

**THE
AUSTRALIAN NATIONAL UNIVERSITY**

1968

REPORT



The Australian National University

**REPORT OF THE COUNCIL FOR THE PERIOD
1 JANUARY 1968 TO 31 DECEMBER 1968**

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THE AUSTRALIAN NATIONAL UNIVERSITY

REPORT OF THE COUNCIL FOR THE PERIOD
1 JANUARY 1968 TO 31 DECEMBER 1968

To His Excellency the Right Honourable Sir Paul Hasluck, G.C.M.G.,
Governor-General and Commander-in-Chief in and over the Commonwealth
of Australia.

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to transmit to Your Excellency the Report of the Council
of the Australian National University for the period from 1 January 1968 to
31 December 1968 furnished in compliance with Section 33 of the *Australian
National University Act 1946-1967*.

R. M. EGGLESTON
Pro-Chancellor

The Council

The Council met six times during the year, in March, May, July, August, September and November. The Chancellor presided over meetings in August and September. The Pro-Chancellor (Dr H. C. Coombs) presided over the meeting in March. In the absence of the Chancellor and the Pro-Chancellor, Sir Norman Cowper was elected to preside over the other meetings.

Following the death of Lord Florey of Adelaide in February, Dr H. C. Coombs was elected Chancellor to hold office for two years from 10 May 1968. The Honourable Mr Justice R. M. Eggleston was elected Pro-Chancellor, vice Dr H. C. Coombs, to hold office until 11 July 1970.

The terms of office of the following members expired on the dates shown:

Members ex officio: Professor D. G. Catcheside, The Deputy Chairman of the Board of the Institute—29 September 1968; Professor C. A. Gibb, The Deputy Chairman of the Board of the School*—31 December 1968.

Members chosen or elected: Mr D. Beattie; Professor F. J. Fenner; Professor R. L. Mathews*; Professor O. H. K. Spate*; Professor W. E. H. Stanner; Mr J. H. Troughton—29 September 1968.

Members elected by the Senate: Senator K. A. Laught*; Senator Dorothy M. Tangney—30 June 1968.

Member elected by Convocation: Sir Roland Wilson, K.B.E.—9 August 1968.

Member elected by the Undergraduate Students: Mr C. P. Blaxland was elected to hold office from 29 September 1968. He resigned on 8 October and was re-elected on 25 October 1968.

MEMBERS OF THE COUNCIL AS AT 31 DECEMBER 1968

MEMBERS EX OFFICIO

Herbert Cole Coombs, M.A.(W.Aust.), Ph.D.(Lond.), Hon. D.Litt.(W.Aust.), Hon. LL.D.(Melb.)—*Chancellor*.

The Honourable Mr Justice Richard Moulton Eggleston, LL.B.(Melb.)—*Pro-Chancellor*.

Sir John (Grenfell) Crawford, C.B.E., M.Ec.(Syd.), Hon. D.Sc.(N'cle (N.S.W.))—*Vice-Chancellor*.

David Noel Ferguson Dunbar, M.Sc.(N.Z.), Ph.D.(Melb.)—*Deputy Vice-Chancellor*.

John Donald Bruce Miller, M.Ec.(Syd.)—*Deputy Chairman of the Board of the Institute of Advanced Studies*.

Cecil Austin Gibb, M.A., B.Ec.(Syd.), Ph.D.(Ill.), F.A.P.S.—*Deputy Chairman of the Board of the School of General Studies*.

* Reappointed or re-elected.

MEMBERS ELECTED BY THE SENATE

Samuel Herbert Cohen, Q.C., B.A., LL.M.(Melb.).

Elected 1 July 1968; present tenure expires 30 June 1971.

Keith Alexander Laught, LL.B.(Adel.).

Elected 1 July 1959; re-elected 1 July 1962, 1 July 1965 and 1 July 1968; present tenure expires 30 June 1971.

MEMBERS ELECTED BY THE HOUSE OF REPRESENTATIVES

Kim Edward Beazley, B.A.(W.Aust.), M.A.(A.N.U.).

Became member of Interim Council 10 June 1949; elected to Council by House of Representatives 13 July 1951; re-elected 1 July 1955, 13 June 1956, 1 July 1958, 8 September 1960, 3 March 1964 and 3 May 1967; present tenure expires 2 May 1970.

Adrian Gibson, LL.B.(Tas.).

Elected 3 May 1967; present tenure expires 2 May 1970.

MEMBERS APPOINTED BY THE GOVERNOR-GENERAL

Kenneth John Clements, B.A.(Syd.), Bishop of Canberra and Goulburn.

Appointed 30 September 1966, present tenure expires 29 September 1969.

Sir Norman (Lethbridge) Cowper, C.B.E., B.A., LL.B.(Syd.).

Appointed 1 July 1955; reappointed 1 July 1958, 30 September 1960, 30 September 1963 and 30 September 1966; present tenure expires 29 September 1969.

John Qualtrough Ewens, C.B.E., LL.B.(Adel.).

Appointed 30 September 1960; reappointed 30 September 1963 and 30 September 1966; present tenure expires 29 September 1969.

Sir Warwick (Oswald) Fairfax, M.A.(Oxon.).

Appointed 30 September 1963; reappointed 30 September 1966; present tenure expires 29 September 1969.

Herbert John Goodes, C.B.E., B.A.(W.Aust.).

Became member of Interim Council 9 August 1946; appointed to Council by Governor-General 1 July 1951; reappointed 1 July 1953, 1 July 1955, 1 July 1958, 30 September 1960, 30 September 1963 and 30 September 1966; present tenure expires 29 September 1969.

Brian William Hone, B.A.(Adel.), M.A.(Oxon.).

Appointed 30 September 1960; reappointed 30 September 1963 and 30 September 1966; present tenure expires 29 September 1969.

Peter James Lawler, O.B.E., B.Ec.(Syd.).

Appointed 12 December 1962; reappointed 30 September 1963 and 30 September 1966; present tenure expires 29 September 1969.

Geoffrey Lance McDonald, B.A., M.B., B.S.(Syd.), F.R.A.C.P., M.R.C.P.

Appointed 26 May 1966; reappointed 30 September 1966; present tenure expires 29 September 1969.

Sir (Horace) Frank Richardson.

Appointed 1 July 1953; reappointed 1 July 1955, 1 July 1957, 30 September 1960, 30 September 1963 and 30 September 1966; present tenure expires 29 September 1969.

Arthur Thomas Shakespeare.

Appointed 30 September 1960; reappointed 30 September 1963 and 30 September 1966; present tenure expires 29 September 1969.

Sir Frederick (William George) White, K.B.E., M.Sc.(N.Z.), Ph.D.(Cantab.), F.A.A., F.R.S.

Appointed 30 September 1960; reappointed 30 September 1963 and 30 September 1966; present tenure expires 29 September 1969.

Arthur John Russell Yencken, M.A. (Cantab.).

Appointed 26 May 1966; reappointed 30 September 1966; present tenure expires 30 September 1969.

MEMBERS CHOSEN BY HEADS OF THE RESEARCH SCHOOLS IN THE
INSTITUTE OF ADVANCED STUDIES

Arthur John Birch, M.Sc.(Syd. and Manc.), D.Phil.(Oxon.), F.R.I.C., F.R.A.C.I., F.A.A., F.R.S.

Chosen 30 September 1968; present tenure expires 29 September 1969.

Oskar Hermann Khristian Spate, M.A., Ph.D.(Cantab.).

Chosen 30 September 1967; re-chosen 30 September 1968; present tenure expires 29 September 1969.

MEMBERS CHOSEN FROM AMONG THE DEANS OF THE FACULTIES IN
THE SCHOOL OF GENERAL STUDIES

David Alexander Brown, M.Sc.(N.Z.), Ph.D., D.I.C.(Lond.).

Chosen 30 September 1967; present tenure expires 29 September 1969.

Andrew Thomas Amos Learmonth, M.A., Ph.D.(Edin.).

Chosen 30 September 1967; present tenure expires 29 September 1970.

MEMBER ELECTED BY THE PROFESSORS IN THE INSTITUTE OF
ADVANCED STUDIES

Frederick Colin Courtice, M.A., D.Phil.(Oxon.), D.Sc.(Syd.), M.R.C.S., F.R.A.C.P., Hon. F.R.A.C.S., F.A.A.

Elected 30 September 1968; present tenure expires 29 September 1970.

MEMBER ELECTED BY THE PROFESSORS IN THE SCHOOL OF GENERAL STUDIES

Russell Lloyd Mathews, B.Com.(Melb.).

Elected 22 May 1967; re-elected 30 September 1968; present tenure expires 29 September 1971.

MEMBER ELECTED BY THE NON-PROFESSORIAL ACADEMIC STAFF
IN THE INSTITUTE OF ADVANCED STUDIES

Arthur Hilary Morton, D.F.C., M.Sc.(W. Aust.), Ph.D.(A.N.U.).

Elected 30 September 1966; present tenure expires 29 September 1969.

MEMBER ELECTED BY THE NON-PROFESSORIAL ACADEMIC STAFF
IN THE SCHOOL OF GENERAL STUDIES

Eric Charles Fry, B.A., B.Ec., Dip.Ed.(Syd.), Ph.D.(A.N.U.).

Elected 30 September 1966; present tenure expires 29 September 1969.

MEMBER ELECTED BY THE RESEARCH STUDENTS

Neville Derrington Hicks, B.A.(Adel.).

Elected for one year from 30 September 1968.

MEMBER ELECTED BY THE UNDERGRADUATE STUDENTS

Christopher Peter Blaxland, B.A.(A.N.U.).

Elected 25 October 1968; present tenure expires 29 September 1969.

MEMBERS ELECTED BY CONVOCATION

The Honourable John Johnstone Dedman, B.A., Hon. LL.D.(A.N.U.).

Elected 30 September 1966; present tenure expires 29 September 1969.

Sir Robert (Bowden) Madgwick, O.B.E., M.Ec.(Syd.), D.Phil.(Oxon.), Hon. D.Litt.(Syd. and N'cle(N.S.W.)), Hon. LL.D.(Q'ld.).

Elected 30 September 1966; present tenure expires 29 September 1969.

George Henry Warwick Smith, C.B.E., B.A., B.Com.(Q'ld), M.Com.(Melb.).

Elected 29 November 1968; present tenure expires 29 September 1969.

Roy Douglas Wright, M.B., M.S., D.Sc.(Melb.), D.Sc.(A.N.U.), F.R.A.C.P.

Appointed to Interim Council by Governor-General 9 August 1946; elected to Council by Convocation 1 July 1951; re-elected 1 July 1953, 1 July 1957, 30 September 1960, 30 September 1963 and 30 September 1966; present tenure expires 29 September 1969.

MEMBERS APPOINTED BY THE COUNCIL

John Darling.

Appointed 10 March 1967; present tenure expires 9 March 1969.

Gerardus Jozef Dusseldorp.

Appointed 10 March 1967; present tenure expires 9 March 1969.

SECRETARY TO THE COUNCIL

The Registrar.

PRINCIPAL ACTIVITIES

We record with deep regret the death on 21 February 1968 of Lord Florey, Chancellor of the University from August 1965.

*Death of Lord
Florey of
Adelaide and
Marston*

Lord Florey was closely associated with the foundation of the University and, in particular, the John Curtin School of Medical Research. He served on the Academic Advisory Committee to the Interim Council and later as an adviser to the Council.

The degree of Doctor of Science (*honoris causa*) was conferred on him in 1958 on the occasion of the opening of the John Curtin School of Medical Research. As a memorial to Lord Florey, the University and the Royal Society (London)

have established a scheme for United Kingdom-Australia postdoctoral visiting fellowships in the medical sciences. An appeal for funds has been launched by the Royal Society in the United Kingdom and by the University in Australia.

*Fourth
Chancellor
Installed*

Dr H. C. Coombs was elected as fourth Chancellor of the University on 10 May 1968 and was installed at a ceremony on 6 September 1968.

Dr Coombs has been actively associated with the University since its inception. As Director-General of the Department of Postwar Reconstruction he took part in planning the University and, after its establishment, he served successively on the Interim Council and, when it was constituted in 1951, the University Council. As Deputy Chairman of the Council since 1952 and then as Pro-Chancellor, which office he held from 1959, Dr Coombs played a regular and leading part in the government of the University.

The office of Chancellor embodies the honour and tradition of the University. The bearer keeps closely in touch with the more important matters of policy and, not being concerned with the ordinary affairs of the day, is able to exert a detached and reflective influence on the University's counsels.

*Appointment
of new Pro-
Chancellor*

The Honourable Mr Justice R. M. Eggleston was appointed Pro-Chancellor to succeed Dr H. C. Coombs; he will serve for a period of two years.

Mr Justice Eggleston is President of the Trade Practices Tribunal and a Judge of the Commonwealth Industrial Court, of the Supreme Court of the Australian Capital Territory, and of the Supreme Court of Norfolk Island.

As Pro-Chancellor, Mr Justice Eggleston chairs meetings of the Council when the Chancellor is not present and presides over ceremonial functions which the Chancellor cannot attend. He advises the University on policy matters and takes an active part in the work of the Council and its committees.

*Vice-
Chancellor*

Emeritus Professor Sir John Crawford, C.B.E., formerly Director of the Research School of Pacific Studies and Head of the Department of Economics, assumed office as Vice-Chancellor on 1 January 1968. Sir John, who was formerly Secretary of the Commonwealth Department of Trade, joined the University in 1960 as Director of the Research School of Pacific Studies and Professor of Economics. He served the University as Deputy Vice-Chancellor from May to December 1967.

*Changes in
Administrative
Structure*

Changes in the administrative structure have included some reorganisation of responsibilities at a senior level.

Professor D. N. F. Dunbar, formerly Professor of Physics in the School of General Studies, was appointed Deputy Vice-Chancellor for five years with effect from 1 January 1968, to give full-time support to the Vice-Chancellor in the area of academic planning. The former Registrar, Mr R. A. Hohnen, O.B.E., was appointed in March 1968 to the newly created post of Secretary. He supports the Vice-Chancellor in the conduct of financial policy and the supervision of academic and business administration.

Mr D. K. R. Hodgkin, Deputy Registrar from 1957 and Registrar, Institute of Advanced Studies, from 1960 is now Registrar of the University and Mr C. G. Plowman, Registrar, School of General Studies, since 1962 is Academic Registrar with responsibility for the academic affairs of the Institute of Advanced Studies and the School of General Studies.

Mr D. St. A. Dexter was appointed Registrar (Property and Plans) to fill a newly established post replacing that of Associate Registrar which lapsed with the retirement of Mr T. M. Owen, O.B.E.

Emeritus Professor A. D. Trendall, C.M.G., Master of University House, has been elected a Fellow of the British Academy. This is believed to be the first occasion on which a scholar resident in Australia has been elected.

*Election to
Fellowship
of the British
Academy*

Professor R. N. Robertson, C.M.G., F.A.A., F.R.S., Chairman of the Australian Research Grants Committee and Professor of Botany at the University of Adelaide, has been appointed Master of University House and, with Mrs Robertson, will take up residence in August 1969. In Canberra he will continue his research in biochemistry and plant physiology. Professor Robertson will succeed Emeritus Professor A. D. Trendall, C.M.G., F.B.A., who has been Master of University House since its opening in 1954, and who retires in March 1969.

*Master of
University
House*

Mr R. Simpson, F.R.I.B.A., a Melbourne architect, has been appointed Site Planner for the University. He will review the site plan prepared by Professor D. Winston, who has been the University's Site Consultant since 1954. Professor Winston will remain available for consultation.

*Appointment
of Site Planner*

In 1965 Mr Simpson made a special investigation into university planning abroad, visiting more than twenty universities in North America, Europe and the Middle East. In 1967 he extended this study and paid return visits to many of the new universities to observe their planning theory in action.

Mr Simpson is a Fellow of the Royal Australian Institute of Architects, a member of the Faculty of Architecture and Building and a former lecturer at the Royal Melbourne Institute of Technology, a former member of the Royal Victorian Institute of Architects Committee on Housing and Town Planning, a foundation councillor and honorary member of the National Trust of Australia (Victoria), and a member of the Buildings Committee, Victoria Institute of Colleges.

Lord Todd of Trumpington opened the Research School of Chemistry on 6 September 1968.

*Opening of
the Research
School of
Chemistry*

The building combines the most modern laboratory facilities with attractive design.

Staff commenced moving into the building during 1967, following the arrival from Britain of Professor A. J. Birch, F.A.A., F.R.S., to take up the Foundation Chair of Organic Chemistry and become the first Dean of the School, and

Professor D. P. Craig, F.R.S., to take up the Foundation Chair of Physical and Theoretical Chemistry. A number of postgraduate scholars and post-doctoral fellows who were working in Britain with Professors Birch and Craig, pending the completion of the laboratories, have joined the staff in Canberra. With subsequent appointments, the academic staff totalled twenty-eight at December 1968.

Opening of the Forestry Building

The Forestry Building was opened by His Royal Highness The Duke of Edinburgh on 16 May 1968. The use of timber for structural and decorative purposes is a feature of the building and many of the timbers used were donated by government agencies or private industrial concerns.

In 1965 the functions of the Australian Forestry School and the main responsibility for forestry education were taken over by the University in the newly established Department of Forestry. The move of the Department from the premises at Yarralumla into permanent quarters on the University site, was the climax of a long period of development in forestry training in Australia.

Conference on Medical Practice

The Chancellor of the University, Dr H. C. Coombs, presided at an international conference on 'Medical Practice and the Community' held in August and sponsored by the University. About fifty visitors from Australia, the United Kingdom, the United States of America and New Zealand participated.

The consensus was that the general practitioner is the most important member of the health services required by the community and that special measures may be needed to ensure continued availability of medical graduates with appropriate qualifications and motivation. The proceedings of the conference will be published.

In the meantime, two separate questions are being investigated. One is whether the University should institute an undergraduate medical school which might make a new and significant contribution to medical education in Australia; the other arises from the strongly expressed view that there is a striking lack of information about medical services and about the incidence of disease and disability.

A committee convened by Professor F. J. Fenner, M.B.E., F.A.A., F.R.S., Director of the John Curtin School of Medical Research, will study the findings of the conference and its implications and will report to the University Council.

Analyses of First Samples from Moon's Surface

Three staff members of the Department of Geophysics and Geochemistry, Dr W. Compston, Dr J. F. Lovering and Professor A. E. Ringwood, F.A.A., have been selected by the United States National Aeronautics and Space Administration to act as principal investigators for the analyses of some of the surface samples from the moon collected during the Apollo mission to the moon scheduled for late 1969.

Visit by Commonwealth Universities Congress

The executive heads of about 140 universities visited the University in August as part of the Tenth Commonwealth Universities Congress. Most of the visitors stayed in University halls of residence. Official functions included receptions by the Governor-General and the Commonwealth Government.

The Australian Universities Commission visited the University on 29 and 30 October and met with members of staff to discuss plans for the University for the 1970-72 triennium. Members of the Commission also talked with students and toured the University.

*Visit of
Australian
Universities
Commission*

The University was host to the 1968 Administrative Staff Conference on 13 and 14 May. Some thirty registrars and bursars from Australian universities, including the University of Papua and New Guinea, attended the conference which was arranged under the auspices of the Australian Vice-Chancellors' Committee.

*Australian
Universities
Administrative
Staff
Conference*

Mr G. L. Macauley, Registrar of the University of New South Wales, was chairman of the meeting.

The New Guinea Research Unit moved to permanent headquarters at Waigani, on the site of the University of Papua and New Guinea. The building, which was designed by the Commonwealth Department of Works, was opened in October 1968 by His Honour the Administrator of the Territory of Papua and New Guinea, Mr D. O. Hay, C.B.E.

*Permanent
Building for
New Guinea
Research Unit*

The extensions to the School of General Studies Building of the University Library have been completed. With a capacity of 82,500 square feet, compared with the former 37,500 square feet, the library has been carefully planned to meet the needs of staff and students for a number of years to come.

*Library
Extensions*

Ursula College, established on the University site on behalf of the Roman Catholic Church by the Ursuline nuns as an affiliated residential college, received its first students on 25 February, and was officially opened by the Honourable Malcolm Fraser, M.P., on 20 October 1968.

*Ursula College
Opened*

Sister Angela Cooney, O.S.U., is Principal of the College which has accommodation for 200 women students.

A combined course in economics and law will be offered for the first time in 1969. Recognition that an increasing number of law graduates will enter professions where there is a need for training in both law and economics led to the decision to offer the course.

*Combined
Course in
Economics
and Law*

Two departments formed by the division of the Department of Geography, Research School of Pacific Studies, have been named the Department of Biogeography and Geomorphology and the Department of Human Geography. The new departments began operating independently on 1 July 1968. Dr D. Walker has been appointed Professor of Biogeography and Head of the Department of Biogeography and Geomorphology.

*Division of
Department of
Geography*

The inaugural series of four University Lectures was given in June and July by Emeritus Professor Sir Keith Hancock, K.B.E., F.B.A., under the general title 'Attempting History'.

*University
Lectures Series*

Dr H. C. Coombs presided over the opening lecture in the H. C. Coombs Lecture Theatre. This was Dr Coombs' first official function as Chancellor and the first function to be held in the lecture theatre of the Research Schools of Social Sciences and Pacific Studies.

Public Lectures

The following public lectures were given in the University during 1968:

19 March	. Professor G. E. Fogg, F.R.S.	Algal Activity in Antarctica
26 March	. Professor C. D. Darlington, F.R.S.	Biologist's View of Education
18 April . . .	Mr R. Hall	Personal Approach to Poetry
23 April . . .	Professor G. E. Mylonas . . .	The Mycenaean Age
26 April . . .	Professor G. E. Mylonas . . .	Mycenae's Last Century of Greatness
8 May	Dr Sarah Gudschinsky	Aboriginal Literacy and Language Problems
9 May	Professor R. P. Winnington-Ingram	Music in Ancient Greek Life
13 June . . .	Emeritus Professor Sir Keith Hancock, K.B.E., F.B.A.	Attempting History: I. The Particular (University Lectures Series)
20 June . . .	Emeritus Professor Sir Keith Hancock, K.B.E., F.B.A.	Attempting History: II. Persons
25 June . . .	Dr Letitia W. Brown	The Civil Rights Movement in Historical Perspective
27 June . . .	Emeritus Professor Sir Keith Hancock, K.B.E., F.B.A.	Attempting History: III. Bias
4 July	Emeritus Professor Sir Keith Hancock, K.B.E., F.B.A.	Attempting History: IV. Teaching
9 July	Mr R. Hall	Poetry in a Technological World
23 July . . .	Dr J. D. Frodsham	New Perspectives in Chinese Literature (Morrison Lecture)
10 September .	Mr R. Hall	Technique in Poetry
17 September .	Professor L. B. Schapiro . . .	The Soviet Union and the World Communist Movement (Research Students' Lecture)
24 September .	Professor L. B. Schapiro . . .	The Changing Pattern of World Communism

In addition, a number of departmental lectures were given to which the public was invited.

The Boyer Lectures for 1968, an Australian Broadcasting Commission radio series named for the late Sir Richard Boyer, former Chairman of the Australian Broadcasting Commission, were given by Professor W. E. H. Stanner. The general theme was 'After the Dreaming—Black and White Australians—An Anthropologist's View'. In the series Professor Stanner discussed the changing status of Australian Aborigines over the last thirty years and their relationship with white Australians.

*Boyer
Lectures*

Council made the following appointments:

Research School of Social Sciences—Professor W. D. Borrie as Director for five years from 9 August 1968.

*Headships
of Research
Schools*

Research School of Physical Sciences—Professor E. W. Titterton, C.M.G., F.A.A., as Director for five years from 13 September 1968.

The University established the following new chairs and made the appointments shown:

New Chairs

Chair of Microbiology, John Curtin School of Medical Research—Dr G. L. Ada, F.A.A.

Chair of Linguistics, Research School of Pacific Studies—Dr S. A. Wurm.

Chair of Biology, Research School of Biological Sciences—Dr G. A. Horridge.

Chair of Nuclear Physics, Research School of Physical Sciences—to be filled.

Chair of Demography, Research School of Social Sciences—to be filled.

Chair of Biogeography and Geomorphology, Research School of Pacific Studies—Dr D. Walker.

Chair of Human Geography, Research School of Pacific Studies—to be filled.

At the end of the year Professor A. D. Hope retired from the Chair of English which he held in the Canberra University College from 1951 to 1960 and from 1960 in the School of General Studies of the University.

Retirements

Professor Hope intends to devote his full time to writing and on 1 January 1969 he will take up the appointment of Library Fellow in the University.

Mr B. A. J. Litchfield retired from the post of University Architect on 20 December 1968. Mr Litchfield had been in the University's service since 1958.

The total full-time staff (excluding research scholars) as at 30 June 1968 was 2,261, representing a net increase of 160 over the corresponding figure at 31 July 1967, namely 2,101.

*Summary of
Staff Numbers*

Teaching and research staff (including central academic) increased by 66 (10%) from 639 to 705, and other staff increased by 94 (6%) from 1,462 to 1,556.

Developments of 1968 in Summary

THE INSTITUTE OF ADVANCED STUDIES

REPORT OF THE DEPUTY CHAIRMAN OF THE BOARD

Professor J. D. B. Miller

This was a year of consolidation and further advance for the six research schools of the Institute of Advanced Studies. Directors were appointed for the Research Schools of Social Sciences and Physical Sciences, in the persons of Professors W. D. Borrie and E. W. Titterton, and the search was begun for new heads for the Departments of Demography and Nuclear Physics; the Directors will retain their Chairs and continue their own academic work in those Departments. Details of developments in research are given in the reports of each School later in this Report, but some mention may be made here of outstanding changes in staff and of certain trends common to more than one School.

In the John Curtin School of Medical Research Professor G. L. Ada, F.A.A., was appointed Head of the Department of Microbiology and took up his appointment in December.

The Research School of Social Sciences saw the first full year of operation of its Education Research Unit. It also welcomed back its former Director, Professor P. H. Partridge, who has had so much to do with the establishment of units within the School and who will, for the time being, take responsibility for the Department of Sociology.

In the Research School of Pacific Studies further moves were made towards a more intensive study of Asian affairs, and there was some predicted change in organisation. Linguistics became a separate department with Professor S. A. Wurm as its head. The former Department of Geography was replaced by the Department of Human Geography and the Department of Biogeography and Geomorphology; Professor D. Walker was appointed Head of the Department of Biogeography and Geomorphology. Professor Wang Gungwu took up his post as Head of the Department of Far Eastern History in September. In 1969 it is hoped to fill Chairs of Prehistory and Human Geography, and to make an appointment to the Chair in the Department of Anthropology and Sociology which Professor J. A. Barnes will be leaving.

The new building of the Research School of Chemistry was officially opened by Lord Todd in September. The building is one of the most distinguished on the campus.

The site for the permanent building of the Research School of Biological Sciences was settled. Professor G. A. Horridge was appointed to its fourth chair and will arrive in 1969.

It will be noted from the Director's report that, although this School began without formal departments, it is moving towards the acceptance of a structure like that in most other Schools in the Institute.

It will be seen from more than one Director's report, especially those of the Research Schools of Social Sciences and Pacific Studies and the John Curtin School of Medical Research, that the number of substantial books being produced in the Institute is increasing, as the progressive effect of previous research makes itself felt. It will also be seen that computers are becoming more and more important in fields previously untouched by them (the report from Social Sciences should be read in this context) and that the proposed arrangement between the University and the Commonwealth Scientific and Industrial Research Organization for joint computer use is becoming of even greater significance. A further element of common activity to which attention may be drawn is that of work in New Guinea, where this University, to a much greater extent than any other in Australia itself, is carrying on considerable research. The centre of this is the New Guinea Research Unit in the Research School of Pacific Studies, but researches are also being carried out from the John Curtin School of Medical Research and the Research School of Social Sciences.

In several fields further joint activity with the School of General Studies is being promoted. These include economics, political science, planning for medical education, and planning for the study of Australian natural resources, for Soviet and East European studies, and for the study of contemporary China. It is a matter of pleasure throughout the Institute that two former Directors, Emeritus Professor Sir Mark Oliphant, K.B.E., F.R.S.N.Z., F.A.A., F.R.S., and Emeritus Professor Sir Keith Hancock, K.B.E., F.B.A., continue to work within it as Honorary Fellows. Sir Keith's seventieth birthday was suitably celebrated by his fellow historians in a special issue of *Historical Studies*.

The total number of academic staff of the grade of research fellow and above in the Institute of Advanced Studies at the end of the year was 349, compared with 303 at the end of 1967. Also, many visiting fellows and honorary fellows, several of considerable eminence, spent various periods of time at this University during the year and contributed substantially to the work of the Institute. Such visitors often initiate research so far unrepresented in the Institute and in many cases the work so started is developed in the Institute on a continuing basis. It is clear that the program of visiting fellowships serves many valuable functions and it is most important that this activity should continue.

At the end of 1968, 286 full-time students were working in the Institute of Advanced Studies as candidates for the degree of Doctor of Philosophy, another ninety-four were working in the School of General Studies and three were in the Computer Centre, making a total of 383 degree of Doctor of Philosophy students in the University as a whole. Of these students, 188 were from other countries. During the year, 101 new scholarships were taken up in the six research schools and the degree of Doctor of Philosophy was conferred on 112 students of whom sixteen had pursued their courses in the School of General Studies.

THE SCHOOL OF GENERAL STUDIES

REPORT OF THE DEPUTY CHAIRMAN OF THE BOARD

Professor C. A. Gibb

The most notable feature of 1968 in the School of General Studies was that this was the year of the first intake of students who had studied under the Wyndham Scheme in New South Wales and the Australian Capital Territory. The eagerly

awaited benefits of the more liberal curriculum and the additional year of maturity were not widely evident. As they reviewed the year's results a few departments, e.g., Political Science and departments in the Faculty of Oriental Studies, felt that the greater maturity may have helped. On the other hand, a rather greater number of departments reported unhappy experiences with the changes they detected in the preparation of students. The Acting Head of the Department of German reported, 'The only innovation that was more or less forced upon the German Department was a good deal of elementary language teaching of a practical nature after translation tests at the end of First Term had shown that first-year students had much less knowledge of German grammar and less practice in translation into the foreign language than in previous years. It seems the high schools now place greater emphasis on reading and comprehension than on an accurate knowledge of the foreign language'.

Undoubtedly, however, the greatest effects of the new secondary school curriculum were felt in the Faculty of Science. This was, of course, expected, since the changes had been greatest in the science curriculum.

Unfortunately, however, expected benefits such as significantly greater knowledge of the biological sciences and a greater interest in geology, did not eventuate in this first group; whereas difficulties in the physical sciences were greater than expected. Very substantial evidence that the laboratory training of these students is being neglected by the secondary schools is a major concern for all science departments. The Department of Chemistry was speaking for many, if not all, when it reported that 'the students were less aware of the laboratory aspects, and were opposed to any form of calculation based on their experimental measurements'.

It is now clear that the University teaching of physics and chemistry must be adapted considerably to cope with the different type of preparation the 'Wyndham' students present in these areas.

Nevertheless, it is by no means certain that all of the difficulties, whether in science or other areas, can be laid at the door of the Wyndham Scheme. The science results of students from other states were not significantly better than those of students from New South Wales and the Australian Capital Territory; and it is noticeable that in discussions of students and student performance, examiners very often hold unsatisfactory attitudes to study and learning responsible for poor performance. There are some who see these attitudes as an outcome of the Wyndham Scheme and of the slowness of school teachers and the system to accept the Scheme, to prepare for it, and to implement it; and of the readiness with which this first group of students has been excused its failure to achieve standards because it was the 'guinea-pig' group. Others, however, see a very much more widely-spread change in attitudes to learning and to science especially and wonder, at least, if 1968 has not simply been the first year when this has manifested itself strongly in this University. Enrolments in science continued in 1968 to show a decline relatively to those in the humanities and the social sciences. The de-emphasis on science studies in Western communities seems to be a much more deep-rooted phenomenon than their de-emphasis in the Wyndham curriculum of New South Wales. Enrolments in science in 1968 exceeded those of 1967 by only 7% while the corresponding increase for arts, economics and oriental studies combined was 20%. Undergraduate enrolments over all faculties increased by 17.5%.

As suggested in the discussion above, failure and 'drop-out' rates continued to cause concern. While science failure may be explained, in part at least, by the factors already mentioned this would not be true for increased failure in law. The Faculty of Law is at present making a study of reasons for failure and it is too early yet to anticipate its findings. However, it remains true that in a quite significant way the Australian National University is still a 'university of second chance' for many students. While a high proportion of its students are distinctly 'top drawer', there is a sizeable tail of (a) those who have failed to obtain admission to quotas in both the Sydney and Melbourne metropolitan universities, (b) minimally qualified part-time students, and (c) in 1968 there has been again a group who has already experienced failure in other universities. So long as this University is growing without a need for quotas there is no compelling argument against the admission of these second-chance students; it is fairly certain that they contribute significantly to both failure and drop-out rates. As the number of applications to enrol continues to increase relatively to the accepted rate of growth, the policy of gradually increasing admission standards which has been approved by Council will eliminate a growing number of these students whose qualifications for university work are questionable. It is recognised, of course, that increasing admission standards mean reduced failure and wastage only if university examination standards remain stable and student motivation is unaffected. The University is aware of pitfalls here and all departments are being continually alerted to the need to establish stable standards and to review their teaching and examining policies and procedure.

Efforts to cope with failure and wastage continue on a number of fronts. Revised curricula and the new semester system of organisation and examining will operate throughout the Faculty of Science from 1969. There is a notable trend through all faculties for an increasing number of departments to give less emphasis to final examinations and to rely correspondingly more on the regular evaluation of class work such as essays, exercises and periodical examinations. The Faculty of Law will increase the size of its tutorial program for first year and will introduce a compulsory program of legal writing for first-year law students. Classes in English Expression or Remedial English will be continued.

The use of group methods to bring about a change of attitudes among unsuccessful students, which was initiated in 1967 by Associate Professor P. Pentony of the Department of Psychology, has been expanded. The University Counselling Service, too, has been expanded. The University Library is doing more to ensure that all new students are given an opportunity to learn how best to make use of its very considerable resources; and the benefit likely to ensue from a formal orientation program dealing with methods of study, reading skills, and knowledge of the University, its methods and resources, is being evaluated. The University's detailed study of the abilities, motives, ambitions, needs and difficulties of its part-time students has been brought close to conclusion and it is hoped that the report in 1969 of this work will point the way to further steps in the direction of more efficient operation.

Curriculum changes worthy of special note include not only the major change in the Faculty of Science, to which reference has been made, but changes also in the Faculties of Law, Oriental Studies and Economics. The Faculty of Law during 1968 made an extensive revision of the course for the degree of Bachelor of Laws with a view to enhancing the national character of work done in The Australian National University and to meet the growing demand for law

graduates in areas of government, administration and business. The number of optional subjects has been increased to permit student specialisation in either Public Law or Business (including International Business) Law. In the Faculty of Oriental Studies the Department of Chinese particularly has modified its program to provide for specialisation in either or both of Classical Chinese and Modern Chinese. This is but one more step in a sequence of many to relate the work of this Faculty more closely to the contemporary needs and interests of Australia. A number of innovations in the Faculty of Economics include two optional units in Computer Science which have already been recognised by the Faculties of Arts and Science as appropriate also to the degrees of Bachelor of Arts and Bachelor of Science; degrees of master in Administrative Studies and in Economic Policy which will contribute to the educational development of potential senior administrators by applying a wide range of academic principles to administrative processes in government and business; and approval with the Faculty of Law of a combined five-year course leading to the degrees of Bachelor of Economics and Bachelor of Laws.

Around the world 1968 has been a year of great disturbance in universities from Paris to Mexico City, from Tokyo to New York. Issues in these disorders have varied from Vietnam, to racism, to teaching methods and curricula. It is doubtful, however, whether the essence of conflict is to be found in these issues or in the ever-present generation gap, and in changes occurring universally in the somewhat anomalous status of adolescents. Whatever the basic causes Australian students, too, have felt a restlessness which is evident in most of our universities though usually, as in this University, it has led to responsible discussions and not to disorder. In some degree expression was given to this by a 'teach-in' organised by students and attended by both staff and students to discuss the intra-university issues of curriculum and teaching methods. Wider social and political issues have been the subject of extra-university demonstrations.

Questions of student participation in the affairs of the University have produced some lively discussions both among the students themselves and with the Vice-Chancellor and deans. It may be expected that these discussions will continue more widely in 1969 and that there may be some revision of academic and administrative structures.

Ability to recruit suitably qualified staff has shown little change during 1968. Recruitment remains difficult, especially in such areas as Russian, mathematics, physics, economics, law and sociology, in each of which senior positions continue to go unfilled. Senior staff resignations have not been excessive though some of them will be felt severely. Professor A. D. Hope, whose unrivalled reputation as Australia's outstanding scholar-poet has lent lustre to the Department of English since his appointment to Canberra University College in 1951, retired early and accepted the first Library Fellowship offered in the University. Other notes on resignations and appointments appear elsewhere in this Report.

The University has been fortunate in securing the services of Visiting Professor in Russian for 1969 of Professor R. Zimek of Palacky University. Two other appointments made during 1968 which will not be effective until later in 1969, but in which the University takes pleasure, are those of Mr C. I. E. Donaldson, at present Fellow of Wadham College, Oxford, as Professor of English to replace Professor Hope, and of Dr C. Duke, now Lecturer in the University of Leeds, to be Director of Adult Education, a position which has been vacant

for some years because the right combination of scholarship and concern for adult or continuing education seemed hard to find. The University as a whole, and the School of General Studies particularly, expresses its most sincere admiration of the way Mr J. L. J. Wilson has served the Department of Adult Education while acting in charge of it these past three years, following his retirement from the University of Sydney.

