-approved post graduate award students</td>
<td>929</td>
<td>317</td>
<td>929</td>
<td>317</td>
</tr>
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7. OTHER REVENUE

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EXPENSES ATTRIBUTED TO FUNCTIONS

8. ACADEMIC ACTIVITIES

**Salary and related expenses**

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**Depreciation expense**

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**Other expenses**

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**TOTAL EXPENSES**

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<td><strong>Total</strong></td>
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9. LIBRARIES

Salary and related expenses

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Depreciation expense

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Other expenses

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TOTAL EXPENSES

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10. OTHER ACADEMIC SUPPORT SERVICES

Salary and related expenses

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<td>Non-academic staff salaries</td>
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Depreciation expense

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Other expenses

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TOTAL EXPENSES

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256
11. STUDENT SERVICES

**Salary and related expenses**

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**Depreciation expense**

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**Other expenses**

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**TOTAL EXPENSES**

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12. PUBLIC SERVICES

**Salary and related expenses**

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**Depreciation expense**

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<td>Campus buildings at cost</td>
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<td>Computing equipment</td>
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**Other expenses**

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**TOTAL EXPENSES**

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257
### 13. BUILDINGS AND GROUNDS

**Salary and related expenses**

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**Depreciation expense**

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**Other expenses**

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<tr>
<td>Miscellaneous operating expenses</td>
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**TOTAL EXPENSES**

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### 14. ADMINISTRATION AND OTHER GENERAL INSTITUTIONAL SERVICES

**Salary and related expenses**

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**Depreciation expense**

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<tr>
<td>Campus buildings at cost</td>
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<td>Campus buildings at valuation</td>
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<td>Research and teaching equipment</td>
<td>3</td>
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<td>Computing equipment</td>
<td>780</td>
<td>684</td>
<td>728</td>
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<td>Other equipment</td>
<td>182</td>
<td>318</td>
<td>142</td>
<td>286</td>
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**Other expenses**

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<tr>
<td>Site administration</td>
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<td>Consumables and services</td>
<td>7,885</td>
<td>7,596</td>
<td>7,629</td>
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<td>Travel, conferences and fieldwork</td>
<td>918</td>
<td>879</td>
<td>906</td>
<td>860</td>
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<td>Scholarships</td>
<td>13</td>
<td>37</td>
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<td>Miscellaneous operating expenses</td>
<td>12,872</td>
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**TOTAL EXPENSES**

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<td>$48,117</td>
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258
NOTES continued

15. OTHER

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<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Bad debts</td>
<td>60</td>
<td>58</td>
<td>60</td>
<td>58</td>
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<tr>
<td>Interest expense</td>
<td>832</td>
<td>444</td>
<td>832</td>
<td>444</td>
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<tr>
<td>Loss on disposal of assets</td>
<td>886</td>
<td>515</td>
<td>886</td>
<td>515</td>
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<tr>
<td>Provision for doubtful debts</td>
<td>57</td>
<td>(102)</td>
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Commonwealth Superannuation Account

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<tbody>
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<td>1994 $'000</td>
<td>1993 $'000</td>
<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>General administrative expenses</td>
<td>550</td>
<td>510</td>
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<td>510</td>
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<td>Pension payments</td>
<td>8,463</td>
<td>16,598</td>
<td>8,463</td>
<td>16,598</td>
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<tr>
<td>Provision for employee superannuation entitlements</td>
<td>(21,232)</td>
<td>47,484</td>
<td>(21,232)</td>
<td>47,484</td>
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<tr>
<td></td>
<td>($10,384)</td>
<td>$65,507</td>
<td>($10,384)</td>
<td>$65,507</td>
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16. SALARY RELATED EXPENSES

The following salary related expenses were incurred during the reporting period:

Contributions to superannuation and pension schemes:

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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1994 $'000</td>
<td>1993 $'000</td>
<td>1994 $'000</td>
<td>1993 $'000</td>
</tr>
<tr>
<td>Funded</td>
<td>18,168</td>
<td>20,820</td>
<td>17,909</td>
<td>20,523</td>
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<tr>
<td>Payroll tax</td>
<td>11,197</td>
<td>10,519</td>
<td>10,951</td>
<td>10,284</td>
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<tr>
<td>Workers compensation</td>
<td>1,486</td>
<td>1,684</td>
<td>1,456</td>
<td>1,656</td>
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<tr>
<td>Long service leave expense</td>
<td>2,288</td>
<td>4,096</td>
<td>2,273</td>
<td>4,085</td>
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<tr>
<td>Annual leave</td>
<td>5,990</td>
<td>5,771</td>
<td>5,730</td>
<td>5,609</td>
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<td></td>
<td>$39,129</td>
<td>$42,890</td>
<td>$38,319</td>
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17. ABNORMAL ITEMS

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<td>1994 $'000</td>
<td>1993 $'000</td>
<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Prior year adjustment to expenditure</td>
<td>820</td>
<td>820</td>
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<tr>
<td>Prior year adjustment to elimination entries</td>
<td>(1,155)</td>
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<td>Research expenditure written off</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>($524)</td>
<td></td>
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18. RESERVES

<table>
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<th>University</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>1994 $'000</td>
<td>1993 $'000</td>
<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Asset replacement</td>
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<td>1,808</td>
<td>1,889</td>
<td>1,808</td>
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<tr>
<td>Asset revaluation</td>
<td>506,634</td>
<td>22,985</td>
<td>505,265</td>
<td>21,616</td>
</tr>
<tr>
<td>Building</td>
<td>4,195</td>
<td>3,750</td>
<td>3,995</td>
<td>3,300</td>
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<tr>
<td>Capital development</td>
<td>199</td>
<td>199</td>
<td>199</td>
<td>199</td>
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<tr>
<td>Equipment</td>
<td>5,058</td>
<td>3,806</td>
<td>5,058</td>
<td>3,806</td>
</tr>
<tr>
<td>Project development</td>
<td>210</td>
<td>339</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research donations</td>
<td>462</td>
<td>328</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self insurance of dwellings and buildings</td>
<td>700</td>
<td>500</td>
<td>700</td>
<td>500</td>
</tr>
<tr>
<td>Long service leave</td>
<td>148</td>
<td></td>
<td>148</td>
<td></td>
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<tr>
<td></td>
<td>$519,495</td>
<td>$33,715</td>
<td>$517,254</td>
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### 18. RESERVES continued

**Movements in reserves**

#### Asset replacement

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<tr>
<td></td>
<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Balance at beginning of year</td>
<td>1,808</td>
<td>1,808</td>
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<tr>
<td>Transfer from retained surpluses</td>
<td>81</td>
<td>81</td>
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<tr>
<td>Balance at end of year</td>
<td>$1,889</td>
<td>$1,808</td>
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</table>

#### Asset revaluation

<table>
<thead>
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<th>University</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Balance at beginning of year</td>
<td>22,985</td>
<td>21,616</td>
</tr>
<tr>
<td>Revaluation increments on revaluation of Land</td>
<td>8,647</td>
<td>8,647</td>
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<td>Buildings</td>
<td>483,649</td>
<td>10,845</td>
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<td>Balance at end of year</td>
<td>$506,634</td>
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#### Building

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<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Balance at beginning of year</td>
<td>3,750</td>
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<tr>
<td>Transfer from retained surpluses</td>
<td>1,843</td>
<td>1,643</td>
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<td>Transfer to retained surpluses</td>
<td>(1,398)</td>
<td>(948)</td>
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<td>Balance at end of year</td>
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<td>$3,300</td>
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#### Capital development

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<tr>
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<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Balance at beginning of year</td>
<td>199</td>
<td>199</td>
</tr>
<tr>
<td>Balance at end of year</td>
<td>$199</td>
<td>$199</td>
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#### Equipment

<table>
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<tr>
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<td></td>
<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Balance at beginning of year</td>
<td>3,806</td>
<td>3,806</td>
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<tr>
<td>Transfer from retained surpluses</td>
<td>1,252</td>
<td>1,252</td>
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<tr>
<td>Transfer to retained surpluses</td>
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<td>(150)</td>
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<tr>
<td>Balance at end of year</td>
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#### Long service leave

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Balance at beginning of year</td>
<td>148</td>
<td>148</td>
</tr>
<tr>
<td>Transfer from retained surpluses</td>
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<td></td>
</tr>
<tr>
<td>Balance at end of year</td>
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<td>$148</td>
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#### Project development

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<tbody>
<tr>
<td></td>
<td>1994 $'000</td>
<td>1993 $'000</td>
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<tr>
<td>Balance at beginning of year</td>
<td>339</td>
<td>324</td>
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<tr>
<td>Transfer from retained surpluses</td>
<td>450</td>
<td>200</td>
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<td>Transfer to retained surpluses</td>
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<td>Balance at end of year</td>
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<td>$339</td>
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#### Research donations

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</thead>
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<td>1994 $'000</td>
<td>1993 $'000</td>
</tr>
<tr>
<td>Balance at beginning of year</td>
<td>328</td>
<td>286</td>
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<tr>
<td>Transfer from retained surpluses</td>
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<td>Balance at end of year</td>
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#### Self insurance of dwellings and buildings

<table>
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</tr>
</thead>
<tbody>
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<td>1994 $'000</td>
<td>1993 $'000</td>
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<td>Balance at beginning of year</td>
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<tr>
<td>Transfer from retained surpluses</td>
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<td>Balance at end of year</td>
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19. RECEIVABLES - CURRENT

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<td>(289)</td>
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<tr>
<td>Other debtors</td>
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<td>3,453</td>
</tr>
<tr>
<td>Advance payments and prepaid expenditure</td>
<td>7,812</td>
<td>7,812</td>
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<td>Loans</td>
<td>7,083</td>
<td>6,922</td>
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<td></td>
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<td></td>
<td>$22,342</td>
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20. INVESTMENTS - CURRENT

Investments at valuation (see note 1.5.2)

<table>
<thead>
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<th></th>
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<tr>
<td>Corporate bonds</td>
<td>8,155</td>
<td>8,155</td>
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<tr>
<td>Convertible notes</td>
<td>1,613</td>
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<td>Shares and share options</td>
<td>8,697</td>
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<td>Government and semi-government securities</td>
<td>1,433</td>
<td>1,433</td>
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Investments at cost

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<td>Corporate bonds</td>
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<tr>
<td>Debentures</td>
<td>919</td>
<td>919</td>
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<tr>
<td>Government and semi-government securities</td>
<td>2,033</td>
<td>2,033</td>
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<tr>
<td>Transferable certificate of deposits</td>
<td>9,344</td>
<td>9,344</td>
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<tr>
<td></td>
<td>13,324</td>
<td>13,324</td>
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Aggregate quoted market value at balance date of investments at cost

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<tr>
<td>Corporate bonds</td>
<td>1,031</td>
<td>1,031</td>
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<tr>
<td>Debentures</td>
<td>1,047</td>
<td>1,047</td>
</tr>
<tr>
<td>Government and semi-government securities</td>
<td>3,026</td>
<td>3,026</td>
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<tr>
<td>Transferable certificate of deposits</td>
<td>9,250</td>
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21. OTHER CURRENT ASSETS

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<tr>
<td>Incomplete project expenditure</td>
<td>1,538</td>
<td>1,538</td>
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<tr>
<td>Materials in store</td>
<td>2,875</td>
<td>5,130</td>
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$4,413 $12,495 $1,536 $1,536
### 22. RECEIVABLES - NON-CURRENT

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<th>1994 '000</th>
<th>1993 '000</th>
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</thead>
<tbody>
<tr>
<td>Loans</td>
<td></td>
<td></td>
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<td>$1,633</td>
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### 23. INVESTMENTS - NON-CURRENT

**Investments at valuation (see note 1.5.2)**

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<th>1994 '000</th>
<th>1993 '000</th>
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<tbody>
<tr>
<td>Convertible notes</td>
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<td>5,635</td>
<td>4,526</td>
<td>5,635</td>
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<td>Corporate bonds</td>
<td>8,099</td>
<td>15,232</td>
<td>8,099</td>
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<tr>
<td>Government and semi-government securities</td>
<td>70,890</td>
<td>75,079</td>
<td>70,890</td>
<td>75,079</td>
</tr>
<tr>
<td>Properties</td>
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<td>66,295</td>
<td>50,028</td>
<td>66,295</td>
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<tr>
<td>Shares and share options</td>
<td>111,111</td>
<td>127,334</td>
<td>111,009</td>
<td>127,329</td>
</tr>
<tr>
<td>Stapled securities</td>
<td>16,720</td>
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<td>16,720</td>
<td>18,062</td>
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<tr>
<td>Managed investment funds</td>
<td>5,978</td>
<td>7,501</td>
<td>5,978</td>
<td>7,501</td>
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<tr>
<td>Overseas managed investment funds</td>
<td>22,501</td>
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<td>22,501</td>
<td>28,155</td>
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<td></td>
<td>289,853</td>
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<td>289,751</td>
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**Investments at cost**

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<th>1994 '000</th>
<th>1993 '000</th>
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</thead>
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<tr>
<td>Corporate bonds</td>
<td>4,356</td>
<td>5,504</td>
<td>4,356</td>
<td>5,504</td>
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<tr>
<td>Debentures</td>
<td>6,328</td>
<td>4,246</td>
<td>6,328</td>
<td>4,246</td>
</tr>
<tr>
<td>Transferable certificate of deposits</td>
<td>10,393</td>
<td>14,094</td>
<td>10,393</td>
<td>14,094</td>
</tr>
<tr>
<td>Government and semi-government securities</td>
<td>5,946</td>
<td>7,868</td>
<td>5,946</td>
<td>7,868</td>
</tr>
<tr>
<td>Shares and share options</td>
<td>25</td>
<td>21</td>
<td>2,011</td>
<td>2,010</td>
</tr>
<tr>
<td>Other</td>
<td>471</td>
<td>456</td>
<td>471</td>
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<tr>
<td></td>
<td>27,519</td>
<td>32,189</td>
<td>29,505</td>
<td>34,178</td>
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</table>

**Aggregate quoted market value at balance date of investments at cost**

<table>
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<tr>
<th>Item</th>
<th>1994 '000</th>
<th>1993 '000</th>
<th>1994 '000</th>
<th>1993 '000</th>
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</thead>
<tbody>
<tr>
<td>Corporate bonds</td>
<td>4,230</td>
<td>5,835</td>
<td>4,230</td>
<td>5,835</td>
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<tr>
<td>Debentures</td>
<td>5,004</td>
<td>4,612</td>
<td>5,004</td>
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<tr>
<td>Transferable certificate of deposits</td>
<td>9,353</td>
<td>14,339</td>
<td>9,353</td>
<td>14,339</td>
</tr>
<tr>
<td>Government and semi-government securities</td>
<td>5,554</td>
<td>8,352</td>
<td>5,554</td>
<td>8,352</td>
</tr>
<tr>
<td>Shares and share options</td>
<td>27</td>
<td>24</td>
<td>2,027</td>
<td>2,024</td>
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<tr>
<td>Other</td>
<td>471</td>
<td></td>
<td>471</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$317,372</td>
<td>$375,482</td>
<td>$319,256</td>
<td>$377,466</td>
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</table>

**Maturity Dates**

<table>
<thead>
<tr>
<th>Item</th>
<th>later than 1 year but not later than 2 years</th>
<th>later than 2 years but not later than 5 years</th>
<th>later than 5 years</th>
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<tbody>
<tr>
<td>Convertible notes</td>
<td></td>
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<td>2,152</td>
</tr>
<tr>
<td>Corporate bonds</td>
<td>3,356</td>
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<td>8,099</td>
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<tr>
<td>Debentures</td>
<td>4,328</td>
<td>2,000</td>
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<tr>
<td>Government and Semi-Government Bonds</td>
<td>5,895</td>
<td>28,891</td>
<td>50,027</td>
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<td>Investment properties</td>
<td></td>
<td></td>
<td>5,978</td>
</tr>
<tr>
<td>Managed investment funds</td>
<td></td>
<td></td>
<td>22,501</td>
</tr>
<tr>
<td>Overseas managed investment funds</td>
<td></td>
<td></td>
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<tr>
<td>Shares and share options</td>
<td></td>
<td></td>
<td>16,720</td>
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<td>Stapled securities</td>
<td></td>
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<tr>
<td>Transferable certificates of deposit</td>
<td>748</td>
<td>9,646</td>
<td>471</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
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</table>
## 24. PROPERTY, PLANT & EQUIPMENT

<table>
<thead>
<tr>
<th></th>
<th>Consolidated 1994</th>
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<th>University 1994</th>
<th>University 1993</th>
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<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td><strong>Site infrastructure at cost</strong></td>
<td>36,447</td>
<td>39,478</td>
<td>36,447</td>
<td>39,478</td>
</tr>
<tr>
<td><strong>Campus buildings at cost</strong></td>
<td>14,673</td>
<td>131,411</td>
<td>13,784</td>
<td>131,411</td>
</tr>
<tr>
<td><strong>Accumulated depreciation</strong></td>
<td>(4,044)</td>
<td>(48,965)</td>
<td>(4,036)</td>
<td>(48,965)</td>
</tr>
<tr>
<td><strong>Accumulated building maintenance provision</strong></td>
<td>(2,740)</td>
<td>(2,820)</td>
<td>(2,740)</td>
<td>(2,820)</td>
</tr>
<tr>
<td><strong>Total Property, Plant &amp; Equipment</strong></td>
<td><strong>44,336</strong></td>
<td><strong>119,104</strong></td>
<td><strong>43,455</strong></td>
<td><strong>119,104</strong></td>
</tr>
<tr>
<td><strong>Land and dwellings at valuation</strong></td>
<td>70,647</td>
<td>71,341</td>
<td>64,897</td>
<td>65,591</td>
</tr>
<tr>
<td><strong>Accumulated depreciation</strong></td>
<td>(1,125)</td>
<td>(363)</td>
<td>(978)</td>
<td>(363)</td>
</tr>
<tr>
<td><strong>Campus buildings at valuation</strong></td>
<td>131,411</td>
<td>577</td>
<td>575,591</td>
<td>575,591</td>
</tr>
<tr>
<td><strong>Accumulated depreciation</strong></td>
<td>(7,249)</td>
<td>(7,249)</td>
<td>(7,249)</td>
<td>(7,249)</td>
</tr>
<tr>
<td><strong>Accumulated building maintenance provision</strong></td>
<td>(2,020)</td>
<td>(2,029)</td>
<td>(2,020)</td>
<td>(2,029)</td>
</tr>
<tr>
<td><strong>Total Property, Plant &amp; Equipment</strong></td>
<td><strong>2,992</strong></td>
<td><strong>65,526</strong></td>
<td><strong>630,241</strong></td>
<td><strong>63,776</strong></td>
</tr>
<tr>
<td><strong>Plant and equipment at cost</strong></td>
<td>160,373</td>
<td>146,079</td>
<td>160,275</td>
<td>146,193</td>
</tr>
<tr>
<td><strong>Plant and equipment at valuation</strong></td>
<td>991</td>
<td>991</td>
<td>991</td>
<td>991</td>
</tr>
<tr>
<td><strong>Accumulated depreciation</strong></td>
<td>(93,092)</td>
<td>(81,463)</td>
<td>(92,676)</td>
<td>(81,116)</td>
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<tr>
<td><strong>Accumulated depreciation</strong></td>
<td>(7,249)</td>
<td>(7,249)</td>
<td>(7,249)</td>
<td>(7,249)</td>
</tr>
<tr>
<td><strong>Accumulated building maintenance provision</strong></td>
<td>(2,020)</td>
<td>(2,029)</td>
<td>(2,020)</td>
<td>(2,029)</td>
</tr>
<tr>
<td><strong>Total Property, Plant &amp; Equipment</strong></td>
<td><strong>38,354</strong></td>
<td><strong>8,225</strong></td>
<td><strong>37,253</strong></td>
<td><strong>8,225</strong></td>
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</table>