There was an unusual peak in the occupation of new buildings during 1968 which will make a marked contribution to the efficiency of teaching and research in 1969 and succeeding years. The General Studies Building of the University Library has been completed and air-conditioned. Not only is it now an aesthetic gem and a tribute to its architect, Mr T. O'Mahony, but it is also adequate, for the first time, as a major and central University facility. The Departments of Botany and Forestry each occupied buildings designed for their particular purposes. The incorporation into the fabric of the Forestry Building of a wide variety of timbers donated by foreign governments and private industries, and by the forestry departments of the Australian States greatly adds to its beauty and utility. It was fitting, indeed, that this building should have been opened by His Royal Highness The Duke of Edinburgh. The Faculty of Law also entered into occupation of its first permanent home since law teaching began in Canberra University College in 1949. While this building will, in the very near future, require extension, it provides adequate accommodation for all activities of the Faculty including the moot program and the law collection of the University Library. Other buildings completed in 1968 were a further extension to the arts complex (to accommodate the Departments of Geography and German, and Linguistics, and to provide two new language laboratories) and an extension to the Geology Building. Ursula College accepted students for the first time in 1968 relieving what would otherwise have been an acute shortage of student accommodation for women. It has quickly become an integral part of the social and academic structure of the University. It is expected that John XXIII College will occupy its new premises with the beginning of the 1969 year. Other buildings under construction and due for occupation in 1969 are Stage I of the Psychology Building and extensions to the Zoology Building, the most serious building deficiencies remaining in the School of General Studies are the temporary and inadequate accommodation of the Departments of Political Science and Biochemistry. The teaching and research program of the latter particularly must suffer severe restraint until a new building can be provided. Indoor recreation and cultural facilities for students also remain a pressing need.

Research in the School of General Studies continued at a high level in 1968 as is indicated by the publication of twenty-five books and more than 215 articles and papers in learned journals during the year. Furthermore, of the 479 students enrolled by the Institute of Advanced Studies in 1968 for the degree of Doctor of Philosophy, 137 worked in and under the supervision of the staff of the School of General Studies. The Australian Research Grants Committee made grants to fourteen members of staff to a total value of \$59,621. This is to be compared with grants of \$84,159 made to thirteen staff members in 1967. While the amount of these grants is not negligible, the reduction in the total amount approved serves to highlight the fact that research in the School will suffer severely unless recurrent funds provided through the Australian Universities

Commission are at a sufficiently high level to sustain research training and the regular research activities of the staff.

The first decade of the Faculty of Science was completed in 1968. From an initial establishment of five small departments housed in two temporary buildings the Faculty has grown to nine departments with eleven professors and a total academic staff of 110. Accommodation is now in attractive buildings for the Departments of Botany, Chemistry, Forestry, Geology, Physics and Zoology. The first stage of a new building for the Department of Psychology will be opened in 1969 and plans for a building to house the rapidly growing Department of Biochemistry are well advanced. A very satisfactory output of high-quality research has been achieved and applications for research training from students in Australia and overseas are considerably more than the number for whom adequate supervision could be provided. Many visitors from overseas select departments in the Faculty for study leave and furtherance of their research interests.

Already it is evident that in 1969 the School of General Studies will have achieved a growth which could not have been predicted for it in 1960. Continued growth into the 1970-72 triennium is assumed, and proposals which were submitted to the Australian Universities Commission in 1968 provide for a further widening of options open to students. In particular, it is hoped to achieve greater development of Modern Asian language teaching and to cater for student interest in courses in anthropology, sociology and religion. Further development of postgraduate programs designed to meet special needs can certainly be expected while honours courses will be subjected to close scrutiny during 1969.

SITE AND BUILDINGS

A list of buildings completed, under construction and in the planning stages during the year is included in the Building Program Summary which appears later in this Report.

With the exception of the postgraduate hall which is held in abeyance pending further investigation of the form this project should take all buildings approved for the 1967-69 triennium were completed or in the construction or design stages. Seventeen University buildings were completed during 1968.

Throughout most of 1968 a site planning project team headed by Dr G. J. R. Linge worked to prepare a brief for the site planner. Mr R. Simpson, F.R.I.B.A., who was appointed to this post in October 1968 is hoping to have the first broad indication of his review of the site plan ready for consideration in March 1969.

At the end of 1967 Council, in conjunction with the National Capital Development Commission, commissioned a comprehensive study of traffic and parking problems on the University site and adjacent city areas. This study has been in train throughout 1968 and the site planner is now working with the traffic consultants to relate solutions of the traffic problems to the University's site plan.

With the completion of the pavilion, North Oval will become the University's main sports arena. However, South Oval will still remain in full use.

A building for the Faculty of Law was amongst those completed during the year. This building, together with the Oriental Studies Building completed in 1965,

forms a courtyard and the formal landscaping is designed to be a fitting terminal to the vista down East Road and past the Chancelry.

As mentioned in the 1967 Report, the Australian and United Kingdom Governments have undertaken to build a 150-inch optical telescope at the University's Siding Spring Observatory. The University is co-operating with the project team by managing the site development elements of the construction program.

ENROLMENTS

One hundred and fifty-two new research students were enrolled by the Institute of Advanced Studies in the first half of 1968 for courses of higher research. (The new research students comprise some sixty-eight Australians, nineteen students from Britain, ten students from New Zealand, eight students from the United States of America, thirty students from Asian countries and seventeen students from other countries.)

There were 1,346 new students enrolled by the School of General Studies in 1968, compared with 1,035 in 1967. The total number of students enrolled by the School was 3,418, compared with 2,961 in 1967; of these 1,542 were full-time students and 1,876 were part-time students. Students enrolled in 1968 for the degrees of master numbered 139 (146 in 1967) and for master preliminary courses 100 (ninety-seven in 1967). The number of enrolments for degrees of bachelor was 3,125, and 165 (147 in 1967) students enrolled for miscellaneous subjects. Detailed statistics are given later in this Report.

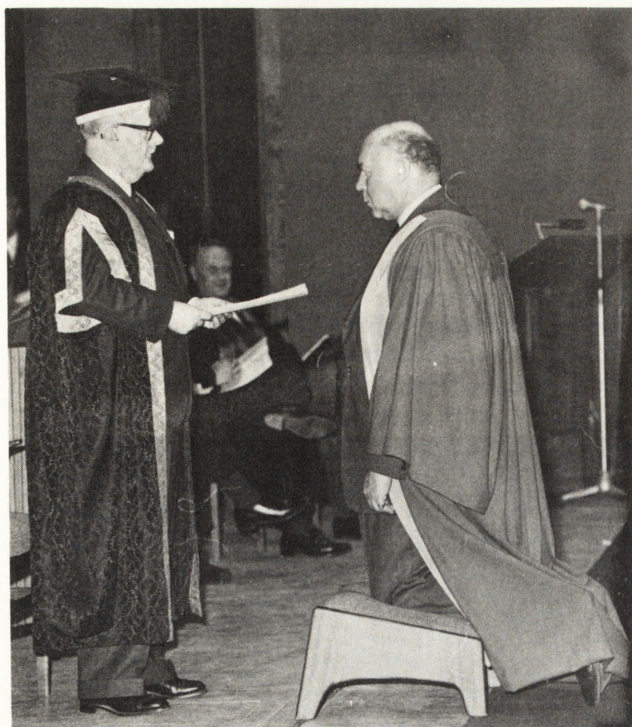
DEGREES AWARDED

The degree of *Bachelor of Arts* was conferred on: G. H. Adcock, G. K. Aldridge, Janet M. Arthur, Rosalie H. Atkinson, Elizabeth M. Baird, S. Barrie, J. P. Barry, H. Blank, A.R.U. Bourke, Roslyn M. Bradfield, Shirley P. Brady, G. J. Brewer, A. R. Browne, R. M. Browning, K. G. Bryant, Elizabeth B. Bull, Pamela M. Burton, Jennifer J. Butler, Patricia M. Cain, Ursula M. C. Callus, Mary A. Campbell, Lynette A. Carratt, P. J. Caspersonn, Judith E. J. Churches, G. S. Cleary, N. J. Conaghan, Jean Cooksley, W. J. Cooksley, Janice L. Craig, Elizabeth A. Craven, M. S. Cronin, Diana M. Crosthwaite, Susan M. Dallaway, J. A. Darling, Jillian W. Davies, S. C. L. Davies, Pauline M. Day, Maria Dugar, A. N. Erskine, Elizabeth A. Evans, G. S. Ferguson, Anne M. Field, R. E. Focken, L. Frankel, I. Frencham, Macey J. Frost, Megan E. Gardiner, T. H. Gascoigne, P. G. Gifford, Mairi M. Grieve, Arlene N. Griffen, K. M. H. Groening, W. C. K. Hammer, Helen E. Hanrahan, J. P. Hanrahan, Marion E. Harris, Alison J. Harvie, A. O. Hay, C. W. Hayden, G. W. Hekimian, G. Herbert, M. A. Hodgkin, Frances A. Hogan, Dianne I. Horne, J. Hyne, Gabrielle Hyslop, G. M. James, S. N. Jay, Margaret A. Johnson, K. Jones, Lee B. Kavanagh, Robyn P. Kearey, Judith E. Kedge, M. A. Keehn, M. J. Kent, A. J. Kevans, Judith A. King, Geraldene M. Kinnane, Maureen C. Kyburz, D. Y. L. Lam, Georgette L. Lambert, Patricia A. Lane, W. J. Langron, Margaret H. Leary, J. D. Le Gassick, R. M. Mackay, Therese D. McKeough, R. K. Mackey, K. McRae, T. Magi, P. J. Malone, F. S. Marris, J. H. Marshall, Sue J. Martin, R. P. Maxwell, D. G. Mitchell, Everill F. L. Moran, Anne M. Nader, M. J. Nation, Ham-Tieu A. Nguyen Thi, P. J. Nolan, Dianne E. Northey, B. J. Odgers, J. O'Connell, L. F. B. O'Rourke, R. M. Peek, R. M. Pegrum, Patricia A.

The Pro-Chancellor (*left*) escorts the new Chancellor, Dr H. C. Coombs, to the stage at the Installation and Conferring of Degrees Ceremony. The Minister for Education and Science, the Honourable Malcolm Fraser, M.P., and the Vice-Chancellor, Emeritus Professor Sir John Crawford (*right*) took part in the proceedings.

Photo by courtesy of The Canberra Times.

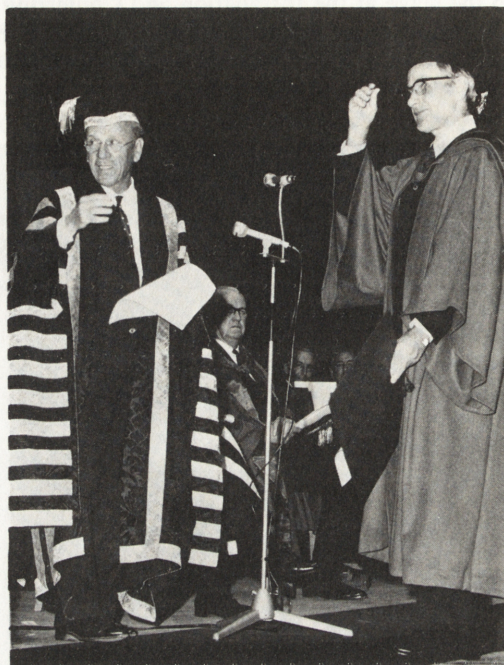




The Vice-Chancellor confers upon Emeritus Professor C. P. FitzGerald the University's first degree of Doctor of Letters which was awarded by examination of published works. *Photo by courtesy of The Canberra Times.*

Professor Sir Mark Oliphant responded for the honorary graduates at the Installation and Conferring of Degrees Ceremony. *Photo by courtesy of Australian News and Information Bureau.*

Below: Artist Sidney Nolan received the degree of Doctor of Laws (honoris CAUSA). Photo by courtesy of Australian News and Information Bureau.





The Chancellor, Dr H. C. Coombs, introduces Emeritus Professor Sir Keith Hancock, who gave the inaugural series of four University Lectures in the new H. C. Coombs Lecture Theatre.

*Photo by courtesy of
Australian News and Information Bureau.*



Two Creative Arts Fellows were in the University during the year—composer George Dreyfus (*left*) and poet Rodney Hall. Both participated in the Boccherini Orchestra, a musical ensemble composed primarily of University staff and students.

*Photo by courtesy of
Australian News and Information Bureau.*

Right: Mr R. Simpson, a Melbourne architect, has been appointed Site Planner for the University.

Photo by courtesy of Athol Shmith, John Cato Pty Ltd.

Viewing the collection of graphic art purchased with a gift from the Bank of New South Wales are Miss P. Lewis, representative of Burton Hall Junior Common-room, Mr N. J. R. Meldrum, Manager of the Canberra Branch of the Bank, Mr W. M. Garnett, representative of Bruce Hall Junior Common-room, and Mr D. A. Richardson, Secretary of the Bank. The pictures are to hang in Bruce, Burton and Garran Halls.

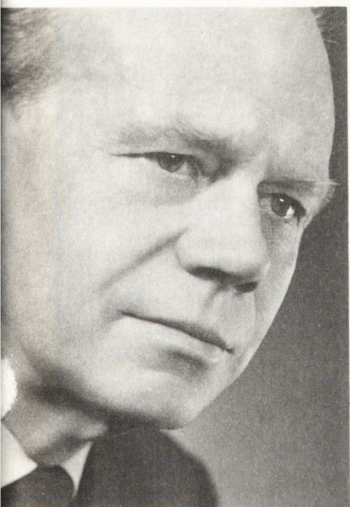
Photo by courtesy of Australian News and Information Bureau.



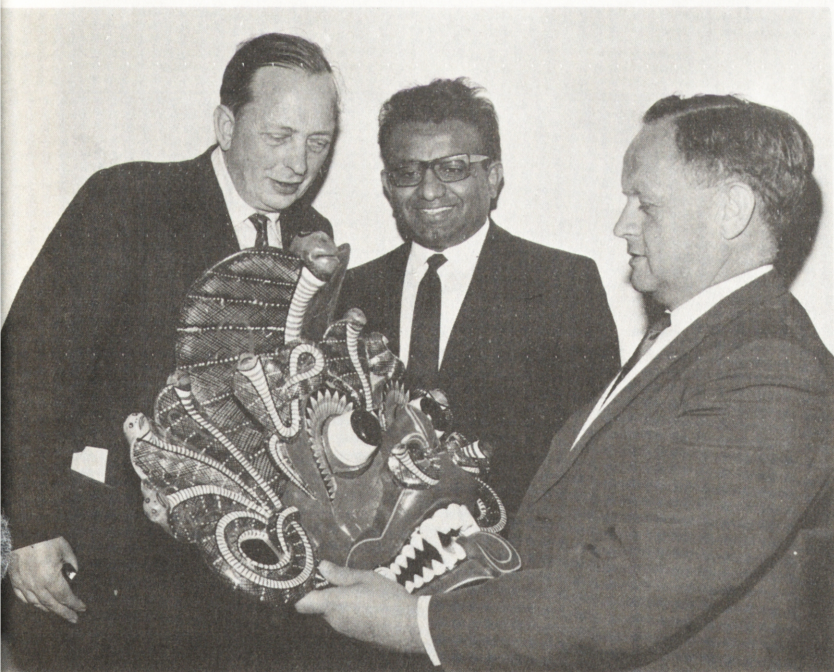
The Ambassador of Ireland, His Excellency Mr B. Durnin (*left*), and the Vice-Chancellor, examine a collection of Celtic books which the Ambassador presented to the University on behalf of the Irish Cultural Relations Committee.

Photo by courtesy of Australian News and Information Bureau.





The permanent headquarters of the New Guinea Research Unit, located on the site of the University of Papua and New Guinea, was opened in October. The building, which was designed by the Commonwealth Department of Works, includes good library facilities.



Mr D. G. B. de Silva, First Secretary of the High Commission for Ceylon (*centre*), explains to Professor A. L. Basham (*left*) and the Deputy Vice-Chancellor, a mask which he presented to the University after his lecture on the masked dances of Ceylon.

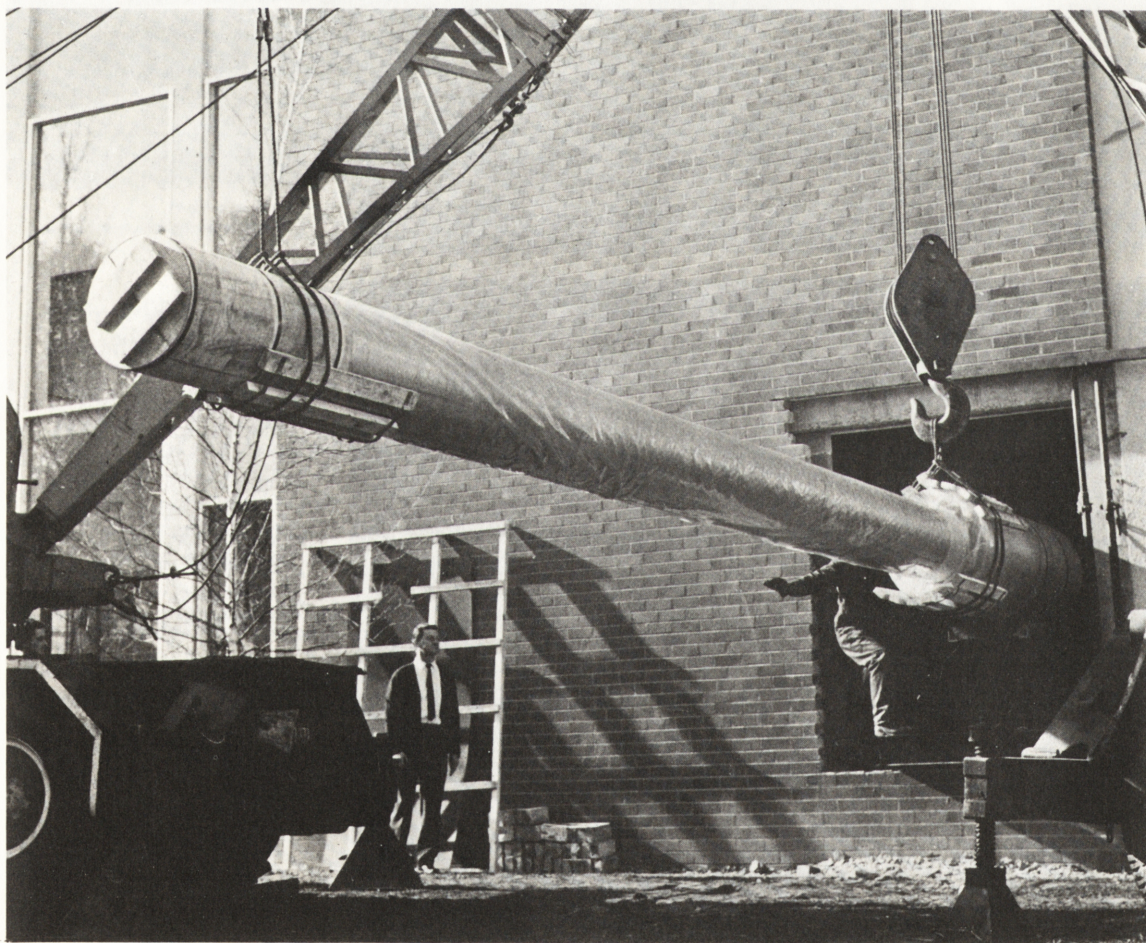
Photo by courtesy of Australian News and Information Bureau.

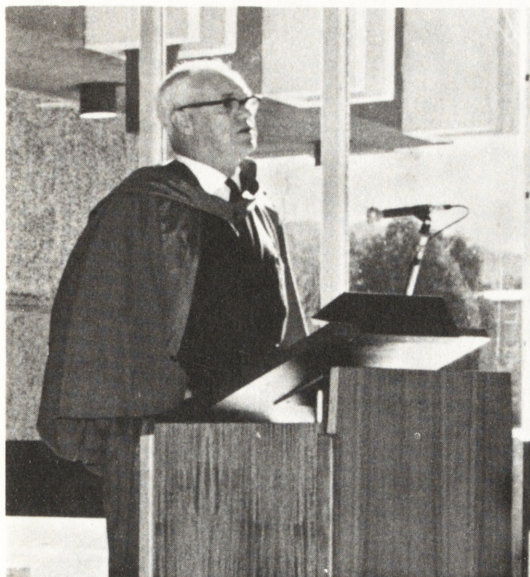
Ursula College,
established as an affiliated
college on the University
site, received its first
students in February.

Photo by courtesy of G. Carpay.



Delivery to the
Department of Physics
of a stainless steel forging,
driving force of the new
wind tunnel which is
expected to be operative
in 1969.





Lord Todd of Trumpington officially opened the new Research School of Chemistry in September.

Photo by courtesy of Australian News and Information Bureau.



His Royal Highness The Duke of Edinburgh and sculptor Vincas Jomantis view the wood sculpture by Jomantis symbolising the growth of a seed, which the Duke unveiled at the opening of the Forestry Building. Behind them are the Vice-Chancellor and Professor J. D. Ovington.

Photo by courtesy of Australian News and Information Bureau.

The Honourable Mr Justice R. M. Eggleston, the Pro-Chancellor.

Photo by courtesy of Australian News and Information Bureau.



Professor R. N. Robertson, Master-Designate of University House.

Photo by courtesy of Australian News and Information Bureau.



Professor W. D. Borrie, Director, Research School of Social Sciences.

Photo by courtesy of Australian News and Information Bureau.



Professor E. W. Titterton, Director, Research School of Physical Sciences.

Phillips, R. W. O. Pugh, S. H. Pyne, Marianne R. Richardson, D. C. Rix, J. E. Rogers, B. C. Rope, Karin E. D. Russell, P. Russell, Jill H. Scheetz, Jennifer M. Schrader, Janet H. Sekavs, Michele J. Setter, B. F. Seymour, Margaret L. Shegog, J. B. Sissons, T. J. Skinner, N. J. Sloan, D. I. Smith, Sandra W. Smith, A. P. Smithies, Therese Souter, Peta R. Sproule, Fiona S. Steele, Yvonne D. Stoyadinovich, R. D. Sweaney, Syed Salim bin Othman, Mary L. Tanner, Josephine C. Taylor, J. L. Thompson, Yvonne M. Thompson, C. B. Topp, J. S. Towsey, Janette M. Trevithick, Beth G. Ulzhoef, W. M. Vance, Vera R. Waddell, Judith A. Walker, Anne M. Wallace, D. Wallace, A. J. B. Ward, P. J. Wheeler, Sandra Whichelo, Ruth H. White, Maria L. T. F. Wong, I. D. K. Wren, Gillian I. E. Wright.

The degree of *Bachelor of Arts with Honours* was conferred on: Jillian M. Arthur, Diane J. Austin, A. A. Baker, E. R. Coleman, A. J. Davies, K. R. Fairbrother, J. A. Falk, Susan E. Falk, R. G. Garnaut, Margaret L. George, Jane P. Gilmour, N. J. Haine, G. Havas, A. K. Hodgkin, P. K. Jordan, C. H. Jory, L. J. Kane, E. L. Kearney, J. F. Livermore, A. Macintosh, R. A. Mathieson, P. W. Molony, Nancy J. Moppett, R. J. Moss, D. R. Oram, P. A. Pemberton, J. M. Penhalluriack, B. J. Piper, Anne C. Plews, P. J. R. Read, P. L. Robinson, J. A. Rummery, G. F. Sanderson, Elizabeth Sawyer, Phillipa M. Sawyer, C. J. Smyth, J. M. Stephens, Megan L. Stoyles, K. L. Taylor, Christine I. Wansbrough, F. G. Westbrook.

The degree of *Master of Arts* was conferred on: R. Addo-Fening (History, School of General Studies); K. E. Beazley (Political Science, School of General Studies); P. J. F. Coutts (Anthropology and Sociology); Josephine M. Flood (Anthropology and Sociology); A. D. Gilbert (History, School of General Studies); Christine B. Inglis (Sociology); R. I. Johnson (History, School of General Studies); Irma E. Kósa (German); R. J. Lawrence (Geography, School of General Studies) Patricia M. Melendres (English); J. N. Molony (History, School of General Studies); R. A. Naulty (Philosophy, School of General Studies); Joy A. Phillips (English); Alison M. Priestley (History, School of General Studies); S. K. Proctor (History, School of General Studies); Gayla M. Reid (English); Claudia Rhodes (English); Moira E. Rowland (Economics, School of General Studies) Nancy M. Viviani (History, School of General Studies); G. T. Walker (Geography, School of General Studies).

The degree of *Bachelor of Economics* was conferred on: G. M. Beer, I. C. Bogg, A. R. Brown, G. K. Brown, B. Buskin, R. A. Calder, M. A. Cobban, S. F. Comfort, C. D. Corrigan, P. R. Daly, S. M. Davidson, J. E. Dixon, L. W. H. Dyer, A. J. Fischer, C. Gibbons, Yvonne A. Green, R. J. Hall, R. Hegerhorst, M. J. Hilyard, H. W. Hutton, M. H. Ives, E. L. Jacenyik, K. P. Jelbart, T. M. Keating, T. H. McClelland, P. W. McCue, J. E. C. Martin, J. C. Mudge, P. J. O'Neill, L. D. R. Osmond, S. A. Oyekoya, W. C. Pender, A. C. Ridley, T. E. Rowe, B. S. Rowley, S. D. Shelley, W. G. Upton, B. A. Wheeler, I. R. E. Wingett.

The degree of *Bachelor of Economics with Honours* was conferred on: R. J. Dash, W. N. Fisher.

The degree of *Bachelor of Laws* was conferred on: G. J. Brewer, J. A. Crawford, D. M. Creed, J. S. Fingleton, P. R. Hélène, P. A. Hohnen, T. A. Long, I. J. A. McArthur, O. D. Mendelsohn, G. Savas, K. B. Scott, S. L. Walmsley.

The degree of *Bachelor of Laws with Honours* was conferred on: E. J. Cooper, B. G. Donald, Kristen E. M. Johnson, W. P. Kearns, A. G. Kerr, B. Morris, P. A. Paterson, R. G. A. Smith.

The degree of *Master of Laws* was conferred on: G. J. Davies (Faculty of Law); D. C. Pearce (Faculty of Law).

The degree of *Bachelor of Arts (Oriental Studies)* was conferred on: R. Auber, Valerie A. B. Cooper, Margaret L. Dacheff-Gies, Delia J. Dumaresq, A. N. Gray, Diana Grey, Jennifer A. Parris, Helen E. Patton, Esther L. Rance, Margo S. Rennie.

The degree of *Bachelor of Arts (Oriental Studies) with Honours* was conferred on: K. G. Boston, J. L. Holland, J. X. Katsiotis, Virginia G. Lee, Elizabeth S. Legge, J. E. Monfries, P. R. Potter, I. M. Proudfoot.

The degree of *Master of Arts (Oriental Studies)* was conferred on: D. D. Razic (Japanese); Heather A. Sutherland (Indonesian Languages and Literatures).

The degree of *Bachelor of Science* was conferred on: G. L. Alexander, Heather M. Alexander, C. D. Arndt, J. J. Asman, J. P. Baker, Barbara J. Bennett, Margaret E. Cobb, M. A. Crawford, P. N. Dalkin, Gwenda J. Durham, R. A. Eccles, R. L. Feltham, Ingrid L. Foster, B. T. Garton, R. R. Hall, Robyn-Lyn Henderson, P. J. Hill, P. D. Hohnen, Agnes Jerfy, H. G. Kaye, L. E. Kurylowics, B. H. Kwa, D. M. Lalor, M. H. Lawrie, C. H. D. Leong, K. F. Ley, Jennifer A. Loh, I. D. Loiterton, Jennifer A. Lowes, Margaret G. McAulay, W. Mayo, Karolyn Olsson, H. J. Peisley, R. A. Proctor, D. C. Purcell, Mary F. Reymer, R. M. Rollason, N. R. Stokes, Mary-Clare Symons, Louise E. Walraven, Elizabeth J. S. Wass, T. A. Zubrzycki.

The degree of *Bachelor of Science with Honours* was conferred on: G. H. Allen, R. G. Bell, G. M. Bellchambers, R. L. Benneworth, B. W. Boreham, W. R. Cady, R. J. Coventry, R. Crichton, M. Dwyer, J. F. Haasz, A. P. Hopkins, G. J. Horrocks, I. W. McCay, K. F. McCue, J. L. McGregor, D. E. Mackenzie, J. R. McMullen, J. F. B. Mercer, Mary L. Mills, M. A. Muetzelfeldt, D. C. Nicholls, W. A. Nicholls, C. W. Ogston, K. R. Patterson, D. E. Peters, D. L. Plumb, I. C. Plumb, J. I. Raine, K. D. Rainsford, M. W. Reynolds, D. A. Saunders, G. J. Stubbs, I. R. Vickers, F. Walraven, W. S. Wilson.

The degree of *Bachelor of Science (Forestry)* was conferred on: Abdul Ghaffar bin Hamid, J. D. Belford, R. V. Clark, M. J. Cooper, B. Cumberland, J. A. Dale, J. J. Douglas, A. Dukuno, C. R. Dunlop, H. J. Elliott, G. L. Gattera, G. E. Grout, P. J. Harper, D. M. Hobson, A. J. Howe, Ismail bin Awang, G. C. King, D. G. Knaggs, Lau Buong Tiing, B. H. Leaver, R. B. McCarthy, G. E. Medhurst, L. A. Newman, D. Num, R. W. Passauer, R. G. Power, J. A. Riggs, J. B. Robinson, B. J. Salter, R. W. Smith, J. L. Steller, M. E. Temu, M. P. Udarbe, J. W. Van Pelt, T. J. Vollbon.

The degree of *Bachelor of Science (Forestry) with Honours* was conferred on: N. G. Ashcroft, P. E. Beaumont, A. R. Gobby, K. E. Gould, P. A. Jenkins, M. E. Johnson, R. G. Lyons, A. McDonald, G. Malajczuk, D. R. Mutton, R. F. Robinson, J. P. Wood.

The degree of *Master of Science* was conferred on: C. M. Anderson (Chemistry); K. H. J. Bryant (Chemistry); R. J. Bultitude (Geophysics and Geochemistry); J. M. Campbell (Pure Mathematics, School of General Studies); G. V. Chapman (Chemistry); H. A. Cheong (Statistics, School of General

Studies); B. T. England (Medical Chemistry); M. D. Fenn (Chemistry); J. J. Foster (Chemistry); B. C. Harding (Physics); R. W. King (Botany); D. Lamb (Forestry); D. K. McIntyre (Botany); D. Mendus (Pure Mathematics, School of General Studies); J. O. Murphy (Applied Mathematics, School of General Studies); T. Parkes (Applied Mathematics, School of General Studies); N. D. Porter (Pure Mathematics, School of General Studies); F. D. Reinke (Physics); Maija A. Renbüss (Botany); M. U. Slee (Forestry); I. W. Wright (Mathematics, Institute of Advanced Studies).

The degree of *Doctor of Philosophy* was conferred on: A. K. Allen (Biochemistry, Institute of Advanced Studies); D. M. Armstrong (Physiology); R. K. Banerjee (Physical Biochemistry), I. G. Bedford (International Relations); A. J. D. Bellett (Microbiology); W. K. Bertram (Theoretical Physics, School of General Studies); M. S. Bessell (Astronomy); V. M. Bofinger (Geophysics and Geochemistry); P. F. Bolger (History, Institute of Advanced Studies); K. H. Bray (Nuclear Physics); J. B. Bremner (Chemistry); M. S. Brooks (Mathematics, Institute of Advanced Studies); R. A. Bryce (Mathematics, Institute of Advanced Studies); E. L. Bydder (Engineering Physics); R. Catley (International Relations); Cheah Kay Seng (Zoology); C. S. Chen (Psychology); Cheong Choong Kong (Statistics, Institute of Advanced Studies); K. Y. Cho (Research School of Biological Sciences); H. H. Chou (Far Eastern History); G. J. Clark (Nuclear Physics); J. W. Cleary (Political Science, Institute of Advanced Studies); J. M. Connellan (Biochemistry, Institute of Advanced Studies); A. D. Couper (Geography, Institute of Advanced Studies); C. Criper (Anthropology and Sociology); A. J. Cunningham (Microbiology); C. A. Davies (Philosophy, Institute of Advanced Studies); R. R. C. de Crespigny (Far Eastern History); B. K. Dickey (History, Institute of Advanced Studies); M. R. Dickson (Electron Microscope Unit); P. D. Drysdale (Economics, Research School of Pacific Studies); C. N. Ejiogu (Demography); R. D. Ekers (Astronomy); H. Verity Fitzhardinge (History, Institute of Advanced Studies); J. R. Flenley (Geography, Institute of Advanced Studies); P. W. Ford (Medical Chemistry); Maureen D. Franek (Physical Biochemistry); H. Fukui (International Relations); R. K. Ghambeer (Biochemistry, Institute of Advanced Studies); Margaret A. Grant (Biochemistry, Institute of Advanced Studies); J. W. Green (Botany); T. H. Green (Geophysics and Geochemistry); Chander K. Gupta (Mathematics, Institute of Advanced Studies); S. C. Gupta (Theoretical Physics, Institute of Advanced Studies); M. Haddad (Economics, Research School of Pacific Studies); T. Hara (Anthropology and Sociology); S. R. Harasymiv (Mathematics, Institute of Advanced Studies); P. R. Hart (History, Institute of Advanced Studies); R. J. Harvey (Physiology); G. N. Hawker (Political Science, Institute of Advanced Studies); Ho Coy Choke (Research School of Biological Sciences); P. G. Holland (Geography, Institute of Advanced Studies); E. R. Hoskins (Geophysics and Geochemistry); F. C. P. Huang (Nuclear Physics); A. R. Hyland (Astronomy); R. D. Hyndman (Geophysics and Geochemistry); M. Ivanovich (Nuclear Physics); M. R. L. Johnston (Zoology); M. A. S. Jones (Experimental Pathology); M. S. Keating (Economic History, Institute of Advanced Studies); J. Kekes (Philosophy, Institute of Advanced Studies); M. C. Kellman (Geography, Institute of Advanced Studies); K. J. Kemezys (Geology); G. W. Kerr (Nuclear Physics); I. B. Lambert (Geophysics and Geochemistry); S. Latukefu (Pacific History);

J. M. Lee (Philosophy, Institute of Advanced Studies); Liang Chi-rong (Biochemistry, Institute of Advanced Studies); Liew Kit Siong (Far Eastern History); B. A. Lockwood (Economics, Research School of Pacific Studies); D. N. Lorenzen (Asian Civilization); D. McCahon (Microbiology); P. G. Macarthy (Economic History, Institute of Advanced Studies); D. R. McNeil (Statistics, Institute of Advanced Studies); G. V. Meehan (Chemistry); J. W. Menzies (Astronomy); J. A. Merritt (History, Institute of Advanced Studies); J. S. Mills (Philosophy, Institute of Advanced Studies); J. M. Morris (Nuclear Physics); B. H. Nesbitt (English); P. F. Nixon (Biochemistry, Institute of Advanced Studies); C. G. Noller (Psychology); P. O. Ohadike (Demography); W. A. Phillips (Psychology); J. Pitha (Electron Microscope Unit); J. D. E. Plant (International Relations); H. Porath (Geophysics and Geochemistry); S. L. Rai (Zoology); C. S. Rann (Chemistry); P. J. Sands (Theoretical Physics, School of General Studies); E. Seneta (Statistics, Institute of Advanced Studies); J. B. Smith (Experimental Pathology); B. D. Sowerby (Nuclear Physics); D. Stenhouse (Physiology); A. G. R. Stewart (Mathematics, Institute of Advanced Studies); T. P. Subrahmanyam (Microbiology); D. J. Sullivan (Nuclear Physics); N. Thurling (Botany); A. V. Townsend (Philosophy, Institute of Advanced Studies); D. T. Tryon (Anthropology and Sociology); Olga van Rijswijk (Anthropology and Sociology); A. D. Ward (Pacific History); A. Watanabe (International Relations); A. M. C. Waterman (Economic History, Institute of Advanced Studies); R. O. Watts (Diffusion Research Unit); A. W. Webb (Geophysics and Geochemistry); M. J. Webber (Geography, Institute of Advanced Studies); Carmel White (Anthropology and Sociology); J. P. White (Anthropology and Sociology); K. L. Williams (Geophysics and Geochemistry); D. I. Wright (History, Institute of Advanced Studies); H. Yamamoto (Medical Chemistry).

The degree of *Doctor of Letters* was conferred on C. P. FitzGerald (Far Eastern History).

The degree of *Doctor of Science* was conferred on J. F. Morrison (Biochemistry, Institute of Advanced Studies).

HONORARY DEGREES

The degree of *Doctor of Laws (honoris causa)* was conferred on Sidney Nolan, on the ground of contribution to Australia through art.

The degree of *Doctor of Letters (honoris causa)* was conferred on Emeritus Professor Sir Keith Hancock, K.B.E., B.A.(Melb.), M.A.(Oxon.), F.B.A., on the ground of distinguished eminence as an historian.

The degree of *Doctor of Science (honoris causa)* was conferred on Emeritus Professor Sir Mark Oliphant, K.B.E., B.Sc.(Adel.), M. A., Ph.D.(Cantab.), F.Inst.P., F.R.S.N.Z., F.A.A., F.R.S., on the ground of distinguished eminence as a scientist.

The degree of *Doctor of Science (honoris causa)* was conferred on Francis Noble Ratcliffe, O.B.E., B.A.(Oxon.), on the ground of contribution to Australian science.

The degree of *Doctor of Science (honoris causa)* was conferred on the Right Honourable the Lord Todd of Trumington, M.A.(Cantab.), D.Phil.(Oxon.), Dr.Phil.(Fran.), D.Sc.(Glas.), F.R.I.C., F.R.S., on the ground of distinguished eminence as a scientist.

PRIZEWINNERS

- The Alliance Française de Canberra Prizes* FRENCH I: Andree Louise Lawrey
FRENCH II: Margaret Honor Johnson FRENCH III: Deborah
Jean Wilkins FRENCH IV: Graham Ian Stanley Lord
- Ansett Air and Space Law Prize* Russell Victor Miller
- The Australian Capital Territory Bar Association Prize for Evidence* Terence
Francis Barker
- The Australian Institute of Physics Prize* Not awarded
- The Australian Psychological Society Prize* Stephen Barclay Hodgkin and
Robert David Christie
- The Australian Society of Accountants' Prize* ACCOUNTING I: Richard Morris
Levy and Henry Ross Smith ACCOUNTING II: Michael Gawan-
Taylor ACCOUNTING III: Brian John Jones
- Canberra Association of University Women Prize* Elsbeth Margaret Jennifer
Hume
- The Canberra Goethe Society Prizes* GERMAN I: Jill Common GERMAN II:
Douglas Roy Fraser GERMAN III: Heinrich Stefanik GERMAN
IV: Janet Elizabeth Price
- The C.S.R. Chemicals Prize* Bogdan Edward Chapman and Roderick John
McDonald and Garry Charles Morris
- The Commonwealth Forestry Bureau Book Prize* Michael William Anderson
- The Economic Society Prizes* ECONOMICS I: Barbara Joan Waterman
ECONOMICS II: Neil Francis Hyden ECONOMICS III: Edward
Cyril Bloomfield
- The Geological Society of Australia Prize* David Llewellyn Gibson
- The George Knowles Memorial Prize* Ronald Gordon Mills
- The Institute Prize for Economic History* Michael Trotman
- The Lady Isaacs' Prize* Iain Duncan McCalman
- The Law Society of the Australian Capital Territory Prize for Contracts* Philip
Anthony McNamara
- The Leslie Holdsworth Allen Memorial Prize* Michael Warwick Hollingworth
- The Marie Halford Memorial Prize* Margaret Castles
- Permanent Trustee Company (Canberra) Limited Prizes* TRUSTS: Frank
Sidney Marris PROPERTY II: Frank Sidney Marris
- Priscilla Fairfield Bok Prize* Deirdre Anne Davis
- The Professional Officers' Association Prizes* GEOLOGY: David Llewellyn
Gibson APPLIED MATHEMATICS I or PURE MATHEMATICS I:
Peter Cornwell Herrald
- The Pure Mathematics Prizes* PURE MATHEMATICS IV: John Allen McLucas
PURE MATHEMATICS III: Earl Vern Dudley
- Rachel Dorph Memorial Prize* Allan John Behm
- The Ramsay Prize* Rosemary Lyons Austin
- The Royal Australian Chemical Institute Prize* Deidre Anne Davis
- The Royal Institute of Public Administration Prize* Richard Hamilton Mills

Schlich Memorial Trust Prize Gregory William Heberle
The Shell Company Prizes ECONOMICS: Piet de Jong SCIENCE: Anthony Donald Weir
The Statistical Society of Canberra Prize Not awarded
The Supreme Court Judges' Prize James William Constance
The Tillyard Prize Desmond John Ball
The Timbind Utilization Prize Nikolai Malajczuk
The United Commercial Travellers' Association Prize John Michael Collins
The University Prizes Desmond John Ball: HONOURS SCHOOL OF POLITICAL SCIENCE James William Constance: HONOURS SCHOOL OF LAW Edward Norman Dancer: HONOURS SCHOOL OF PURE AND APPLIED MATHEMATICS Richard Lewis Tweedie: HONOURS SCHOOL OF STATISTICS Neil John Vousden: HONOURS SCHOOL OF ECONOMICS
The W. B. Clarke Prize in Geology Wilfrid Hugh Oldham and Anthony George Seelaf

STAFF

THE INSTITUTE OF ADVANCED STUDIES

Dr D. A. Aitkin, Senior Research Fellow in Political Science, formerly Research Fellow.

Dr W. J. Cliff, Senior Fellow in Experimental Pathology, formerly Fellow.

Dr T. Scarlett Epstein, Senior Fellow in Economics, Research School of Pacific Studies, formerly Visiting Fellow in Anthropology and Sociology.

Dr D. H. Green, Senior Fellow in Geophysics and Geochemistry, formerly Fellow.

Mr S. K. Gupta, Senior Research Fellow in International Relations, formerly Assistant Editor, *The Times of India*, Bombay.

Dr A. R. Hall, Professorial Fellow in Economics, Research School of Social Sciences, formerly Senior Fellow.

Dr Helen Hughes, Senior Fellow in Economics, Research School of Pacific Studies, formerly Senior Research Fellow.

Dr E. Kamenka, Professorial Fellow in History of Ideas, formerly Senior Fellow.

Dr K. J. Lafferty, Senior Fellow in Experimental Pathology, formerly Fellow.

Dr I. McDougall, Senior Fellow in Geophysics and Geochemistry, formerly Fellow.

Dr C. A. C. Mims, Professorial Fellow in Microbiology, formerly Senior Fellow.

Dr J. F. Morrison, Professorial Fellow in Biochemistry, formerly Senior Fellow.

Dr H. Naora, Professorial Fellow, Research School of Biological Sciences, formerly Chief of Biology Division, National Cancer Center Research Institute, Tokyo.

Mr R. W. Rickards, Professorial Fellow, Research School of Chemistry, formerly Senior Fellow.

Dr B. A. Robson, Senior Fellow in Theoretical Physics, formerly Fellow.

Dr A. M. Sargeson, Professorial Fellow, Research School of Chemistry, formerly Senior Fellow.

*Senior Staff
 Appointments
 and
 Promotions*

Dr S. S. Swierczkowski, Senior Research Fellow in Mathematics, formerly Senior Lecturer, Department of Mathematics, University of Sussex.
Professor D. Walker, Professor of Biogeography and Geomorphology, formerly Professorial Fellow.

THE SCHOOL OF GENERAL STUDIES

Mr R. J. Bennetts, Senior Lecturer in Political Science, formerly South-East Asian Correspondent, *The Age*.

Dr R. O. Byrne, Senior Lecturer in Botany, formerly Lecturer.

Dr B. W. Chappell, Senior Lecturer in Geology, formerly Lecturer.

Dr L. Dalgarno, Senior Lecturer in Biochemistry, formerly Research Fellow, California Institute of Technology.

Mr J. L. R. Davis, Senior Lecturer in Law, formerly Lecturer in Law, University of Canterbury.

Mr J. Dixon, Senior Lecturer in Law, formerly Lecturer in Accounting, University of New South Wales.

Mr G. F. Fairbairn, Senior Lecturer in History, formerly Lecturer.

Dr R. G. Florence, Senior Lecturer in Forestry, formerly Lecturer.

Dr J. D. Frodsham, Reader in Chinese, formerly Senior Lecturer.

Mr W. J. Ginnane, Reader in Philosophy, formerly Senior Lecturer.

Dr W. H. Gladstones, Senior Lecturer in Psychology, formerly Lecturer.

Dr M. M. Gore, Senior Lecturer in Physics, formerly Lecturer.

Dr W. A. Heather, Senior Lecturer in Forestry, formerly Lecturer.

Dr C. C. Heyde, Reader in Statistics, formerly Lecturer in Statistics, University of Sheffield.

Mr W. E. Holder, Senior Lecturer in Law, formerly Professor of Law, University of Mississippi.

Mr B. J. McFarlane, Senior Lecturer in Political Science, formerly Lecturer.

Dr R. H. P. Mason, Senior Lecturer in Asian Civilization, formerly Lecturer.

Dr A. J. Mortlock, Reader in Physics, formerly Senior Lecturer.

Dr D. M. Paton, Reader in Botany, formerly Senior Lecturer.

Professor K. A. Provins, Professor of Psychology, formerly Reader in Psychology, University of Adelaide.

Dr I. G. Ross, Professor of Chemistry, formerly Reader in Chemistry, University of Sydney.

Dr D. L. Scott, Senior Lecturer in Chemistry, formerly Lecturer.

Dr R. J. Stalker, Reader in Physics, formerly Senior Lecturer.

Dr Margaret J. Stoljar, Senior Lecturer in German, formerly Lecturer.

Miss M. B. Travers, Senior Lecturer in Russian, formerly Lecturer in Russian, University of Melbourne.

Mrs K. O. West, Senior Lecturer in Political Science, formerly Lecturer.

Senior Staff Resignations

THE INSTITUTE OF ADVANCED STUDIES

Dr C. A. Blyth, Professorial Fellow in Economics, Research School of Pacific Studies, on appointment to the National Institute of Economic and Social Research, London.

Dr R. F. Brissenden, Senior Research Fellow in Philosophy, on appointment as Reader in English, School of General Studies.

Dr W. Buscombe, Senior Fellow in Astronomy, on appointment to Northwestern University.

Dr V. Dlab, Senior Research Fellow in Mathematics, on appointment to Charles University.

Dr K. S. Heier, Senior Fellow in Geophysics and Geochemistry, on appointment as Professor of Geochemistry, University of Oslo.

Professor K. Mahler, Professor of Mathematics, on appointment as Professor of Mathematics, Ohio State University.

Dr C. D. Rollins, Senior Fellow in Philosophy, on appointment to the Department of Philosophy, University of Connecticut.

Dr L. T. Searle, Senior Fellow in Astronomy, on appointment to Mount Wilson and Palomar Observatories, California.

Mr D. J. Whalan, Senior Fellow in Law, on appointment as Professor of Law, University of Queensland.

Dr R. K. Wilson, Senior Research Fellow in New Guinea Research Unit, on appointment to the University of Melbourne.

THE SCHOOL OF GENERAL STUDIES

Dr G. J. Aitchison, Reader in Physics, on appointment as Head of School of Applied Science, Canberra College of Advanced Education.

Dr R. F. C. Brown, Senior Lecturer in Chemistry, on appointment as Reader in Chemistry, Monash University.

Dr J. A. Clegg, Senior Lecturer in Zoology, on appointment to the National Institute of Medical Research, London.

Mr J. G. Head, Senior Lecturer in Accounting and Public Finance, on appointment as Professor of Economics, Dalhousie University.

Mr G. K. W. Johnston, Reader in English, on appointment as Professor of English, Faculty of Military Studies, University of New South Wales.

Mr D. J. Rose, Senior Lecturer in Law, on appointment to the Attorney-General's Department, Canberra.

Dr J. L. Tassie, Reader in Theoretical Physics, on appointment as Senior Fellow in Theoretical Physics, Institute of Advanced Studies.

THE SCHOOL OF GENERAL STUDIES

Professor A. D. Hope, Professor of English.

Mr K. P. McGrath, Associate Director of Forestry.

Retirements

Professor R. L. Armstrong, Yale University; Mr A. H. Ashenden, Victoria University of Wellington; Dr Anne C. Baker, University College of Swansea; Dr B. E. Baschek, Christian Albrecht University of Kiel; Dr L. S. Bhat, Indian Statistical Institute; Professor R. H. Bing, University of Wisconsin; Dr Nancy Bowers, Duke University; Dr R. Brett, U.S. Geological Institute; Dr Letitia W. Brown, Howard University; Professor K. A. Bush, Washington State University; Professor F. A. Campbell, University of Calgary; Professor A. B. Carson, University of California (Los Angeles); Mr D. N. Chester, University of Oxford; Dr A. F. Collings, California Institute of Technology; Dr R. W. Compans, Rockefeller University; Dr G. M. Crawley, Michigan State University; Professor C. D. Darlington, University of Oxford; Dr T. R. H. Davenport, Rhodes University; Professor D. G. Davies, Duke University; Dr C. E. Davis, Jnr; Dr L. H. Dale, Yale University; Professor A. G. De Busk, Florida State University; Dr W. C. de Groat, University of Pennsylvania; Professor E. J. Dobson, University of Oxford; Professor A. Donagon, University of Illinois (Urbana Champaign); Professor R. E. Folinsbee, University of Alberta; Dr L. C. Fowke;

Visiting Research Workers

Professor W. T. R. Fox and Dr Annette B. Fox, Columbia University; Associate Professor Y. Fukushima, Keio University; Dr E. Giles, Harvard University; Dr and Mrs R. F. Goldstein, University of Denver; Professor H. E. Gove, University of Rochester; Dr J. B. Hair, University of Canterbury; Professor J. F. C. Harrison, University of Wisconsin; Mr D. Harvey, University of Bristol; Dr M. Hashimoto, Japanese Language Institute; Professor S. Hayashi, University of Tokyo; Associate Professor D. J. Heasman, University of Saskatchewan; Dr M. Ishizuke, Kyoto University; Professor F. B. Jones, University of California (Riverside); Mr K. J. Keith, Victoria University of Wellington; Dr J. E. Kendle, University of Manitoba; Professor W. Klement, University of California (Los Angeles); Professor J. B. Lansing, University of Michigan; Dr H. W. Lefevre, University of Oregon; Professor J. F. Lerbekmo, University of Alberta; Professor A. W. Lind, University of Hawaii; Professor D. L. Livesey, University of British Columbia; Dr U. E. Lüttge, Technical University of Darmstadt; Dr B. M. Lynch, St Francis Xavier University; Mr R. D. McAlpine; Professor K. A. McKirdy, University of Waterloo; Professor Lucy P. Mair, London School of Economics and Political Science; Dr P. Mandl, Czechoslovak Academy of Sciences; Dr E. M. Martin, National Institute for Medical Research, London; Professor W. H. Moir, University of Colorado; Professor S. Nagarajan, University of Poona; Mr N. D. Nelson, University of Wisconsin; Professor P. A. Nicoll, University of Indiana; Professor Y. Nogami, University of Tokyo; Dr S. Otok, University of Warsaw; Dr C. W. Oyster; Professor M. H. Panckhurst, University of Otago; Dr D. J. Patmore, University of Alberta; Professor D. Perkins and Dr Dorothy Perkins, Stanford University; Dr C. J. Piluso, University of Oregon; Professor M. M. Postan; Professor E. A. Power, University College, London; Dr A. M. Reid, University of California (San Diego); Dr K. Rensch, University of Cologne; Dr P. H. Reynolds; Dr B. Rose, A.E.R.E., Harwell; Dr W. L. Rowe, Duke University; Professor J. Rubin, University of Chicago; Dr A. R. Sandage, Mount Wilson and Palomar Observatories; Dr A. G. Sanders, University of Oxford; Professor V. A. Saull, McGill University; Professor L. B. Schapiro, London School of Economics and Political Science; Dr L. S. Sealy, Cambridge University; Professor C. S. Shoup, Columbia University; Professor S. Singh, University of Delhi; Dr C. J. Smith, State University of New York; Assistant Professor E. L. Sobel, University of British Columbia; Mr M. Y. Sowani, University of Allahabad; Dr I. G. Speden, New Zealand Geological Survey; Professor K. Stacey, Kansas State University; Associate Professor N. Staub, University of California (San Francisco Medical Centre); Mr L. P. Stupin, Leningrad State University; Dr Ellen S. Takahashi; Professor A. Takayama, Purdue University; Dr T. Thirunamachandran, University College, London; Professor J. F. Thomson and Associate Professor Judith J. Thomson, Massachusetts Institute of Technology; Professor Y. Ueyehara, University of Hawaii; Miss V. Vitali, University of Rome; Assistant Professor Y. R. Waghmare, Indian Institute of Technology; Professor W. Walsh, University of Leeds; Dr L. G. Warner, Ohio State University; Dr D. H. Watson, University of Birmingham; Professor R. L. Watts, Queen's University at Kingston; Professor W. A. Weber, University of Colorado; Professor T. C. Weir, University of Manitoba; Dr S. Whineray, University of Copenhagen; Dr A. E. Whitford, Lick Observatory; Dr J. Wiegold, University College of South Wales and Monmouthshire, Cardiff; Professor J. M. Yoffey; Mr K. Yoneda, Institute of Asian Economic Affairs; Associate Professor D. York, University of Toronto; Professor H. E. Young, University of Maine; Dr W. M. Zuk, Queen's University at Kingston.

VISITORS

During the year the University was honoured by the visit of His Royal Highness The Duke of Edinburgh.

Among other overseas visitors to the University were: The Honourable P. B. Allen, Minister of Works, New Zealand; Professor G. K. Batchelor, University of Cambridge; Dr K. Brewster, President, Yale University; Mr K. Chantala, Director of Secondary Education, Laos; Dr S. Dedijer, Director, Research Policy Programme, Lund University; Phra Depkavee, Wat Depsirin, Thailand; Professor Dong Wook Shinn, President, Australian Affairs Research Institute, Kon-Kuk University; Professor C. O. Easman, University of Ghana; Dr W. E. Felling, Ford Foundation; Lord Franks, Provost, The Queen's College, Oxford, and Lady Franks; Mr R. K. A. Gardiner, Executive Secretary, United Nations Economic Commission for Africa; Dr J. H. E. Griffiths, Vice-Chancellor, University of Malaya; Professor C. S. Holling, Ford Foundation; Dr D. Hornig, United States Presidential Scientific Adviser; Dr S. M. Hussain, Director General, Radio Pakistan; Dr R. T. Hutcheson, Registrar, University of Glasgow; Dr E. Kleinjans, Chancellor, East-West Centre, Honolulu; Dr A. J. McConnell, Provost, Trinity College, Dublin; Dr G. P. Malalasekera, Chairman of the Council of Higher Education of Ceylon; Mr T. Miki, Minister for Foreign Affairs, Japan; Professor and Mrs G. E. Mylonas, Washington University; Dr S. Oudomvilay, Director, Dong Dok Teachers' College, Laos, and Mrs Oudomvilay; The Right Honourable Lord Penney, K.B.E., F.R.S.; Phra Sasanasophon, Chief Abbot, Wat Bovoranives Vihara, Thailand; Mr G. E. Torres, President, University of Mindanao; Dr S. J. L. Zake, Minister for Education, Uganda, and Mrs Zake; delegates to the ECAFE Conference, Canberra; delegates to the Conference on Medical Practice; members of the Tenth Commonwealth Universities Congress.

BENEFACTIONS

Special Purpose Grants and Bequests to the University during 1968 were as follows:

<i>Donor</i>	<i>Amount</i>	<i>Purpose</i>
	\$	
Anonymous	4,000	For research—Department of Economics, Research School of Pacific Studies
	3,000	For research—Department of Economic History, Institute of Advanced Studies
	Unspecified	For purchase of Leonard French Panels
	750	For research—Department of Economics, School of General Studies
A.P.M. Forests Pty Ltd	7,550	For research—Department of Botany
Atlantic Trade Study	2,668	For research—Department of Economics, Research School of Pacific Studies
Australian Conservation Foundation Incorporated	9,349	For research—Department of Geography
Australian Institute of Aboriginal Studies	9,999	For research—Department of Anthropology and Sociology
	6,059	For research—Department of German
Australian Institute of International Affairs	7,228	For research—Department of Economics, School of General Studies
Australian Institute of Nuclear Science and Engineering	3,045	For research—Department of Engineering Physics

	\$	
Australian Institute of Urban Studies .	200	For publishing assistance— <i>Australian Planning Institute Journal</i>
Australian Research Grants Committee	2,093	For research—General Linguistics
	2,270	For research—Department of Economics, School of General Studies
	7,906	For research—Department of Asian Civilization
	12,319	For research—Department of Forestry
	6,736	For research—Department of Chemistry
	11,949	For research—Department of Psychology
	35,735	For research—Department of Physics
	12,600	For research—Department of Biochemistry, School of General Studies
Australian Timber Producers' Panel .	1,566	For purchase of timber panelling—Forestry Building
Australian Wool Board	8,925	For research—Department of Geography
	13,440	For research—Department of Chemistry
	10,892	For research—Department of Statistics, School of General Studies
	3,451	For research—Department of Zoology
	8,337	For scholarship—Department of Zoology
	3,600	For scholarship—Department of Experimental Pathology
Bank of New South Wales	1,000	For purchase of graphics for University halls of residence
Broken Hill Mining Managers' Association	2,550	For studentship—Department of Geophysics and Geochemistry
Brunei-Malaysia Department of Education	2,441	For scholarship—Department of Economics, School of General Studies
Bryant & May Pty Ltd	500	For research—Department of Botany
Burroughs Wellcome & Co. (Australia) Ltd	6,000	For fellowship—Department of Physiology
Champion Papers	7,473	For research—Department of Botany
Commonwealth Scientific and Industrial Research Organization	4,250	For research—Department of Geophysics and Geochemistry
	3,000	For research—Department of Zoology
	1,844	For scholarships—Departments of Geophysics and Geochemistry, Medical Chemistry and Zoology
Davidson, Professor J. W.	2,989	For publishing assistance— <i>Journal of Pacific History</i>
Department of the Interior	2,410	For research—Department of Forestry
Department of Supply	800	For scholarship—Department of Physics
Drapers Company	2,034	For scholarship—Department of Economics, School of General Studies
Eso Standard Oil (Australia) Limited .	1,000	For research—Department of Geology
Federal Match Forests Pty Ltd	750	For research—Department of Botany
Ford Foundation	83,472	For research—Research Schools of Social Sciences and Pacific Studies
General Motors-Holden's Pty Ltd	3,000	For scholarship—Department of Astronomy
Heron Island Pty Ltd	1,000	For research—Research School of Biological Sciences
Ian Buchan Fell Bequest	1,000	For research—Department of Economic History, Institute of Advanced Studies
I.B.M. Australia Limited	2,500	For fellowship—Computer Centre
Imperial Chemical Industries of Australia and New Zealand Limited	2,600	For fellowship —Department of Chemistry
John Galvin Trust	14,939	For research—Department of Indonesian Languages and Literatures
Leverhulme Trust	12,196	For visiting fellowships
Life Insurance Medical Research Fund of Australia and New Zealand	1,915	For research—Department of Clinical Science
Metropolitan Water, Sewerage and Drainage Board	3,000	For research—Department of Geophysics and Geochemistry
National Parks and Wildlife Service .	3,550	For scholarship—Department of Botany
National Capital Development Commission	2,410	For research—Department of Forestry
National Heart Foundation of Australia	7,099	For research—Department of Experimental Pathology
	14,674	For research—Department of Clinical Science
	7,560	For fellowship—Department of Clinical Science
National Institutes of Health	896	For research—Department of Experimental Pathology
	5,209	For research—Department of Zoology
	896	For research—Research School of Chemistry
	2,232	For research—Department of Physiology

<i>Donor</i>	<i>Amount</i>	<i>Purpose</i>
	\$	
Nuffield Foundation	2,000	For research—Department of Biogeography and Geomorphology
	3,000	For research—Department of Economic History, Institute of Advanced Studies
	3,500	For research—Department of Forestry
	3,000	For research—Department of Microbiology
Queen Elizabeth II Fellowship Com- mittee	26,466	For fellowships—Departments of Astronomy and Nuclear Physics; Diffusion Research Unit
	11,722	For fellowships—Research School of Biological Sciences
Republic of Nauru	10,000	For research—Department of Pacific History
Reserve Bank of Australia—Rural Credits Development Fund	1,460	For research—Department of Human Geography
	14,000	For research—New Guinea Research Unit
	6,900	For research—Department of Economics, Research School of Pacific Studies
Rothmans University Endowment Fund	219	For fellowship—Department of Forestry
Snowy Mountains Hydro-Electric Authority	1,000	For research—Department of Geophysics and Geochemistry
Trendall, Emeritus Professor A.D. . .	1,341	For Campanian and Lucanian Pottery Fund
Western Australia Forests Department	7,000	For research—Department of Forestry
World Health Organization	1,785	For research on Bilharziasis—Department of Zoology
	896	For research on Hydatids—Department of Zoology

Accompanying Reports and Statements

THE INSTITUTE OF ADVANCED STUDIES

THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH

REPORT OF THE DIRECTOR

Professor F. J. Fenner, M.B.E., F.A.A., F.R.S.

At the administrative level, and in relation to senior appointments, the year 1968 was a period of consolidation rather than innovation. Twelve committees of the Faculty Board were established. These cover all the School services and most of the School, as distinct from departmental, academic activities. They have involved the academic staff more widely and deeply in the business of running the School and have ensured a better flow of information between the academic staff and the School services.

Because of the limited range of medical research in Australia compared with the United States and Europe, many scientists in the John Curtin School of Medical Research achieve a greater degree of professional contact with their colleagues overseas than with those in Australia, although both academic staff and students participate actively in the meetings of Australian specialist societies concerned with their particular disciplines. In order to establish even better liaison between the John Curtin School of Medical Research and medical scientists elsewhere in Australia I visited all the larger Australian universities during the year, and gave seminars on the history, current research and planned future development of the John Curtin School of Medical Research. As one result we have arranged short-term visiting fellowships to enable research workers from the University of Melbourne and Monash University to come to the John Curtin School of Medical Research and we plan to extend such arrangements as suitable opportunities occur. Liaison was also established with the Medical Research Advisory Committee of the National Health and Medical Research Council in August, when the heads of departments in the School met members of the Committee and the Director-General of Health, to discuss developments in medical research and research training in Australia.

The research facilities of the School were enhanced by the completion of an isotope suite, with chemical laboratories and laboratories equipped for handling with safety large and small animals which have been inoculated with highly radioactive materials; and a well equipped animal hospital with operating theatres for large and small animals. During the year a major effort was put into the reconstruction of several laboratories of the Department of Physiology for Professor P. O. Bishop's work on the physiology of vision, and this is now almost completed. Special quarters have been built for receiving and housing monkeys to be used in the Department of Physiology.

The only major appointment made during 1968 was that of Professor G. L. Ada, F.A.A., as Head of the Department of Microbiology. Professor Ada, who took up his appointment in December, came to the School from the Walter and Eliza Hall Institute of Medical Research in Melbourne where he had carried out distinguished work for nearly twenty years, first as a chemical virologist and more recently in immunology. Professor Ada, who holds the degree of Doctor of Science from the University of Sydney, was appointed a Fellow of the Australian Academy of Science in 1965. He is currently President of the Australian Biochemical Society.

Dr S. V. Boyden, F.A.A., a former Professorial Fellow in the Department of Experimental Pathology returned to the John Curtin School of Medical Research in January 1968 after having spent about two years working in the Research School of Social Sciences at this University. He heads a small group working on urban biology, which is temporarily attached to the Department of Microbiology. During the year Dr J. F. Morrison and Dr C. A. C. Mims were appointed to Professorial Fellowships in the Departments of Biochemistry and Microbiology respectively.

The output of research is being maintained at a high level in both quality and quantity, a total of 180 scientific papers and three major books having been published during the year. The books were *Selective Toxicity* (fourth edition) and *Heterocyclic Chemistry* (second edition) (A. Albert), and *Biology of Animal Viruses* (two volumes) (F. J. Fenner).

Brief accounts of the research work are set out in the departmental reports which follow. The Department of Clinical Science, which moved into its accommodation in the Canberra Hospital in September 1967, has now established its area of investigation and the results of its research are beginning to appear in print. The arrival of Professor F. W. E. Gibson as the new head of the Department of Biochemistry in January 1967, and of Professor P. O. Bishop, F.A.A., as the new head of the Department of Physiology in September 1967 are reflected in this year's Report by the establishment of major new lines of investigation in these two departments. Other departments have in the main continued with their former lines of research, but new perspectives have been brought to the School's activities by the work of small groups in human genetics, led by Dr R. L. Kirk, and in urban biology, led by Dr S. V. Boyden.

The work of the *Department of Biochemistry* is directed towards the study of fundamental problems at the cellular and sub-cellular levels. Within the area of interests of a particular research group, problems are chosen with two main aims in view. Firstly, the work should result in a new and significant contribution to the knowledge of the subject being studied and secondly, that problems chosen for students working for the degree of Doctor of Philosophy should introduce them to a wide range of experimental techniques to provide a sound basic training in biochemical research.

Research Activities

The main research topics during 1968 included studies on (a) metabolic pathways leading to the formation of vitamins which contain benzene rings; (b) the function of vitamin B₁₂ and vitamin K and a related compound, ubiquinone; (c) the way in which a number of enzymes catalyse specific chemical reactions; (d) the transport of phosphorylated compounds across cell membranes; and (e) the structure of proteins.

Most metabolic processes are carried out by identical or similar molecules in all living cells. Therefore, to study the various problems, organisms have been used which provide the simplest experimental systems.

When studying the problems listed above, a wide range of approaches has been used. Some of the more tangible advances which have been made during the year may be mentioned. Four new chemical compounds have been discovered and their identity and role in metabolic processes determined. Several other compounds have been discovered but have yet to be fully identified. Vitamins usually act as coenzymes with specific enzyme proteins to catalyse metabolic reactions and studies on vitamin function are being carried out at two distinct levels. Much is known about the functioning of vitamin B₁₂ and investigations have reached the level where sophisticated physical chemical techniques, such as electron spin resonance, are used to examine changes taking place in the coenzyme molecule while the purified enzyme-coenzyme complex is catalysing a specific chemical reaction. With vitamin K and ubiquinone, relatively little is known about their function, and investigations have started at the level of whole cells. The techniques of microbial genetics have made it possible to isolate and examine cells which cannot form ubiquinone and/or vitamin K. It is thought that ubiquinone and vitamin K play a vital part in reactions within the cell which produce energy and, by studying the various mutant bacteria, it is hoped to define the roles played by these compounds. Computer programs have been developed to analyse data on reactions carried out by a number of enzymes in order to obtain information on the interactions between the proteins and small molecules such as substrates and coenzymes.

The work of the Department has been greatly facilitated by access to complex instruments and by collaboration with workers in other departments of the John Curtin School of Medical Research, the Research School of Chemistry and the Commonwealth Scientific and Industrial Research Organization.

The *Department of Clinical Science* is physically situated in the Canberra Hospital, except for one section, the Human Genetics Group, which has its laboratories in the John Curtin School of Medical Research. The Department accepts clinical responsibility for the investigation and treatment of patients and pursues a program of clinical and laboratory research orientated towards problems associated with coronary heart disease, while the Human Genetics Group is concerned with population genetics.

Studies carried out in various parts of the world have led to the suspicion that diet, physical inactivity, obesity, stress, smoking, blood pressure and abnormalities in the ways in which the body chemically deals with fats and carbohydrates might be contributing to the causation of coronary heart disease. This disease has become increasingly common in our type of community but is still rare among such people as the New Guineans. Projects undertaken by the Department to increase our understanding of these conditions include such investigations as the effects of starch and different types of sugars and fats in the diet of patients and of normal subjects on the blood levels and rates of usage of cholesterol and other forms of fat in the body; the effects of obesity on cholesterol production and excretion; the ability of adipose tissue to assimilate, synthesise, burn and release fat; the effect of different carbohydrates in the diet on the formation of fats by the rat liver; the influence of mental stress on blood pressure and on the tendency of blood platelet cells to initiate

thrombosis; and a survey of New Guinea natives to establish the prevalence of coronary heart disease and to examine the extent to which the so-called 'risk factors' operate in this relatively 'immune' population. In addition, a special cookery book is being prepared for use by patients and others interested in controlling weight and blood fats.

Genetic studies have been concerned with the occurrence and population distribution of genetic variants which are revealed by an examination of different types of proteins and enzymes found in blood and other tissues. Studies have been made on samples collected from Australian Aborigines, New Guinea, India, Fiji, Malaysia and Thailand, and several new variants have been discovered.

The work of the *Department of Experimental Pathology* continued to be concentrated in two main fields of research, the normal and pathological function of the lymphatic system including the phenomenon of immunity and disorders of the cardiovascular system both of the arteries and of the microcirculation.

The lymphatic system is intimately involved in the recognition of foreign material and the generation of reactive cells which elaborate specific antibodies and constitute the cellular basis of immunological memory. These reactions involve cells in lymph nodes, spleen, thymus and other lymphoid tissue. Experiments have been directed towards the elucidation of the life histories of these various cells in order to gain a better understanding of the reactions of the body to any material that is regarded as 'non-self'. This is of importance in the basic defence mechanism of the body to invasion by foreign antigens and also in the mechanisms by which grafts from other individuals are rejected. Special attention is being given to reactions in the foetus before birth.

Diseases of the cardiovascular system are of considerable importance because of their prevalence in our society, especially diseases of the arteries such as atherosclerosis which is the underlying disorder in coronary heart disease. Metabolism of elastin and of lipid, important components of the walls of arteries diseased by atherosclerosis, has been pursued experimentally. The functional and structural changes of the microcirculation, especially in inflammatory conditions, have also been studied.

Much of the activity of the *Department of Medical Chemistry* revolves around the study of the chemistry of certain families of substances that are noted for strong and highly selective biological effects. The families studied belong to what are called nitrogen heterocycles, which are defined as follows. The atoms in many molecules are arranged in the form of rings which usually consist only of carbon atoms. However, when a foreign element is present, the rings are said to be heterocyclic, and in nitrogen heterocycles the foreign element is nitrogen. Nitrogen heterocycles play a tremendously important part in the life processes of the human body. Familiar examples are the water-soluble vitamins, the genetic code and the total heredity of each cell (which are recorded as unique arrangements of purine and pyrimidine heterocycles), and an ever increasing number of modern therapeutic remedies.

In the year under review, several groups in the Department have been working on purines and pyrimidines, as well as with pteridines on which the formation of these substances in the body depends. Specially studied were the combination of these substances with simple negatively charged molecules (called

nucleophiles) such as are abundantly present in the living cell, not overlooking the most abundant of all, namely water which is so often disregarded in conventional chemistry. The tendency of these substances to combine with one another (polymerisation) and to break down to simpler substances (degradation) has also been pursued under mild conditions. Attention has also been given to a group of related substances known as azapteridines which have been little studied hitherto in spite of evidence of powerful physiological activity. They include the food poison, toxoflavin (from infected rice) and the antibiotic, fervenulin.

An attempt is being made to synthesise simplified analogues of tetrodotoxin, the extremely potent agent in the puffer fish which causes paralysis when eaten. Tetrodotoxin is of great interest to experimental pharmacologists, because it blocks the transport of sodium ions in a unique way, and it is desirable to relate molecular structure to biological action in this field.

A different type of activity in this Department is the quantitative study of the formation of complexes by traces of metals (such as copper, zinc and calcium) which occur in the blood and other tissues. The problem under investigation is how these metal ions distribute themselves among the many substances in the body which are capable of binding them. As a laboratory model, thirteen of the commonest amino acids of the blood stream were allowed to react with a range of biologically important metal ions and the results, first recorded in potentiometric titration, were analysed by computer. From this approach, a rough outline of their pattern of distribution is beginning to emerge.

This year's work owed many of its successes to the opportunity to use modern apparatus, much of it of great complexity. For example, the indispensable nuclear magnetic resonance spectrometer, which was installed in the Department in 1966, has required modernisation in two ways; its sensitivity has been greatly increased by connection to a computer of average transients (in 1967), and its range of usefulness has been extended by the variable temperature probe introduced in 1968.

In the *Department of Microbiology* work has centred on the chemistry, structure, genetics and classification of viruses, and also on the diseases caused by viruses. LCM virus infection of mice continues to be an important laboratory model for the role of the immune response in the production of pathological lesions, sickness and death. LCM virus, like leukemia viruses, infects mice in utero and leads to a life-long virus carrier state with pathological results later in life. These pathological changes have now been shown to be a result of a chronic low-grade immune response to the infecting virus. Indeed, in all the patterns of infection produced by this virus, it is the immune response which is harmful. The immune response is depressed by antilymphocyte serum, and treatment of infected mice with this serum prevents the pathological changes. Antilymphocyte serum is also proving a useful tool in evaluating the role of the immune response in myxomatosis in rabbits and in mousepox infections of mice.

The new Head of the Department of Microbiology, Professor G. L. Ada, F.A.A., brings with him a strong research group whose interests are primarily immunological. Modern research methods in immunology can be fruitfully applied to the study of virus, and the work of Professor Ada and his group on the structure of protein antigens and their behaviour in animals will be of direct relevance to much of the work of the Department.

The many mosquito-borne viruses isolated in 1966 from the Sepik River area in New Guinea, have been shown to belong to five distinct strains. One of these seems to be identical with a virus recently isolated in Queensland, but the others are probably new Australasian viruses. One of them was recovered from the sera of patients with fever, and they are at present being compared with mosquito-borne viruses isolated elsewhere in the world. Studies are also in progress on the mosquito-borne virus causing infectious polyarthrits in Nelson Bay, New South Wales.

A new activity has been associated with the Department this year by the attachment of Dr S. V. Boyden's Urban Biology Group, which is concerned with the effects of the technological environment of the modern city on the biology of man. In September the Group organised a successful national symposium on 'The Impact of Civilisation on the Biology of Man' at which four members of the Department gave papers.

The work of the *Department of Physical Biochemistry* is intended to throw light particularly on the more physical aspects of biochemical substances, systems and processes. The objective is biological, though the methods are (in part) those of physical chemistry. Most of our work is concerned with large molecules, such as proteins and complex sugars, which occur in the animal body inside or outside cells.