### ACQUISITIONS AND DISPOSALS

<table>
<thead>
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<th>Consolidated 1993</th>
<th>University 1994</th>
<th>University 1993</th>
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<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td><strong>Campus buildings at cost</strong></td>
<td>14,673</td>
<td>13,784</td>
<td>900</td>
<td>1,592</td>
</tr>
<tr>
<td><strong>Land and dwellings at valuation</strong></td>
<td>900</td>
<td>1,592</td>
<td>900</td>
<td>1,592</td>
</tr>
<tr>
<td><strong>Campus buildings at valuation</strong></td>
<td>1,806</td>
<td>1,806</td>
<td>20,715</td>
<td>6,633</td>
</tr>
<tr>
<td><strong>Plant and equipment at cost</strong></td>
<td>20,927</td>
<td>6,633</td>
<td>20,927</td>
<td>6,633</td>
</tr>
<tr>
<td><strong>Works of art and rare library materials at cost or valuation</strong></td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td><strong>Total Acquisitions &amp; Disposals</strong></td>
<td><strong>38,354</strong></td>
<td><strong>8,225</strong></td>
<td><strong>37,253</strong></td>
<td><strong>8,225</strong></td>
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</tbody>
</table>

### 25. OTHER NON-CURRENT ASSETS

<table>
<thead>
<tr>
<th></th>
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<th>Consolidated 1993</th>
<th>University 1994</th>
<th>University 1993</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td><strong>Deferred research and development costs</strong></td>
<td>554</td>
<td>617</td>
<td>2,914</td>
<td>2,914</td>
</tr>
<tr>
<td><strong>Research and development funding</strong></td>
<td>26,580</td>
<td>16,231</td>
<td>73,070</td>
<td>73,070</td>
</tr>
<tr>
<td><strong>Technology licence fund accrued income</strong></td>
<td>73,070</td>
<td>73,070</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Technology licences fund cash investment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Other Non-Current Assets</strong></td>
<td><strong>$100,204</strong></td>
<td><strong>$92,832</strong></td>
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</tr>
</tbody>
</table>
## 26. CREDITORS - CURRENT

<table>
<thead>
<tr>
<th></th>
<th>Consolidated</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td>Accrued expenses</td>
<td>5,295</td>
<td>13,304</td>
</tr>
<tr>
<td>Income in advance *</td>
<td>42,550</td>
<td>53,856</td>
</tr>
<tr>
<td>Other creditors</td>
<td>6,802</td>
<td>5,130</td>
</tr>
<tr>
<td>Trade creditors</td>
<td>8,346</td>
<td>6,424</td>
</tr>
<tr>
<td></td>
<td><strong>$62,193</strong></td>
<td><strong>$78,714</strong></td>
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</tbody>
</table>

* Income in advance includes an amount of $14,696,408 for special purpose grants (1993 $14,210,644)

## 27. PROVISIONS - CURRENT

<table>
<thead>
<tr>
<th></th>
<th>Consolidated</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td>Employee superannuation entitlements</td>
<td>10,627</td>
<td>16,992</td>
</tr>
<tr>
<td>Employee leave entitlements</td>
<td>9,317</td>
<td>8,371</td>
</tr>
<tr>
<td></td>
<td><strong>$19,944</strong></td>
<td><strong>$25,363</strong></td>
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</table>

## 28. OTHER CURRENT LIABILITIES

<table>
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<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td>Incomplete project revenue</td>
<td>3,822</td>
<td>6,804</td>
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<tr>
<td>Research and development advance funding</td>
<td>2,875</td>
<td>6,151</td>
</tr>
<tr>
<td></td>
<td><strong>$6,697</strong></td>
<td><strong>$12,955</strong></td>
</tr>
</tbody>
</table>

## 29. PROVISIONS - NON-CURRENT

<table>
<thead>
<tr>
<th></th>
<th>Consolidated</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td>Employee leave entitlements</td>
<td>24,980</td>
<td>25,271</td>
</tr>
<tr>
<td></td>
<td><strong>$331,243</strong></td>
<td><strong>$346,400</strong></td>
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## 30. OTHER NON-CURRENT LIABILITIES

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td>Income in advance</td>
<td>3,128</td>
<td>3,051</td>
</tr>
<tr>
<td>Licences and royalties</td>
<td>97,854</td>
<td>87,667</td>
</tr>
<tr>
<td>Research and development advance funding</td>
<td>2,982</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>$100,982</strong></td>
<td><strong>$93,700</strong></td>
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</table>
31. STATEMENT OF CASH FLOWS

31.1 Reconciliation of Cash

Cash balance comprises

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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash on hand</td>
<td>60</td>
<td>56</td>
<td>60</td>
<td>56</td>
</tr>
<tr>
<td>Bank</td>
<td>79</td>
<td>4,335</td>
<td>(52)</td>
<td>4,280</td>
</tr>
<tr>
<td>Deposits at call</td>
<td>65,622</td>
<td>62,086</td>
<td>62,301</td>
<td>58,712</td>
</tr>
<tr>
<td></td>
<td>$65,761</td>
<td>$66,477</td>
<td>$62,309</td>
<td>$63,048</td>
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</table>

31.2 Reconciliation of Operating Result to Net Cash Flows from Operations

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</tr>
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<tr>
<td>Operating result</td>
<td>7,775</td>
<td>6,189</td>
</tr>
<tr>
<td>Depreciation and amortisation of property, plant and equipment</td>
<td>25,205</td>
<td>19,200</td>
</tr>
<tr>
<td>Building maintenance</td>
<td>(89)</td>
<td>(462)</td>
</tr>
<tr>
<td>Provision for doubtful debts</td>
<td>57</td>
<td>102</td>
</tr>
<tr>
<td>Provision for employee entitlements</td>
<td>8,147</td>
<td>1,560</td>
</tr>
<tr>
<td>Provision for employee superannuation</td>
<td>1,620</td>
<td>47,484</td>
</tr>
<tr>
<td>Provision for purchase of technology licence</td>
<td>10,187</td>
<td>997</td>
</tr>
<tr>
<td>Revenue received from government</td>
<td>(234,156)</td>
<td>(228,293)</td>
</tr>
<tr>
<td>Net (gain)/loss from the sale of investments</td>
<td>1,967</td>
<td>(2,010)</td>
</tr>
<tr>
<td>Increase/(Decrease) in operating assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receivables</td>
<td>(17,450)</td>
<td>349</td>
</tr>
<tr>
<td>Inventories</td>
<td>2,497</td>
<td>(2,636)</td>
</tr>
<tr>
<td>Assets (Revaluation)</td>
<td>34,236</td>
<td>(36,517)</td>
</tr>
<tr>
<td>Other</td>
<td>2,005</td>
<td>(3,129)</td>
</tr>
<tr>
<td>Increase/(Decrease) in operating liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creditors</td>
<td>(37,211)</td>
<td>11,088</td>
</tr>
<tr>
<td>Other</td>
<td>820</td>
<td>868</td>
</tr>
<tr>
<td>Net cash flows from operating activities</td>
<td>($194,390)</td>
<td>($185,414)</td>
</tr>
</tbody>
</table>
NOTES continued

32. LAND

Australian Capital Territory

The major teaching and research facilities of the University are located on the Acton Campus site of 141 hectares and the Mt Stromlo site of 81 hectares. These sites are provided free of charge and held on lease in perpetuity. The use of this land is restricted to University activities. The value has not been assessed nor been brought to account.

Negotiations have commenced since the amalgamation of the Canberra Institute of the Arts with the University on 1 January 1992 to transfer to the University on lease in perpetuity 4.443 hectares of land occupied by the Institute. The value has not been assessed nor brought to account.

The University occupies other sites of 225 hectares within the Australian Capital Territory on varying leasehold terms and conditions; likewise, these sites have not been brought to account.

New South Wales

The University owns 148 hectares of freehold land at Coonabarabran on which is located the Siding Spring Observatory and a further 3 hectares is held by the University at Coonabarabran under permissive occupancy. The value has not been assessed nor been brought to account.

The University owns 349 hectares of freehold land at Kioloa and 41 hectares of freehold land at Mongarlowe given to the University by individual donors for teaching and research purposes. The value of this land has been assessed and brought to account.

Northern Territory

The University occupies 26,500 hectares near Tennant Creek held on lease in perpetuity on which is located the Warramunga Seismic Station. The value has not been assessed nor been brought to account.

The University owns 4 hectares of freehold land at Darwin on which is located field research headquarters. The value has not been assessed nor brought to account.

Fiji

The University occupies 1 hectare at Suva held on a 75 year lease from November 1965 which is used for field research purposes. The value of this site has not been assessed nor brought to account.

Papua-New Guinea

The University occupies 2 hectares within Papua-New Guinea held on varying leasehold arrangements for field research purposes. The value has not been assessed nor brought to account.
33. COMMITMENTS FOR EXPENDITURE NOT BROUGHT TO ACCOUNT AND BORROWINGS

Material capital expenditure contracted for and payable:

(a) not later than one year; 5,252 8,442 5,252 8,442
(b) later than one year but not later than two years; 2,000 2,000
(c) later than two years but not later than five years after the end of the financial year.

Total capital expenditure commitments $5,252 $10,442 $5,252 $10,442

Material lease and hire expenditure contracted for and payable:

(a) not later than one year; 239 70 213 50
(b) later than one year but not later than two years; 58 39 58 39
(c) later than two years but not later than five years after the end of the financial year.

Total lease and hire expenditure commitments $297 $118 $271 $98

Borrowings - due date for repayment of principle:

(a) not later than one year; 4,000 4,000
(b) later than one year but not later than two years; 8,000 4,001 8,000 4,001
(c) later than two years but not later than five years after the end of the financial year.

Total repayment of principle $12,000 $4,001 $12,000 $4,001

34. REMUNERATION OF EXECUTIVES

Fees are not payable to members of Council. Employees of the University who are members of Council do not receive remuneration for Council service other than their salaries. Directors of ANUTECH Pty Ltd, other than the Managing Director and the Manager, Technological Marketing Life Sciences Division, do not receive remuneration for their services.