One major line of attack has been on the complex sugars which are found in all 'connective tissues' (such as artery walls, heart valves and cartilage). Although a number of chemically distinct species are present, their function may be rather concerned with actions such as lubrication and the maintenance of water-balance (hence of the stiffness and plasticity of the tissue) than with specific chemical interactions.

A second major line of attack has been on the variety of proteins that are found in milk, some of which have a purely nutritional function, others are related to the building up of immunity, others to the regulation of metabolism in the mammary gland. Both detailed investigation of some of these proteins and a wide survey of their occurrence and nature in different species of animal have been carried out.

A third major line has been on the enzymes which catalyse the formation and breakdown of sulphate compounds in the animal body. Such compounds occur widely in cells and in connective tissues, but their importance in metabolic processes has been relatively neglected.

In addition work has been done, both experimental and theoretical, on the general ways in which large-molecular substances may interact with each other in the situations, inside and outside cells, where they occur naturally. Often such substances have been studied in isolation, and in dilute solution. Their interactions in concentrated systems may throw light on the structure and behaviour of both the cytoplasm of cells and on connective tissues. The liability to radiation damage of the fatty substances which help to form cell membranes has been studied in artificial systems.

In these projects, and in other minor ones that have cropped up from time to time, there has been a broad spectrum of collaboration by members of the Department with other workers in departments of the John Curtin School of Medical Research, in other Australian universities and overseas.

The work of the *Department of Physiology* is mainly concentrated along three separate lines: (a) the nature of the chemical substances used to transmit information between nerve cells; (b) the way muscle nerves influence and determine the properties of the muscles to which they are connected; and (c) the nervous mechanisms in the eye and the brain that enable us to see and recognise the objects in the world about us.

Studies of chemical transmitter substances operating at synapses within the mammalian brain and spinal cord have continued along the lines developed in past years. By means of special microtechniques, compounds of interest can be administered close to nerve cells of a selected and identified type, so mimicking the release of transmitter substances from the terminals of other neurones upon them. Additional evidence has been obtained for the function of the simple amino acid glycine as an inhibitory transmitter of major importance in the spinal cord; interference with this action of glycine is responsible for the convulsions observed in strychnine poisoning and tetanus. The excitation of central neurones by glutamic and aspartic acid has now been demonstrated to be associated with the function of these amino acids as important central excitatory transmitters, and a possible development of this work will be the design of new types of anticonvulsants. Investigations have also continued of the factors involved in the manufacture, storage and destruction of transmitter agents, and of the mechanism of release of these substances from nerve endings. The motor nerves which innervate muscle fibres mediate specific influences which determine some of the dynamic properties of fast and slow muscles of mammals. The nature of the neural influence is still unknown but progress has been made in defining the interaction between nerves and muscles following surgical cross-union of nerves. It has been found that nerves not only determine the speed of contraction but also influence the mechanism which controls the degree of activation of contractile material during contraction. These results have also revealed new aspects of events in contraction.

The work on the visual system, which is still fairly new to the Department, is now well established. Three laboratories are in routine use and a fourth is under construction. The eye forms an image of objects in the outside world on the light sensitive layer at the back of the eye. The main aim of the Department's work on vision concerns the way in which the neural layers in the eye transform the images of external objects into coded messages consisting of patterns of nerve impulses. These messages are transmitted along the optic nerve to the brain and the information undergoes successive stages of neural processing in the nervous system. The problems being investigated include binocular single vision and stereoscopic depth discrimination. The central problem is the recognition by the brain that a particular pattern of nerve impulses represents a particular object in the external world. A solution to the problem of pattern recognition is of the greatest importance for our general understanding of brain function and has wide implications in other fields, particularly computing science.

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‡ Not a member of this University.

¶ Member of the Department of Physical Biochemistry.

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*** Based on work done while a Visiting Research Worker.

‡ Not a member of this University.

¶ Member of the Department of Medical Chemistry.

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 'On the iridescent viruses of insects.' *Department of Microbiology.*
- CONNELLAN, J. M.
 'The structure and activity of amylase.' *Department of Biochemistry.*
- CUNNINGHAM, A. J.
 'Antibody-forming cells.' *Department of Microbiology.*
- DICKSON, M. R.
 'Fine structure of some lower metazoa.' *Electron Microscope Unit.*

*Doctor of
 Philosophy*

* Based on work done while a member of the Department.

‡ Not a member of this University.

** Based on work done prior to joining this University.

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Department of Medical Chemistry.
- FRANEK, MAUREEN D.
 'Investigation of the proteinpolysaccharides of some connective tissues.'
Department of Physical Biochemistry.
- GHAMBEER, R. K.
 'Ribonucleotide reductase of lactobacillus leichmannii.'
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- GRANT, MARGARET A.
 'Studies on the biosynthesis and structure of bacillus subtilis a-amylase.'
Department of Biochemistry.
- HARVEY, R. J.
 'The spino-olivo-cerebellar pathway of the cat.'
Department of Physiology.
- JONES, M. A. S.
 'Interaction of lymphocytes with alien tissues.'
Department of Experimental Pathology.
- LIANG CHI-RONG
 'Phosphonate metabolism in tetrahymena.'
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- STENHOUSE, D.
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- SUBRAHMANYAN, T. P.
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- YAMAMOTO, H.
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- ENGLAND, B. T.
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THE RESEARCH SCHOOL OF PHYSICAL SCIENCES

REPORT OF THE DIRECTOR

Professor E. W. Titterton, C.M.G., F.A.A.

The year was marked by a record output of research results—a total of 265 reports and papers were published and twenty-one theses were presented for the degree of Doctor of Philosophy.

The work of Dr R. E. Edwards in the Department of Mathematics earned him election as a Fellow of the Australian Academy of Science, while two members of the Department of Astronomy were appointed to senior positions overseas—Dr W. Buscombe to a chair at Northwestern University and Dr L. T. Searle to Mount Wilson and Palomar Observatories.

Two very distinguished members of the School, Emeritus Professor Sir Mark Oliphant, K.B.E., F.R.S.N.Z., F.A.A., F.R.S., and Professor K. Mahler, F.A.A., F.R.S., retired at the end of the year. Sir Mark who has been a University Fellow for the past two years, will continue to work in the School as an Honorary Fellow, but Professor Mahler elected to take up a post at Ohio State University.

The Astronomer Royal, Professor Sir Richard Woolley, O.B.E., F.A.A., F.R.S., was appointed Honorary Professor of Astronomy for three years from 1 January 1969, and Emeritus Professor Sir Leonard Huxley, K.B.E., F.A.A., was appointed a Visiting Fellow for one year in the Electron and Ion Diffusion Unit. A major nuclear physics conference, sponsored by the Departments of Nuclear and Theoretical Physics, and the Australian Institute of Nuclear Science and Engineering, was held in the laboratory in February and was attended by seventeen delegates from leading laboratories overseas.

The laboratory attracts many overseas visitors and twelve honorary fellows and research fellows were at work on various problems during the year; in addition, some twenty visiting fellows and research fellows from Australia and overseas were partly financed by the School to work on research problems in Canberra. This flow of visitors is of considerable importance to the health of research in the School. Staff and students benefit from discussion and from exposure to differing techniques and viewpoints from other laboratories.

Among distinguished short-term visitors to the School were the Right Honourable Lord Penney, K.B.E., F.R.S., lately Chairman of the United Kingdom Atomic Energy Authority and now Rector of the Imperial College of Science and Technology; Professor S. C. Curran, F.R.S., Vice-Chancellor and Principal of the University of Strathclyde; Professor A. N. Matveyev (USSR), Assistant Director-General of Science, UNESCO; Dr L. Branscomb, Head of the Joint Bureau of Astrophysics, Denver; and Dr D. Hornig, United States Presidential Scientific Adviser.

The change introduced in the form of School government, by the adoption of a Faculty and Faculty Board system in 1967, has proved to be satisfactory. It has been welcomed by staff and has facilitated flow of information to and from staff members and has stimulated interchanges between departments.

Professor D. C. Peaslee's term on the Faculty Board expired in August and Dr F. C. Barker, Department of Theoretical Physics, was elected to replace him, for a term of two years.

During the year the Director arranged information meetings for technical, clerical and workshop staff and for scholars and students. These meetings, too, were welcomed by participants and will continue to be held as and when appropriate. The final submission of the triennial estimates for 1970-72 was made, there being no significant change over the position as described in last year's Report. The Chairman and members of the Australian Universities Commission visited the University during October for discussions on the submission. During the visit the physical and engineering scientists of the Commission made a tour of inspection of the laboratory to see equipment and discuss the plans for additions to buildings.

Following on the proposal that this University should share a computer facility with the Commonwealth Scientific and Industrial Research Organization, Canberra, a re-assessment of this School's needs was undertaken. To enable a large ANU-CSIRO computer to be installed it is desirable that the present IBM 360/50 should be left in the School. This would eliminate the need for a machine of the PDP 10/50 type which had been included in the original triennium proposal. However, the S360/50, as it stands, cannot fill the School's 1970-72 needs without considerable modification, especially of the input. Appropriate recommendations have been formulated to upgrade the system to cope with the expected research needs of the School.

Progress with the Anglo-Australian 150-inch telescope has been good. Professor O. J. Eggen, F.A.A., and Professor S.C.B. Gascoigne, F.A.A., continued to advise on the project and Mr H. Wehner has been seconded full-time to the engineering group. Completion of the instrument is expected in 1973. Tenders have been called for an extension to the lodge at Siding Spring Observatory to double its sleeping capacity and for five new houses. A contract has been let for a water pipeline from Timor Dam to the Observatory and a new section of the access road has been completed to prepare for the heavy transports which will carry equipment to the mountain top.

On the main campus, Stage II of the Geophysics and Geochemistry Building was approaching completion by the end of the year; occupancy should be possible by mid-1969. The re-building of the nuclear physics accelerator block, following the removal of the Cockcroft-Walton accelerator which has gone to the University of New South Wales, has been postponed until the next triennium. Determination of the precise nature of the building awaits a Government decision on the proposal to add a type FN injector accelerator to the present tandem accelerator system to increase the experimental capacity of the laboratory.

Late in November, during low power operation of the homopolar generator, a fault developed in the current control equipment causing an arc between electrodes. The consequent excessive currents flowing within the machine caused considerable damage to the current collection mechanism and parts, particularly the sliding brush system. The design of the machine had taken such possible failures into account to allow it to withstand the immense forces which can be produced—as high as 400 tons on each rotor. In fact no primary structure of the generator failed under the loads experienced. During the incident the planned safety measures operated smoothly and well and the operating staff brought the machine to rest in a most efficient and competent manner. By Christmas the damage had been assessed, the machine dismantled and damaged components were being made good.

Following Professor Titterton's appointment as Director of the School in September, Council agreed to create a second chair in the Department of Nuclear Physics. The holder of this new chair is expected to become the head of the department, thus relieving the Director of this responsibility and allowing him more time to deal with the affairs of the School. The Director will retain his Chair in the Department and expects to continue his researches with a small group. He will remain Head of the Department until the new appointee arrives in Canberra; it is hoped that this will be late in 1969.

The following notes describe some of the more important developments in research within the departments and units of the School.

In the *Department of Astronomy*, apart from the aid given to the Anglo-Australian 150-inch telescope project, researches continued at both the Mount Stromlo and Siding Spring Observatories. These were aided by the presence of Dr A. R. Sandage, Mount Wilson and Palomar Observatories, and Dr A. E. Whitford, Director of Lick Observatory, for visits of a year and six months respectively.

Research Activities

Contrary to popular myth, major astronomical breakthroughs come from good equipment used at good observing sites by persistent and careful observers. This was demonstrated again in 1968 with the 24-inch polarising telescope at Siding Spring Observatory where a two-year program of observations of nearly 2,000 stars was completed. From these data—the most accurate and extensive polarisation measurements ever obtained—it has been possible to construct the first consistent picture of the magnetic field of our local spiral arm of the Galaxy. During the same period, and with the same equipment, the presence of polarised light in a wide variety of astronomical objects has been established. This work has made it clear that polarisation is a valuable additional parameter in the search for an understanding of these objects.

Since the commissioning of the Cassegrain focus of the 74-inch Mount Stromlo reflector last year, and the installation of the image tube spectrograph, the telescope has been used almost exclusively as an electronic camera. Much of the dark sky time is used for obtaining redshifts for distant galaxies and radio sources in a long-term project, but the image-tube spectrograph played an important role in the most spectacular event of the year—the optical identification of the X-ray source in Centaurus, near the Southern Cross.

Work on liquid-state physics has continued in the *Diffusion Research Unit*. Liquids are at present the state of matter about which least is known and intensive studies are under way to construct fundamental theories of the same degree of completeness as those available for the gaseous and solid states. In the past five years new theoretical equations for liquid properties have emerged but, in certain areas—diffusion in particular—there are virtually no data suitable for testing them. For this reason the Unit has undertaken to measure diffusion in the liquefied, rare gases as the theories must be tested first for near-ideal liquids of this type. The task, experimentally, is very difficult and the major effort of the Unit this year has been in designing, constructing and testing apparatus for the purpose. At the end of the year the last design problems had been overcome and the apparatus was in the final stages of construction. It is anticipated that it will be in operation early next year.

The *Electron and Ion Diffusion Unit* continued investigations of low energy electron and ion collision processes with neutral molecules through the measurement of transport coefficients, and the interpretation of the data in terms of energy dependent collision cross sections. Cross sections for both elastic and inelastic scattering in hydrogen have now been derived from the experimental data in parahydrogen which were reported last year.

The apparatus for measuring the mobility of mass identified ions has been completed and the first preliminary results taken.

The changeover to experimental systems employing ultra high vacuum technology is now almost complete and several sets of drift velocity data have been obtained. The new data have enabled the cross section for electrons in helium to be extended to lower energies and the cross section for neon to be determined for the first time. Drift velocity measurements have also been made at low temperatures, and over an extended range of pressure, in helium, deuterium, hydrogen and carbon dioxide as part of an extensive experimental investigation into the cause of an unexpected pressure dependence observed previously in this laboratory and elsewhere.

Work in the *Department of Engineering Physics* centres mainly on the development and use of the homopolar generator for a wide range of experiments which can take advantage of the unique attributes of this equipment—namely, controlled high-current high-energy pulses.

Three major researches require the use of the homopolar generator. In the first of these, million ampere arc phenomena are under study. The equipment for these experiments has been developed further and some success has been achieved in alleviating the problem of disintegration of the anode and the consequent obscuration of the arc itself by surrounding it in a water vortex.

A second series of experiments relates to the development of a higher power laser. Preliminary studies have been promising and, already, a laser power output as good as any in the world has been obtained. It is hoped that work in progress to devise discharge tubes capable of withstanding very high radiation and stresses will enable the full energy of the homopolar generator to be employed. This should enable a laser beam to be produced which is some one hundred times more powerful than anything yet achieved. Such a beam would have many research applications.

The third application of the homopolar generator is to power ultra-high field magnets for use in solid state physics. The magnet laboratory has had a 150 kilogauss system in operation for some time and construction of a unique 300 kilogauss magnet is well under way. Most problems of the design have now been solved, particularly that of a process for bonding together the turns of the inner coils so that the bond is not subject to deterioration under water. This process is entirely new and is the subject of a patent application.

Experiments in solid state physics using the 150 kilogauss magnet have continued in liaison with other universities, and the Department's own work in the field is now gaining momentum.

In addition to the above, a program for the development of sliding brushes for the homopolar generator has been undertaken. This has enabled installation of moveable brushes bearing on the horizontal faces of the rotors (where there is significant potential gradient) to be effected so as to allow the output voltage of the homopolar generator to be varied during a pulse. The flat surfaces of the

centre discs of the rotors were machined smooth and accurate to take the brushes and the surfaces were lapped to high accuracy on the boring mill using telescope mirror grinding techniques. Before the underside of the top rotor could be lapped the forty-ton rotor had to be turned over using special lifting equipment designed and constructed for the operation. These changes produced successful voltage control, thereby enhancing the capabilities of the homopolar generator system.

Apart from work concerned directly with the homopolar generator experiments continued with a small toroidal plasma machine with the object of producing hot, stable, predictable plasmas—this is basically a pilot study to determine the feasibility of a major plasma experiment employing the homopolar generator. The stability behaviour of the system is now understood although there are still many questions to be answered.

The small group conducting fundamental research on information processing and systems made a number of advances. Studies in seismic processing have led to simulation of an on-line event detector using a digital computer. Progress has also been made in one of the central problems in information processing, namely, the automatic description and classification of inputs (representing patterns) in specific instances, particularly handwritten characters and line drawings. Progress has also been made in the automatic synthetic description of parts of pictures from more primitive elements, such as spots and edges. Studies of the role of learning in the description process have progressed.

In the *Department of Geophysics and Geochemistry* research continued on a variety of problems related to the crust and upper mantle of the earth.

The most extensive activity continues to be the age-dating of rocks ranging from the Precambrian, for which a time scale has to be established, to young rocks of ages from ten million years to very recent in which reversals and changes of the earth's magnetic field can be studied. In connection with this work, partly because of its similarity to the geology of Western Australia (to which it was contiguous on present theories of continental drift) an extensive study of age-dating and palaeomagnetism in India and Ceylon has been completed.

A notable event was the offer to the Department by the United States National Aeronautics and Space Administration of lunar samples to be collected by the Apollo mission in 1969. The investigations will include measurements on the temperature and pressure conditions under which basalt-like rocks on the lunar surface were formed; rubidium-strontium dating of the materials of the lunar surface and analyses of lunar material by neutron activation, by study of fission tracks, and by the use of the electron microprobe.

There have been considerable extensions to apparatus within the Department. A second high-pressure rock deformation apparatus has been built, the high-pressure phase transformation apparatus is being extended to 300 kilobars in order to study the mantle at depths of up to 800 km while the seismic network operated jointly with the Snowy Mountains Authority is being telemetered to increase its accuracy and uses.

Other work in the Department included extensive studies of the distribution of trace elements in rocks, both in Australia and the circum-Pacific belt; measurements of radioactivity of rocks; radiocarbon-dating; studies of structural geology and rock mechanics, particularly in regions of economic importance.

The *Department of Mathematics* continued its research and ancillary activities. Its members were in considerable demand as authors, supervisors of students working for the degree of Doctor of Philosophy, seminar and colloquium lecturers, examiners for higher degrees, referees, reviewers, editors, committee chairmen and committee members. The Department again played an important role in bringing distinguished visitors to Australia and lively mathematicians to Canberra. Recruiting of staff, visitors and research students continued at a highly satisfactory rate, considering the difficulties of the market.

Research in the *Department of Nuclear Physics*, as noted in last year's Report, has been extended to all regions of the periodic table and many new results bearing on the structure of nuclei have been obtained.

Although a series of minor troubles on the tandem accelerator, mainly of an electrostatic nature, required twelve tank openings during the year, nevertheless the total beam time obtained—6,950 hours—was an all-time record, amounting to over nineteen hours a day.

The 2 MeV AK accelerator also performed well and logged 3,700 hours during the year. It is proving to be a most useful machine working mainly in the field of p and He³ capture radiation studies using the new Ge(Li) detectors and the recently acquired 10-inch x 10-inch sodium iodide crystal detector.

The 1.2 MV Cockcroft-Walton accelerator was dismantled and has been delivered to the University of New South Wales, where it will be used for solid state physics studies.

Research during the year was greatly aided by the full use of the IBM 1800 data acquisition and processing system. The core store has been raised to 16 K words and the device makes available single channel and multi-parameter pulse height analysis and many channel detection systems, for example, in angular distribution measurements.

The link between this system and the University's S360/50 was tested and was ready for practical use by the end of the year. It provides a two-way data link compatible with both systems.

Research problems studied with the tandem accelerator included measurements of the tensor polarisation of deuterons elastically scattered from the nuclei Be⁹, C¹² and O¹⁶, studies of three particle final states arising from the compound systems Be⁶, B⁹ and N¹³, properties of the N¹⁴(p,γ)O¹⁵ reaction at stellar energies, determinations of the spin and parities of highly excited states of O¹⁵, parity violation in strong interactions, studies of the low-lying energy levels of Al²⁷ and Al²⁹ through (α, p γ) angular correlation measurements using the double-focussing magnetic spectrometer, and the He³ elastic and inelastic and (He³, α) reactions induced from Mg²⁶, Al²⁷, Fe⁵⁶, Cu⁶³ and Ag targets. A study was made of the Fourier analysis method of analysis of excitation functions and the method was applied to the analysis of data taken on the elastic scattering of protons from Na²³, P³¹ and Ni⁶².

The study of the odd-mass cobalt isotopes, mentioned last year, is nearing completion. Many new levels have been discovered, spins and parities determined and branching ratios and mixing ratios of various transitions measured.

Work on the collective states of odd-even nuclei continued, Rh^{108} shows a high degree of collectivity of its negative parity states. Data taken for Ag^{107} and Ag^{109} is in course of analysis.

Work with the 2 MeV machine included studies of the capture reactions $B^{11}(He^3, \gamma)$ and $B^{11}(\alpha, \gamma)$ of proton capture resonances in Si^{29} and a high resolution investigation of the $K^{41}(p, n)$ reaction from threshold up to 2,300 keV. This last experiment yielded a value of $1,237 \pm 1.6$ keV for the threshold and provided evidence for a number of 3^- levels with a spacing of about 7 keV in the energy region up to 1.9 MeV.

An investigation was made of the possibility of measuring nuclear g-factors by the perturbation of γ - γ correlations from a decaying radioactive source through the application of a strong magnetic field. Such experiments could be carried out with the 150 kilogauss Bitter magnet powered by the homopolar generator when this becomes available again for experimental work.

In the *Physics of Ionized Gases Unit* interesting results were obtained on the scattering of a number of species of positive ions from a variety of metal and carbon targets. The scattering in the region of incident energies from 2,000 to 30,000 eV is highly elastic, the target behaving as a collection of stationary, independent atoms. A precision measurement of the magnitude and energy distribution of the secondary electrons ejected from targets by positive ions was made. There are no electrons with energies near zero and distributions are closely gaussian, peaking in the neighbourhood of 10 eV.

Following the retirement of Emeritus Professor Sir Mark Oliphant, experimental work will be completed in mid-1969 and the Unit will be disbanded. Sir Mark will remain in the School as an Honorary Fellow and expects to do a good deal of writing following completion of his experimental program.

During the year the *Department of Theoretical Physics* continued to work on fundamental problems of nuclear physics, elementary particle physics, statistical mechanics and plasma physics.

In theoretical nuclear physics the emphasis was on the structure of light nuclei and on optical model type calculations of reactions and scattering. These investigations were closely related to experimental work in the Department of Nuclear Physics. In elementary particle physics the main work completed was an extensive study of non-leptonic hyperon decays. Studies in statistical mechanics led to the development of improved methods of handling the Ornstein-Zernike relation and the Percus-Yevick model. A study of plasma stability, related to work on the Australian National University torus, was made.

The recruitment of staff in the discipline became easier and a number of new appointments were made during the year.

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† Visiting Research Worker.

‡ Not a member of this University.

** Based on work done prior to joining this University.

* Based on work done while a member of the Department.

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* Based on work done while a member of the Department.

¶ Member of the Department of Theoretical Physics, Institute of Advanced Studies.

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THESES

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BESSELL, M. S.

'A study of some southern short period variables.' *Department of Astronomy*.

*Doctor of
Philosophy*

BOFINGER, V. M.

'Geochronology in the East Kimberley area of Western Australia.' *Department of Geophysics and Geochemistry*.

BRAY, K. H.

'Some ^3He -induced direct reaction studies.' *Department of Nuclear Physics*.

BROOKS, M. S.

'On varieties of metabelian groups of prime-power exponents.' *Department of Mathematics*.

BRYCE, R. A.

'On certain varieties of metabelian groups.' *Department of Mathematics*.

BYDDER, E. L.

'The theory of partially ionised and non-uniform plasma.' *Department of Engineering Physics*.

CLARK, G. J.

'A study of the disintegration of excited states in ^8Be and ^{16}O .' *Department of Nuclear Physics*.

EKERS, R. D.

'The structure of southern radio sources.' *Department of Astronomy*.

GREEN, T. H.

'High pressure experimental investigations on the origin of high-alumina basalt, andesite and anorthosite.' *Department of Geophysics and Geochemistry*.

GUPTA, CHANDER K.

'Centre-extended-by-metabelian groups.' *Department of Mathematics*.

* Based on work done while a member of the Department.

¶ Member of the Department of Nuclear Physics.

† Visiting Research Worker.

** Based on work done prior to joining this University.

- GUPTA, S. C.
'Transport coefficients of binary gas mixtures.' *Department of Theoretical Physics.*
- HARASYMIV, S. R.
'On approximation by automorphic images of distributions.' *Department of Mathematics.*
- HOSKINS, E. R.
'Field and laboratory experiments in rock mechanics.' *Department of Geophysics and Geochemistry.*
- HUANG, F. C. P.
'Gamma-ray studies of some light nuclei.' *Department of Nuclear Physics.*
- HYLAND, A. R.
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'Geothermal and electrical conductivity measurements of the structure of the crust and upper mantle in Australia.' *Department of Geophysics and Geochemistry.*
- IVANOVICH, M.
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'Investigations of high grade regional metamorphic and associated rocks.' *Department of Geophysics and Geochemistry.*
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'Three-colour photometry of southern globular clusters.' *Department of Astronomy.*
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'Nuclear reaction studies involving neutrons and gamma rays.' *Department of Nuclear Physics.*
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THE RESEARCH SCHOOL OF SOCIAL SCIENCES

REPORT OF THE DIRECTOR

Professor W. D. Borrie

In structure and research interests, the School continued along the major lines of the previous year, with nine Departments, three Units, and an Archives Section for the collection of business records. While the major focus of applied research continued to be Australia and the Territory of Papua and New Guinea, comparative and theoretical interests sustained research contacts with many overseas areas and helped to bring many scholars from overseas to work in the School.

General

In August Professor P. H. Partridge resigned as Director of the School, but he retains his Chair of Social Philosophy and has also agreed to be Acting Head of the Department of Sociology until that chair is filled. On his return from study leave in September the Faculty held a dinner for Professor and Mrs Partridge as a mark of appreciation of their services to the School during the previous seven years.

*The
Directorship*

In August the Council appointed Professor W. D. Borrie as Director.

As in previous years, articles in Australian and overseas journals were an important avenue of publication of current research results, but there have been signs for some time that the output of books was rising as major research projects, built up over the years, came to full fruition. In this regard 1968 proved a significant year.

Publications

The following books and monographs by individual authors, or with present or recent past members of the School as major contributors, were published in 1968:

New books:	
by current staff	22
by previous staff or students based on research done while at the university	7
Revised editions of books	4
	<hr/>
	33
	<hr/>

The international interest in these works is apparent in the fact that seventeen were published overseas.

A major recruiting drive was conducted during the year, with some success, but still with some disappointments which will require further effort in 1969 to sustain the 'target' of keeping filled 90% of established academic posts.

Staffing

With the deliberate policy of maintaining a considerable proportion of academic posts on a temporary basis, and with consequent resignations and lags in finding replacements, a 'target' above 90% is extremely difficult to sustain; but as 1968 closed there seemed every prospect of attaining that level.

Although there was only a net increase of four actually on the pay-roll at the end of 1968 (eleven new appointments, seven resignations) bringing the total staff to sixty-one, a further fourteen posts had been accepted; this brought the total of posts committed to seventy-five, only five short of the approved establishment of eighty.

Satisfactory as the situation thus appeared to be by December, it is emphasised that resignations and some loss will certainly occur to 'posts on offer', so that in 1969 at least ten to twelve positions will again require action.

One disappointing feature was the failure once more to fill the Chair of Sociology in response to advertisements. However, by the end of the year some lines of inquiry which were still open offered some prospects that an appointment could be made in 1969.

In November the Council approved the creation of a second Chair in Demography, the occupant to be Head of the Department to replace Professor Borrie.

Students

In January 1968, fifty-eight students were enrolled, all but one of whom held scholarships and were enrolled for the degree of Doctor of Philosophy.

The statistics for the year were:

Students enrolled, January 1968	58
Students appointed during 1968:	
From Australia	10
From overseas	8
	—
	18
Graduated during year	14
Resigned before completion of course	2
Students enrolled, December 1968	60

The improvement in the quality of applications which was apparent in 1967 was sustained in 1968 and there continued to be a considerable stream of applicants from a wide range of countries.

Research and Teaching

During the year there was a marked increase in the use of the computer by both staff and students, requiring an increase in the programming staff to service this need. A group of three programmers was established on a joint-school basis to serve both the Research School of Social Sciences and the Research School of Pacific Studies.

Another prominent and associated aspect of research was the extensive use of sample surveys, particularly in the Departments of Sociology and Political Science. In the Departments of Economics and Economic History there was increasing interest in econometrics and a growing demand for formal courses in this area as an aid to the research work of both staff and students. At the same time, the Faculty of Economics in the School of General Studies has been planning a degree of master by course work and in the latter part of the year discussions were held amongst the economists and economic historians in the School of General Studies and the Research Schools of Social Sciences and Pacific Studies concerning co-ordination of such graduate course work, with particular reference to a common core that could serve the needs of students for degrees of master and doctor.

In general, there was a further move in 1968 towards the use of quantitative and statistical methods in many fields of research, with philosophy perhaps wholly, and history substantially immune from the trend. The computer has changed the dimensions of many fields of social science research, with consequent implications with regard to both the adequate preparation of students and the efficient organisation of staff (e.g. the balance between academic and supporting staff). These issues received preliminary consideration during the year and will require further examination in 1969.

One of the important functions of the three research units is to sustain interdisciplinary research within the School and research contacts with other universities and institutions in the fields they represent. The Urban Research Unit continued to accept the major responsibility for the Joint Urbanisation Seminars, two of which were again held during the year. These bring together some forty persons from many parts of Australia, representing the major disciplines associated with the study of problems of urban growth and drawn from universities, private business and Commonwealth and State government departments. The second seminar this year, dealing with educational planning in urban areas, also provided a link with the Education Research Unit.

The Education Research Unit, in its first full year of operation, was used to attain another aim—the cross-disciplinary discussion of research interests and results by students and staff of the various departments from within the School who are working in a common general area. Nine such seminars were held in the field of education, with papers based on current research, not only in the Unit itself, but also in the Departments of Demography, History, Political Science, Sociology and Statistics.

Liaison in research matters between the School and other universities was again assisted by representation from most Departments at the meeting of the Australian and New Zealand Association for the Advancement of Science held in Christchurch, New Zealand, in January, and at the annual meetings of the national associations representing the separate disciplines, which now provide for almost every department of the School. In addition, some attention was given to small conferences bringing in selected people from outside to assist the planning of new research in the School. One such meeting, arranged by the Department of Demography, brought in representatives of both the Administration of the Territory of Papua and New Guinea and of the Commonwealth Bureau of Census and Statistics to assess and discuss the statistical requirements for demographic, medical and social research in New Guinea.

An important aspect of research and teaching activities continued to be the visiting fellows. In 1968, thirteen of these came from overseas and four from Australia. In addition, five other staff members of other Australian universities spent shorter periods working in the School as honorary visiting fellows. It is pleasing to note that the visiting fellows program is one in which there is no recruitment problem: a steady flow of distinguished scholars seems assured, at least for a considerable time ahead. The success of the scheme owes much to the impact members of School staff have themselves made abroad. In the past year staff on study leave have lectured, for example, in Oxford, London, Manchester, Sussex, Moscow, Heidelberg, Yale, Toronto, Berkeley, Texas and Tokyo.

During the year members of the School assisted in the organisation and proceedings of an international conference on 'Medical Practice and the Community' held in August at this University. The recommendations of the conference have led to preliminary discussions between the Directors of the John Curtin School of Medical Research and Research School of Social Sciences concerning possible avenues of medical, economic and social studies that might be jointly sponsored in the field of health.

The *Department of Demography* continued to work mainly in its three established fields: the Australian population, the demography of the Pacific and South-East Asia, and international migration. Three new staff members brought

*Research
Activities*

the establishment momentarily to full strength, but the appointment of Professor Borrie as Director means that a new Head of Department will have to be found. The students in this Department continued to be predominantly from overseas. Two students from Nigeria received the degree of Doctor of Philosophy and took up academic posts in the Universities of Zambia and East Africa. The remaining seven students continued to work on population growth, labour force, fertility, infant mortality, and immigration in Australia and Asia. In student research increasing attention was given to research topics based on Australian data.

A new research project was launched during the year in collaboration with the Department of Economics in the Research School of Pacific Studies, to study traditional practices of family limitation in Javanese villages. The Department's group specialising in international immigration has also worked closely with the Social Science Research Council of Australia in the development of the Council's third major project, a national study of the impact of postwar immigration on Australia. Professor Borrie is Chairman of the Council's Organising Committee and Dr C. A. Price is the Council's Director of social and cultural aspects of the project.

The work of the *Department of Economic History* also tended to move towards econometric measurement, and to the development of organised industry studies and the examination of policy in Australian economic growth. At the same time, some of the special conditions promoting Australian growth have been taken up for study. This work is illustrated by analyses of Australian consumption functions, a study of the mining industry, a new project dealing with 'industries' of the elite professions, and a study of political economy in the 1920s. Some of the conditions of economic development have been given attention in essays on the balance of payments since 1890, the growth of the service industries, and the general conditions of economic growth in Australia during 1890-1960.

One other innovation planned by this Department is the participation by its members in the debates in overseas journals on the application of theory in historical issues. During 1968 one such study was completed by Professor N. G. Butlin in the form of a small monograph on the economics of slavery in the United States.

The *Department of Economics* again directed its main attention to current economic conditions and prospects, theories of capital and growth, and econometric studies. Aspects of specific interest to staff members included oil and shipping, trade practices, the presentation and analysis of Australian vital statistics, monetary institutions and policies, and the interpretation of econometric models and data.

By the end of the year steps had been taken to strengthen the staff, particularly in the field of econometrics, and also to strengthen the formal training of students through appropriate course work. The co-ordination of such course work with graduate training elsewhere in the University was discussed with other Departments of Economics and Economic History in both the Institute and the School of General Studies.

The *Education Research Unit* commenced activities in 1968 under the direction of Mr D. S. Anderson, Professorial Fellow. It is intended that the Unit will concentrate most of its effort on sociological and allied studies in the area of

education, with projects selected for their national rather than merely local interest.

Three projects were started in 1968, all concerning higher education. A study of professional socialisation is being made in engineering, law, medicine and teaching, using students in six Australian universities as a source of information. Several progress reports have been published and the work is due to be completed in 1970. A great deal of analysis of the existing information has yet to be made and additional information is to be collected on all students. Some preliminary findings are: firstly that students in different faculties tend to be from different social and educational backgrounds; secondly, that there are significant differences in attitudes of students according to the faculty they enter, for example students entering medicine in the Universities of Western Australia and Queensland are more alike than students in one university entering different faculties; thirdly the majority of students entering professional faculties are oriented to professional practice far more than any other objective of university education; there is impatience with those parts of the courses not perceived as being professionally useful. A special study is also being made of those students who withdraw from their courses.

The second study is of colleges of advanced education and is being made with the aid of a grant from the Commonwealth Advisory Committee on Advanced Education. The study will examine the students, teaching arrangements and policies of a representative selection of advanced colleges in all states.

The third project in higher education is a survey of part-time students in the Australian National University. A Visiting Fellow, Dr I. S. Turner, is also working on the prospects for decentralisation of educational administration in New South Wales.

At this stage no firm decisions have been taken about the areas in which further projects will be developed, but an appointment has been made to enable work to begin in 1969 on the economics of education, and a student for the degree of Doctor of Philosophy will begin a thesis on the structure of Catholic education in Australia. An important aspect of future developments will be the continued close association with the departments of the School and, desirably, some joint projects in which they will participate.

The main work of the *Department of History* is research in Australian history and its relations with British and Commonwealth history. There is an active section concerned with modern (nineteenth and twentieth century) Indian history. A semi-independent unit under Professor D. H. Pike works on a long-term project, the *Australian Dictionary of Biography*. Work was completed on the third volume of the Dictionary, the first of four to cover the period 1851-90, and this will appear in April 1969. Work also progressed steadily on Volume IV with the aid of collaborators from all parts of Australia.

Appointments made during 1968 will bring three historians, on leave for two years from their own universities, to finish well advanced work on the Federal Movement in Australia, on the history of the City of Ballarat, and on the interconnections of the Pacific gold-rushes in California, Australia and New Zealand in the nineteenth century. In 1968 books were published on the early history of the Commonwealth Bank of Australia, and on the history of Western India in the nineteenth century. Books in the press at the end of the year were

a study of relations between Britain and the Australian colonies 1815-32, and an index to the nineteenth century Australian parliamentary papers which contain biographical information.

Work in Australian history has been aided by the collection in one building of the valuable manuscript and printed collections of the National Library of Australia. The Department's aim of encouraging scholarship in this field would be greatly strengthened by the creation of equally favourable conditions with regard to the Commonwealth archives.

A small but useful part of the Department's activities consists in its joint responsibility with the Australian Academy of Science for the work of a research-associate, concerned with his own research on the history of Australian scientific societies, and with the description and collection of material relating to the history of Australian science.

Work in the *Department of Law* continued to include a considerable number of topics in public, private, international and comparative law as well as legal theory. The regular staff was depleted during the year by the departure of Mr D. J. Whalan, Senior Fellow, to take up a Chair of Law at the University of Queensland, and of Dr N. N. Singh, Research Fellow, who returned to India. Two staff members were also on study leave. Mr J. G. Starke, Q.C., Senior Fellow, spent the year at the International Court at The Hague, and in July Professor G. Sawyer left to spend some months at the Max-Planck Institute for Comparative Law, Heidelberg, before taking up a Visiting Fellowship at the University of Oxford.

As compensation, the Department continued to enjoy the company of many visitors, particularly of Dr L. S. Sealy, University of Cambridge, who spent nine months concentrating on the law of sale of goods—a topic of close interest to the work of Dr S. J. Stoljar and of a number of the students. The staff losses suffered through resignations during the year were made up by the offers of two appointments as research fellow and senior research fellow, but these will not be taken up until 1969.

The work on New Guinea law was continued by Mr B. J. Brown, who also assisted in the organisation of a conference on legal problems of the Territory held at the School under the auspices of the New Guinea Legal Research Council.

The special interests of the *Department of Philosophy* are well illustrated in the books prepared in the Department during 1968 for publication in 1969. These include a number of books on such basic concepts of social and political philosophy as power and equality; studies in Marxism and intellectual ideas in the Soviet Union; interpretative essays on individual philosophers and schools of philosophy; studies in higher education. The Department is now stronger than it has been for some time past in the field of moral philosophy and philosophy of mind, but it expects in the near future to continue to emphasise political philosophy and intellectual history. Two new research fellowships were filled in the latter part of the year, thus overcoming some of the staffing problems alluded to in the 1967 Report.

The only permanent staff member of the History of Ideas Unit, Dr E. Kamenka, was on study leave during the year. Dr R. F. Brissenden, Senior Lecturer in the Department of English, completed his term as a Senior Research Fellow

with the Unit, and towards the end of the year Mrs D. Green, also of the Department of English, was appointed to a visiting fellowship for one year to enable her to work on a history of Australian Literature.

The *Department of Political Science* continued to pursue a wide range of activities, with Australian Studies at the centre of the work. A second seminar was held on Australian politics. Guest speakers included a number of Members of the House of Representatives, as well as leaders from industry and the Commonwealth Public Service.

Quantitative studies continued to play a major role in the Department's research and were accompanied by an extension of course work on modern political research design, survey methodology and other social statistics. Three members also contributed papers to a UNESCO Seminar in Sydney on Mathematics in the Social Sciences. Statistical techniques have been extensively used, not only in the major survey of Australian political attitudes, but also in such areas as the analysis of voting in the Federal Conventions of the 1890s and in the first Commonwealth Parliament, the relationship between psychological dispositions and political attitudes, and gaming theory in political science.

The Department also participated in an interdisciplinary study of the Papua and New Guinea House of Assembly elections, which involved a group of thirty anthropologists and political scientists from universities in several countries. Professor R. S. Parker, M.B.E., was co-editor, with Dr A. L. Epstein and Dr Marie O. Reay of the Research School of Pacific Studies, of the volume to contain the research results.

A significant event was the visit of Professor L. B. Schapiro of the London School of Economics and Political Science who lectured and conducted seminars on communism and totalitarianism. Another visitor, Mr R. Hyslop, Assistant Secretary, Department of the Navy, also took up a one-year Commonwealth Public Service Fellowship to work on a history of Australian naval policy, 1900-1939, with special reference to the roles and relations of ministers and the civil and naval advisers.

The interests of the Department in international politics were sustained in the work of Professor A. L. Burns on the conditions of international stability, and of Dr T. H. R. Rigby and Mr P. Dibb on the structure of the Soviet Communist Party and on the economic development of the Soviet Far East.

Any substantial expansion of the staff of the *Department of Sociology* is necessarily curtailed until the Chair is filled but plans were laid to bring another senior American sociologist to the Department as a visitor in 1969.

The small group of four academic staff and four students continued to press forward with several established lines of research: social stratification, the sociology of religious groups, aspects of urban life, factors affecting the scholastic achievement of children entering secondary schools, the impact of university experience on a sample of undergraduates of the University of Melbourne, the relations between Italian migrants and Australians in a Victorian rural area, a study of 'deprived' citizens in an inner Sydney suburb and the implications of social 'deprivation' for social policy, and a study of registered social clubs in New South Wales.

Members of the Department continue to carry the main responsibility for teaching and supervising the students enrolled for the degree of Master of

Arts in sociology. This course has continued to attract a reasonable body of able students, and is fulfilling one of its main purposes of producing trained sociologists to fill vacancies in newly developing departments of sociology in Australian universities.

The *Department of Statistics* continued research on a wide front. In pure probability theory work has been done on certain classes of probability distributions, on random processes and on control theory. In applied probability theory work has continued on geometrical probability theory, on the theory of dams, and on a variety of genetical problems. In statistics much attention has been paid to problems of classification and discrimination in multivariate problems and in the application of these methods to medical (mainly psychiatric) diagnosis. Other work on psychiatric statistics has also been carried out. Consulting work for other departments has greatly increased, with the growing emphasis in many parts of the School on quantitative studies. An innovation during the year was the appointment of a full-time programmer to assist in large scale computational experiments.

During 1968 the major preoccupation of the *Urban Research Unit* has been its Sydney project, 'The Process of Urban Development'. This project, which includes elements of economics, town planning, public administration and sociology, is designed to shed light on the way important decisions are made, and their effects. Apart from interviews with officers in public authorities and private enterprise the main effort has been devoted to interview surveys and the processing of property information from Valuation Rolls. Two sessions of the Joint Urbanisation Seminar held during the year dealt with School planning and public health in relation to urban development respectively. A doctoral thesis was commenced on the social welfare role of Australian state housing authorities.

The Urban Research and Education Research Units were important focal points of interdisciplinary interests within the School and also of contact between School staff and outside groups.

Finally, in 1968 the Archives Section secured two notable collections which should be of very great value to future research in the School, especially in the fields of history, economic history and political science. These are records of Dalgety and Company Limited and the New Zealand Loan Limited, and the right to microfilm the complete records up to 1957 of the Australian Workers' Union.

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‡ Not a member of this University.

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‡ Not a member of this University.

¶ Member of the Department of Statistics, School of General Studies.

T H E S E S

Thesis titles of work successfully submitted by research students in the Research School of Social Sciences on whom degrees were conferred in 1968:

- BOLGER, P. F.
'Hobart Town society, 1855-1895.' *Department of History.* *Doctor of
Philosophy*
- CHEONG CHOONG KONG
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Department of Statistics.
- CLEARY, J. W.
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Political Science.*
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'African migrants in Lagos suburbs: A demographic and socio-economic survey
of rural urban migration in the main migrant areas of the Federal Territory of
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Department of History.
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- HAWKER, G. N.
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of Political Science.*
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THE RESEARCH SCHOOL OF PACIFIC STUDIES

REPORT OF THE DIRECTOR

PROFESSOR O. H. K. SPATE

The year has seen considerable progress in departmental reorganisation and the strengthening of South-East Asian interests foreshadowed in the 1967 Report. Linguistics has been established as a separate department; the division of the old Department of Geography into two Departments, of Biogeography and Geomorphology and of Human Geography, has been carried out; and Prehistory will become a separate department when a chair, already advertised, is filled. Appointments designed to strengthen work on contemporary South-East Asia, China and Japan have been made, but will not produce their full effects until 1969. Recruitment, particularly of Asian specialists, continues to present difficulties and the School has to face one penalty of success—that often the best person offering is clearly one of our own staff; nevertheless, the recruitment prospect seems distinctly brighter than it did at the end of 1967.

The Department of Far Eastern History is already benefiting from the assumption of duty by Professor Wang Gungwu in September. Dr S. A. Wurm was appointed to the new Chair of Linguistics in March, Dr D Walker to that of Biogeography and Geomorphology in December, but the sister Chair of Human Geography, offered to Dr H. C. Brookfield, remained vacant owing to his acceptance of a simultaneous and attractive offer from Pennsylvania State University. The School must also record some losses, notably, Dr C. A. Blyth, Professorial Fellow in Economics, who left in August to become Deputy Director of the National Institute of Economic and Social Research, London; and Professor J. A. Barnes who will soon be taking up the important and arduous position of the first Professor of Sociology in the University of Cambridge. Both carry with them best wishes for success and happiness. The School must mourn the deaths of Dr Emma Sadka, a much-valued member of the Department of Pacific History, and Mr J. H. Brimmell, a recent recruit in International Relations, whose promise as a specialist on modern China was tragically cut short by a motor accident in Thailand.

The 1967 Report included a fairly lengthy discussion of the rationale of our organisational changes, and this need not be repeated. It may be noted that accommodation difficulties are becoming acute, and the relief to be afforded by the addition of the new hemihexagon and the 'laboratory block' to the H. C. Coombs Building is eagerly awaited. Work should begin in the first half of 1969, and when completed will enable Far Eastern History to rejoin physically the School, to the enhancement of inter-departmental co-operation, and will provide much more up-to-date and efficient laboratory facilities for Biogeography and Geomorphology and for Prehistory. Co-operation in these fields is particularly close and valuable. The H. C. Coombs Lecture Theatre was opened during the year and has proved a valuable addition to the University's facilities.

As the detailed reports from the Departments of Economics and International Relations will show, foundations have been laid for building up a really effective contribution to the study of contemporary China and Japan, and indeed a good deal has already been done, while the *Bulletin of Indonesian Economic Studies* continues as an invaluable source of data and review of developments in the economy of this important neighbour. Still nearer home, our understanding of

New Guinea's past is being greatly enhanced by work in Linguistics, Prehistory, and Biogeography and Geomorphology; of its present by Anthropology and Sociology (which is contributing, *inter alia*, to an inter-departmental, inter-school, and inter-university study of the House of Assembly elections), by Economics and Human Geography, and by the New Guinea Research Unit, some of whose recent research bulletins are really substantial monographs. The Unit, and indeed the School generally, played a major role in the Second Waigani Seminar at Port Moresby, which set a very high standard on a topic, 'The History of Melanesia', which, it seems safe to say, would have been regarded as visionary only a decade ago. A Pacific Manuscripts Bureau has been set up by the University in conjunction with four major Pacific libraries in Australia, New Zealand and Hawaii; it is run by the Department of Pacific History, which has also issued the first two volumes in its new Pacific History Series from the Australian National University Press. Other developments are noted in the departmental summaries below.

Seventy-five students were working for the degree of Doctor of Philosophy at the end of the year. Though the incidence of applications between various fields of study is unequal, it is clear that the attraction of the School for overseas students is not only being maintained but is increasing, and the problem of selection between really good candidates is increasingly difficult.

Amongst the numerous visitors to the School, mention should be made of H. E. Hammer de Roburt, President of the Republic of Nauru; Mr T. Miki, Foreign Minister of Japan; Haji Yaacob Mohammed, Minister of State, Singapore; and Sir Gawain Bell, Secretary-General of the South Pacific Commission.

Acknowledgement must be made to the invaluable financial assistance received from the Ford Foundation, mainly for contemporary Indonesian, Chinese and Japanese studies, and the Strategic and Defence Studies Centre; and from the Reserve Bank of Australia Rural Credits Development Fund which has financed a number of useful projects in New Guinea. It is a matter of great regret that approaches to several sources for aid to a most important archaeological project in New Guinea, needing finance far beyond the normal resources of the School, have been unsuccessful; but the Nuffield Foundation has supported the experimental work on computerisation in pollen analysis. On the other hand, we must congratulate ourselves on a most welcome by-product of Professor J. W. Davidson's activity as constitutional adviser in the negotiations leading to Nauruan independence—the generous gift from the Republic of Nauru of \$10,000 to be used to assist in the publication of books and other works relating to the Pacific Islands.

The year has been particularly fruitful in publications: members of the School have been responsible for over a score of books (excluding reprints and edited works) and some fifteen substantial monographs, well-distributed between the departments. A special word is due on *An Ethnographic Bibliography of New Guinea*, prepared by the Department of Anthropology and Sociology and published by the Australian National University Press in three volumes; with both a topical and locational organisation this will prove an invaluable reference. Other new works which may be mentioned are: *A Small Rich Industrial Country* (H. W. Arndt), *American Business Cycles 1945-50* (C. A. Blyth), *Australian Trade Policy 1942-1966* (J. G. Crawford* *et al.*), *Capitalism, Primitive and Modern* (T. Scarlett Epstein), *The Uighur Empire (744-840)*

* Based on work done while a member of the Department of Economics.

(C. P. Mackerras), *Australia* (O. H. K. Spate), *Australia's Foreign Policy* (T. B. Millar), *Vietnam* (A. S. Watt), *Of Islands and Men* (H. E. Maude), *Hubert Murray* (F. J. West). Highly selective, and perhaps invidious, as this brief list is, it is impressive evidence of the range and quality of the School's work.

Finally, four extra-curricular staff activities call for mention. Professor J. D. B. Miller has been appointed Deputy Chairman of the Board of the Institute of Advanced Studies. Dr G. J. R. Linge, Department of Human Geography, assisted the University administration for six months and gave most valuable assistance in preparing the brief for the University's new Site Planner. Sir Leslie Melville, K.B.E., an Honorary Fellow, in the Department of Economics will have the delicate and responsible task of advising Government on the budget of the University of Papua and New Guinea. The Australian Broadcasting Commission Boyer Lectures for 1968 were given by Professor W. E. H. Stanner, Department of Anthropology and Sociology, on the evolution of Australian attitudes towards the Aborigines: these lectures, informed with learning and with deep human feeling, were a most moving experience for those who heard them.

The main emphasis of work in the *Department of Anthropology and Sociology* continued to be on traditional and changing cultures in New Guinea; three staff members—Dr M. Ann Chowning, Dr A. L. Epstein, and Dr Marie O. Reay—were engaged on election studies in addition to continuing work on more strictly anthropological lines. Although for obvious reasons of logistics, national importance, and above all its academic significance as the last great reservoir (except perhaps for central Brazil) for the study of tribal society at a very early stage of contact with the West, New Guinea will remain the most important single locus for the Department's activities. Work has been carried out in Fiji, India, and Thailand, while Dr J. D. Freeman, who recently returned from field research in Samoa, is investigating the theoretical assumptions of cultural anthropology.

Research Activities

The publication of *An Ethnographic Bibliography of New Guinea*, already referred to, is a notable achievement. The Department welcomed as visiting professor for six months Professor Lucy P. Mair, formerly of the London School of Economics and Political Science, a well-known Africanist and author of what was long the standard work of Australian administration in New Guinea. The prehistorians organised an important seminar, bringing in experts from other universities and agencies, on 'Prehistoric Environment and Man in Australia'.

Mr D. J. Mulvaney, in association with the Australian Institute for Aboriginal Studies, organised a conference on the preservation of prehistoric monuments and antiquities in Australia. Progress is being made not only in studies directly on prehistoric sites in Australia, but in the important task of searching for possible links between the prehistory of man in Australia and in South-East Asia. Work has been done on Timor and on the more recent connections of the Macassar people with the Aborigines of north-west Australia. It is becoming apparent that man in Australia cannot continue indefinitely to be regarded as an isolate; at the same time, the frontiers of knowledge are being pushed back in time both in New Guinea, with evidence of agriculture at least 2,000 B.P. (before present); and in south-east Australia, where dates of 20,000 B.P. have been ascertained for an industry at Burrill Lake, New South Wales. In these

activities there has been close co-operation with the Department of Biogeography and Geomorphology, which also relies heavily on the work of the radiocarbon-dating laboratory (to the expenses of which the School contributes) in the Department of Geophysics and Geochemistry, Research School of Physical Sciences. At the opposite end of the time-scale, the first significant Australian work on 'modern' archaeology (a branch of increasing importance overseas) was carried out by the study of the early nineteenth century military settlement at Port Essington. It is gratifying to record that the Army authorities sought the services of the student concerned, Mr F. J. Allen, to advise on measures for the protection of the site. In both anthropology proper and pre-history, contacts and co-operation with the Australian Institute of Aboriginal Studies are close.

The *Department of Biogeography and Geomorphology* was formally established on 1 July, though there had in practice been a considerable amount of devolution of the physical and human wings of the old undivided Department of Geography before that, and there remains a good deal of sharing of facilities with the Department of Human Geography. Arrangements for the final 'division of assets' which will be necessary when the Department of Biogeography and Geomorphology moves into the new laboratories are going smoothly. The appointment of Mr R. J. Johns as Research Assistant will enable the field station at Mount Wilhelm in New Guinea to be continuously manned; and the Department now possesses an impressive item of mobile equipment in the form of a 'Proline' borer, capable of taking cores through 100 feet of surficial deposits, and mounted on its own vehicle. There has been an active field program both on the biogeographical and geomorphological sides; contributions have been made, *inter alia*, to plant ecology both in the mallee and in New Guinea; to speleology—a student, Mr R. M. Frank, was associated with the study of the remarkable Aboriginal evidences at depth in the Koonalda Cave on the Nullarbor; to Quarternary limnology; to the unravelling of the environmental conditions of assemblages of mammalian fossils in both New Guinea and northern Australia, this in collaboration with Mr M. Plane of the Bureau of Mineral Resources, Geology and Geophysics. The pioneer experimentation on computer storage and retrieval of pollen morphological information has been successful; it has resulted in an important paper in *Pollen et Spores* (Paris) and emphasises the Department's leading position in Australian palynology. The year's visit of Professor W. A. Weber, University of Colorado, was of great value to Dr D. N. McVean's work on cryptogams (lichens and mosses). The collection of reference pollen slides now numbers 4,800, and during the year pollen preparations of 250 species were distributed to each of ten other laboratories. The Department is in close contact with, and receives much assistance from the Commonwealth Scientific and Industrial Research Organization's computers and its herbarium at Lae; the Bureau of Mineral Resources, Geology and Geophysics; the ORSTOM Herbarium at Lae. Help has also been received from the Commonwealth Bureau of Meteorology; the Northern Territory Administration Water Section; the Commanding Officer, R.A.A.F., Fairbairn; the Department of Geology, School of General Studies.

The *Department of Economics* suffered a loss in the departure of Dr C. A. Blyth, but, except for Indonesian work, recruitment has been good. Major research interests continue to be in the economic development of New Guinea,

Malaysia, Singapore, and Indonesia, and in intra-regional trade, including Australian and Japanese trade relations with South-East Asia. The Department tries to ensure that it has always at least one project in hand in each country of this general region, so that it can maintain informed contact with developments. There is a good deal of inter-departmental co-operation; with the Department of International Relations in the India-Japan-Australia studies; with the Department of Demography, Research School of Social Sciences, in research into Javanese fertility; with Dr T. H. R. Rigby's study of the Soviet Far East, Department of Political Science, Research School of Social Sciences; and with the School's general effort towards contemporary Chinese studies. Mr E. K. Fisk will expand his notable work on the New Guinea economy to other Pacific islands. The expertise of the Department, particularly in the Indonesian field, leads to a considerable demand for the services of its members as consultants, usually on leave: Emeritus Professor T. H. Silcock has served with the Ministry of Overseas Development in London, Dr Helen Hughes with the World Bank in Washington, Dr D. H. Penny with the Bank's Economic Development Institute in Washington and the Agro-Economic Survey at Bogor, Indonesia; Dr J. Panglaykim with ECAFE in Bangkok.

The *Department of Far Eastern History* has attracted over the years a group of first-class scholars whose work is of international repute. Their interests, however, are for the most part on what might be called the 'classical' side, and this imposes some difficulty in that there is a growing feeling in the University, to which the School would gladly be responsive, that there should be more emphasis on modern periods: this would be in keeping both with the national interest and with academic opportunity. The former Head of the Department, Emeritus Professor C. P. FitzGerald, was one of the rare men who were at home in both the ancient and modern camps, and the School is fortunate indeed in having secured as his successor a scholar of similar range in Professor Wang Gungwu. This is of particular significance in that the research topics of the twelve students who completed or continued their theses during 1968 were equally divided between classical and modern themes, and allowing for staff absences on study leave or field-work, this imposes a severe supervision strain. The problem is particularly acute on the Japanese side, and it is likely that a special proposal will have to be made to overcome this difficulty. While every effort must be made to strengthen the modern side, it goes without saying that the older tradition of the Department which has to its credit outstanding achievements in such fields as the evolution and significance of Chinese bronze metallurgy, Chinese science, and the history of the Mongols, will continue to receive full support.

The work of the new *Department of Human Geography* is about equally divided between Australia and the tropical regions to the north, particularly Melanesia and parts of South-East Asia. Within Australia, the Department has worked mainly on industrial, transport, and retailing geography; a new departure has been study of spatial perception in connection with retailing location. Outside Australia, Dr H. C. Brookfield is engaged on large-scale general work on Melanesia, and Dr P. J. Rimmer has been preparing for a comprehensive study of rail transport in Thailand. There has been some interruption of Mr R. Ho's work on aspects of the social geography of Malaysia due to his ill-health. Dr G. J. R. Linge's studies of Australian manufacturing have been interrupted on account of his important contribution noted above, to the University's own

locational problems. The most notable event in 1968 was the holding of a four-week course on statistical and mathematical approaches in geography, given by Dr D. Harvey of the University of Bristol: this was an extremely lively and stimulating, if occasionally intimidating, course, and fulfilled a long-standing ambition of the old Department of Geography. It was attended by members of the Department of Biogeography and Geomorphology, the Department of Geography, School of General Studies, and the New Guinea Research Unit, and also, by invitation, members of the Commonwealth Scientific and Industrial Research Organization and the Department of Geography at Monash University. The sad loss to the *Department of International Relations* of Mr J. H. Brimmell did not halt the Department's approach to contemporary Chinese studies, since it was fortunate in having, as a Visiting Fellow, Emeritus Professor C. P. FitzGerald, following his retirement as Professor of Far Eastern History. The arrival in the first half of 1969 of Mr D. Duncanson in this Department, and of Dr Audrey Donnithorne in the Department of Economics, will greatly strengthen this field. Another welcome addition to the staff is Mr S. K. Gupta, formerly Research Secretary to the Indian Council of World Affairs. The Department had also the benefit of an extended visit from Professor W. T. R. and Dr Annette Fox of Columbia University. While the work of the Department has, naturally, a strong emphasis on the nations from Pakistan to Japan inclusive, it has extended as far as the Middle East, and Professors Miller and Bull are engaged on more general works. With aid from Ford Foundation funds, the Department organised the first conference of Australian academic teachers of international relations—including specialists in law, economics and history—on the theme of 'Afro-Asian States and International Order'. This was a very useful and successful occasion. Very naturally, members of the Department are in considerable demand as informed and objective commentators on foreign affairs of special interest to Australia, and this is a very legitimate and desirable form of public relations for the School, and indeed the University. Amongst many such occasions, special mention should be made of Professor J. D. B. Miller's Röntgen Oration to the College of Radiologists of Australasia.

The new *Department of Linguistics* is small in numbers but vigorous in publication, though in the nature of the case most of its work appeals to a specialised, but world-wide, readership. Although the languages of South-East Asia, Melanesia and Polynesia are by no means neglected, and indeed very substantive contributions have been made to the study of languages in Thailand, Vietnam and Tahiti, the main emphasis is on New Guinea, which provides of itself a vast laboratory of importance not only empirically but also for the elucidation of general laws in lexicostatistics. As a result of the work in New Guinea, it is now being established that the Papuan languages, hitherto thought to be unrelated, are in fact to a great extent genetically inter-related and constitute a great family occupying more than threequarters of the New Guinea area; this throws considerable light on the past migrations of the peoples. Progress has also been made in the study of Australian Aboriginal languages.

The *New Guinea Research Unit*, under Dr R. G. Crocombe as Executive Officer, is controlled by a committee representing the Departments of the School most concerned with New Guinea, and acts both as a service unit, providing essential aid to departmental workers, and as a research agency in its own right. Its own research falls into four major fields: problems of resettlement; economic

growth; non-traditional forms of association, social and political; inter-tribal and inter-cultural communication. Much of its work is of great practical interest and value, with a direct bearing on the multifarious problems of 'advancement' in this late phase of Papuan and New Guinean colonial history; much is published in the *New Guinea Research Bulletin*. Five issues of the bulletin were produced during the year, two of which—those by Mr R. K. Wilson on village industries and by Mr E. W. Waddell and Mr P. A. Krinks on Orokaiva economics—are substantial monographs.

The big events in the year were the Second Waigani Seminar, on the History of Melanesia, and the opening of the Unit's new buildings. The Seminar, organised jointly with the University of Papua and New Guinea, the Administrative College, and the Council on New Guinea Affairs, was opened by Professor J. W. Davidson and closed by Professor O. H. K. Spate; it was a great success. The new building, on ground at Waigani leased from the University of Papua and New Guinea, provides good library and working accommodation; a residential lodge is being planned. The building was opened in September by His Honour the Administrator, Mr D. O. Hay, C.B.E. Mr J. Guise, Speaker of the House of Assembly, and Mr M. Toliman, Ministerial Member in charge of Education, also spoke.

The research of the *Department of Pacific History* is largely concerned with 'colonial' situations in the Pacific Islands (including New Guinea) and to some extent in South-East Asia. The retirement and death of Dr Emma Sadka represent not only the personal loss of a valued friend, but a loss of strength in the South-East Asian field. Nevertheless, four of the eleven doctoral theses currently under preparation are on South-East Asian themes, the rest dealing with the Pacific Islands from the Gilberts to the Cooks. Since most of the documentary evidence for contacts of 'colonial' type is of European provenance, the Department has been concerned in attempts to cross-check such material by the view from 'the other side of the hill'. In this context, the newly formed Pacific Manuscripts Bureau, under the direction of Mr R. A. Langdon, will be anxious to secure records not only from European but also from indigenous sources, and one of the first two issues in the new Pacific History Series is *The Works of Ta'unga*, a Polynesian pastor with a long record of missionary activity. An interesting, and unorthodox, development is the project of Mr D. H. Lewis to investigate Polynesian techniques of navigation, in the most practical manner—by sailing in his own ketch, using traditional methods of seamanship. Another variety of 'participant observation' in current history is exemplified by Professor J. W. Davidson's activity as Constitutional Adviser to Nauru, which has resulted in the generous gift, already noted, from the Republic.

The *Strategic and Defence Studies Centre*, of which Dr T. B. Millar, Professorial Fellow in International Relations, is Executive Officer, is pioneering discussion in some depth of the significance to Australia of the themes suggested by its title. Its main achievement in 1968 was the holding of a conference at Wellington on defence co-operation between Australia and New Zealand. The Centre, which is essentially supported by Ford Foundation funds, holds seminars and discussions, a main principle of which is to engage both academics and officials concerned with defence problems in full and frank discussion. Its value may be judged by the appreciative reference of Mr L. H.

Barnard, M.P., Deputy Leader of the Opposition in the Commonwealth Parliament, to 'the devoted work of a handful of university people' at the Australian National University.

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THESES

Thesis titles of work successfully submitted by research students in the Research School of Pacific Studies on whom degrees were conferred in 1968:

BEDFORD, I. G.

'The Telengana Insurrection: A study in the causes and development of a Communist Insurrection in rural India, 1946-51.' *Department of International Relations.*

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CATLEY, R.

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'The development of the Chinese Empire in the south: A discussion of the origins of the state of Wu of the three kingdoms.' *Department of Far Eastern History.*

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'The present and former vegetation of the Wabag region of New Guinea.' *Department of Geography.*

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'Ecological studies on the secondary vegetation of a tropical montane habitat in Mindanao.' *Department of Geography.*

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LOCKWOOD, B. A.

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PLANT, J. D. E.

'The origins and development of Australia's policy and posture at the United Nations Conference on International Organization, San Francisco—1945.' *Department of International Relations.*

TRYON, D. T.

'The languages of the Loyalty Islands.' *Department of Anthropology and Sociology.*

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'Bakoiudu: Resettlement and social change among the Kuni of Papua.' *Department of Anthropology and Sociology.*

WARD, A. D.

'Towards one New Zealand. The Government and the Maori people 1861-93.' *Department of Pacific History.*

WATANABE, A.

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WEBBER, M. J.

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WHITE, CARMEL

'Plateau and plain. Prehistoric investigations in Arnhem Land, Northern Territory.' *Department of Anthropology and Sociology.*

WHITE, J. P.

'Taim bilong bipo. Investigations towards a prehistory of the Papua-New Guinea Highlands.' *Department of Anthropology and Sociology.*

*Master of
Arts*

COUTTS, P. J. F.

'Archaeology of Wilson's Promontory.' *Department of Anthropology and Sociology.*

FLOOD, JOSEPHINE M.

'Archaeology of Yarat Shelter.' *Department of Anthropology and Sociology.*

THE RESEARCH SCHOOL OF CHEMISTRY

REPORT OF THE DEAN

Professor A. J. Birch, F.A.A., F.R.S.

The School was officially opened on 6 September 1968 by Lord Todd of Trumington in the presence of a distinguished gathering including the Honourable Malcolm Fraser, M.P., Minister for Education and Science.

Growth of the School has been according to plan, with an excellent field of applicants for staff posts, and adequate recruiting at a high level for scholars. Two new groups were formed, intended particularly to assist all three major sections of the School. X-ray crystallography with Dr G. B. Robertson and supporting staff will be concerned with inorganic and organic molecular structures, as well as aspects of crystal structures. Physical organic and inorganic chemistry with Dr A. J. Parker will be concerned with details of organic and inorganic reaction mechanisms.

The present staff consists of two professors, three professorial fellows, one senior fellow, five fellows and seventeen research fellows. Two visitors and five honorary research fellows are working in the School together with sixteen scholars, one of whom resigned. The first degree of Doctor of Philosophy from the School itself was awarded during the year.

Professor D. P. Craig was elected to the Fellowship of the Royal Society, and was President of Section B of ANZAAS. Many staff members participated in conferences in Australia and abroad. Notably, Dr A. M. Sargeson was invited to take part in the International Union of Pure and Applied Chemistry Symposium on Inorganic Nomenclature in London, and to lecture in the United States and Canada, and Dr D. A. Buckingham was invited to a Gordon Conference in New Hampshire. Some staff members gave courses of lectures in the School of General Studies.

The research topics continued to be those commenced last year, but the pace is accelerating as equipment becomes fully operational. In connection with programs of insect chemistry, a stereoselective synthesis of the juvenile hormone juvabione has been completed, and considerable progress made, in collaboration with the Division of Entomology, Commonwealth Scientific and Industrial Research Organization, on a termite trail substance. Considerable advances have been made in knowledge of the structures of the macrolide antibiotics.

In the physical and theoretical group, very good progress has been made in setting up new equipment and in starting research programs in the ultra-violet spectroscopy, in electron and nuclear spin resonance, and infra-red spectroscopy of labile species. The School's equipment for liquifying helium has been brought into use and has allowed an excellent start to be made in programs of work in solid state spectroscopy at very low temperatures. The group and the School generally have benefited from the presence of two visiting scientists from University College, London—Professor E. A. Power and Dr T. Thirunamachandran, who are giving courses of lectures and

contributing to seminar discussions. A regular series of informal research meetings have been organised and have provided a fruitful source of stimulus in the group.

In inorganic chemistry a series of iridium (I) complexes have been shown to have the remarkable property of isomerising to hydrido-iridium (III) complexes. Modifications of the reactivities of co-ordinated organic molecules continue to be studied, particularly with amino acid esters. A program of synthesis and degradations of peptides resulting from this work is of considerable promise, particularly in the analysis of proteins starting from the N-terminal end. A number of mechanism studies, and studies of molecular asymmetry in co-ordinated complexes are under way. A notable result is the discovery of isomers due to rotational arrangements of nitro-groups.

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‡ Not a member of this University.

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‡ Not a member of this University.

† Visiting Research Worker.

* Based on work done while a member of the Department.

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‡ Not a member of this University.

¶ Based on work done while a member of the Department of Chemistry.

THE RESEARCH SCHOOL OF BIOLOGICAL SCIENCES

REPORT OF THE DIRECTOR

PROFESSOR D. G. CATCHESIDE, F.A.A., F.R.S.

The School began to take shape during 1968, with laboratories and other facilities becoming available following completion of the conversion of Block M during the early months of the year. Improvements and alterations are continuing and, with the finding that the new groups required even more space than had been expected, accommodation has also been made available in the Research School of Chemistry and part of Block C. Difficulties of accommodation are expected until the permanent building becomes available.

Dr G. A. Horridge who is Director of the Gatty Marine Laboratory at St Andrews University has been appointed to a foundation chair concerned with behavioural biology. He is well known for his research in neurobiology, especially with the nerve nets of lower animals. The new group will include neurophysiology, behaviour and the growth of nerve fibres. A major problem concerns how certain central nerve cells act in combination to filter sensory excitation and to govern co-ordinated activity. It is expected that Professor Horridge will take up his appointment in August 1969.

Dr H. Naora, who was Chief of Biology Division, National Cancer Center Research Institute, Tokyo, has accepted appointment to a Professorial Fellowship to develop a Unit of Molecular Biology. He took up his appointment in October 1968 and has begun work on the mechanisms of synthesis of ribonucleic acids and proteins. Dr Naora is highly distinguished for his research in this important field.

In the development of the School, biology has been seen as an integrated subject conceived in terms of levels of complexity of the problems to be considered. The major fields thus separated form convenient units for organisation, although there are no true boundaries between any of them. However, the experience is that due to the need to give the foundation professors assurances of supporting staff, they have acquired groups whose nature and function are indistinguishable from conventional departments. Consequently, the School is moving towards the acceptance of a structure like that in most other Schools of the Institute.

In *Developmental and Cellular Biology*, despite a slow build-up of the group, several lines of research have been initiated. Using the electron microscope, studies of the frequently bizarre mechanisms of cell division in simple plants shed light on this fundamental process which in higher organisms appears so uniform and highly integrated as to defy analysis. Some idea of the way in which the more complex mechanisms of cell division may have evolved is being formed.

Research Activities

The control of development of organisms appears to be dependent on the release of genetic information in an orderly sequence. This is being studied using micro-organisms and barley. The full complement of organelles of the cell may be developed only under specified conditions of nutrition. It is believed

that organelles contain genetic information for their own development. The production of this information can thus be demanded by a suitable change in the nutritional environment, enabling an insight to be gained into the control of the production or suppression of the information for development. At a more highly organised level, the genetic information required to convert a dark-grown and therefore abnormal plant to a fully normal one can be elicited by light, a convenient signal for the experimental control of development. Barley seedlings have been found to be suitable material and their photomorphogenesis is being studied.

Structures which appear identical at maturity may have developed in different ways; a study of pathways of development can help elucidate evolutionary history and taxonomy, and has done so in the work of the group on the eucalypts.

The work of *Environmental and Population Biology* is concerned with the relationships between environmental factors and the physiological performance, and ecological distributions, of various plants and animals. It has the objective of understanding the key mechanisms which underlie such important ecological phenomena as adaptation of species to particular environments, competition between species for energy, water and nutrients, productivity in relation to genotype and environment and the distribution of species within communities. Emphasis is being given to the biological problems of extreme environments; and to the mechanisms of tolerance of environmental stress. Because of the importance of water in the Australian environment, particular emphasis is being given to water and energy relationships, to the closely related areas of salinity tolerance, and to water and ion balance regulation.

Three closely linked fields of activity constitute the research program at present. The first is associated with the evaluation and understanding of physical phenomena which have special relevance to energy, water and gas exchanges in the biosphere. This work provides the overall framework within which ecological and physiological processes occur. The second area covers studies of population ecology, related particularly to the environmental restraints within which individual species must operate. The third area comprises physiological studies of key processes which underlie the adaptation of species to various environments.

Although the work in *Genetics* includes study of bacteria, the major effort has continued to be directed towards understanding some of the fundamental processes of life in a fungus, as a representative of a higher organism capable of convenient growth in a laboratory. The advantages of such an organism include ease of cultivation, of biochemical analysis and of genetic analysis. The problems being studied include the determination of the sequence of amino acids in a group of related enzymes, derived from different species or different mutants, with a view to tracing their evolution and the relation of structure to function; the biochemical genetics of the control of the production of enzymes and of their activities; and the mechanism of genetic recombination and its control.

Notable progress has been made in the development of methods to purify enzymes and of automatic methods to analyse them. Work on the biochemical genetics of complex aspects of metabolism is giving important evidence about

control mechanisms and isoenzymes. Study of the mechanism of recombination has disclosed a case in which the same regulatory gene probably acts at two different loci. This may open the way to discovery of the functions of these regulatory genes and to a deeper understanding of the mechanism of genetic recombination.

The main research in the *Molecular Biology Unit* is the study of the mechanisms of synthesis of ribonucleic acids and proteins. This includes the recognition of informational macromolecules by ribosomes, the initiation and termination of the synthesis of proteins and ribonucleic acids, the function of the cell nucleus especially in relation to the transfer of genetic information from the nucleus to the cytoplasmic machinery and the formation of ribosomes. The hope is that these studies will contribute towards an understanding of the cellular and molecular biological aspects of cell differentiation, growth and multiplication in higher organisms.

A small *Taxonomy Unit* has been established to develop research in modern methods, including numerical and experimental ones, the latter particularly directed at environmental interactions and reproductive systems. It is hoped that the work will, in collaboration with the Commonwealth Scientific and Industrial Research Organization, contribute to a modern *Flora of Australia*, the only comprehensive one now being a century old.

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** Based on work done prior to joining this University.

‡ Not a member of this University.

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♠ Based on work done while a member of the Department of Zoology.

¶ Member of the Department of Zoology.

** Based on work done prior to joining this University.

‡ Not a member of this University.