The number of staff of the University whose remuneration falls within the following bands in excess of $100,000 are

<table>
<thead>
<tr>
<th>Remuneration Range</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>$100,000 - $109,999</td>
<td>42</td>
<td>36</td>
</tr>
<tr>
<td>$110,000 - $119,999</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>$120,000 - $129,999</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>$130,000 - $139,999</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>$140,000 - $149,999</td>
<td>3</td>
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<td>$150,000 - $159,999</td>
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<td>$170,000 - $179,999</td>
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<td>$180,000 - $189,999</td>
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<td>1</td>
</tr>
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<td>$190,000 - $199,999</td>
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<td>1</td>
</tr>
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<td>$200,000 - $209,999</td>
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<td>1</td>
</tr>
<tr>
<td>$209,999 - $219,999</td>
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<td>1</td>
</tr>
</tbody>
</table>

35. SUPERANNUATION COMMITMENTS

35.1 Commonwealth Superannuation Account

The University maintains an account, on conditions approved by the Treasurer of the Commonwealth, to meet the employer's liability to the Commonwealth Superannuation Scheme.

Transfers are made to the account each fortnight in accordance with a predetermined formula approved by Council and based on advice from the Commonwealth Actuary. The University's contribution rate in 1994 was 14 per cent of eligible employee superannuable salaries. The University's 1994 contribution was $4,333,633. Pensions are met on an emerging cost basis and paid to the Commonwealth Superannuation Administration. Pension payments amounted to $10,518,572 for 1994.

The actuarial assessment undertaken as at 30 June 1993 indicated that sufficient funds were available to meet all benefits that would have been payable under the plan in the event of termination of the plan and voluntary or compulsory termination of the employment of each employee who contributes to the Commonwealth Superannuation Scheme.

The financial transactions and balances of the Commonwealth Superannuation Account have been included with the accounts of the University.

35.2 Supplementary Superannuation Scheme

The University administers a Supplementary Superannuation Scheme for academic and general staff. The Scheme is being maintained only for retired members on benefits. The actuary has advised that the Fund was in a sound financial state as at 30 June 1993. The total accumulated funds of the scheme at 31 December 1994 were $20,900,875 comprising $20,943,995 in investments and other assets and $43,120 in liabilities. No contributions were made by the University to the scheme during 1994. Pension payments for 1994 amounted to $1,543,116.

35.3 Superannuation Scheme for Australian Universities

New continuing staff members employed by the University since 1 April 1983 have been required to join the Superannuation Scheme for Australian Universities, which is managed independently of the University. The University contributes to the Scheme at the rate of 14 per cent of members' salaries. During 1994, the University's contributions were $13,702,924.

35.4 Public Sector Superannuation Scheme

The University has a number of employees who are members of the Public Sector Superannuation Scheme to which the University contributes at the rate of 12.4 per cent of members salaries. During 1994, the University's contributions amounted to $197,131.

35.5 Employee Non Contributory Productivity Superannuation Schemes

The University's contributions for employees who are contributors to the Commonwealth Superannuation and Public Sector Superannuation Schemes are paid to the Commonwealth Superannuation Administration. During 1994 the University's contributions were $793,000 and $44,648 respectively.

The University pays contributions for eligible employees, other than employees who are contributors to the Commonwealth Superannuation and Public Sector Superannuation Schemes, to the Tertiary Education Superannuation Scheme. The University's contributions in 1994 were $3,833,456.
NOTES continued

36. TRUST FUNDS

Endowments are received by the University to fund scholarships, prizes and lectures. The balance of the funds at 31 December 1994 was $40,169.

37. CONTINGENT LIABILITIES

Guarantees of $98,835 have been given to the University Co-operative Credit Society for loans made to needy students.

The University is a defendant in six legal actions. The aggregate value of four of these claims is $482,000. The aggregate value of two of the claims has yet to be determined.

The University has given a guarantee, on behalf of ANUTECH, for funds held in trust by ANUTECH for prepaid course fees which are subject to the Education Services for Overseas Student Act and the associated Tuition Assurance Scheme regulations. No liability is expected to arise.

ANUTECH has guaranteed $2,250,000 to an unrelated party in return for advance funding of projects based on conditions of the agreements. These guarantees are secured by term deposits. No liability is expected to arise.

ANUTECH has guaranteed $60,000 to an unrelated party as security for advance payments by overseas students for the English language courses. No liability is expected to arise.

ANUTECH is involved in three legal actions, two of which are related to one company. These actions arise from contracts within ANUTECH's normal course of business. Legal advice in all cases make the directors confident that ANUTECH's position is strong. In respect of each action ANUTECH expects to be indemnified at least in part by its insurers.

38. AUDITORS' REMUNERATION

Fees for audit services provided to the University by the Australian National Audit Office are estimated to be $227,000. Fees amounting to $23,000 for ANUTECH Pty Ltd and $157,000 for the University, were paid or are due and payable to Ernst and Young, Chartered Accountants, for audit and other services provided.

39. COOPERATIVE RESEARCH CENTRES

The University is receiving Commonwealth Funding under the Cooperative Research Centres Program for the establishment of the following Cooperative Research Centres:

Plant Sciences - a program for collaboration in research and development in the plant sciences with CSIRO and Biochem Pacific Pty Ltd to facilitate and undertake specific research and development and educational programs in plant biology. The University's contribution (representing 48 per cent of the total of the partners' contributions) in the form of staff and equipment resources will have a total approximate value of $10,800,000 over seven years from 1991. The Centre is administered by the University.
NOTES continued

39. COOPERATIVE RESEARCH CENTRES continued

Robust and Adaptive Systems - a joint venture with CSIRO and the Sciences and Technology Organisation of the Department of Defence. Management Services are provided by ANUTECH. The activities of the Centre are to conduct scientific and engineering research into Robust and Adaptive Signal Processing and Control Systems, to conduct engineering research training at several levels to meet perceived national needs and to provide a basis for development, commercialisation and technology transfer of the research conducted at the Centre. The University's contribution (representing 48 per cent of the total of the partners' contributions) in the form of staff and equipment resources will total $5,202,000 over six years from 1991.

Australian Photonics - cooperative research with five research organisations, seven business partners and two government instrumentalities on the development of optical waveguide devices and photonic networks and systems for communications, information processing, sensing and industrial applications. The University's contribution (representing 8 per cent of the total of the partners' contributions) in the form of staff and equipment resources will total $3,066,000 over seven years from 1991. The Centre is administered by the University of Sydney.

Biological Control of Vertebrate Pest Populations - a cooperative research centre with the core participants being the CSIRO, the University, Agricultural Protection Board of Western Australia and the Department of Conservation and Land Management. The Centre is developing a new method of biological control that will reduce the birth rate of feral pests. The University's in kind contribution (representing 11 per cent of the total of the partners' contributions) will be $3,512,000 over seven years from 1993. The centre is administered by the CSIRO.

Advanced Computational Systems - an unincorporated collaborative venture with CSIRO, Digital Equipment Corporation, Fujitsu and Sun Microsystems. The mission of the centre is to establish an internationally competitive research capability in the area of high performance advanced computational systems. The University's contribution (representing 27 per cent of the total of the partners' contributions) in the form of staff and equipment resources will total $11,353,700 over seven years from 1993. The Centre is administered by the University.

Research Data Network - a collaborative venture whose participants include the CRC for Advanced Computational Systems, Monash University, CSIRO, the CRC for Distributed Systems Technology, University of Queensland, AVCC Siemens Ltd. and Telstra Corporation Limited. The Centre will conduct research and education programs in areas relating to communications network technologies, applications and services. It will also support network infrastructure development, including the upgrade of the Australian Academic and Research Network, AARNet. The University's contribution (representing 16 per cent of the total of the partners' contributions) in the form of staff and equipment resources will total $1,533,546 over five years from 1994. The Centre is administered by Monash University.

Costs for all Cooperative Research Centres are expensed as incurred except where future benefits are expected beyond reasonable doubt to exceed these costs. In 1994 all costs were expensed.

It was announced in 1995 that the Australian National University will be party to two other Cooperative Research Centres: Australian Landscape Evolution and Mineral Exploration and The Sustainable Development of Tropical Savannas. It is expected that these Centres will commence operation in early 1995.
NOTES continued

40. SYNDICATED RESEARCH AND DEVELOPMENT

40.1 Syndicates 1 and 2

In December 1990 ANUTECH Pty Ltd entered into agreements with two syndicated research and development partnerships worth a total of $50,000,000.

Under the terms of the agreements the partnerships agreed to:

- provide funds for research for three years 1991-1993;
- acquire technology licences from ANUTECH Pty Ltd for $34,600,000.

The $34,600,000 received from the sale of the technology licences has been placed into a technology sinking fund (Note 25) along with accrued income earned (Note 25) and the profit component from the research and development for the duration of the agreements.

The agreements with each partnership contain a put option which gives each partnership the option of selling the technology licences back to ANUTECH Pty Ltd for a consideration equal to the accumulated balance of the technology sinking fund. A provision to purchase the technology licences has therefore been recorded (Note 30).

The partnerships are able to exercise their options during the period 31 January 1998 to 31 January 2003. ANUTECH Pty Ltd has entered into agreements with two indemnifiers who have agreed to meet any shortfall on the put option payment should either of the partnerships exercise their option.

40.2 Syndicate 3

In June 1992 ANUTECH Pty Ltd entered into agreements with a syndicated research and development partnership worth a total of $51,500,000.

Under the terms of the agreement the partnership agreed to:

- provide funds for research for three years 1992-1995. The research funds for 1995 are disclosed in Notes 21, 25, 28 and 30;
- acquire technology licences from ANUTECH Pty Ltd for $33,800,000.

The $33,800,000 received from the sale of the technology licences has been placed into a technology sinking fund (Note 25) along with accrued income earned.

The agreement with the partnership contains a put option which gives the partnership the option of selling the technology licence back to ANUTECH Pty Ltd for a consideration equal to the accumulated balance of the technology sinking fund. A provision to purchase the technology licences has therefore been recorded (Note 30).

The partnership is able to exercise their option on 30 June 1997. ANUTECH Pty Ltd has entered into an agreement with an indemnifier who has agreed to meet any shortfall on the put option payment should the partnership exercise their option.
41. RELATED PARTY DISCLOSURES

The University enters into a number of transactions for the provision of goods and services under normal commercial terms and conditions with student organisations based on campus.