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'Control of aromatic biosynthesis particularly with regard to the common pathway and the allosteric enzyme, 3-deoxy-D-arabino heptulosonate 7-phosphate synthetase.' *Rev. pure appl. Chem.*, **18**, 41-78.

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‡ Not a member of this University.

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'The nature of 3-deoxy-D-arabino-heptulosonate 7-phosphate synthetase in extracts of *Neurospora crassa*: Biochemical genetics of allosteric isoenzymes.' *Proceedings of the Australian Biochemical Society*, 70.

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'Regulation of allelic recombination in *Neurospora crassa*.' Abstract in *Proceedings of International Congress of Genetics*, Tokyo, **1**, 4.

'The *phen-1* mutants of *Neurospora crassa*.' Abstract in *Proceedings of the Australian Biochemical Society*, 7.

TOCCHINI-VALENTINI, G. P.‡, MARINO, P.‡ & COLVILL, A. J. E.

'Mutant of *E. coli* containing an altered RNA polymerase.' *Nature, Lond.*, **220**, 5164, 275-6.

*Molecular
Biology*

NAORA, H.**

'A plausible mechanism of simultaneous reading of genetic information from both strands of DNA.' *J. theor. Biol.*, **19**, 2, 183-95.

NAORA, H.** & KODAIRA, KUMIKO**

'Non-competitive binding of rapidly labelled nuclear RNA by ribosomes.' *Biochim. biophys. Acta*, **161**, 1, 276-8.

T H E S E S

Thesis titles of work successfully submitted by research students in the Research School of Biological Sciences on whom degrees were conferred in 1968:

*Doctor of
Philosophy*

CHO, K. Y.

'The cell envelope and internal organisation of some bacteria.'

HO COY CHOKE

'Physiological genetics of transport systems for amino acids in *Neurospora crassa*.'

‡ Not a member of this University.

** Based on work done prior to joining this University.

THE SCHOOL OF GENERAL STUDIES

THE FACULTY OF ARTS

REPORT OF THE DEAN

Professor A. T. A. Learmonth

The 1968 entry included many students from New South Wales, the first group to have had their schooling wholly under the Wyndham Scheme. As expected, there was a rather larger enrolment, and one-third to half of the total enrolments opted for arts courses. No great difficulty was encountered nor exceptionally good performances by whole groups, though one department noted that these students may tend to have heard of everything with no great understanding of what they had heard, and in others the starting point for New South Wales students was a little different. Several departments found that dropping out during the year continued to be a serious problem, representing serious wastage of effort by students and staff, even if presumably the individual student does gain some benefit from the experience. The quota authorised by Council was applied for Political Science I; after various students had withdrawn, the class was rather below the quota figure. The Department of History hopes to avoid the need for quotas for first-year students by introducing an additional unit for those students.

Some effort was made to overcome the problem of excessive demands on students at particular dates for completion of essay, projects, etc., but the second half of the year still seems to contain several crisis points for many students. Experimental methods of teaching have continued and spread: often there is closer supervision of the students' performance through the academic year, assessment in some courses being continuous throughout the year, while in others there is still some form of final synthesis or examination. This pattern appeals to students, particularly if they know they have passed a particular unit without the strenuous effort of preparation for the November examination period; however, it seems to be associated with exacerbation of the problem of conflicting loyalties at various dates through the year.

Faculty became concerned with the problem of maintaining the highest academic standards in small departments, particularly those lacking in counterparts in the Institute of Advanced Studies or with other contacts in Canberra. Following this the Vice-Chancellor invited the Faculty to make a very wide examination of its future policy. Results so far include a statement of policy about optimum size of the Faculty at 3,000 students or 7,950 individual enrolments in units; reference to the Board of the School of General Studies of the idea of a special degree for very able students; and suggestions for new departments of anthropology, religion and fine arts as well as Spanish and Australian prehistory. The Faculty and its Development Committee will continue to work on these and other problems of future policy, including teaching methods, alternative course structures, and the feasibility of a research group in the humanities.

The Faculty Development Committee asked the Dean to discuss several of these problems with the arts members of the Students' Representative Council and several very useful and constructive meetings were held. Various ways

in which student opinion might be taken into account were also discussed, but without any firm decisions; these must await more definite proposals and a University-wide policy.

Staff and postgraduate student research continued at a satisfactory level, and the publication list includes many substantial contributions. Many part-time students enrolled for the degree of master find the long vistas of thesis work too demanding, and a good deal of wastage of staff and student effort is apparent, though there may be some benefits. Only exceptionally is a thesis for the degree of master successfully completed in as short a period as twelve months of full-time work, and there is some discrepancy as compared with the policy in recent years of awarding scholarships for the degree of master for one year, with a possible but rarely granted extension to fifteen months.

Teaching, seminars and research were enriched by many contacts with visiting scholars from the Institute of Advanced Studies, from other Australian institutions, and by visitors from many countries including several from India this year. Study leave periods were very fully used, some in Australia and some overseas, and conferences at home and abroad also gave stimulus.

The Arts Building Extension was occupied in December by the Departments of Geography, French, German and Russian, and General Linguistics. It contains some fine big map laboratories and a language laboratory which can be run as one large or two smaller units, and despite teething troubles with heat and noise it promises very well though lacking in even a minimal foyer space on the two main approaches.

Professor A. D. Hope, Professor of English in Canberra University College and then in this University, retired in December to become a Library Fellow in the University. Mr G. K. W. Johnston, Reader in English, resigned to become Professor of English in the Faculty of Military Studies, University of New South Wales.

PUBLICATIONS

Classics

RAWSON, BERYL M.

Review article on *The Latin Cognomina* (by I. Kajanto), *Societas Scientiarum Fennica. Classical Philology*, **LXIII**, xxii, 154-9.

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GREEN, DOROTHY

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HOPE, A. D.

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KNIGHT, S. T.

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Mathematics:
(Applied)

BROWN, A.

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† Visiting Research Worker.

‡ Not a member of this University.

§ Member of the Department of Human Geography, Institute of Advanced Studies.

* Based on work done while a member of the Department.

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WIEGOLD, J.†

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WIEGOLD, J.†, NEUMANN, P. M.‡ & SIMS, C. S.‡

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CAMPBELL, R. J.

- 'Proper names.' *Mind*, **LXXVII**, 326-50.
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BEDDIE, B. D.

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COOKSEY, R. J.

- 'Foreign policy review, October-December, 1967.' *Australian Quarterly*, **XL**, ii, 99-110.
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'Pine Gap.' *Australian Quarterly*, **XL**, iv, 12-20.

* Based on work done while a member of the Department.

†† Visiting Research worker, Department of Mathematics, Institute of Advanced Studies.

** Based on work done prior to joining this University.

¶ Member of the Department of Mathematics, Institute of Advanced Studies.

‡ Not a member of this University.

† Visiting Research Worker.

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LYALL, E. A.

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McFARLANE, B. J.

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'The agent in passive constructions with a participle predicate.' *Melbourne Slavonic Studies*, **II**, 63-70.

Russian

THESES

Thesis titles of work successfully submitted by research students in the Faculty of Arts on whom degrees were conferred in 1968:

NESBITT, B. H.

'Aspects of literary nationalism in Australia and New Zealand with special reference to the *Bulletin*, 1880-1900.' *Department of English*.

*Doctor of
Philosophy*

ADDO-FENING, R.

'British political expansion in India, 1811-1844.' *Department of History*.

*Master of
Arts*

BEAZLEY, K. E.

'Caucus as an instrument for determining the policy and tactics of the Federal Parliamentary Labor Party in the Commonwealth Parliament, 1901-1960.' *Department of Political Science*.

GILBERT, A. D.

'The Churches and the Conscription Referenda, 1916-17.' *Department of History*.

- INGLIS, CHRISTINE B.
 'The Darwin Chinese: A study of Assimilation.* *Department of Sociology.*
- JOHNSON, R. I.
 'The history of the Sydney Mechanics' School of Arts from its foundation in 1833 to the 1880's.' *Department of History.*
- KÓSA, IRMA E.
 'Lessings theologische Schriften aus den Jahren 1774 bis 1781.' *Department of German.*
- LAWRENCE, R. J.
 'Aboriginal habitat and economy.' *Department of Geography.*
- MELENDRES, PATRICIA M.
 'Social criticism in the Australian novel: The aboriginal theme.' *Department of English.*
- MOLONEY, J. N.
 'The Roman mould of the Australian Catholic Church 1846-1878.' *Department of History.*
- NAULTY, R. A.
 'Locke's philosophy of mind.' *Department of Philosophy.*
- PHILLIPS, JOY A.
 'Shakespeare's "Troilus and Cressida".' *Department of English.*
- PRIESTLEY, ALISON M.
 'The Molesworth Committee and New South Wales.' *Department of History.*
- PROCTOR, S. K.
 'Aspects of the Sydney Press 1803-1827.' *Department of History.*
- REID, GAYLA M.
 'The ideal of eloquence in Jonson's occasional verse.' *Department of English.*
- RHODES, CLAUDIA
 'The integrity of the later poems of W. B. Yeats.' *Department of English.*
- ROWLAND, MOIRA E.
 'The Malayan fishing industry.' *Department of Economics.*
- VIVIANI, NANCY M.
 'A history of Nauru.' *Department of History.*
- WALKER, G. T.
 'The coastal geomorphology of the Jervis Bay Area.' *Department of Geography.*

* Submitted as a requirement in addition to course work.

THE FACULTY OF ECONOMICS

REPORT OF THE DEAN

Professor R. L. Mathews

In contrast to the relative stagnation of recent years, there was a very large increase of 36.4% in undergraduate unit enrolments in the Faculty of Economics in 1968 (from 959 to 1,308). First-year enrolments increased by 35.5% (from 647 to 877). In view of the strong demand for economics graduates in the community, the upsurge in student numbers gives cause for satisfaction, especially as it has been associated with an overall improvement in student performance. Of an exceptionally able group of nine final honours students in departments of the Faculty in 1968, seven received First Class Honours and two Second Class Honours (Division A).

Enrolments

Postgraduate enrolments increased from twenty-three in 1967 to a 1968 figure of forty-two, of whom sixteen were enrolled in courses of preliminary study for the degree of Master of Economics, seventeen were working on theses for the degree of Master of Economics and nine were working on theses for the degree of Doctor of Philosophy under the supervision of members of the Faculty.

In 1968, the first year of intake in respect of students who had completed the new six-year New South Wales and Australian Capital Territory secondary school curriculum, there was no noticeable improvement in the quality of first-year students (although it was observed that students generally demonstrated greater competence in mathematics than their predecessors). However, it seems that the attention which all departments have been giving to teaching and examining arrangements may be beginning to bear fruit in the form of improved student performance. As a proportion of original enrolments in all first-year classes, 51.1% of students passed in 1968 compared with 43.4% in 1967 and 37.3% in 1966. Expressed as a percentage of first-year students actually sitting for the final examinations, the pass rate was 74.2% in 1968 compared with 60.2% in 1967 and 55.8% in 1966.

Student Performance

The significant fall in failure rates is mainly attributable to the steps taken by all departments during recent years to improve the effectiveness of teaching. In particular, a more important role has been given to tutorial assignments or essays and, in the assessment of final examination results, greater weight has been given to term or mid-year examinations and to the year's work generally. In 1969, work in some units will be organised on a semester basis. The increased emphasis on written work and on term or mid-year examinations has necessitated action by all departments in the Faculty, and relevant departments in the Faculty of Arts, to co-ordinate their requirements to ensure that students are not subjected to unreasonable demands at any time during the year. The Faculty is continuing with its study of the causes of student failure. One disquieting feature of the 1968 results was the high failure rates in certain second and third-year units; the reasons for these are being sought.

One of the main factors responsible for poor student performance in the Faculty of Economics, as in other faculties, has been inadequate admission

standards. The Faculty has supported a policy of gradually raising admission standards through the use of academic criteria for admission intended to ensure that students admitted will be able to complete their course in a period not longer than minimum time plus one year.

Lack of information about the nature and requirements of economics courses in the University, and about employment opportunities for economics graduates, is believed to have affected the quality of student intake in the Faculty of Economics, especially as economics and commercial courses in secondary schools are often taken by students who have difficulty in coping with academic subjects. The Faculty has therefore prepared an information monograph, *Studying Economics in the Australian National University*, and arranged for its distribution to fourth-year and sixth-year students in secondary schools in the Australian Capital Territory. The monograph discusses reasons for studying economics, employment opportunities for economics graduates, choice of career and of an appropriate university course, matriculation and admission requirements, courses of study for the degree of Bachelor of Economics, preparation necessary for first-year university study, and what the courses offered by the several departments of the Faculty are about.

Courses

A new third-year statistics unit, Operational Research, was offered in 1968, and the Accounting IV course was also offered for the first time.

The year 1968 was a significant year with respect to the development of new courses at both the undergraduate and postgraduate levels. The Faculties of Economics and Law approved courses of study rules for a combined five-year course leading to the degrees of Bachelor of Economics and Bachelor of Laws, and students will be able to enrol for this course in 1969. The Faculty of Economics also approved the inclusion of two optional units in Computer Science in the course leading to the degree of Bachelor of Economics.

The first unit will be available to second-year students in 1970 and the second to third-year students in 1971. The teaching staff will be provided by the Computer Centre and the units will be available to other faculties; the Faculty of Arts has already decided to make units available to students for the degree of Bachelor of Arts. The Faculty of Economics also approved the introduction of a new second-year unit in Mathematical Economics, and third-year units in Asian Government and Political Sociology, to be offered for the first time in 1970.

Consideration is being given to the introduction of half-units in Applied Economics (Labour Economics, Agriculture in the National Economy, Problems of Agricultural Production and Prices, and Studies in Resources Allocation), to replace the existing units in Agricultural Economics, Labour Economics and Theory of Development and Fluctuations. Changes in the Statistics IV course to be introduced in 1970 will make it possible for students to take an expanded econometrics option.

It has been observed above that there has been a very large increase in the number of students seeking to enrol for high degrees in the Faculty. In addition to a large complement of full-time graduate students (most of whom have been awarded scholarships), the Faculty has been attracting an increasing number of part-time students from graduates of the Australian National

University and of other universities who have taken up employment with the Commonwealth Public Service in Canberra. In order to make adequate provision for such students, and to extend the range of course work available to professional economists beyond the four years now required for an honours degree, the Faculty of Economics has agreed in principle to the establishment of degrees of master by course work in Economic Policy and in Economic Analysis and Econometrics. Faculty also approved the establishment of a degree of Master in Administrative Studies. This course will contribute to the educational development of potential senior administrators by applying a wide range of academic disciplines to administrative processes in government and business.

Degrees of master by thesis will continue to be available to graduates but, in future, all programs for the degree of master offered by the Faculty will require the successful completion of the equivalent of the fourth honours year (part-time candidates for the degree of master may take this over two years). The courses of study for the degree of Master of Economics will then formally constitute a fifth year of course work. Admission to both the fourth year and the fifth year will continue to depend on the attainment of a high level of performance in earlier years. It is intended that the fifth year of course work will be available, with the approval of the supervising department, to doctoral candidates as the first year of a three-year program for the degree of Doctor of Philosophy.

A significant feature of the proposed new courses in Economic Policy and in Economic Analysis and Econometrics is the extent of the participation of two Departments of Economics and the Department of Economic History in the Institute of Advanced Studies. These departments and the four departments of the Faculty have all agreed to contribute to the teaching of the new courses and to participate in a Committee of Graduate Studies in Economics (which will be established to administer the programs). In this way, full advantage will be taken of the unique facilities for advanced studies in economics which exist in the Australian National University.

In proposals submitted to the Australian Universities Commission for the 1970-72 triennium, provision has been made for a Department of Administrative Studies to administer the degree of master in Administrative Studies, but it is expected that other departments in the Faculty of Economics and in other faculties and schools of the University will participate in the teaching of individual units. Discussions are being held with the Chairman of the Commonwealth Public Service Board to ensure that the course is adapted to the needs of government; the course will be concerned mainly (but not exclusively) with the administration of resources in the public sector. The fifth-year course in administrative studies will be available to graduates of all faculties (including graduates of other universities) who have successfully completed a preliminary qualifying course.

It is expected that, subject to teaching resources being available on the necessary scale, the several postgraduate course work programs will be offered for the first time in 1970.

The Faculty of Economics is proposing to make provision for one other group of postgraduate students, namely economics graduates of overseas universities,

who may be accepted for a one year course of study at the level of the fourth honours year; it is proposed that students who successfully complete this should be awarded a postgraduate diploma.

The establishment of the Canberra College of Advanced Education, which will offer part-time courses in accountancy and administrative studies for the first time in 1969, has implications for the future development of university courses in these areas. Care is being taken to ensure that University and College programs complement each other to the maximum extent possible, thereby providing educational opportunities to differing groups of students in accordance with their particular aptitudes and interests.

*Undergraduates
Transferring
from Other
Universities*

In order to ease the problem of undergraduates who transfer to the Australian National University from other universities before they have completed their degree, Faculty has adopted a policy of granting status in specified units where the head of the department so recommends on the basis of reasonable equivalence of courses, and of granting status in up to three unspecified units subject to the following conditions:

- (a) the number of unspecified units for which status will be given will be equal to one less than the number of recognised units which have been completed in other universities but which have not been accepted for status in specified units;
- (b) a student who has been given status in unspecified units will still be required to complete the economics major, one other full non-mixed major and Statistics I.

*Student
Participation
in University
Government*

During the year, the Faculty of Economics considered the question of student and junior staff participation in University government, and the matter is still under review. Faculty resolved that heads of departments should arrange regular meetings with senior students enrolled in their departments, in order to discuss teaching arrangements and other questions of interest to students; such meetings, which it is envisaged will be held at least once a term, have already commenced in some departments. Junior staff already participate in the formulation of academic policy through departmental meetings.

Accommodation

The accommodation position in the Copland Building was eased considerably at the end of 1968, when the Faculty of Law moved to its new building. Some rearrangement of occupancy, involving mainly a move by the Department of Economic History to the wing previously occupied by the Faculty of Law, is taking place in order to make effective use of the new space. Plans for the 400-seat Copland Lecture Theatre have been approved and construction should commence in the first half of 1969.

Staff

Staff turnover did not present such a problem in 1968 as in earlier years, although two members resigned to take up appointments in overseas universities and the recruitment of new staff continues to be exceedingly difficult. The Faculty again received invaluable teaching assistance and research stimulus from distinguished American, English and Japanese visiting professors. Members of staff in the Institute of Advanced Studies and the Vice-Chancellor also gave generous assistance with teaching.

Members of the four departments in the Faculty are engaged in a wide range of research activities, with major emphasis being placed on resource allocation in the public sector; government accounting, budgeting and national accounting systems; income measurement theory; company financial reporting; Australian economic development; analysis of fertility in relation to population growth; theory of economic fluctuations; wage, income and price theory; applied economic policy; input-output analysis; Japanese-Australian trade; stochastic processes; probability; Markov processes operational research; and econometrics. Books published for members of the Faculty during the year included: *Government Accounting in Australia* (W. R. C. Jay and R. L. Mathews, eds), *National Income—An Introduction* (B. D. Cameron), *Federal Economic Policy* (B. D. Cameron), *Input-Output Analysis and Resource Allocation* (B. D. Cameron). *A Study of Cost and Demand Inflation* (J. D. Pitchford) was translated into Japanese and Spanish. Numerous research papers were published in Australian, American, English, Japanese, German and Belgian journals.

All departments conducted regular research seminars during the year.

PUBLICATIONS

JAY, W. R. C.

'The economy and the Budget.' *Australian Accountant*, XXXVIII, ix, 482-7.

'Passing the Budget.' In *Government Accounting in Australia* (ed. W. R. C. Jay & R. L. Mathews), 7-15, Cheshire, F. W.

'The financial accounts of the Commonwealth Government.' In *Government Accounting in Australia* (ed. W. R. C. Jay & R. L. Mathews), 50-7, Cheshire, F. W.

'Consolidation and classification in Government accounting.' In *Government Accounting in Australia* (ed. W. R. C. Jay & R. L. Mathews), 204-21, Cheshire, F. W.

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Government Accounting in Australia. Cheshire, F. W., 292.

MA, R. A.

'The linked logics of practice and pedagogy: A comment.' In *Proceedings of Australian Association of University Teachers of Accounting 1968 Convention*, D16-20, Univ. of Newcastle.

MATHEWS, R. L.

'The accounts of public authorities.' In *Government Accounting in Australia* (ed. W. R. C. Jay & R. L. Mathews), 39-46, Cheshire, F. W.

'Reform of budgetary procedures, accounting systems and decision-making processes.' In *Government Accounting in Australia* (ed. W. R. C. Jay & R. L. Mathews), 185-203, Cheshire, F. W.

'Government accounts and social accounting.' In *Government Accounting in Australia* (ed. W. R. C. Jay & R. L. Mathews), 225-30, Cheshire, F. W.

'Finance for education.' *Economic Papers*, XXVII, 1-30. (Also in *Aust. Univ.*, VI, i, 59-95.)

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'Company organisation and finance.' In *Australia: An Economic and Investment Reference*, 39-45, Commonwealth of Australia.

Public and Private Investment in the Australian Economy. Univ. of Sydney, 54.

MATHEWS, R. L., BUCKLEY, J. W.‡ & KIRCHER, P.‡

'Methodology in accounting theory.' *Accounting Review*, XLIII, ii, 274-83.

*Accounting
and Public
Finance*

‡ Not a member of this University.

STANDISH, P. E. M.

- 'Higher management education in Australia.' *Aust. Univ.*, **V**, iii, 189-207, 1967.
'Financial accounting and reporting in the Australian Post Office.' In *Government Accounting in Australia* (ed. W. R. C. Jay & R. L. Mathews), 110-28, Cheshire, F. W.

Economics

CAMERON, B. D.

- National Income—An Introduction*. Cheshire, F. W., 76.
Federal Economic Policy. Cheshire, F. W., 100.
Input-Output Analysis and Resource Allocation. Cambridge, 109.

DRYSDALE, P. D.

- 'Pacific economic integration: An Australian view.' In *Pacific Trade and Development* (ed. K. Kojima), 1-29, Japan Economic Research Center.
Pacific Economic Integration: The Evolution of a New Approach to Regional Trade and Development Policies. *Aust. Neighbours*, 4th Series, 61, 4.

PITCHFORD, J. D.

- 'Population growth and economic development.' *New Zealand Economic Papers*, **V**, 1-10.
'An analysis of price movements in Australia 1947-68.' *Aust. econ. Pap.*, **VII**, xi, 111-35.
Inflacion de Coste e Inflacion de Demanda. (Spanish trans. by V. S. Sorrodellas of *A Study of Cost and Demand Inflation*), Editorial Gustavo Gili, S.A., 265.
Japanese trans. and printing of *A Study of Cost and Demand Inflation* by Tuttle, Tokyo, 206.

Statistics

GROVES, G. W.‡ & HANNAN, E. J.

- 'Time series regression of sea level on weather.' *Rev. geophys.*, **6**, 129-74.

HANNAN, E. J. & TERRELL, R. D.

- 'Testing for serial correlation after least squares regression.' *Econometrica*, **36**, 133-50.

SENETA, E.

- 'Finite approximations to infinite non-negative matrices.' *Proc. Camb. phil. Soc. math. phys. Sci.*, **63**, 983-92, 1967.
'The random walk and bacterial growth.' *Zastosow. Mat.*, **9**, 135-47, 1967.
'The Galton-Watson process with mean one.' *J. appl. Probab.*, **4**, 489-95, 1967.
'On the maxima of absorbing Markov chains.' *Australian Journal of Statistics*, **9**, 93-102, 1967.
'On a certain passage-time property of inhomogeneous random walks.' *Annls Soc. scient. Brux.*, **82**, 5-12.
'The stationary distribution of a branching process allowing immigration: A remark on the critical case.' *Jl R. statist. Soc.*, Series B, **30**, 176-9.
'Finite approximations to infinite non-negative matrices, II: Refinements and applications.' *Proc. Camb. phil. Soc. math. phys. Sci.*, **64**, 465-70.

SENETA, E. & VERE-JONES, D.§

- 'On the asymptotic behaviour of subcritical branching processes with continuous state space.' *Z. Wahrscheinlichkeitstheorie Verwandte Gebiete*, **10**, 212-25.

‡ Not a member of this University.

§ Member of the Department of Statistics, Institute of Advanced Studies.

THE FACULTY OF LAW

REPORT OF THE DEAN

Professor J. E. Richardson

Council reappointed to membership of the Faculty the Honourable Mr Justice P. E. Joske, C.M.G., of the Commonwealth Industrial Court, of the Supreme Court of the Australian Capital Territory and of the Supreme Court of Norfolk Island, Mr A. F. Mason, Q.C., Solicitor-General, and Mr K. F. O'Leary of the legal firm of Martin, Crossin, O'Leary and Barker, President of the Law Society of the Australian Capital Territory. Professor G. Sawyer was not reappointed in 1968 because of his impending departure on sabbatical leave for a year.

*Membership
of the Faculty*

The full-time academic staff comprised three professors, one reader, six senior lecturers, four lecturers, two senior tutors, seven part-time lecturers, three part-time tutors.

Staff

In 1968 three appointments were made to positions of Senior Lecturer. Mr W. E. Holder, Professor of Law, University of Mississippi, took up his appointment in October; Mr D. E. Harding, Lecturer, Law School, University of Sydney, and Mr F. Rinaldi, Lecturer, Department of Philosophy, University of Queensland, will take up their appointments early in 1969.

Mr D. C. Pearce of the Parliamentary Draftsman's Section, Attorney-General's Department, was appointed Lecturer in August; Mr C. Turner, Department of Law, Institute of Advanced Studies, was appointed as a Senior Tutor.

A fourth Chair of Law was advertised but no appointment has yet been made.

Miss M. R. M. Watson, Senior Tutor, resigned on her marriage in January and was replaced by Mr R. S. Geddes, a law graduate of this university. Mr D. J. Rose resigned from the position of Senior Lecturer in February to join the Advisings Section of the Attorney-General's Department.

During the year the Faculty was visited by an increasing number of lawyers from overseas and Australia. Guest lecturers included: Professor J. S. Ziegel, McGill University; Professor E. McWhinney, Director, Institute of Air and Space Law, McGill University; Professor I. L. Head, University of Alberta; Mr J. D. McLean, University of Sheffield; Professor I. C. Rutledge, Dean, Ohio State University Law School; Mr S. Picker, Visiting Lecturer, University of Melbourne, and Mrs J. Picker; Professor A. R. N. Cross, University of Oxford; Professor J. Hall, Indiana University; the Honourable Mr Justice K. S. Jacobs, New South Wales Supreme Court; Mr C. R. Hewitt, Legal Correspondent, *New Statesman*; Mr L. V. Harvey, Chief Marriage Guidance Officer, Attorney-General's Department; Mr P. Brazil, Senior Assistant Secretary, Attorney-General's Department. Professor R. Taira, a Leverhulme Fellow, visited the Faculty from June to October. Professor Taira, Professor of Law, Keio University, undertook research on the Australian Federal System. Mr and Mrs S. Picker joined the Faculty in November and will be engaged in research on International Trade Law until February 1969.

Visitors

Staff on Leave

Mr D. L. Pape and Mr D. O'Connor were on study leave in 1968 at the Institute of Advanced Legal Studies. Mr O'Connor spent his study leave completing work for a degree of Doctor of Philosophy of the University of London. Professor H. Whitmore left Australia on study leave in September. He is to spend his leave at the Law School, Yale University, visiting American law schools on a Carnegie Foundation Fellowship and in London.

Dr Alice E. S. Tay took a year's leave of absence from the Faculty to accept appointment as Senior Fellow in the Russian Institute, Columbia University. During the year she made substantial progress on her book *Soviet Law and Legal Problems*, and in collaboration with Dr E. Kamenka in the History of Ideas Unit, Research School of Social Sciences, completed work on another book *Marxism and the Theory of Law*, to be published in London and New York in 1969 as a research project sponsored by the Research Institute on Communist Affairs, Columbia University. In the final months of her stay in New York, Dr Tay began a study of the background and content of law in Communist China and she has been invited by that Institute to return to New York for a brief period during the Australian summer vacation to prepare this work for publication as a book in 1970.

During her leave, Dr Tay visited universities in Singapore, Taiwan, Japan, the United States, Canada and England, and gave lectures at a number of law schools and academic centres, as well as a seminar to the Department of External Affairs in Ottawa.

Dean and Subdean

Professor J. E. Richardson returned from study leave in February and resumed the deanship. Mr A. D. Hambly replaced Mr D. W. Smith as subdean in August.

Enrolments

Approximately 148 students enrolled for law courses for the first time in 1968. Total enrolments were 405; 228 full-time and 177 part-time students. Of these 115 students were enrolled for the combined Bachelor of Arts/Bachelor of Laws degree course. Total enrolments increased by 24% over the 1967 figure and new enrolments by 48%.

Completion of the degree of Bachelor of Laws

It has been the practice in the Annual Report to refer specifically to the number of candidates on whom degrees were conferred during the year though they successfully completed their law courses in the preceding year. In this Report the number of persons who have qualified in the annual examinations to take out their degrees in 1969 are also included.

At the Conferring of Degrees ceremony held in May 1968, twenty students graduated; twelve received the degree of Bachelor of Laws and eight the Degree of Bachelor of Laws with Honours.

Following the annual examinations in November 1968, thirty-four students completed their legal studies, twenty-six of whom qualified for the degree of Bachelor of Laws and eight for the degree of Bachelor of Laws with Honours.

Degree of Bachelor of Laws with Honours

In 1967 the first degree with honours examinations were held under the revised rules. One candidate obtained First Class Honours, one obtained Second Class Honours (Division A) and seven were awarded Second Class Honours (Division B).

At the recently completed annual examinations, of the eight candidates who obtained honours, two were awarded First Class Honours, one was awarded Second Class Honours (Division A) and five were awarded Second Class Honours (Division B).

The Faculty was gratified at the continued good level of results obtained in the third and fourth years of the law course and also at the level of success gained by candidates sitting for the degree with honours.

1968 Annual Examinations

As against this, however, the Faculty is most concerned at the high failure rate in first-year and in certain second-year subjects. As yet it is too early to express the probable reasons, although some tentative conclusions have been reached. There is little doubt, for example, that many students coming to the University from school have difficulty in adjusting to law studies. It is planned in 1969 to increase the size of the tutorial program in first-year law notably by increasing the number of tutorials in Legal Method and Contracts and to introduce tutorials in Legal and Constitutional History and the new first-year subject of Criminal Law. At the same time it is hoped also to introduce a compulsory program of legal writing for first-year law students. These plans will require the Faculty to allocate a much greater portion of its teaching resources to first-year subjects than it would have wished at this time when several new subjects will be introduced in the third and fourth years of the course for the degree of Bachelor of Laws. The Faculty's present study of the reasons for the failure rate will involve it in comparing results of students undertaking a straight law course with those undertaking the combined arts/law course.

The George Knowles Memorial Prize for the student doing the best academic work in the year was awarded to Mr R. G. Mills.

Prizes

Mr J. W. Constance, who qualified for the Degree of Bachelor of Laws with First Class Honours, received the Supreme Court Judges' Prize for the student obtaining the highest honours result in law. He was also awarded a University Prize.

The Permanent Trustee Company's Will Drafting Prize was awarded to Mr B. R. Kwasnycia. Mr R. V. Miller won the Ansett Air and Space Law Prize, Mr T. F. Barker the Australian Capital Territory Bar Association Prize for Evidence, Mr P. A. McNamara the Law Society of the Australian Capital Territory Prize for Contracts, and Mr F. S. Marris the Permanent Trustee Company (Canberra) Limited Prizes for Trusts and Property II.

The Faculty is grateful to the donors of prizes for their interest in law students.

Two students received the degree of Master of Laws during 1968, the second and third students to be awarded this degree. Six other students were proceeding to the degree by thesis and a seventh student was admitted to the qualifying course for the degree of master. Mr D. Nochimson, the first Fulbright postgraduate scholar to come to the Faculty, was one of those who enrolled for a course for the degree of master.

Postgraduate Students

New Students

Our experience has been that in the schools, both at teacher and student level, little is known about the structure of the legal profession and the training in law offered by Australian universities. In an effort to close the gap, Professor L. R. Zines, with the assistance of various members of the Faculty, produced a booklet entitled *The Study of Law* which has been distributed to schools, members of the legal profession and other interested persons. The Faculty will continue to make the booklet available over the next few years.

Moots

The compulsory Moot program continued to be extremely effective in 1968 under the capable and enthusiastic direction of Mr G. J. Davies. The Faculty would like to record its appreciation to all those lawyers from outside who have given considerable time to the setting of suitable problems and to adjudication. A team from the law school participated in the Australia and New Zealand intervarsity Law Schools Moots Competition held in Tasmania in May. The law school was represented by Messrs A. Cork (leader), J. Faulks, I. Cunliffe and G. Vasaris. The team acquitted itself well but did not gain the outright success of 1967.

Federal Law Review

The fifth edition of the *Federal Law Review* appeared in 1968 and was commemorated by a dinner at Bruce Hall. Guest speakers included the Honourable Mr Justice J. D. Holmes of the Court of Appeal of the New South Wales Supreme Court and Mr A. F. Mason, Q.C.

The *Federal Law Review* is becoming increasingly well known and it is noteworthy that it has been cited on various occasions in the daily press and elsewhere. In some instances material published in the Review has been reproduced in various journals. The growth in its stature is reflected in increased sales.

Curriculum

The most significant development in 1968 was a very extensive revision of the course for the degree of Bachelor of Laws. The Faculty considered that the time had arrived at which the law school should enter a second stage of development in an endeavour to build up a national character. It also recognised that there was a growing demand for law graduates, not only in professional private practice but also in areas of government administration and business.

Under the revised course structure the number of compulsory law subjects has been reduced and the number of optional subjects has been increased with a view to allowing students at the end of second year to undertake specialisation if they wish in either of two major law areas, one being Public Law and the other Business or Commercial Law, including International Business Law. In effect, therefore, the Faculty has three types of law course available to students—one which might be termed a general practitioner's course, the other two being the specialised courses just mentioned. New optional subjects include Comparative Law, Criminology, Law of Employment, Law of Industrial Property, Local Government and Town Planning Law, Military Law, Soviet Law, Commercial Law III, The Legislative Process, Public International Law II, Advanced Commercial Law.

The revised course structure received Council's approval which was followed by the respective approvals of the legal education authorities in New South Wales and Victoria. Of the eleven new optional subjects, seven will be introduced in 1969 if staffing arrangements permit and the balance phased in by 1972. The new course structure is unique amongst Australian law schools and has attracted considerable attention.

Stage I of the new building was completed late in the year and the Faculty moved in shortly before Christmas. For the first time the Faculty will enjoy comfortable and reasonably adequate accommodation. The building is simple and functional and a tribute to its architects, Messrs O'Mahony, Neville and Morgan.

Law Building

It was always a matter of concern to the Faculty that first-year students very particularly avoided working in the branch of the University Library housed with the Faculty of Law when it was situated in the Copland Building because of the very unsatisfactory state of the accommodation and furnishings. The Faculty hopes that the appreciably improved library conditions in the new building will result in more effective studies.

Library

The law collection is now approximately 23,000 volumes. During the year it was agreed to amalgamate the law collection in the R. G. Menzies Building of the University Library with the law school's holdings in the new building. Unfortunately it is not possible to carry the decision into effect because there is insufficient space to house the augmented collection in the provision made for the library in Stage I of the building program. Without the collection from the R. G. Menzies Building the new law library will only absorb at the maximum three years of expansion of the existing collection of reports, statutory materials, periodicals and books.

Council invited the Dean in 1968 to report on the development of the law library in the light of revisions to the curriculum for the degree of Bachelor of Laws. Since then the Faculty has been giving a great deal of consideration to library development and its decisions have been the subject of discussions with the University Librarian and the Library Committee. It is hoped to achieve close co-ordination of academic and library activity. When the discussions reach substantially defined conclusions the Dean will make his report.

Professor Richardson was a principal commentator on legal education at the Australian Universities Law Schools' Association meeting held in Perth in August. He was appointed chairman of a committee of the Association, consisting of a representative of each law school, set up to investigate all aspects of legal education and to prepare a revised statement on the standards of law schools.

Other Activities

Professor Richardson gave lectures and addresses to a number of organisations and groups in Western Australia, New South Wales and the Australian Capital Territory. He delivered a paper 'Institutional Problems of the Foreign Investor with special reference to the Legal Problems of the Oil Agreements', at a seminar on overseas investment in Australia convened in Sydney last November by

various authorities, including the Committee for Economic Development of Australia, the Commercial Law Association, the American Chamber of Commerce in Australia and the Australian National Committee of the International Chamber of Commerce. He also presented two written submissions to the Senate Select Committee on off-shore petroleum resources and appeared on two days before the Committee.

Professor Whitmore lectured on recent developments in Administrative Law to the Institute of Administration, University of New South Wales, in May.

In October Professor Zines was elected to the Council of the Law Society of the Australian Capital Territory.

Professor Zines, Mr Davies and Mr Pearce conducted seminars for the Public Service Board during the year on Constitutional Law, Legal History, the Rule of Law, the Operation of the Doctrine of Precedent and Administrative Law. Professor Zines also delivered a paper on Federal Public Corporations in Australia to a colloquium in Canberra.

In May Mr Smith visited the Territory of Papua and New Guinea at the invitation of the Commonwealth Department of External Territories in order to act in an arbitral capacity in the determination of academic salaries in the Administrative College of Papua and New Guinea. Mr Smith also delivered two papers at a Residential School on Trade Unionism at the University of New England. Mr Hambly delivered a paper on the new Adoption Legislation to a conference of Australian Family Law teachers held at Monash University in May. This paper will be the basis for an article on the Adoption of Children Legislation, recently introduced in all Australian states and territories, which is to appear shortly in the *University of Western Australia Law Review*.

Mr J. Dixon represented the Faculty at a seminar on Business Law held in Auckland in May by the New Zealand Society for Legal Research. Mr G. Marston gave a series of lectures on International Law to External Affairs cadets. The postgraduate seminars in law held for the first time in Canberra in 1967 by the Law Society of the Australian Capital Territory in co-operation with the Faculty, continued in 1968. Seminars were well attended by practitioners in the area, members of the university and students. The first series of seminars in Second Term were on Evidence and the second in Third Term on Stamp Duty. The Attorney-General of the Commonwealth announced towards the end of the year that he had appointed Professors Richardson and Zines as members of a committee to review the provisions of the Judiciary Act. Professor Whitmore was also appointed by the Attorney-General to serve on a committee to consider and report to the Government on provisions for judicial review of the decisions of Commonwealth administrative tribunals and administrative officers.

*The Australian
National
University
Law Society*

Under the active presidency of Mr A. Cork the Society engaged in a wide range of activities during the year and as usual all functions were well attended. One of the most notable achievements was to prepare, in consultation with the Faculty, a questionnaire relating to the structure of the law course, teaching of subjects and possible improvements in training for law. The questionnaire met with a good response and was the subject of subsequent discussions between the Dean and the executive of the Society with mutually beneficial results. The

Society also went to considerable trouble to provide first-year students with opportunities to meet fellow students and staff of the law school. Council approved the Society's proposal for a compulsory annual membership fee of \$2.00 to operate as from 1969.

PUBLICATIONS

PEARCE, D. C.

'Fraudulent infant contractors.' *42, Australian Law Journal*, 294-303.

RICHARDSON, J. E.

'The law, economics and politics of selective air carriage in Australia.' In *1966 Yearbook of Air and Space Law*, 61-83, McGill Univ.

'Nationality and registration of aircraft operated by International Agencies.' In *The Freedom of the Air* (ed. E. McWhinney & M. A. Bradley), 208-25, Oceana.

'Introduction to the Australian Trade Practices Act, 2nd rev. ed., Hicks Smith, 232.

RICHARDSON, J. E. & POULTON, H. W.‡

'Australia's two-airline policy—law and the layman.' *3, Fedl Law Rev.*, 1, 64-85.

TAY, ALICE E. S.

'The law of inheritance in the new Russian Civil Code of 1964.' *17, Int. comp. Law Q.*, 2, 472-500.

WHITMORE, H.

'Censorship of the mass media: The "D" notice system.' *41, Australian Law Journal*, 449-53.

WHITMORE, H. & BENJAFIELD, D. G.‡

'Judicial decisions affecting public administration.' *Public Administration (Sydney)*, 321-47, 1967.

THESES

Thesis titles of work successfully submitted by research students in the Faculty of Law on whom degrees were conferred in 1968:

*Master of
Laws*

DAVIES, G. J.

'Some problems of nationalization under the Commonwealth Constitution.'

PEARCE, D. C.

'The law relating to the contractual capacity of infants.'

‡ Not a member of this University.

THE FACULTY OF ORIENTAL STUDIES

REPORT OF THE ACTING DEAN

Professor A. H. Johns

The total of students enrolled in the Faculty rose quite markedly in the first post-Wyndham year. In general, the additional year at school gave every appearance of producing a more mature and able student than the old system. To this extent the Wyndham Scheme has shown merit, at least to the extent that it concerns this Faculty.

In the course of the year members of the Faculty participated in seminars and Adult Education courses arranged at the University, and gave lectures at other Australian universities. In this connection the second intensive summer course in Japanese directed by Dr A. Alfonso deserves special mention. Dr J. D. Frodsham, who was promoted to Reader during the year, attended the First Sinological Conference held in Taipei, and subsequently took up a post as visiting professor at the University of Hawaii.

The Robertson Committee renewed its grant for Associate Professor O. B. van der Sprenkel's bibliographical project, which is making excellent progress. The committee likewise made a grant to enable Dr H. H. E. Loofs to attend the third season of the British Museum Archaeological Expedition to Thailand. On this occasion he was appointed leader of the expedition.

The English-Malay Dictionary project continued to make good progress. It is hoped that the mid-way point will be reached in June 1969.

In late 1968 the Faculty approved new courses to be offered for the first time in 1969; the Department of Chinese introduced separate majors in Classical and Modern Chinese; the Department of Indonesian Languages and Literatures introduced a unit in Elementary Literary Arabic.

An event of the year was the production by the Kalidase Society in collaboration with the Canberra Arts Council of a classical Indian play *The Little Clay Cart* for which Professor A. L. Basham prepared a new translation.

Visitors

Visitors to the Faculty during the year included Mr D. G. B. de Silva, First Secretary, Office of the High Commissioner for Ceylon, who presented a Ceylonese dance mask, Dr G. P. Malalasekera, O.B.E., an eminent Ceylonese Buddhist scholar, and Dr P. Voorhoeve, formerly Curator of Oriental Manuscripts in the library of the University of Leyden. Professor Y. Uyehara, of the University of Hawaii, held a visiting appointment in the Department of Japanese during Second Term.

Enrolments

The total number of enrolments for units offered in the Faculty was 635 (of which 446 were full-time), including 101 withdrawals and two non-examination enrolments, as compared with 380 in 1967. Examination enrolments totalled 534 (Asian Civilization, 286; Chinese, 37; Indonesian Languages and Literatures, 126; Japanese, 65; South Asian and Buddhist Studies, 20), as compared with 343 in 1967.

Thirty-nine students held Oriental Studies Scholarships during the year. It is regretted that six scholars lost their scholarships due to unsatisfactory progress. Miss E. M. J. Hume, a scholarship student, gained First Class Honours in South-East Asian Studies and was awarded the Canberra Association of University Women Prize.

Mr G. J. Forrester was awarded a scholarship to study for a degree of master in the Department of Indonesian Languages and Literatures.

On 31 December thirteen full-time students and three staff candidates were enrolled for the degree of Doctor of Philosophy, and nine students were enrolled for the degree of Master of Arts (Oriental Studies).

At the Conferring of Degrees ceremony held in May, seventeen students graduated; nine received the degree of Bachelor of Arts (Oriental Studies) and eight the Degree of Bachelor of Arts (Oriental Studies) with Honours. The degree of Master of Arts (Oriental Studies) was conferred in absentia on Mr D. D. Razic and Miss H. A. Sutherland.

It is a pleasure to note that the first thesis (by Mr D. N. Lorenzen) for the degree of Doctor of Philosophy completed in the Department of Asian Civilization, 'The Kāpālikas and Kālamukhas: Two lost Śaivite sects' has been accepted for publication by the Australian National University Press.

PUBLICATIONS

CAIGER, J. G.

*Asian
Civilization*

'A "reverse course" in the teaching of history in postwar Japan?' *J. Orient. Soc. Aust.*, V, i and ii, 4-16, 1967.

'The aims and content of school courses in Japanese history 1872-1945.' In *Japan's Modern Century, A Special Issue of Monumenta Nipponica Prepared in Celebration of the Centennial of the Meiji Restoration* (ed. E. Skvzypczak), 51-81, Sophia University.

LOOFS, H. H. E.

'Urgent ethnological research among the Ifugao, Luzon, Philippines.' *Bull. int. Comm. Urgent anthrop. Ethnol. Res.*, No. 8, 77-82, 1966.

'Australian awareness of Southeast Asia: An assessment of its depth.' *Australian Outlook*, XXI, iii, 347-58, 1967.

'Aspects matériels d'un complexe mégalithique aux Philippines.' *Archéocivilisation (Antiqués Nationales et Internationales)* (N.S.), No. 3-4, 40-2 + 8 plates, 1967.

'Prehistoric archaeology in Thailand.' *Hemisphere*, XI, xii, 22-7 + illustrations, 1967.

DE CRESPIGNY, R. R. C.

Chinese

'An outline of the local administration of the Later Han Empire.' *Chung Chi Journal*, VII, i, 57-71.

'Civil war in early China: Ts'ao Ts'ao at the Battle of Kuan-tu.' *J. Orient Soc. Aust.*, V, i and ii, 51-64.

KIRLOFF, C.

'An objective report on China.' *Quadrant*, XII, iii, 52-6.

'How all flowers became hundred.' *Chiasmata*, 17-24.

LIU TS-UN-YAN

Chinese Popular Fiction in Two London Libraries. Lung Men Bookstore, xv + 375, 1967.

'Lu Hsi-hsing and his commentaries on the Ts'an-tung-ch'i.' *Tsing Hua Journal of Chinese Studies* (N.S.), VII, i, 71-98.

'On the edition of the combined three commentaries on the *Wu-chên p'ien* in the Taoist Tripitaka.' *Eastern and Western Culture*, No. 15, 33-41.

Ch'ing Ch-un. Sing-tao Jih-pao, Hong Kong, iv + 873.

'Lin Chao-ên (1517-1598), the master of the Three Teachings.' *T'oung Pao*, **LII**, iv-v, 253-78.

'Yüan Huang and his "four admonitions".' *J. Orient. Soc. Aust.*, **V**, i and ii, 108-32.

'A selected bibliography from Chinese and Japanese sources on the study of Taoist thought in the Ming Dynasty.' *Chung Chi Journal*, **VI**, ii, 107-30.

Indonesian Languages and Literatures

JOHNS, A. H. (ed. and trans.)

A Road with No End. Hutchinson, 150. (Edited trans. (with introduction) of *Djalan tak ada Udjung* (by Mochtar Lubis), Balai Pustaka, 1951.)

SOEBARDI

'Huraian singkat tentang perkembangan Bahasa Indonesia sebagai-bahasa Pengajaran dan Bahasa Ilmu. (A brief analysis on the development of the Bahasa Indonesia as language for instruction and sciences.)' *Dewan Bahasa*, **XI**, xi, 484-95, 1967.

'Malaysia and Indonesia: Closer ties through history and language.' *Persaudaraan*, **I**, i, 3-14.

'Some verse of Taufiq Ismail, a poet of the generation of '66.' (Trans. of some verses from *Tirani (Tyranny)* (by Taufiq Ismail) with a brief introduction.) *East Wind*, **II**, i, 29-36.

Review article on four Indonesian language textbooks written in English, published in Australia. *Bijdragen tot de taal-, land-, en Volkenkunde*, **CXXIV**, iv, 545-51.

Japanese

ALFONSO, A.

Japanese—A Basic Course. Department of Japanese, The Australian National University, 463 + viii.

The Japanese Writing System: A Structural Approach. Part 1, Unit 1, 1-139; Part 1, Unit 2, 140-326; Department of Japanese, The Australian National University.

CRAWCOUR, E. S.

'Bakumatsu no kahei mondai ni tsuite (The currency problem in the late Tokugawa period).' In *Shihon shugi no keisi to hatten (Formation and Development of Capitalism)* (ed. Ôtsuka Hisao et al.), 273-86, Tokyo University Press.

'Changes in Japanese commerce in the Tokugawa period.' In *Studies in the Institutional History of Early Modern Japan* (ed. J. W. Hall & M. B. Jansen), 189-202, Princeton Univ.

South Asian and Buddhist Studies

DE JONG, J. W.

'Encore une fois le fonds Pelliot tibétain no. 610.' *Central Asiatic Journal*, **XII**, i, 1-7.

Review article on *Oriental and Asian Bibliography* (by J. D. Pearson). *Indo-Iranian Journal*, **X**, iv, 292-5.

Review article on the first five chapters of the Tibetan version of *Vāgbhata's Astāṅgahridayasamhitā* (ed. and trans. into English by C. Vogel). *Indo-Iranian Journal*, **X**, iv, 295-7.

Review article on *Die Überlieferung von Devatta* (by B. Mukherjee). *Indo-Iranian Journal*, **X**, iv, 297-8.

Review article on *The Mahimnastava or Praise of Shiva's Greatness* (by W. N. Brown). *Indo-Iranian Journal*, **X**, iv, 299-300.

Review article on *An Annotated Bibliography of the Catalogues of Indian Manuscripts* (by K. L. Janert). *Indo-Iranian Journal*, **X**, iv, 300-2.

Buddha's Word in China. Australian National University Press, 26.

'Les Sūtrapitaka des Sarvāstivādin et des Mūlasarvāstivādin.' In *Mélanges d'indianisme à la mémoire de Louis Renou*, 395-402, Paris ed., E. de Boccard.

'Remarks on the text of the Rāstrapālapariprcchā.' In *Dr. Raghaven Felicitation Volume*, 1-7, Adyar Library, Madras.

THESES

Thesis titles of work successfully submitted by research students in the Faculty of Oriental Studies on whom degrees were conferred in 1968:

LORENZEN, D. N.

'The Kāpālikas and Kālāmukhas: Two lost Śaivite sects.' *Department of Asian Civilization.*

*Doctor of
Philosophy*

RAZIC, D. D.

'Mishima Yukio's modern Nō plays.' *Department of Japanese.*

*Master of
Arts (Oriental
Studies)*

SUTHERLAND, HEATHER A.

'“Tempo Doeloe” and “Pudjangga Baru”: Aspects of social and intellectual life in Batavia, C. 1933-1942.' *Department of Indonesian Languages and Literatures.*

THE FACULTY OF SCIENCE

REPORT OF THE DEAN

Professor D. A. Brown

The first decade of the Faculty was completed this year. From an initial establishment of five small departments housed in two temporary buildings, the number of departments has now increased to nine, with eleven professors and a total academic staff of about 110. A high standard of teaching has been achieved, and the reputations earned by the departments have ensured the recruitment and retention of an efficient staff. As indicated by the lists of publications in this and earlier Annual Reports, there has also been a very satisfactory output of high-quality research work, and applications for research training from students in Australia and overseas are, on the whole, considerably in excess of the number for whom adequate supervision could be provided. Many visitors from overseas select departments in the Faculty for study leave and furtherance of their research interests.

Accommodation in separate, attractive buildings has been provided for the Departments of Botany, Chemistry, Forestry, Geology, Physics and Zoology. The first stage of a new building for the Department of Psychology will be opened in mid-1969, and plans for a building to house the rapidly growing Department of Biochemistry are well advanced.

In 1968, undergraduate student numbers increased, as expected following the first complete operation of the Wyndham Scheme in the New South Wales and Australian Capital Territory secondary schools. The examination results achieved by the 1968 intake of students were disappointing, especially in the physical sciences. This was, however, a situation observed in almost every university in New South Wales, and it is hoped that the experience of 1968 will lead to better adjustments, both in the universities and the secondary schools, for the transition from secondary to tertiary science education.

The final details of the new science semester courses have been worked out and departments are preparing to operate a system of semester units in 1969. First-year courses are not affected by these changes.

PUBLICATIONS

Biochemistry

D'COSTA, M. A.‡, CROMPTON, M.‡ & BIRT, L. M.**

'Fatty acid oxidation during adult development in the blowfly, *Lucilia*.' *Proceedings of the Australian Biochemical Society*, **1**, 17.

HOWELLS, A. J.** & WYATT, G. R.‡

'An investigation of a bacterial ribosomal system for assay of messenger activity of RNA from higher organisms.' *Proceedings of the Australian Biochemical Society*, **1**, 47.

WALKER, ANGELA, C.** & BIRT, L. M.**

'Aspects of the development of mitochondria in the flight muscle of the blowfly, *Lucilia cuprina*.' *Proceedings of the Australian Biochemical Society*, **1**, 39.

‡ Not a member of this University.

** Based on work done prior to joining this University.

KNOX, R. B. & EVANS, L. T.‡

'Inflorescence initiation in *Lolium temulentum* L. XII: An autoradiographic study of evocation at the shoot apex.' *Aust. J. biol. Sci.*, **21**, 1083-94.

PATON, D. M.

'Photoperiodic and temperature control of flower initiation in the late pea cultivar Greenfeast.' *Aust. J. biol. Sci.*, **21**, 609-17.

PATON, D. M. & WILLING, R. R.

'Bud dormancy in *Populus*.' *Aust. J. biol. Sci.*, **21**, 157-9.

PRYOR, L. D.

Trees in Canberra. 2nd rev. ed., Commonwealth Government Printer, 199.

'Eucalyptus in West Pakistan.' *Pakist. J. For.*, **18**, 45-56.

TOTHILL, J. C.‡ & KNOX, R. B.

'Reproduction in *Heteropogon Contortus*. I. Photoperiodic effects on flowering and sex expression.' *Aust. J. agric. Res.*, **19**, 869-78.

ALLPRESS, J. G.‡, ANDERSON, J. S.‡ & HAMBLY, A. N.

'The reaction of uranium oxides with alkali halides.' *J. inorg. nucl. Chem.*, **30**, 1195-208.

BALDAS, J.‡, BICK, I. R. C.‡, DOUGLAS, G. K. & PORTER, Q. N.‡

'Mass spectrometric studies. IV. The structure of Atherospermine.' *Aust. J. Chem.*, **21**, 2305-10.

BINDRA, A. P., ELIX, J. A., GARRATT, P. J.‡ & MITCHELL, R. H.‡

'Synthesis of a (1,2-c) furo (5,6-c) thienocycloöctatetraene and a (1,2-c) thienocycloöctatetraene.' *Tetrahedron Lett.*, 5573-4.

BINDRA, A. P., ELIX, J. A. & SARGENT, M. V.‡

'Annulated 1,5-di-trans (10) annulenes.' *Tetrahedron Lett.*, 4335-8.

BRADBURY, J. H.

'The structure of wool.' *Proc. R. Aust. chem. Inst.*, **35**, 98-100.

BRADBURY, J. H., CHAPMAN, G. V.* & KING, N. L. R.

'The chemical composition of the histological components of wool.' In *Symposium on Fibrous Proteins* (ed. W. D. Crewther), 368-72, Butterworth.

BRADBURY, J. H., CRAWFORD, P. J.* & HAMBLY, A. N.

'Kinetics of an interfacial, polycondensation reaction. II. Reaction of terephthaloyl chloride with piperazine.' *Trans. Faraday Soc.*, **64**, 1337-47.

BRADBURY, J. H. & FENN, M. D.

'A nuclear magnetic resonance study of the conformation of poly- γ -benzyl-L-glutamate in mixed solvents.' In *Symposium on Fibrous Proteins* (ed. W. D. Crewther), 69-70, Butterworth.

'Helix to coil transition in poly-L-amino acids. Part Ib. A viscosity study of poly- γ -benzyl-L-glutamate.' *J. molec. Biol.*, **36**, 231-46.

BRADBURY, J. H. & STUBBS, G. J.

'Relations between line widths in proton magnetic resonance spectra and molecular weight of poly- γ -benzyl-L-glutamate.' *Nature, Lond.*, **218**, 5146, 1049-50.

BROOMHEAD, J. A.

'The reactivity of hydroxy groups in metal complexes.' *J. Am. chem. Soc.*, **90**, 4480-2.

BROOMHEAD, J. A., DWYER, M. & KANE-MAGUIRE, N. A. P.‡

'Synthesis and resolution of heterochelate metal complexes of chromium (III) and cobalt (III) with the ligands 2, 2'-bipyridine, 1, 10-phenanthroline and oxalate ion.' *Inorg. Chem.*, **7**, 1388-93.

BROOMHEAD, J. A., DWYER, M. & MELLER, A.

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¶ Member of the Research School of Chemistry.

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THESES

Thesis titles of work successfully submitted by research students in the Faculty of Science on whom degrees were conferred in 1968:

BERTRAM, W. K.

'Dispersion theory and (d,p) reactions.' *Department of Theoretical Physics.*

*Doctor of
Philosophy*

BREMNER, J. B.

'Photochemical studies of six-membered homocyclic and heterocyclic systems.' *Department of Chemistry.*

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'Studies on the oxidative metabolism of *Moniezia Expansa* (Cestoda).' *Department of Zoology.*

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'An experimental study of counting behaviour in the white rat.' *Department of Psychology.*

GREEN, J. W.

'A study of altitudinal variation in *Eucalyptus pauciflora* Sieb. ex Spreng.' *Department of Botany.*

JOHNSTON, M. R. L.

'Studies on *Cardianema alicata*, 1933 (Nematoda: Filarioidea).' *Department of Zoology.*

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'Studies in fossil brachiopod morphology.' *Department of Geology.*

* Based on work done while a member of the Department.

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** Based on work done prior to joining this University.

- MEEHAN, G. V.
'Synthetic approaches to mycelianamide.' *Department of Chemistry.*
- NOLLER, C. G.
'A study of the family during separation from and reunion with an alcoholic husband.' *Department of Psychology.*
- PHILLIPS, W. A.
'Word discrimination: A study of the role of prior experience in the processing of briefly available visual information.' *Department of Psychology.*
- RAI, S. L.
Biology of *Austrobilharzia terrigalensis* Johnston, 1917 (Trematoda: Schistosomatidae).' *Department of Zoology.*
- RANN, C. S.
'Absorption of resonance radiation by atoms dispersed in a flame.' *Department of Chemistry.*
- SANDS, P. J.
'Off-axis aberration coefficients.' *Department of Theoretical Physics.*
- THURLING, N.
'Evolution of the genus *Cardamine* in Eastern Australia.' *Department of Botany.*
- ANDERSON, C. M.
'Photocycloaddition and elimination reactions.' *Department of Chemistry.*
- BRYANT, K. H. J.
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- CHEONG, H. A.
'Some applications of the Saddlepoint method in probability theory.' *Department of Statistics.*
- FENN, M. D.
'The influence of solvents on the conformation of poly-l-amino acids.' *Department of Chemistry.*
- FOSTER, J. J.
'Halide complexes of manganese.' *Department of Chemistry.*
- HARDING, B. C.
'The diffusion of impurities in magnesium oxide.' *Department of Physics.*
- KING, R. W.
'The physiology of Flowering *Pharbitis nil*.' *Department of Botany.*
- LAMB, D.
'Relationships between environmental factors and the composition of mountain eucalypt forest in the Australian Capital Territory.' *Department of Forestry.*
- MCINTYRE, D. K.
'Mineral nutrition in planted *Eucalyptus grandis*.' *Department of Botany.*
- MENDUS, D.
'Editing by computer.' *Department of Pure Mathematics.*
- MURPHY, J. O.
'Non-linear oscillations of massive stars.' *Department of Applied Mathematics.*
- PARKES, T.
'Peristaltic motion.' *Department of Applied Mathematics.*
- PORTER, N. D.
'Solution of partial differential equations and convolution equations by distributions.' *Department of Pure Mathematics.*

REINKE, F. D.

'Diffusion of germanium in copper.' *Department of Physics.*

RENBÜSS, MAIJA A.

'Microbiological changes in soils associated with the "ashbed" effect.' *Department of Botany.*

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'The status and potential of the hybrid between *Pinus Elliottii* and *P. Carribaea* in Queensland.' *Department of Forestry.*

THE UNIVERSITY LIBRARY

REPORT OF THE UNIVERSITY LIBRARIAN

Mr J. J. Graneek

Buildings

Stage II of the General Studies Building of the University Library was completed on schedule and, although there were some delays in supplying furniture and fittings, readers were able to make use of the new accommodation from the beginning of the academic year. The building provides shelving for approximately 250,000 volumes, double the present stock, and seating for 1,300 readers at open carrels, compartmented study tables, group study rooms, postgraduate reading rooms and a mixture of formal and informal seating in the reference area in the current periodicals room. This room, in addition to the display of unbound parts of periodicals, offers facilities for consulting newspapers, art books and atlases. It also houses the large decorative screen by J. Coburn entitled 'Polynesia'. A refrigeration unit was added to the ventilation system and was under test at the close of the year.

The branch library in the Research School of Chemistry and Stage I of the law library were occupied, the one at the beginning and the other at the end of the year.

Acquisitions

The intake of books acquired by purchase, gift and exchange is indicated in the following table:

	<i>Purchases</i>	<i>Gifts</i>	<i>Totals</i>
<i>The Institute of Advanced Studies</i>			
Main Library	10,614	1,582	12,196
Branch Libraries	4,792	1,287	6,079
Total	15,406	2,869	18,275
<i>The School of General Studies</i>			
Main Library	11,425	626	12,051
Law	5,978	146	6,124
Total	17,403	772	18,175
<i>Oriental Studies</i>			
Western Languages	250	40	290
Oriental Scripts	5,089	299	5,388
Total	5,339	339	5,678
Grand Total	38,148	3,980	42,128

At 31 December the total stock of the Library was:

The Institute of Advanced Studies	258,878
The School of General Studies	156,868*
Oriental Studies	82,549
Total	498,295

* Including Law.

The acquisition of the 500,000th book is a landmark in the Library's development. At the time of amalgamation in 1960, the Institute of Advanced Studies had 165,000 volumes and the School of General Studies 70,000, including 20,000 in oriental studies and 7,000 in law. If the present rate of growth is maintained, we shall reach 1,000,000 volumes in 1978, thirty years after the first book was taken into stock on 24 May 1948.

Outstanding among the donations received during the year was a collection of over 1,000 Polish books presented by the late Mrs Maria Przybylkiewicz, the library of the late H. Scott-Bennett, and a collection of Celtic literature and Irish history presented by the Department of Cultural Affairs of the Government of Ireland to supplement the Archbishop Duhig Memorial Collection.

Outstanding purchases included the National Reporter System (of United States Law), a collection of letters and other documents addressed to Mr Flexmore Hudson, Editor of the journal *Poetry, the Australian International Quarterly of Verse*, the Stern Collection of Chinese manuscripts, mainly Buddhist texts, from Tunhuang (on microfilm), Science Citation Index and Rand Corporation publications.

In connection with the development of research projects relating to contemporary China, steps were taken to obtain a comprehensive coverage of primary source materials through suppliers in Hong Kong, Tokyo and elsewhere. In the course of a visit to Europe and South-East Asia, Miss J. M. Waller was able to strengthen sources of supply of South Asian and South-East Asian materials.

Use of the Library at all levels and in all sections continued to expand as indicated in the following statistics:

Reader Services

	1966	1967	1968
<i>Transactions recorded at Loans Desks</i>			
The Institute of Advanced Studies	54,866	61,010	71,718
The School of General Studies			
Reserved Books	134,738	138,079	138,859
Others	64,337	75,143	89,659
Total	253,941	274,232	300,236
<i>Inter-Library Loans Borrowed</i>			
The Institute of Advanced Studies	4,435	4,505	4,117
The School of General Studies	2,063	1,900	2,612
Total	6,498	6,405	6,729
<i>Lent</i>			
The Institute of Advanced Studies	4,701	5,069	4,692
The School of General Studies	824	1,062	1,514
Total	5,525	6,131	6,206

It was agreed that a biological sciences branch library should be established to serve primarily the Research School of Biological Sciences and the relevant departments of the Faculty of Science in the School of General Studies. Pending

the erection of the research school and the associated library, books and journals are being collected and being made available for use on the lower ground floor of the R. G. Menzies Building of the University Library.

The appointment of a readers' adviser in the General Studies Building of the University Library made possible a comprehensive program of instruction in library use directed mainly towards first-year undergraduates. A total of 745 students was enrolled and ninety-nine tutorials were conducted. On the basis of the experience derived from this first year of trial and experiment, plans have been made for what it is hoped will be an even more effective program in 1969.

Technical Services

There was some reduction in the total number of titles catalogued but all newly purchased books and most miscellaneous gifts were fully processed and made available for use on library shelves within a short time of receipt. The backlog of Western language purchased books was completely cleared and a start was made on the cataloguing of a number of major collections received by donation over the past ten years. A total of 299,194 cards was incorporated in the library catalogues. Reclassification to the Library of Congress system did not progress as rapidly as had been hoped mainly as a result of unexpectedly frequent staff changes. Valuable experience has, however, been gained and there is reason to believe that output will improve significantly in 1969 and subsequent years.

Exhibitions

The McDonald Room was used as in previous years for a variety of art and similar exhibitions. A new and welcome development was the use made of the McDonald Room by the Australian National University Press for the launching of newly published books.

DEPARTMENT OF ADULT EDUCATION

REPORT OF THE OFFICER IN CHARGE

Mr J. L. J. Wilson

The Department of Adult Education provided sixty-seven classes, ten more than in 1967, in thirty subjects in the humanities, social sciences, science, and European and Asian languages. Enrolments totalled 1,945, an increase of 154 over the corresponding figure for 1967.

Enrolments in a number of courses were restricted. Six of the language courses were on an intensive basis and continuous use was made throughout the year of the language laboratory. Of the sixty-seven classes held, all on a two-hour session basis, three were of sixty sessions each, three of forty sessions each, twenty-three were of thirty sessions each, thirteen were of twenty sessions and twenty-five of ten sessions each. The total number of two-hour sessions was 1,510, the corresponding figure for 1967 being 1,340.

Six schools or seminars, with a total enrolment of 555 were held, an increase of 147 on the previous year. The Intensive Japanese Language course of one month's duration had an enrolment of fifty-four, drawn from the business community, public servants, teachers and scholars, from all over Australia. Other schools or seminars were held for pharmacists in the southern region of New South Wales, which attracted forty-six; for ninety-six members of the Australian Council of National Trusts, drawn from every part of Australia; for 220 parents of first-year undergraduates, of whom large numbers came from New South Wales, a few from Queensland and South Australia and a large number from Victoria, as well as from the Australian Capital Territory. Seminars were also conducted on South-East Asia and on 'An Independent Education Authority for the Australian Capital Territory'. At this latter seminar, attended by 120 representatives of Parents' and Citizens' Associations, teachers and administrators, the Report of the Working Party on this subject, which had been produced in the previous year, was presented and discussed. This report was the subject of further intensive discussion by many bodies in the Australian Capital Territory throughout 1968 and by educationalists in other parts of Australia.

The post of Director of the Department was advertised in early 1968 and Dr C. Duke of the Department of Adult Education and Extra-Mural Studies, University of Leeds, was appointed to the position. Dr Duke will take up his appointment in April 1969.

PUBLICATION

CREW, B. H.

Bibliography of Adult Education in Australia 1835-1965. National Library of Australia in association with Australian Association of Adult Education, 107.

AUSTRALIAN NATIONAL UNIVERSITY PRESS

REPORT OF THE DIRECTOR

Mr W. A. Wood

The Press is the publishing department of the University administering the University imprint and publishing fund. General responsibility for and control of the Press are vested in the Vice-Chancellor. An Editorial Committee, consisting mainly of members of the academic staff, supervises editorial policy and advises the Director of the Press.

There was a very large increase in the number of books published by the Press, from thirteen the previous year to thirty in 1968. In addition three issues of a journal were published, and thirty-nine new departmental publications were taken on for commercial distribution. Of sixty-five works considered for publication thirty-two were accepted.

Increasing emphasis was placed on overseas sales. Fifteen separate editions of Press books were sold to publishers in North America, the United Kingdom and New Zealand. In addition Press books are now distributed in South-East Asia by a new affiliate of Angus & Robertson Ltd in Singapore and are sold by agencies in Japan, the United Kingdom and the United States.

In April the Press was host to a meeting of the Association of Australian University Presses and the Director was elected Vice-President of the Association.

PUBLICATIONS

BIRD, E. C. F.

Coasts.

BRISSENDEN, R. F. (ed.)

Studies in the Eighteenth Century.

BROWN, D. A. (trans.)

The Geochemistry of the Lovozero Alkaline Massif. Trans. from *Geokhimiya Lovozerskogo Shchelochnogo Massiva* (by V. I. Gerasimovsky *et al.*), Part 1. Geology and Petrology; Part 2. Geochemistry.

CALDWELL, J. C.

Population Growth and Family Change in Africa.

CARRON, L. T.

An Outline of Forest Mensuration.

COEDÈS, G.

The Indianized States of Southeast Asia.

CRAWFORD, J. G. *et al.*

Australian Trade Policy 1942-1966.

CROCOMBE, R. G. & CROCOMBE, MARJORIE

The Works of Ta'unga.

EPSTEIN, T. SCARLETT

Capitalism, Primitive and Modern.

GOLLAN, R. A.

The Commonwealth Bank of Australia.

GOODMAN, R. D.

Secondary Education in Queensland, 1860-1960.

- HAIG, B. D.
Real Product, Income, and Relative Prices in Australia and the United Kingdom.
- HAIG, B. D. & MCBURNEY, S. S.
The Interpretation of National Income Estimates.
- HALL, A. R.
The Stock Exchange of Melbourne and the Victorian Economy, 1852-1900.
- HALL, R.
The Law of Karma.
- HUGHES, C. A. & GRAHAM, B. D.
A Handbook of Australian Government and Politics 1890-1964.
- HUNTER, A.
Oil Supply in Australia's Defence Strategy.
- JUKES, J. T. G.
The Strategic Situation in the 1980s.
- KUMAR, R.
Western India in the Nineteenth Century.
- LOUIS, L.
Trade Unions and the Depression.
- LOW, D. A. (ed.)
Soundings in Modern South Asian History.
- MILLAR, T. B. (ed.)
Australian-New Zealand Defence Co-operation.
- MILLER, J. D. B. (ed.)
India, Japan, Australia.
- PEARSON, W. H.
Henry Lawson Among Maoris.
- RICHARDSON, J. L.
Australia and the Non-Proliferation Treaty.
- SCARR, D. A. (ed.)
A Cruise in a Queensland Labour Vessel to the South Seas (by W. E. Giles).
- SILCOCK, T. H.
Proud and Serene.
- TROY, P. N.
Drivers' Licences and Vehicles in the Australian Capital Territory.
- DEPARTMENT OF ANTHROPOLOGY AND SOCIOLOGY
An Ethnographic Bibliography of New Guinea (3 vols.)
- DEPARTMENT OF ECONOMICS, RESEARCH SCHOOL OF PACIFIC STUDIES
Bulletin of Indonesian Economic Studies.

COMPUTER CENTRE

REPORT OF THE HEAD OF CENTRE

Dr M. R. Osborne

The major developments in computing facilities have been the implementation of a new and much improved operating system during the period March to June and the installation of four magnetic tape drives in November. However, the load on the computer has continued to grow and, despite the improvements in operational efficiency, job turn around times have lengthened appreciably during the year. Additional processing capability and such facilities as remote consoles are an increasingly urgent requirement.

Research into a range of problems in numerical analysis and in computer systems and software has been pursued and a number of papers published. Members of the Centre presented papers at a number of national and international conferences, and meetings on 'The Formulation and Solution of Diffusion Problems' and 'Least Squares Methods in Data Analysis' were organised.

The main teaching activity is the provision of introductory programming courses, and during the year six courses were attended by one hundred and thirteen students. Advanced courses on available techniques and facilities are held regularly, and some undergraduates receive instruction. Proposals to expand the undergraduate teaching role of the Centre have gone forward. The Computer Centre offers a regular consulting service to computer users.

PUBLICATIONS

ANDERSSON, R. S. (ed.)

The Formulation and Solution of Diffusion Problems. Technical Report No. 19, 1-65, Computer Centre, The Australian National University.

ANDERSSON, R. S.

'Note on conductivity models for the earth.' *J. geophys. Res.*, **73**, 3, 6535-43.

'On the reliability of finite difference representations.' *Australian Computer Journal*, **2**, 173-7.

BOOTHROYD, J.***

'The symmetric matrix eigenproblem—Jacobi's method revised.' *Australian Computer Journal*, **1**, 86-94.

CREASY, P. N.

O.S. 360 Multiprogramming Experiments. Technical Report No. 18, 1-9 + appendices, Computer Centre, The Australian National University.

HEFFERNAN, T.

ANUCC System 360, Model 50 Operator's Guide. Technical Report No. 20, 1-15, Computer Centre, The Australian National University.

KOWALIK, J.* & MORRISON, J. F.¶

'Analysis of kinetic data for allosteric enzyme reactions as a non-linear regression problem.' *Math. Biosci.*, **2**, 57-66.

MORTLOCK, A. J. ¶¶

The Near-Surface Diffusion Anomaly Problem. Technical Report No. 19, 62-5, Computer Centre, The Australian National University.

*** Based on work done while a Visiting Research Worker.

¶ Member of the Department of Biochemistry, John Curtin School of Medical Research.

¶¶ Member of the Department of Physics.

* Based on work done while a member of the Centre.

OSBORNE, M. R.

Computing Considerations in Linear Least Squares Analysis. Technical Report No. 17, 1-31, Computer Centre, The Australian National University.

On the Integration of Stiff Systems of Ordinary Differential Equations. Technical Report No. 24, 1-14, Computer Centre, The Australian National University.

OSBORNE, M. R. & WATSON, G. A.

'Note on two methods of solving ordinary linear differential equations.' *Comput. J.*, **10**, 383-4.

ROHL, JULIE M.

A Program for Multiple Linear Regression. Technical Report No. 25, 1-12, Computer Centre, The Australian National University.

SIMPSON, I. R.

An Introduction to FORTRAN Programming and Computer Centre Facilities. Technical Report No. 21, 1-51 + tables, Computer Centre, The Australian National University.

SMITH, B. W.

Information Systems. Technical Report No. 22, 1-37, Computer Centre, The Australian National University.

An Introduction to Digital Computing using the PL/1 Language. Technical Report No. 23, 1-186, Computer Centre, The Australian National University.

'The economic impact of computer-based technological change.' *Australian Computer Journal*, **1**, 65-77.