Members of Council during the year were:

Sir Geoffrey Yeend (deceased 6 October 1994)
The Honourable Professor PE Baume (from 1 December 1994)
Miss PM Griffin
Professor RD Terrell
Professor JW White (to 17 August 1994)
Professor BLN Kennett (from 18 August 1994)
Professor DM Griffin (to 31 August 1994)
Professor RJ Campbell (from 1 September 1994)
Ms C Wyndham (to 30 November 1994)
Mr H McPherson (from 1 December 1994)
Mr S Banerjee (to 25 May 1994)
Mr DT Atkins (from 26 May 1994)
Mrs RM Gibson
Mr IF Grigg
Dr RE Klugman
Senator MA Colston
Mr PM Ruddock
Justice Mary M Finn (from 20 May 1994)
Mr JV Townsend (from 20 May 1994)
Dr DF Nicholls (to 29 September 1994)
Professor MC Ricklefs (from 30 September 1994)
Professor AW Rodgers (to 29 September 1994)
Professor ALJ Beckwith (from 30 September 1994)
Mr IR Hancock (to 29 September 1994)
Professor IR Wright (from 30 September 1994)
Dr MP Edmunds
Mr DH Solomon
Ms KD Ord
Mr JF Muir

42. SEGMENT INFORMATION

The Economic Entity operates predominantly in the Australian Capital Territory for the purpose of teaching and research.

43. SUBSEQUENT EVENTS

The University will terminate its Supplementary Superannuation Scheme on 30 June 1995 by transferring the pensioners in the Scheme together with the appropriate value of assets to the Superannuation Scheme for Australian Universities. The estimated actuarial liability of the fully indexed pensions payable under the Supplementary Superannuation Scheme as for 1 July 1995 is $13,258,553. The residual surplus in the Scheme, estimated to be $7,642,322 at 31 December 1994, will be transferred to the University.
ANUTECH Pty Limited

A.C.N. 008 548 650
(Incorporated in the Australian Capital Territory)

Audited Financial Statements
for the year ended
31 December 1994

Contents

Statutory Reports and Accounts

Director’s Report
Independent Auditor’s report
Directors’ statement
Profit and Loss account
Balance sheet
Cash Flow Statement
Notes to and forming part of the Accounts
The directors present their report on the results of ANUTECH Pty Limited for the financial year ended 31 December 1994, and the state of affairs of the Company at that date.

The directors in office at the date of this report are:

Mr Ronald Bruce Töpfer (Chairman)
Professor Allan Douglas Barton
Mrs Sylvia Iris Boyle
Professor John Henry Carver
Mr John Wallace Morphett
Mr James Fulton Muir
Professor Charles Barry Osmond
Professor Ian Gordon Ross
Professor Susan Wyber Serjeantson
Mr Ian William Shedden
Professor Robin Barrington Stanton

The principal activities of the Company during the year were to undertake the marketing of the research and experimental work of The Australian National University, and there was no significant change in the nature of these activities during that period.

The operating profit of ANUTECH Pty Limited for the year ended 31 December 1994 was $752,994 ($998,188 in 1993). Operating profit decreased from previous year due to the write off of research and development expenditure, and lower interest rates on cash on deposit.

Donations totalling $425,000 ($320,000 in 1993) were made to The Australian National University.

ANUTECH’s total revenue for the year was $43.2m, compared with $43.6m the previous year.

In the difficult economic environment of 1994, ANUTECH has been able to maintain its high level of activity and profitability in its operating divisions, highlighting ANUTECH’s successful methods of operation in providing efficient and effective services to our customers.

Highlights of the year included a significant increase over the previous year’s activity in national and international consultancies undertaken through the Social Sciences, Forestry and Environment and Life Sciences Divisions, reflected in a doubling of consultancy revenue for 1994.

The Big Dish-based solar thermal power system moved a significant step towards commercialisation in June with its first successful generation of electricity which fed into the East Coast grid.

Australian Scientific Instruments concluded an excellent year with international sales of a SHRIMP II and a MASIF instrument to Japan, and a SHRIMP RG to a US consortium, including Stanford University.

New and established courses from Forestry and Environment and Social Sciences and Training Divisions were well-patronised, the new Geographic Information Systems (GIS) course being particularly well received.

Finally, the ANUTECH English Language Centre received full accreditation from the national accrediting body, NEAS.

In summary 1994 has been another successful year for ANUTECH in achieving its goals and objectives, particularly in benefiting The Australian National University through research funding, and providing donations.
INCOME TAX
The Company is exempt from income tax under Section 23 of the Income Tax Assessment Act 1936.

DIVIDENDS
Under its Memorandum and Articles of Association the Company is precluded from paying a dividend to the members.

SIGNIFICANT CHANGES IN THE STATE OF AFFAIRS
There were no significant changes in the state of affairs of the Company.

SIGNIFICANT EVENTS AFTER BALANCE DATE
There are no matters or circumstances that have arisen since the end of the financial year that have significantly affected or which may significantly affect the Company.

LIKELY DEVELOPMENTS AND EXPECTED RESULTS
ANUTECH foresees 1995 as another difficult year and anticipates decreased net results to those of 1994.

PARTICULARS OF DIRECTORS

<table>
<thead>
<tr>
<th>Name of Director</th>
<th>Qualifications, Experience and Special Responsibilities</th>
<th>Interest in Shares</th>
<th>Interest in Contracts</th>
</tr>
</thead>
</table>
| Allan Douglas BARTON | B.Com, PhD, FCPA  
Professor of Accounting (ANU)  
Treasurer ANU 1984 - 92  
Pro Vice-Chancellor (Finance and Fabric) of the ANU 1992 - present  
Director since 1984 | Nil | Nil |
| Sylvia Iris BOYLE | BA (ANU)  
Grad. Cert. Mngt. (Monash, Mt. Eliza)  
Manager Social Science Division  
Director since September 1994 | Nil | Nil |
| John Henry CARVER | AM, MSc(Syd), PhD ScD (Camb), FAIP, FAA, FTS  
Emeritus Professor  
Past Director Research School of Physical Sciences and Engineering (ANU)  
Director Institute of Advanced Studies (ANU), 1994  
Foundation Director 1979, resigned December 1991, re-appointed April 1994 | Nil | Nil |
### PARTICULARS OF DIRECTORS

<table>
<thead>
<tr>
<th>Name of Director</th>
<th>Qualifications, Experience and Special Responsibilities</th>
<th>Interest in Shares</th>
<th>Interest in Contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Wallace MORPHEITT</td>
<td>BE, OPEng, FIE, FAIM, FAICD Company Secretary 1979-85 Chief Executive 1982-87 Managing Director since March 1987</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>James Fulton MUIR A.O.</td>
<td>Member ANU Council and Chairman of ANU Finance Committee Director of WIN Television Past Chairman Canberra Development Board Past Chief Manager for ACT Westpac Banking Corporation Director since October 1988</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Charles Barry OSMOND</td>
<td>BSc., MSc (UNE), PhD (Adel.) Director of Research School of Biological Sciences (ANU) Director since 1992</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Ian Gordon ROSS A.O.</td>
<td>MSc, PhD, FRACI, FAA Emeritus Professor Deputy Vice-Chancellor of the ANU 1977-1989 Pro Vice-Chancellor of the ANU 1989 -1990 Past Chairman Australian Research Grants Committee Foundation Director since 1979</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Ian William SHEDDEN</td>
<td>BE, FTS, HonFIEAust, FIChemE, 37 years commercial experience in engineering contracting and technology development Director since March 1987</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Susan Wyber SERJEANTSON</td>
<td>BSc (NSW), PhD (Hawaii) Director Institute of Advanced Studies and Deputy Vice-Chancellor of the ANU 1994 - present Director since January 1994</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Robin Barrington STANTON</td>
<td>BE, PhD (NSW) Dean Faculty of Engineering and Information Technology (ANU) Director since January 1994</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Ronald Bruce TOPFER</td>
<td>Barrister and Solicitor ACT, NSW and Victoria Senior Partner, Mallesons Stephen Jaques 1981 - 89 Past Chairman Valuation Review Board Past member ACT Law Reform Commission Grazier Director since September 1990 Chairman of Board since August 1991</td>
<td>Nil</td>
<td>Nil</td>
</tr>
</tbody>
</table>
SHARE OPTIONS

No options for shares in the Company have been issued during the financial year and no options remain unexercised.

DIRECTOR'S BENEFITS

Since the end of the previous financial year no director of the Company has received or become entitled to receive any benefit, other than a benefit included in the aggregate amount of emoluments received or due and receivable by the directors shown in the consolidated accounts, by reason of a contract entered into by the Company or an entity that the Company controlled or a body corporate that was related to the Company when the contract was made or when the director received, or become entitled to receive the benefit, with:

- a director; or
- a firm of which a director is a member; or
- an entity in which a director has a substantial financial interest

ROUNDING

The amounts contained in this report have been rounded off under the option available to the Company under S311 and regulation 3.6.05 of the Corporations Law and Regulations.

Signed in accordance with a resolution of the directors.

A.D.Barton
Director

Canberra, 22 March 1995
Independent Auditor's Report

To the Members
of Anutech Pty Limited

Scope

We have audited the financial statements of Anutech Pty Limited for the financial year ended 31 December 1994 as set out on pages 7 to 20, including the Statement by Directors. The company's Directors are responsible for the preparation and presentation of the financial statements and the information they contain. We have conducted an independent audit of these financial statements in order to express an opinion on them to the members of the company.

Our audit has been conducted in accordance with Australian Auditing Standards to provide reasonable assurance as to whether the financial statements are free of material mis-statement. Our procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the financial statements, and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion as to whether, in all material respects, the financial statements are presented fairly in accordance with Australian accounting standards and statutory requirements, so as to present a view which is consistent with our understanding of the company's financial position, the results of its operations and its cash flows.

The audit opinion expressed in this report has been formed on the above basis.

Audit Opinion

In our opinion, the financial statements of Anutech Pty Limited are properly drawn up:

(a) so as to give a true and fair view of:
   (i) the company's state of affairs as at 31 December 1994, and its profit and cash flows for the financial year ended on that date; and
   (ii) the other matters required by Divisions 4, 4A and 4B of Part 3.6 of the Corporations Law to be dealt with in the financial statements;

(b) in accordance with the provisions of the Corporations Law; and

(c) in accordance with applicable Accounting Standards.

ERNST & YOUNG

G. F. Welsh
Partner

Canberra
Date Opinion Formed: 22 March 1995

Audit: 6
Ernst & Young - Committed to Excellence
Official Olympic Sponsors of Accounting, Taxation and Management Consulting Services and the Olympic Job Opportunities Program
In accordance with a resolution of directors of ANUTECH Pty Limited, we state that -

(1) In the opinion of the directors:

(a) the profit and loss account is drawn up so as to give a true and fair view of the profit of the Company for the financial year ended 31 December 1994; and

(b) the balance sheet is drawn up so as to give a true and fair view of the state of affairs of the Company as at 31 December 1994;

(c) at the date of this statement there are reasonable grounds to believe that the Company will be able to pay its debts as and when they fall due.

On behalf of the board

A.D.Barton
Director

Canberra, 22 March 1995
## ANUTECH PTY LIMITED
### PROFIT AND LOSS ACCOUNT

**YEAR ENDED 31 DECEMBER 1994**

<table>
<thead>
<tr>
<th>Notes</th>
<th>1994 ('000)</th>
<th>1993 ('000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating revenue</td>
<td>43,177</td>
<td>43,567</td>
</tr>
<tr>
<td>Operating profit before abnormal items</td>
<td>942</td>
<td>868</td>
</tr>
<tr>
<td>Abnormal items</td>
<td>(189)</td>
<td>130</td>
</tr>
<tr>
<td>Operating Profit</td>
<td>753</td>
<td>998</td>
</tr>
<tr>
<td>Retained profits at the beginning of the year</td>
<td>2,622</td>
<td>2,251</td>
</tr>
<tr>
<td>Aggregate of amounts transferred from reserves</td>
<td>1,029</td>
<td>185</td>
</tr>
<tr>
<td>Total available for appropriation</td>
<td>4,404</td>
<td>3,434</td>
</tr>
<tr>
<td>Donation provided for or paid to The Australian National University</td>
<td>425</td>
<td>320</td>
</tr>
<tr>
<td>Aggregate of amounts transferred to reserves</td>
<td>784</td>
<td>492</td>
</tr>
<tr>
<td></td>
<td>1,209</td>
<td>812</td>
</tr>
<tr>
<td>Retained profits at the end of the year</td>
<td>3,195</td>
<td>2,622</td>
</tr>
</tbody>
</table>

The profit and loss account should be read in conjunction with the accompanying notes.
ANUTECH PTY LIMITED

BALANCE SHEET

AT 31 DECEMBER 1994

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
</tr>
<tr>
<td>Notes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CURRENT ASSETS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>3,452</td>
<td>3,402</td>
</tr>
<tr>
<td>Receivables</td>
<td>4,032</td>
<td>2,583</td>
</tr>
<tr>
<td>Inventories: Finished goods - at cost</td>
<td>579</td>
<td>84</td>
</tr>
<tr>
<td>Other</td>
<td>2,875</td>
<td>5,829</td>
</tr>
<tr>
<td><strong>TOTAL CURRENT ASSETS</strong></td>
<td><strong>10,938</strong></td>
<td><strong>11,898</strong></td>
</tr>
<tr>
<td>NON-CURRENT ASSETS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investments</td>
<td>116</td>
<td>16</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>7,136</td>
<td>6,251</td>
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<tr>
<td>Other</td>
<td>100,204</td>
<td>92,832</td>
</tr>
<tr>
<td><strong>TOTAL NON-CURRENT ASSETS</strong></td>
<td><strong>107,456</strong></td>
<td><strong>99,099</strong></td>
</tr>
<tr>
<td><strong>TOTAL ASSETS</strong></td>
<td><strong>118,394</strong></td>
<td><strong>110,997</strong></td>
</tr>
<tr>
<td>CURRENT LIABILITIES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creditors and borrowings</td>
<td>2,313</td>
<td>1,352</td>
</tr>
<tr>
<td>Provisions</td>
<td>848</td>
<td>611</td>
</tr>
<tr>
<td>Other</td>
<td>6,697</td>
<td>8,121</td>
</tr>
<tr>
<td><strong>TOTAL CURRENT LIABILITIES</strong></td>
<td><strong>9,858</strong></td>
<td><strong>10,084</strong></td>
</tr>
<tr>
<td>NON-CURRENT LIABILITIES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provisions</td>
<td>118</td>
<td>105</td>
</tr>
<tr>
<td>Other</td>
<td>100,982</td>
<td>93,700</td>
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<tr>
<td><strong>TOTAL NON-CURRENT LIABILITIES</strong></td>
<td><strong>101,100</strong></td>
<td><strong>93,805</strong></td>
</tr>
<tr>
<td><strong>TOTAL LIABILITIES</strong></td>
<td><strong>110,958</strong></td>
<td><strong>103,889</strong></td>
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<tr>
<td><strong>NET ASSETS</strong></td>
<td><strong>7,436</strong></td>
<td><strong>7,108</strong></td>
</tr>
<tr>
<td>SHAREHOLDERS’ EQUITY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share capital</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Reserves</td>
<td>2,241</td>
<td>2,486</td>
</tr>
<tr>
<td>Retained profits</td>
<td>3,195</td>
<td>2,622</td>
</tr>
<tr>
<td><strong>TOTAL SHAREHOLDERS’ EQUITY</strong></td>
<td><strong>7,436</strong></td>
<td><strong>7,108</strong></td>
</tr>
</tbody>
</table>

The balance sheet should be read in conjunction with the accompanying notes.
### ANUTECH PTY LIMITED

**STATEMENT OF CASH FLOWS**

**YEAR ENDED 31 DECEMBER 1994**

<table>
<thead>
<tr>
<th>Notes</th>
<th>1994 ($'000)</th>
<th>1993 ($'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CASH FLOWS FROM OPERATING ACTIVITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project and sales revenue</td>
<td>29,110</td>
<td>29,558</td>
</tr>
<tr>
<td>Other income and recoveries</td>
<td>3,813</td>
<td>2,948</td>
</tr>
<tr>
<td>Payments to suppliers and employees</td>
<td>(31,581)</td>
<td>(35,304)</td>
</tr>
<tr>
<td>Interest received</td>
<td>99</td>
<td>460</td>
</tr>
<tr>
<td>Interest on technology licence funds</td>
<td>10,349</td>
<td>9,234</td>
</tr>
<tr>
<td>Rent received</td>
<td>71</td>
<td>79</td>
</tr>
<tr>
<td>Sales tax rebate received</td>
<td>91</td>
<td>130</td>
</tr>
<tr>
<td><strong>NET CASH FLOWS FROM OPERATING ACTIVITIES</strong></td>
<td>18</td>
<td>11,952</td>
</tr>
</tbody>
</table>

| **CASH FLOWS FROM INVESTING ACTIVITIES** | | |
| Purchase of shares | (100) | - |
| Acquisition of building and equipment | (1,233) | (109) |
| Proceeds from sale of equipment | 100 | 21 |
| Cash outflow for term deposits | (10,349) | (8,788) |
| **NET CASH FLOWS FROM INVESTING ACTIVITIES** | (11,582) | (8,876) |

| **CASH FLOWS FROM FINANCING ACTIVITIES** | | |
| Donations to the ANU | (320) | (450) |
| **NET CASH FLOWS FROM FINANCING ACTIVITIES** | (320) | (450) |

| **NET INCREASE/(DECREASE) IN CASH HELD** | 50 | (2,221) |

Cash held at 31 December 1993  
3,402  
5,623

| **CASH HELD AT 31 DECEMBER 1994** | 18 | 3,452 |

The statement of cash flows should be read in conjunction with the accompanying notes.
NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

(a) Basis of accounting

The financial statements have been prepared under the convention of historical cost accounting except for certain assets which are stated at valuation. Cost in relation to assets represents the cash amount paid or the fair value of the asset given in exchange.

The accounts have been made out in accordance with the requirements of the Corporations Law, which include disclosures by Schedule 5 and applicable accounting standards.

The accounting policies adopted are consistent with those of the previous year unless otherwise specified.

Where appropriate 1993 figures have been reclassified to facilitate comparison.

(b) Property, plant and equipment

Cost and valuation
Property, plant and equipment are carried at cost or at independent valuation. Any surplus on revaluation is credited directly to the asset revaluation reserve and excluded from the profit and loss account.

Any gain or loss on the disposal of revalued assets is determined as the difference between the carrying value of the asset at the time of disposal and the proceeds from disposal, and is included in the result of the Company in the year of disposal.

Depreciation
Depreciation is charged on the Company's non-current assets under the prime cost method so as to write off the cost of the assets over their estimated useful lives. Major depreciation periods are:
- Building 40 years
- Plant and equipment 3 to 10 years

(c) Cash

For the purposes of the statement of cash flows, cash includes cash on hand and in the bank, cash management trusts, commercial bills and term deposits.

(d) Investments

All investments are valued at Directors' valuation based on estimated market value at balance date.

The Company's interest in associated companies which are not controlled entities have been valued at Directors' valuation and dividend income is only taken into profit as it is received.

Associated companies are companies in which the Company exercises significant influence by holding shares and participating in financial and operating policies. Generally, the shareholding in associated companies represents 20% to 50% of the voting power.
NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

(e) Projects - project revenue and expenditure

**Long term projects**
Projects which are expected to run for more than one year have been classified as long term projects.

The balance of funds available to meet expenditure in future years is carried forward as incomplete project revenues. Deficits are carried forward as incomplete project expenditure. Provision is made in the current year for any anticipated future losses on the projects.

(f) Inventories

Inventories are valued at the lower of cost or net realisable value. Costs are assigned at purchase cost on a first in first out basis.

(g) Employee entitlements

Provision is made for long service leave, annual leave and other contractual entitlements, estimated to be payable to employees on the basis of statutory and contractual entitlements.

(h) Income tax

No provision for income tax has been made as the Company is exempt under Section 23 of the Income Tax Assessment Act 1936.

(i) Donations and Gifts to The Australian National University

Under the Company's Memorandum and Articles of Association the Company is precluded from the payment of dividends to its shareholders. The articles provide for donations and gifts and these are considered an appropriation of profits rather than an expense of the Company.

(j) Deferred income - Rental received in advance

Under the conditions of the lease agreement with the CSIRO dated 13 July 1990, rent will not be charged for the first two years of the twenty year term. As a result the rental income received in advance is brought to account as income from 1 January 1993 on an annual straight line basis for the remaining 18 years.

(k) Deferred research and development costs

Research and development costs are expensed as incurred except where future benefits are expected, beyond any reasonable doubt, to exceed those costs. Where research and development costs are deferred such costs are amortised over future periods on a basis related to expected future benefits. Unamortised costs are reviewed at each balance date to determine the amount that is no longer recoverable and any amount so identified is written off.

(l) Research donations

Funds donated to ANUTECH have been recognised as income in determining the profit for the year.
NOTE 2: REVENUE AND EXPENSES

Operating profit for the year has been arrived at after including:

(i) Operating revenue before abnormal items:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue from completed projects</td>
<td>4,848</td>
<td>8,356</td>
</tr>
<tr>
<td>Revenue from long term projects</td>
<td>16,333</td>
<td>13,507</td>
</tr>
<tr>
<td>Accrued income on technology licences investment</td>
<td>10,187</td>
<td>8,991</td>
</tr>
<tr>
<td>Profit on syndicated research and development</td>
<td></td>
<td>1,679</td>
</tr>
<tr>
<td>projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>7,463</td>
<td>7,505</td>
</tr>
<tr>
<td>Project management fees and recoveries</td>
<td>3,904</td>
<td>3,078</td>
</tr>
<tr>
<td>Total operating revenue</td>
<td>42,735</td>
<td>43,116</td>
</tr>
</tbody>
</table>

Other operating revenue:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest from unrelated corporations</td>
<td>188</td>
<td>268</td>
</tr>
<tr>
<td>Proceeds on sale of property, plant and equipment</td>
<td>100</td>
<td>21</td>
</tr>
<tr>
<td>Rental revenue</td>
<td>154</td>
<td>162</td>
</tr>
<tr>
<td>Total operating revenue</td>
<td>442</td>
<td>451</td>
</tr>
</tbody>
</table>

(ii) The following items of expenses:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision for employee entitlements</td>
<td>275</td>
<td>179</td>
</tr>
<tr>
<td>Depreciation on building</td>
<td>154</td>
<td>118</td>
</tr>
<tr>
<td>Depreciation on property, plant and equipment</td>
<td>91</td>
<td>79</td>
</tr>
<tr>
<td>Rental - operating lease</td>
<td>43</td>
<td>41</td>
</tr>
<tr>
<td>Provision to purchase technology licences and royalties</td>
<td>10,187</td>
<td>10,670</td>
</tr>
</tbody>
</table>

(iii) Profit/(loss) on sale of property, plant and equipment

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit/(loss) on sale of property, plant and equipment</td>
<td>(1)</td>
<td>(1)</td>
</tr>
</tbody>
</table>

NOTE 3: ABNORMAL ITEMS

Included in the operating profit are the following items:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research expenditure written off</td>
<td>(189)</td>
<td>-</td>
</tr>
<tr>
<td>Sales tax rebate</td>
<td>-</td>
<td>130</td>
</tr>
<tr>
<td>Total abnormal items</td>
<td>(189)</td>
<td>130</td>
</tr>
</tbody>
</table>
ANUTEC PTY LIMITED

NOTES CONTINUED

31 DECEMBER 1994

NOTE 4: SYNDICATED RESEARCH AND DEVELOPMENT

(a) Syndicates 1 & 2
In December 1990 ANUTECH Pty Limited entered into agreements with two syndicated research and development partnerships worth a total of $50m.

Under the terms of the agreements the partnerships agreed to:
(a) Provide funds for research for three years 1991-1993.
(b) Acquire technology licences from ANUTECH for $34.6m.

The $34.6m received from the sale of the technology licences has been placed into a technology sinking fund (Note 10) along with accrued income earned (Note 10) and the profit component from the research and development for the duration of the agreements.

The agreements with each partnership contain a "put option" which gives each partnership the option of selling the technology licences back to ANUTECH for a consideration equal to the accumulated balance of the "technology sinking fund". A provision to purchase the technology licences has therefore been recorded (Note 15).

The partnerships are able to exercise their options during the period 31 January 1998 to 31 January 2003.

ANUTECH has entered into agreements with two indemnifiers who have agreed to meet any shortfall on the put option payment should either of the partnerships exercise their option.

(b) Syndicate 3
In June 1992 ANUTECH Pty Limited entered into agreements with a syndicated research and development partnership worth a total of $51.5m.

Under the terms of the agreement the partnership agreed to:
(a) Provide funds for research for three years 1992-1995. The research funds for 1995 are disclosed in Notes 7, 10, 13 and 15.
(b) Acquire technology licences from ANUTECH for $33.8m.

The $33.8m received from the sale of the technology licences has been placed into a technology sinking fund (Note 10) along with accrued income earned (Note 10).

The agreement with the partnership contains a "put option" which gives the partnership the option of selling the technology licence back to ANUTECH for a consideration equal to the accumulated balance of the "technology sinking fund". A provision to purchase the technology licences has therefore been recorded (Note 15).

The partnership is able to exercise their option from 30 June 1997.

ANUTECH has entered into an agreement with an indemnifier who has agreed to meet any shortfall on the put option payment should the partnership exercise their option.
NOTE 5: CASH

Cash at bank and on hand
Deposit with cash management trusts
Commercial bills and term deposits

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash at bank and on hand</td>
<td>131</td>
<td>28</td>
</tr>
<tr>
<td>Deposit with cash management trusts</td>
<td>835</td>
<td>1,044</td>
</tr>
<tr>
<td>Commercial bills and term deposits</td>
<td>2,486</td>
<td>2,330</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,452</strong></td>
<td><strong>3,402</strong></td>
</tr>
</tbody>
</table>

NOTE 6: RECEIVABLES

Trade debtors
Prepayment
Accrued interest

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade debtors</td>
<td>3,540</td>
<td>2,255</td>
</tr>
<tr>
<td>Prepayment</td>
<td>61</td>
<td>49</td>
</tr>
<tr>
<td>Accrued interest</td>
<td>100</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,701</strong></td>
<td><strong>2,318</strong></td>
</tr>
</tbody>
</table>

Amounts receivable from controlling entity

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Australian National University</td>
<td>331</td>
<td>265</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,032</strong></td>
<td><strong>2,583</strong></td>
</tr>
</tbody>
</table>

NOTE 7: OTHER ASSETS (CURRENT)

Research and Development Syndicate:
Research and development funding 1995 4(a)&(b)

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>4(a)&amp;(b)</td>
<td>2,875</td>
<td>5,829</td>
</tr>
</tbody>
</table>

NOTE 8: INVESTMENTS (NON-CURRENT)

(a) Quoted on a prescribed stock exchange, at cost
Options for shares in other corporations

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options for shares in other corporations</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

(b) Not quoted on a prescribed stock exchange, at cost and Directors' valuation
Shares in associated company (not controlled)
Shares in Virax Pty Limited

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shares in associated company (not controlled)</td>
<td>101</td>
<td>1</td>
</tr>
<tr>
<td>Shares in Virax Pty Limited</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
| The principal activity of this associated company is the development of a new vaccine technology.
The investment by ANUTECH represents 44.3% of the issued ordinary shares of Virax Pty Limited.
The balance date of Virax Pty Limited is 30 June. |

(c) Not quoted on a prescribed stock exchange, at Directors' valuation
Shares in associated company (not controlled)
Shares in Paterson Instruments Pty Limited

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shares in associated company (not controlled)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Shares in Paterson Instruments Pty Limited</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
| The principal activity of this associated company is the assembly and sale of high pressure and high temperature machines.
The investment by ANUTECH represents 30% of the issued ordinary shares of Paterson Instruments Pty Ltd.
The balance date of Paterson Instruments Pty Ltd is 30 June. |

(d) Not quoted on a prescribed stock exchange, at cost
Share in Partnerships

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share in Partnerships</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>116</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

ANUTECH PTY LIMITED
NOTES CONTINUED
AT 31 DECEMBER 1994
NOTE 9: PROPERTY, PLANT AND EQUIPMENT

Office furniture, fittings and equipment - at cost
Accumulated depreciation
  631
  (365)
  266

Motor vehicles - at cost
Accumulated depreciation
  356
  (46)
  310

Plant and equipment - at cost
Accumulated depreciation
  81
  (5)
  76

Building - at cost
  889
  independent valuation 1993
    9(a)
    5,750
  6,484

(a) Revaluation
The building owned by the Company at 31 December 1994 is restated to a valuation determined by Mr D Lovell, FAIV, at 31 December 1993. The valuation is an estimate of the amount the asset could be exchanged between a knowledgeable willing buyer and a knowledgeable willing seller in an arm’s length transaction. The Company does not have a set policy for regular revaluation of buildings.

NOTE 10: OTHER ASSETS (NON CURRENT)

Deferred research and development costs
  Research and Development Syndicate:
    Research and Development funding 1995
      4(a)&(b)
      -
      2,914
    Technology licences fund - cash investment
      4(a)&(b)
      73,070
      16,231
      89,301
      100,204
      92,832

NOTE 11: CREDITORS AND BORROWINGS (CURRENT)

Trade creditors (unsecured)
  1,367
  1,034

Amounts payable to controlling entity
The Australian National University (unsecured)
  946
  318

  2,313
  1,352

NOTE 12: PROVISIONS (CURRENT)

Provision for employee entitlements
  423
  291

Provision for donation to The Australian National University
  425
  320
  848
  611
### AT 31 DECEMBER 1994

#### NOTE 13: OTHER LIABILITIES (CURRENT)

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomplete project revenue</td>
<td>$3,822</td>
<td>$1,970</td>
</tr>
<tr>
<td>Research and Development Syndicate:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research and Development advance funding 1995</td>
<td>$2,875</td>
<td>$6,151</td>
</tr>
<tr>
<td></td>
<td>$6,697</td>
<td>$8,121</td>
</tr>
</tbody>
</table>

#### NOTE 14: PROVISIONS (NON-CURRENT)

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision for employee entitlements</td>
<td>$118</td>
<td>$105</td>
</tr>
</tbody>
</table>

#### NOTE 15: OTHER LIABILITIES (NON-CURRENT)

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deferred income - rental received in advance</td>
<td>$1,333</td>
<td>$1,417</td>
</tr>
<tr>
<td>Deferred income - prepaid interest</td>
<td>$1,795</td>
<td>$1,634</td>
</tr>
<tr>
<td>Research and Development Syndicate:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research and Development advance funding 1995</td>
<td>$2,982</td>
<td></td>
</tr>
<tr>
<td>Provision to purchase technology licences and royalties</td>
<td>$97,854</td>
<td>$87,667</td>
</tr>
<tr>
<td></td>
<td>$100,982</td>
<td>$93,700</td>
</tr>
</tbody>
</table>

#### NOTE 16: SHARE CAPITAL

<table>
<thead>
<tr>
<th>Authorized capital</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,000,000 ordinary shares of $1.00 each</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Issued:</td>
<td>2,000</td>
<td>2,000</td>
</tr>
</tbody>
</table>

#### NOTE 17: RESERVES

<table>
<thead>
<tr>
<th>(a) Building fund reserve</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance 1 January 1994</td>
<td>$450</td>
<td>$200</td>
</tr>
<tr>
<td>Transfer (to) retained profits</td>
<td>(450)</td>
<td>-</td>
</tr>
<tr>
<td>Transfer from retained profits</td>
<td>$200</td>
<td>$250</td>
</tr>
<tr>
<td>Balance 31 December 1994</td>
<td>$200</td>
<td>$450</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(b) Project development fund reserve</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance 1 January 1994</td>
<td>$339</td>
<td>$324</td>
</tr>
<tr>
<td>Transfer (to) retained profits</td>
<td>(579)</td>
<td>(185)</td>
</tr>
<tr>
<td>Transfer from retained profits</td>
<td>$450</td>
<td>$200</td>
</tr>
<tr>
<td>Balance 31 December 1994</td>
<td>$210</td>
<td>$339</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(c) Asset revaluation reserve</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance 1 January 1994</td>
<td>$1,369</td>
<td>2</td>
</tr>
<tr>
<td>Surplus/(loss) on revaluation of non-current assets</td>
<td>-</td>
<td>$1,367</td>
</tr>
<tr>
<td>Balance 31 December 1994</td>
<td>$1,369</td>
<td>$1,369</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(d) Research donations reserve</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance 1 January 1994</td>
<td>$328</td>
<td>$286</td>
</tr>
<tr>
<td>Transfer (to)/from retained profits</td>
<td>$134</td>
<td>$42</td>
</tr>
<tr>
<td>Balance 31 December 1994</td>
<td>$462</td>
<td>$328</td>
</tr>
</tbody>
</table>

<p>| Total Reserves                                                             | $2,241 | $2,486 |</p>
<table>
<thead>
<tr>
<th>Notes</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>$'000</td>
<td>$'000</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE 18: STATEMENT OF CASH FLOWS**

*a) Reconciliation of cash*

Cash balance comprises:

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>cash at bank and on hand</td>
<td>131</td>
<td>28</td>
</tr>
<tr>
<td>cash management trusts</td>
<td>835</td>
<td>1,044</td>
</tr>
<tr>
<td>commercial bills and term deposits</td>
<td>2,486</td>
<td>2,330</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,452</td>
<td>3,402</td>
</tr>
</tbody>
</table>

*b) Reconciliation of the operating profit to the net cash flows from operations*

<table>
<thead>
<tr>
<th>Description</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating profit</td>
<td>753</td>
<td>998</td>
</tr>
<tr>
<td>Depreciation</td>
<td>246</td>
<td>197</td>
</tr>
<tr>
<td>Provision for employee entitlements</td>
<td>144</td>
<td>59</td>
</tr>
<tr>
<td>Changes in assets and liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade debtors</td>
<td>(1,350)</td>
<td>(1,461)</td>
</tr>
<tr>
<td>Prepayments</td>
<td>(9)</td>
<td>8</td>
</tr>
<tr>
<td>Accrued interest</td>
<td>(90)</td>
<td>191</td>
</tr>
<tr>
<td>Inventory</td>
<td>(495)</td>
<td>361</td>
</tr>
<tr>
<td>Deferred expenditure</td>
<td>(140)</td>
<td>(188)</td>
</tr>
<tr>
<td>Trade creditors</td>
<td>333</td>
<td>(173)</td>
</tr>
<tr>
<td>ANU payments</td>
<td>629</td>
<td>65</td>
</tr>
<tr>
<td>Incomplete projects</td>
<td>1,852</td>
<td>(924)</td>
</tr>
<tr>
<td>R&amp;D compensation revenue</td>
<td>(187)</td>
<td>(738)</td>
</tr>
<tr>
<td>Deferred income</td>
<td>7</td>
<td>158</td>
</tr>
<tr>
<td>R&amp;D advance funding</td>
<td>-</td>
<td>(1,679)</td>
</tr>
<tr>
<td>Provision for purchase of technology licence</td>
<td>10,187</td>
<td>10,231</td>
</tr>
<tr>
<td><strong>Net cash flow from operating activities</strong></td>
<td>11,952</td>
<td>7,105</td>
</tr>
</tbody>
</table>
NOTE 19: SEGMENT INFORMATION
The Company operates predominantly in the technical and research industry in Australia.

NOTE 20: REMUNERATION OF DIRECTORS
Amounts received, or due and receivable by directors (being full time employees of company)

<table>
<thead>
<tr>
<th>Band</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10,000 - $19,999</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>$20,000 - $29,999</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>$70,000 - $79,000</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>$100,000 - $109,000</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>$180,000 - $189,999</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Number of directors whose remuneration was within the following bands:

<table>
<thead>
<tr>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>226</td>
<td>166</td>
</tr>
</tbody>
</table>

Directors remuneration for 1994 include an abnormal payment for previous contractual obligations.

NOTE 21: RETIREMENT AND SUPERANNUATION
Superannuation contributions and amounts paid in connection with the eventual retirement from the office of director

<table>
<thead>
<tr>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
</tr>
</tbody>
</table>

NOTE 22: REMUNERATION OF AUDITORS
Amounts received or due and receivable by the auditors for:
- auditing the accounts
- other services

<table>
<thead>
<tr>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
</tr>
</tbody>
</table>

NOTE 23: EXPENDITURE COMMITMENTS
Lease expenditure contracted for but not otherwise provided for in these accounts.

<table>
<thead>
<tr>
<th>Timing</th>
<th>1994</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payable not later than one year</td>
<td>7 0</td>
<td>62</td>
</tr>
<tr>
<td>Later than one year and not later than two years</td>
<td>4 4</td>
<td>42</td>
</tr>
<tr>
<td>Later than two years and not later than five years</td>
<td>131</td>
<td>125</td>
</tr>
<tr>
<td>Later than five years</td>
<td>699</td>
<td>709</td>
</tr>
<tr>
<td>Total</td>
<td>944</td>
<td>938</td>
</tr>
</tbody>
</table>

The lease expenditure commitments are predominantly owed to The Australian National University for the building site. The annual base lease payments are subject to CPI increases with a contract review in 1996.
NOTE 24: CONTINGENT LIABILITIES

Business undertaking
ANUTECH has guaranteed $2,250,000 to unrelated parties in return for advance funding of projects based on the conditions of the agreements. These guarantees are secured by term deposits. No liability is expected to arise.
ANUTECH has guaranteed $60,000 to an unrelated party as security for advance payments by overseas students for the English Language courses. No liability is expected to arise.

Legal Actions
ANUTECH is involved in three legal actions, two of which are related to one company. These actions arise from contracts within ANUTECH's normal course of business. Legal advice in all cases make the directors confident that ANUTECH's position is strong. In respect of each action ANUTECH expects to be indemnified at least in part by its insurers.

NOTE 25: CONTROLLING ENTITY

The Australian National University is the beneficial shareholder of ANUTECH Pty Limited.

NOTE 26: RELATED PARTY DISCLOSURES

The names of the Directors of the Company during the financial year were:

Mr Ronald Bruce Topfer (Chairman)
Professor Allan Douglas Barton
Mrs Sylvia Iris Boyle (appointed September 1994)
Professor John Carver
Mr John Wallace Morphett
Mr James Fulton Muir
Professor Charles Barry Osmond
Professor Ian Gordon Ross
Professor Susan Wyber Serjeantson (appointed January 1994)
Mr Ian William Shedden
Professor Robin Barrington Stanton (appointed January 1994)
Mr John Thorne (resigned May 1994)
Mr Norman Tieck (resigned September 1994)

No directors, other than fulltime employees of ANUTECH, received remuneration for their services.

ANUTECH provides a range of services to its controlling entity The Australian National University. These transactions take place on normal commercial terms and conditions.

Miscellaneous items of computer hardware and software were sold to directors during the year. These transactions take place on normal terms and conditions.

Mr John Morphett is a Director of the associated companies Virax Pty Limited and Paterson Instruments Pty Limited.

ANUTECH provides management services for Paterson Instruments Pty Limited. ANUTECH received $50,113 for management services and $7,500 for director fees. These transactions are based on normal commercial conditions.

ANUTECH received $17,875 as rental income and cost recovery from Trippett Shedden Pty Limited of which Mr Ian Shedden is a Director. These transactions take place on normal terms and conditions.
THE AUSTRALIAN NATIONAL UNIVERSITY

VICE-CHANCELLOR

Executive Officer to the Vice-Chancellor

Pro-Vice-Chancellor and Chair, Board of the Institute of Advanced Studies

Director
Institute of Advanced Studies
Deputy Vice-Chancellor

Deputy Vice-Chancellor

Director
Computing Services

Librarian

Dean
Graduate School

Pro-Vice-Chancellor
(Planning and Administration)

The Registrar

The Secretary

Head, Management Information Systems Division

Head, Public Affairs Division

Director, Centre for Continuing Education

Head, Planning Unit

Pro-Vice-Chancellor
(Finance and Fabric)

Head, Finance & Accounting

Head, Buildings & Grounds

SENIOR ADMINISTRATIVE STRUCTURE