'The place of computing in high schools—some experience and further directions.' *Australian Computer Society, Queensland Branch Monthly Bulletin*, **9**, 1-6.

TEMPERLY, J. F. & OSBORNE, M. R.

FORTRAN Programming Considerations. Technical Report No. 16, 1-57, Computer Centre, The Australian National University.

TEMPERLY, J. F. & SMITH, B. W.

'A grading procedure for PL/1 student exercises.' *Comput. J.*, **10**, 368-73.

TOGNETTI, K. P.¶

'Non-linear diffusion in vertical water flow in soil.' In *Seminar on Formulation and Solution of Diffusion Problems.* Technical Report No. 19, 26-9, Computer Centre, The Australian National University.

¶ Member of the Research School of Biological Sciences.

UNIVERSITY HOUSE

REPORT OF THE MASTER

Emeritus Professor A. D. Trendall, C.M.G., F.B.A.

The Master

Emeritus Professor A. D. Trendall, who has been Master of the House since 1954 decided to retire at the end of March 1969, on the occasion of his sixtieth birthday, and the Council appointed Professor R. N. Robertson, C.M.G., F.A.A., F.R.S., to succeed him. The Master-Designate expects to take up office towards the beginning of the Third Term of 1969 and an Acting-Master will be appointed for the intervening period.

Emeritus Professor Trendall spent just over three months abroad on study leave from late November 1967 to early March 1968 preparatory to his retirement. He spent a month in North America mainly at work in the museums of New York and Boston; he also accepted an invitation to deliver a lecture at Carleton University. Most of the remainder of the time was spent in Italy collecting material for a forthcoming book on Apulian vase-painting. In July 1968 he was elected a Fellow of the British Academy.

Governing Body

At the end of 1968 the composition of the Governing Body was as follows:

Fellows: Retiring 15 August 1969: Professor G. H. Newstead (Deputy Master), Professor Hanna Neumann, Dr J. F. Lovering, Mr R. W. Rickards, Mr G. B. Smith.

Retiring 15 August 1970: Dr C. R. Heathcote (Bursar), Dr D. C. Shaw, Miss B. J. Stevenson (Steward).

Dr C. A. Tisdell and Dr Germaine A. Joplin vacated the offices of Bursar and Steward respectively, on the completion of their term of office in August 1968, and the Governing Body placed on record its deep appreciation of the great service both had rendered to the House. The vacant positions were filled by the appointment of Dr C. R. Heathcote and Miss B. J. Stevenson.

The Chancellor

The death of the Chancellor, Lord Florey, an Honorary Fellow of the House, on 21 February 1968, was noted with extreme regret.

His successor in office, Dr H. C. Coombs, is regularly in residence in the Chancellor's Flat in the House.

Members and Residents

There was a considerable increase in the total membership this year, which now stands at about 600, including sixty-five Visitor Members and forty-two Invited Members. Over 150 regular new members were enrolled.

During the year the number of research students in residence averaged about eighty-five, but due to an increase in the number of resident staff and visitors there was an unusually high level of occupancy and revenue from accommodation has benefited accordingly.

No change was made in the tariffs for research students, but those for members of the staff and casual visitors were increased by about 9% in February, and consequential adjustments were made to the charges for casual meals and special catering.

The steady increase in wages and the rising cost of food will necessitate another adjustment in 1969.

Visitors from overseas who stayed in University House for one month or more included: Dr Janice Carkin, San Jose State College; Professor A. B. Carson, University of California (Los Angeles); Professor D. N. Chester, University of Oxford; Professor C. D. Darlington, University of Oxford; Dr T. R. H. Davenport, Rhodes University; Professor E. J. Dobson, University of Oxford; Professor A. Donagan, University of Illinois (Urbana Champaign); Professor W. T. R. and Dr Annette B. Fox, Columbia University; Dr J. B. Hair, University of Canterbury; Professor J. F. C. Harrison, University of Wisconsin; Professor D. J. Heasman, University of Saskatchewan; Professor K. A. Hirsch, Queen Mary College, London; Professor F. B. Jones, University of California (Riverside); Professor W. Klement, University of California (Los Angeles); Dr P. Mandl, Czechoslovak Academy of Sciences; Professor S. Nagarajan, University of Poona; Dr S. Otok, University of Warsaw; Dr and Mrs C. W. Oyster, University of California (Berkeley); Professor M. N. Postan; Dr A. G. Sanders, University of Oxford; Professor L. B. Schapiro, London School of Economics and Political Science; Professor C. S. Shoup, Columbia University; Professor S. Singh, University of Delhi; Dr R. P. So'ejono, Djakarta; Mr L. P. Stupin, Leningrad State University; Dr R. Taira, Keio University; Professor A. Takayama, Purdue University; Professor J. F. Thomson and Associate Professor Judith J. Thomson, Massachusetts Institute of Technology; Professor Y. Uyehara, University of Hawaii; Miss V. Vitali, University of Rome; Dr Y. R. Waghmare, Indian Institute of Technology; Professor W. Walsh, University of Leeds; Dr L. G. Warner, Ohio State University; Professor R. L. Watts, Queen's University at Kingston; Professor A. E. Whitford, Lick Observatory.

Many other overseas scholars and visitors have been in residence for shorter periods, including: Lord and Lady Franks, University of Oxford; Lord and Lady Todd, University of Cambridge; Sir Douglas and Lady Logan, University of London; Sir Theodore and Lady Fox, Rotherfield, Sussex; Professor T. Agekyan, Leningrad State University; Professor L. H. Aller, University of California (Los Angeles); Professor Kathleen M. T. Atkinson, Queen's University of Belfast; Professor M. L. Black, Duke University; Dr Carmen Blacker, University of Cambridge; Professor R. J. Dubos, Rockefeller University; Professor G. E. Fogg, Westfield College; Dr J. F. Foster, Association of Commonwealth Universities, London; Professor H. G. Farnir, University of Liege; Professor S. Hayashi, University of Tokyo; Professor A. A. McKay, McMaster University; Professor K. A. McKirdy, University of Waterloo; Professor Lucy P. Mair, London School of Economics and Political Science; Dr G. T. Malalasekera, Ceylon; Dr N. T. Mirov, University of California (Berkeley); Professor G. E. Mylonas, Washington University; Professor D. C. Rowat, Carleton University; Professor R. P. Winnington-Ingram, King's College, London.

Many members of the staffs of Australian universities and national institutes have also stayed in the House.

Buildings and Grounds

Good progress has been made with the redecoration and re-upholstering of the flats in the East, West and North Wings, which after fifteen years of continuous use were beginning to show signs of deterioration. The Drawing-room has been completely refurnished and repainted, and a ceiling of acoustic tiles has been installed.

Library, Gramophone and Record Collection

Extensive use continues to be made of the library; over 2,300 borrowings were recorded and there were many new acquisitions either by gift (fifty-five) or by purchase (fifty-nine). Professor K. Mahler, F.R.S., presented a large collection of paperbacks. It is sad to have to report the loss of two valuable and much appreciated gifts, the first volume of the *Canadian Dictionary of Biography* and *The Gentle Wilderness*.

The Music-room has been partly refurnished with new cabinets for records, scores, etc. It continues to be in constant use and about ninety records were acquired during the year. Borrowings numbered 1,800.

Functions and Activities

The usual Commencement Dinner was held on Tuesday, 5 March, and was attended by some 120 members. A choral program presented by the University Consort was much appreciated. The Annual Dance was held on 19 April, with supper in Hall and dancing in the Common-room, and an attendance of about 240.

Guest Nights were held on 10 July and 10 October. Both were filled to capacity and at the former a program of madrigals was presented during the dinner.

Residents held a Carols by Candlelight Christmas Party on 13 December, at which over 250 people were present.

Several lectures were given in the Common-room during the year and two Concerts were held in the Hall.

Residents' Committee

The Residents' Committee under the chairmanship, until August, of Mr J. Worden, and subsequently of Miss Ilze Buduls, continued its activities throughout the year and organised a number of very successful parties, film-showings and other functions, including an evening of 'Victoriana' which was very well received.

The collection of contemporary works of art purchased from the funds made available by the Calouste Gulbenkian Foundation was exhibited in the R. G. Menzies Building of the University Library in October.

Gifts and Donations

Lady Hancock presented a pair of silver candlesticks designed by Mr R. Rosenfeldt, and the Master a set of rose-bowls also designed by Mr Rosenfeldt to match the candlesticks.

PUBLICATIONS

TRENDALL, A. D.

'Acquisitions of classical antiquities in Australia, 1962-65.' *Fasti Archaeologici*, XVIII-XIX, 12-14, 1967.

Greek Vases in the Felton Collection. Oxford, xxxii + 16 illustrations.

'The Nicholson Museum.' *Art and Australia*, V (1967-8), 528-37.

STUDENT RESIDENCES

BRUCE HALL—*Warden:* Mr W. P. Packard

BURTON HALL—*Warden:* Mr G. G. Rossiter

GARRAN HALL—*Warden:* Dr J. R. T. Short

The year 1968 saw the opening of Ursula College, offering about 200 places for women, while John XXIII College was still restricted to its temporary quarters in what used to be Lennox House. Thus there was a sudden increase in the number of places available for women, but the usual preponderance of male students amongst all students enrolled in the University was unchanged. All three University halls helped to alleviate the problem by further increasing the ratio of men students to women students accepted into residence. This is borne out by the following brief statistics showing average numbers for the year 1968:

<i>Halls</i>	<i>Undergraduates</i>			<i>Postgraduates</i>			<i>Total</i>
	<i>Men</i>	<i>Women</i>	<i>Total</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>	
Bruce . . .	115	62	177	27	3	30	203
Burton . . .	135	84	221	17	4	23	244*
Garran . . .	138	73	211	16	2	18	229

* Four vacancies at end of year.

With John XXIII College nearing completion and likely to be ready for occupation in 1969, the wardens of halls hope to be able to return to a better balance of the sexes within their halls of residence. This can, of course, be achieved only gradually, if the balance in any one age group is not to be upset.

The wardens again co-operated to maintain a fairly even distribution of talent and interests between the three halls. The academic record of all halls is most encouraging; in every hall 75% or more of the undergraduate members passed in all the units for which they were enrolled.

This year Burton Hall remained open in the Christmas vacation offering refuge to those whose work or circumstances make a continuous stay necessary. All halls accommodate conferences during vacations, and Garran Hall was the venue of a major exhibition, 'Design in Scandinavia', during December.

The landscaping of the surrounds of the halls makes visible progress. Unfortunately some of it may suffer when building operations on the former boiler house may start again to provide some very much needed additional space for Bruce Hall; Garran Hall's parking problem also still awaits solution.

Not all students who wish to do so can be accommodated on the campus. The University succeeded again in finding lodgings for all students requiring accommodation. The great dispersion of rooms offered in the city presents a major difficulty that is not likely to lessen with time.

STUDENT ASSOCIATIONS AND WELFARE

REPORT OF THE DEAN OF STUDENTS

Professor Hanna Neumann

My first year of office has, on the whole, been a quiet one, due in large measure to the successful work of the first Dean of Students. Professor D. A. Brown had established the means of communication and attended to incipient worries; I thus found a setting in which students active in University affairs and members of the University's administration at all levels co-operate naturally—and here the stress is on 'naturally'. I have continued the Dean's Informal Discussion Group, though in a different form, and have derived much benefit from the opportunity it affords to learn more from students about their concerns and problems, and from members of the University's administrative officers about practical implications and pertinent facts and figures. I trust the discussion group still serves its primary purpose, namely to provide a ready forum where day-to-day needs may be mentioned and long-term concerns be discussed.

There are certainly such long-term concerns. What I tried to convey in my previous remarks is merely that I do not think they lie in areas such as 'authority versus co-operation'; my impression is rather that the concern is about academic matters in the widest sense.

The 'teach-in' organised by the students points that way, but is not by itself the basis for my views. The question 'What are we, the students and the staff, here for?' is commonly asked. The contribution towards an answer must start, or so it seems to me, with an effort to make more members of our academic community aware of the legitimacy of the question.

Perhaps it is merely a facet of these thoughts that one part of the Dean of Students' ex officio commitments has become of major interest to me. The award of highly selective scholarships, their effects on scholars, the ways to handle situations arising out of this—as also, distinct from this but not unconnected, the effects of life in hall as against life off campus. Once more I appreciate the opportunity to observe these matters from closer quarters, the more so as this again is an area where—except here and there—gathering experience to be used flexibly, rather than clear-cut action, is what seems most appropriate.

So much for my personal impressions. It remains to mention that, to my regret, I had to ask once for the University Discipline Committee to be convened. I express my appreciation of the hearing the committee has given me in that case. A high proportion of minor disciplinary matters (outside the halls) arise out of failures to comply with library rules. I am grateful to the Registrar's Department for having removed routine matters of this nature from the Dean of Students' duties.

UNIVERSITY HEALTH SERVICE

The University Health Service is directed by Dr S. B. Furnass and assisted by Mrs P. M. Sorby, S.R.N., as Nursing Sister. The Sports Clinic established last year has amply justified its existence: about 200 consultations took place

in the winter months. Moreover, last year's Student Health Survey led Dr Furnass to institute a physical fitness program available to both students and staff.

An athletics coach supervises the program which, it is hoped, will attract many members. In other ways also, Dr Furnass again stressed the importance of preventive medicine. Two seminars on the uses and abuses of drugs, held at student request, fall under this heading.

UNIVERSITY COUNSELLING SERVICE

The University Counselling Service directed by Mr J. E. Gough has had another active year. Counselling proper, that is advising on personal and study difficulties, is done with individual clients or in the form of group counselling (Mrs M. Evans, partly in association with Associate Professor P. Pentony's project of some years' standing); more students than last year consulted the service prior to undertaking a course of study. The Careers and Employment Service is under Mr S. J. Rawling. It was supplemented in August by a part-time and vacation appointments service under Mrs. J. Henderson.

The third major concern of the University Counselling Service is the Efficient Reading Courses run for students, graduates and staff by Mrs L. M. Rose. In order to cope with the increased number of users of this service, programmed materials have been prepared for use in 1969.

Last, not least, users much appreciate pamphlets, reports, detailed statistics and library materials made available by Mr Gough and his assistants.

UNIVERSITY UNION

In 1968 the University Union had 3,175 student members, three staff members, twenty-eight life members, six student members enrolled for the degree of Doctor of Philosophy and three Staff Centre members.

Members of the Board of Management were as follows: Mr D. H. Solomon: Chairman, elected by the general membership to the Board; Professor Hanna Neumann: The Vice-Chancellor's nominee; Mr A. T. Shakespeare: appointed by Council; the Bursar (Mr W. S. Hamilton): ex officio; Professor J. D. Smyth and Professor L. F. Crisp: appointed by the Staff Association; Mr A. Brooks: appointed by the Students' Representative Council; Mr C. D. S. Alexander: appointed by the Sports Council; Mr C. C. Macknight: appointed by the Research Students' Association; Miss J. Chapman, Mr R. G. Fraser, Mr A. G. Hartnell, Mr R. J. Rankin and Mr R. C. Refshauge: elected by the general membership; and Mr G. J. Nuthall: co-opted by the Board.

In the course of the year a constitutional amendment was passed which altered the tenure of office of the Chairman of the Board.

The University Union administrative staff consisted of the Secretary to the Board, Mr E. C. de Toth; the Assistant Secretary, Mr H. E. Falvey, and twelve members of permanent staff.

Revenue from membership fees, used by the University Union for current

purposes, was \$49,969. This was an increase of \$7,517 over 1967 and can be accounted for by a slight increase in membership.

Entrance fees, used for capital expenditure, provided \$12,358 (\$9,860 in 1967). University Union trading throughout the year showed a loss of several thousand dollars, due largely to an increase in food costs which the Board of Management decided to meet from its financial resources rather than by raising food prices during the year. In 1969 the question of prices is to be reviewed. Total expenditure on the Income and Expenditure Account in 1968 was \$42,600 (\$39,048 in 1967).

Pressure on the capital account remained heavy as the Board of Management continued to develop the facilities of the building, and capital expenditure was \$4,670 (\$8,561 in 1967).

Activities in the University Union continued to expand. Many Union Nights and Lunchtime concerts were held.

Debates again prospered, and the parliamentary nights were stimulated by the participation of several members of parliament and of a number of colourful personalities.

The Union Art Exhibition was again successful, as was the Union Dinner.

The Board decided to experiment with the holding of a faculty or departmental staff/student function. A highly successful beginning was made with a sherry party for the Department of Political Science. More than 450 staff and students attended and the evening was held by all to be a great social success as well as a useful way of allowing staff and students to get together. The Board intends to hold a large number of this type of function in 1969, so as to allow all staff and students in the School of General Studies the opportunity of attending at least one.

During the year the University Union sought money from the Australian Universities Commission to allow for the construction of a second stage. This would have the effect of virtually doubling the existing size of the Union. It would mean the creation of some facilities which as yet either do not exist or exist inadequately in the present building. Common-room space is simply not available in the present building.

The Board decided not to proceed with the construction of a Cellar which would have cost about \$30,000 to build. It considered the money could better be spent on other facilities within the Union.

The Union gratefully acknowledges the donation of a semi-grand piano by the University. This instrument has been a well worthwhile acquisition.

Finally, it is important that the University Union places on record how appreciative it is of the help given it over the year by the Registrar and his staff.

STUDENT ASSOCIATIONS

During the year the Research Students' Association concentrated on various aspects of student welfare.

The provision of further accommodation for postgraduate scholars was discussed at length with the University administration, whose willingness to consult the Association was appreciated. It seems likely that the present good standard of housing for scholars will be maintained and even diversified.

Two other matters which involved the Association's executive in lengthy discussions were the method of payment of Commonwealth Postgraduate Scholars and the amount of the scholars' stipend, and the provision of more adequate facilities for the presentation of theses. In the latter connection, it is hoped that a satisfactory outcome will be achieved during 1969. Research students' relations with undergraduate bodies were examined at length but the Research Students' Association sees no strong case at present for relinquishing the autonomous status which has made it an effective instrument in maintaining the welfare of postgraduate scholars.

The year proved to be an active one for student organisation with the University. A diversity of activities provided scope for students to participate in social, political, philosophical and scientific affairs. In addition, there was a pronounced increase in student concern with University affairs at all levels, and a wish to participate in a meaningful way in the decision-making processes of the University. Constructive discussions have laid a basis for improvements which should continue to take place in the academic curriculum in future years. It is hoped that 1969 will see an early consolidation of the work already done in these fields, and further constructive progress.

Students' Association

A re-examination also occurred at the student organisation level leading to a detailed and protracted examination of the feasibility and desirability of re-organisation or amalgamation of the three undergraduate student bodies. This examination is still continuing, but it has so far led to a much closer co-operation in student affairs between the three bodies.

The Students' Representative Council has been particularly concerned with the financial implications of attending this University, and to this end a detailed financial examination of all aspects of the costs involved is proposed. The appointment by the University of a full-time employment officer to assist students in supplementing their incomes is appreciated.

Clubs and societies continued to cater for a wide variety of student interests, with many clubs sponsoring stimulating examinations of public issues. Most significant was the detailed examination of the Aboriginal question and the publication of *Aboriginal Quarterly* on the campus. In addition, guest speakers addressed student audiences on a wide range of topics, such as the South Australian Elections, conscription, Australian relations with Asia, and the Czechoslovakian Crisis.

The student radio program 'Inside-Out' continues to function as a useful means of communicating student opinion to the community, and improvements in the quality and content of *Woroni* have helped to improve communications within the University and the student population in particular. This year's edition of *Prometheus*, edited by the University Creative Arts Fellow, Mr R. Hall, maintained the high standard set by previous editions. Furthermore, the number of high quality faculty and society journals continued to grow.

This year's student charity appeals met with more success than in previous years. A financially successful Bush Week raised over \$1,000 to aid the Childrens' Medical Research Foundation and a student-sponsored Biafra Hunger Appeal succeeded in raising \$9,000 to send a medical team and provisions to Biafra.

The value of membership of the National Union of Australian University Students was closely examined after a decision by the Union to raise its fees, and the question as to whether the Students' Association is to retain its membership of the Union remains to be decided.

Sports Union

There was an expansion of the activities of the Sports Union in 1968. This was partly due to an increased income arising from greater staff participation and the levying of a compulsory fee on research students, and to greater efforts being made to promote more varied types of sport.

Student participation rose about 8% this year to a figure of 30%. Although this is a healthy rise it is still regarded as too small a participation rate. It was pleasing to see the affiliation of five new clubs.

The Sports Council spent some time discussing ways and means of increasing active participation in sport and it is hoped to institute a far-reaching plan next year based on inter-mural sport.

The appointment of a full-time office secretary has greatly increased the service the Sports Union can give to clubs and individuals. The sharing of staff with the Students' Representative Council proved to be a great success.

The capital development program resulted in the completion of the North Oval pavilion but unfortunately the projected ski hut has not been completed as hoped. The latter project has been held up by legal problems for over two years. The Sports Council spent some time on future planning and a request for a sports centre, tennis courts, a new oval and a boatshed was presented to the Australian Universities Commission. Priority has been placed on the sports centre which should provide the much needed place for indoor sports which we lack at present. It was also decided in relation to capital development to find another \$1,000 per annum, making the total contribution \$3,000 per annum.

Clubs had varying success this year in competitions. The best results came from cricket and squash which won the local competitions and rugby union and skiing which both did well to come second in intervarsity competitions beating the larger and more established universities.

Blues were awarded to P. Busby (Athletics), M. E. Healy (Australian Rules), D. M. Howell (Cricket), J. J. Tait (Rugby Union), P. G. Landon (Squash), M. F. Nekvapil and M. J. Dudzinski (Skiing) for outstanding performances in sport.

Co-operation between the University Union, Students' Representative Council, Sports Union and Research Students' Association continued and it is hoped this may grow into a more permanent relationship in future years. The assistance and co-operation from the University administration continued to the great benefit of the Sports Union.

PUBLICATIONS

FURNASS, S. B. & WHYTE, H. M.¶

'A student health survey.' Abstract in *Australas. Ann. Med.*, **17**, 165.

*University
Health Service*

GOUGH, J. E. & RAWLING, S. J.

Graduation and Employment. Counselling and Appointment Studies No. 1, The Australian National University, 68.

*University
Counselling
Service*

¶ Member of the Department of Clinical Science.

BUILDING PROGRAM SUMMARY

Buildings Completed in 1968

	<i>Date Completed</i>
Arts Building Extension	December
Biochemistry, School of General Studies—temporary accommodation	January
Botany Building	March
Chancelry Stage IIB	January
Forestry Building	March
Geology Building Extension	December
Geophysics Building Stage IIA	August
H. C. Coombs Lecture Theatre	June
H. C. Coombs Building—completion of Basement	August
John Curtin School of Medical Research—extension for animal breeding unit	March
Law Building	December
New Guinea Research Unit Building (Waigani)	August
North Oval Pavilion	October
Nuclear Physics—office/laboratory block extension	May
Research School of Biological Sciences—temporary accommodation	June
Residence at Siding Spring Observatory	October
University Library—School of General Studies Building Stage II	January

Buildings Under Construction in 1968

	<i>Estimated Completion Date</i>
Geophysics Building Stage IIB	June 1969
Psychology Building Stage I	June 1969
Zoology Building	April 1969

Buildings Being Planned

- Chemistry Building Extension
- Copland Building Lecture Theatre
- H. C. Coombs Building Extensions
- Residence at Waigani for New Guinea Research Unit

Affiliated Colleges

- Ursula College—Completed February 1968
- John XXIII College—Estimated date of completion February 1969
- Burgmann College—Planning stage

UNIVERSITY STATISTICS

FULL-TIME STAFF

AS AT 30 JUNE 1968

<i>Designation</i>	<i>Males</i>	<i>Females</i>	<i>Total</i>
<i>Teaching Staff</i>			
Professor	35	1	36
Associate Professor	6	..	6
Reader	23	..	23
Senior Lecturer	64	4	68
Lecturer	83	9	92
Senior Demonstrator, Senior Tutor	23	6	29
Demonstrator, Tutor, Teaching Fellow	9	10	19
Total Teaching Staff	243	30	273
<i>Research Staff</i>			
<i>(The Institute of Advanced Studies)</i>			
Professor	44	..	44
Professorial Fellow, Reader, Senior Fellow	101	2	103
Fellow, Senior Research Fellow, Research Fellow	167	7	174
Junior Research Staff	32	58	90
Total Research Staff, Institute of Advanced Studies	344	67	411
<i>(School of General Studies)</i>			
Junior Research Staff	9	12	21
Total Research Staff	353	79	432
<i>Technical Staff</i>			
Technical Officer	148	12	160
Assistant	199	110	309
Total Technical Staff	347	122	469
<i>Library Staff</i>			
Professional	8	44	52
Other	15	52	67
Total Library Staff	23	96	119

FULL-TIME STAFF—*continued*

AS AT 30 JUNE 1968

<i>Designation</i>	<i>Males</i>	<i>Females</i>	<i>Total</i>
<i>Sundry Staff</i>			
Adult Education	1	2	3
Computer Centre	6	4	10
Data Processing Unit	4	15	19
University Press	8	2	10
Counselling and Student Advisory Services	2	1	3
Health Services	1	2	3
Halls of Residence	1	7	8
Audio-visual Services	5	2	7
Multilith Service	4	3	7
Student Unions, etc. . . . .	..	1	1
Translation Unit	1	1	2
Total Sundry Staff	33	40	73
<i>Central Administration Staff</i>			
Chief Administrative Officer	8	..	8
Senior Administrative Officer	15	3	18
Administrative Officer	13	3	16
Administrative Assistant	19	5	24
Clerk, Typist, etc.	85	154	239
Total Central Administration Staff	140	165	305
<i>Departmental Administration Staff</i>			
Administrative Officer . . . . .	..	..	..
Administrative Assistant	3	..	3
Clerk, Typist, etc.	8	158	166
Total Departmental Administration Staff	11	158	169
<i>Development Work and Construction Staff</i>			
Professional Staff	6	..	6
Tradesman Staff . . . . .	..	..	..
Other Staff	6	6	12
Total Development Work and Construction Staff	12	6	18
<i>Maintenance and Other Staff</i>			
Maintenance of Buildings	55	1	56
Caretaking and Cleaning	53	36	89
Gardens, Grounds and Playing Fields	42	..	42
Domestic Staff	47	95	142
Messengers, Porters, Attendants and other General Services	44	21	65
Stores	3	6	9
Total Maintenance and Other Staff	244	159	403
Total Staff	1,406	855	2,261

(A) THE INSTITUTE OF ADVANCED STUDIES—RESEARCH STAFF

AS AT 30 JUNE 1968

<i>Departments, etc.</i>	<i>Pro- fessors</i>	<i>Profes- sorial Fellows, Readers, Senior Fellows</i>	<i>Fellows, Senior Research Fellows</i>	<i>Research Assistants, Senior Depart- mental Research Officers</i>	<i>Total</i>
<i>The John Curtin School of Medical Research</i>					
Biochemistry	2	5	6	..	13
Clinical Science	1	1	2	..	4
Experimental Pathology	1	4	4	2	11
Medical Chemistry	1	5	6	1	13
Microbiology	1	6	4	1	12
Physical Biochemistry	1	3	4	1	9
Physiology	2	2	4	1	9
Electron Microscope Unit . . . . .	..	1	2	..	3
<i>The Research School of Physical Sciences</i>					
Astronomy	2	..	10	6	18
Engineering Physics	1	8	3	3	15
Geophysics and Geochemistry	2	2	14	7	25
Mathematics	2	2	11	..	15
Nuclear Physics	1	5	8	2	16
Theoretical Physics	2	2	4	..	8
Diffusion Research Unit . . . . .	..	..	2	..	2
Electron and Ion Diffusion Unit . . . . .	..	..	3	..	3
Physics of Ionized Gases Unit . . . . .	..	..	..	1	1
<i>The Research School of Social Sciences</i>					
Demography	1	3	3	2	9
Economic History	1	2	2	3	8
Economics	2	4	..	1	7
History	2	5	..	7	14
Law	1	3	1	2	7
Philosophy	2	5	2	1	10
Political Science	2	3	5	6	16
Sociology . . . . .	..	1	3	2	6
Statistics	1	1	3	..	5
Education Research Unit . . . . .	..	1	..	..	1
Urban Research Unit . . . . .	..	..	1	2	3
Archives . . . . .	..	..	1	3	4
Director's Section . . . . .	..	..	..	1	1
<i>The Research School of Pacific Studies</i>					
Anthropology and Sociology	2	6	5	8	21
Economics	1	4	5	4	14
Far Eastern History . . . . .	..	3	3	6	12
Geography . . . . .	..	6	4	3	13
International Relations	2	1	4	4	11
Linguistics	1	..	2	1	4
Pacific History	1	3	5	4	13
New Guinea Research Unit . . . . .	..	1	5	3	9
Director's Section	1	..	..	2	3

(A) THE INSTITUTE OF ADVANCED STUDIES—RESEARCH STAFF

AS AT 30 JUNE 1968—*continued*

<i>Departments, etc.</i>	<i>Pro- fessors</i>	<i>Profes- sorial Fellows, Readers, Senior Fellows</i>	<i>Fellows, Senior Research Fellows</i>	<i>Research Assistants, Senior Research Officers</i>	<i>Depart- mental Assistants, Research Officers</i>	<i>Total</i>
<i>The Research School of Chemistry</i>						
Inorganic Chemistry . . . . .	..	..	4	..	..	4
Organic Chemistry	1	..	8	..	..	9
Physical and Theoretical Chemistry	1	..	8	..	..	9
Microanalytical Unit . . . . .	..	..	1	..	..	1
<i>The Research School of Biological Sciences</i>						
Genetics	1	3	6	..	..	10
Developmental and Cellular Biology	1	..	1	..	..	2
Environmental and Population Biology	1	1	3	..	..	5
Molecular Biology . . . . .	..	..	..	..	..	..
Total	44	102	172	90	..	408

(B) THE SCHOOL OF GENERAL STUDIES—TEACHING STAFF

AS AT 30 JUNE 1968

<i>Departments, etc.</i>	<i>Associate Professors, Readers</i>	<i>Senior Lecturers, Lecturers</i>	<i>Assistant Lecturers, Demon- strators, Tutors, Teaching Fellows</i>	<i>Total</i>	
<i>The Faculty of Arts</i>					
Classics	1	1	4	1	7
English	2	1	8	2	13
French	1	..	5	..	6
General Linguistics . . . . .	..	..	2	..	2
Geography	1	..	4	1	6
German	1	1	3	..	5
History	2	2	8	4	16
Mathematics—					
Applied	1	1	3	2	7
Pure	1	..	6	2	9
Philosophy	1	1	6	..	8
Political Science	2	1	9	3	15
Russian . . . . .	..	1	3	..	4
<i>The Faculty of Economics</i>					
Accounting and Public Finance	1	1	3	..	5
Economic History	1	1	3	1	6
Economics	2	1	7	1	11
Statistics	1	2	6	..	9
<i>The Faculty of Law.</i>	3	2	8	1	14
<i>The Faculty of Oriental Studies</i>					
Asian Civilization	1	2	5	..	8
Chinese	1	..	3	1	5
Indonesian Languages and Literatures	1	..	4	2	7
Japanese	1	1	2	1	5
South Asian and Buddhist Studies	1	..	2	1	3
<i>The Faculty of Science</i>					
Biochemistry	1	1	1	..	3
Botany	1	..	8	3	12
Chemistry	2	2	7	5	16
Forestry	1	..	10	2	13
Geology	1	2	6	3	12
Physics . . . . .	..	1	8	4	13
Psychology	2	2	5	6	15
Theoretical Physics	1	1	1	..	3
Zoology	1	1	9	3	14
Total	36	29	159	48	272

(C) CENTRAL ACADEMIC STAFF

AS AT 30 JUNE 1968

<i>Department, etc.</i>	<i>Pro- fessor</i>	<i>Profes- sorial Fellow, Reader</i>	<i>Senior Fellow, Fellow</i>	<i>Senior Research Fellow, Research Fellow</i>	<i>Senior Lecturer</i>	<i>Total</i>
Adult Education	1	1
Computer Centre	1	1	1	..	3
Total	1	1	1	1	4

ENROLMENTS

To 30 JUNE 1968

	<i>Full-time</i>	<i>Part-time</i>	<i>Total</i>
<i>The Institute of Advanced Studies</i>			
Ph.D. Course	433	46	479
Courses of research not leading to a degree	11	..	11
Total: The Institute of Advanced Studies	444	46	490
 <i>The School of General Studies</i>			
Higher Degree Courses (excluding Preliminary Courses for the degree of Master)			
M.A.	30	54	84
M.A. (Oriental Studies)	4	3	7
M.Ec.	1	10	11
LL.M.	1	3	4
M.Sc.	16	17	33
	52	87	139
 Bachelor Degree Courses—			
B.A.	660	908	1,568
B.A. (Oriental Studies)	101	67	168
B.Ec.	115	311	426
LL.B.	224	164	388
B.Sc.	340	110	450
B.Sc. (Forestry)	119	6	125
	1,559	1,566	3,125
 Preliminary Courses for the degree of Master	24	76	100
Miscellaneous (Single Units) (not for any purpose referred to above)	7	158	165
	31	234	265
 Total Enrolments by the School of General Studies	1,642	1,887	3,529
 Number of students for whom the School of General Studies has effected more than one enrolment	100	11	111
 Total Students enrolled by the School of General Studies	1,542	1,876	3,418
 Number of students enrolled by both the Institute of Advanced Studies and the School of General Studies	5	26	31
 Total number of Students in the University	1,981	1,896	3,877
 New Students in 1968	778	708	1,486

ASSISTED STUDENTS

To 30 JUNE 1968

	<i>Males</i>	<i>Females</i>	<i>Total</i>
<i>Higher Degree Students</i>			
Commonwealth Government Assistance	101	12	113
University Assistance	339	57	396
Other Assistance	23	4	27
	463	73	536
Assistance from more than one source . . . . .	..	..	..
Total Assisted Higher Degree Students	463	73	536
<i>Students other than Higher Degree</i>			
Commonwealth Government Assistance			774
State Government Assistance			330
University Assistance			155
Other Assistance			37
			1,296
Assistance from more than one source			41
Total Assisted Students other than Higher Degree			1,255
Total Assisted Students at the University			1,791

DEGREES CONFERRED

YEAR ENDED 30 JUNE 1968

	<i>Number Conferred on</i>		
	<i>Males</i>	<i>Females</i>	<i>Total</i>
Doctor of Letters (<i>honoris causa</i>)	1	..	1
Doctor of Science (<i>honoris causa</i>)	1	..	1
Doctor of Letters	1	..	1
Doctor of Science	1	..	1
Doctor of Philosophy	89	4	93
Master	30	11	41
Bachelor	278	119	397
Total Degrees	401	134	535

FINANCIAL STATEMENTS

STATEMENT OF ASSETS AND LIABILITIES

AS AT 31 DECEMBER 1968 (i)

	\$	\$
GENERAL FUNDS		
<i>Current Assets</i>		
Cash at Bank and on Deposit		
Operating Funds	1,024,140	
Restricted Funds—Cash	798,839	
Investments	18,927	
	<hr/>	1,841,906
Cash Held in Imprests		16,673
Commonwealth Superannuation and Provident Account		
Reserve—Cash and Securities		4,016,675
Debtors		193,854
Advances and Prepayments		549,480
Materials in Stores and Service Pools (at cost)		533,362
		<hr/>
		7,151,950
<i>Fixed Assets</i>		
Buildings (at cost or valuation)		
Buildings and Service Installations	31,365,548	
Dwellings	5,143,306	
	<hr/>	36,508,854
Teaching and Research Equipment and Furniture (at cost or valuation)		
The Institute of Advanced Studies	13,227,982	
The School of General Studies	3,934,649	
The Library	312,876	
Computer Centre	607,197	
Adult Education	10,259	
Administration and General Services	727,543	
Residential Properties	464,072	
	<hr/>	19,284,578
The Library		
Books and Publications (at cost)		2,638,915
Halls of Residence		
Buildings (at cost)	5,337,023	
Furniture and Equipment (at cost less depreciation)	470,781	
Works of Art (at cost)	3,427	
	<hr/>	5,811,231
		<hr/>
		71,395,528
<i>Liabilities</i>		
Creditors		479,368
		<hr/>
		70,916,160

STATEMENT OF ASSETS AND LIABILITIES

AS AT 31 DECEMBER 1968 (i)—*continued*

	\$	\$	\$
Capital Accumulation Account (ii)		65,820,169	
University House Profits Equalisation Fund		13,500	
Restricted Funds (vi)		817,766	
Commonwealth Superannuation and Provident Account Reserve			
Cash and Securities	4,016,675		
Properties included in Fixed Assets	248,050		
	4,264,725		
		70,916,160	
Trust and Agency Funds (vii)			1,242,851
Contingent Liability			
Guarantees—Staff Housing Loans Program	\$224,370		

J. G. CRAWFORD
Vice-Chancellor

L. A. BELLINGHAM (Mrs)
Accountant

The above Statement of Assets and Liabilities and the accompanying Statement of Income and Expenditure have been examined and are in agreement with the accounts, which have been audited. In my opinion, they show fairly the financial operations for the year ended 31 December 1968, and the state of the affairs of the Australian National University as at that date.

V. J. W. SKERMER
Auditor-General for the Commonwealth
24 June 1969

CAPITAL ACCUMULATION ACCOUNT

FOR THE YEAR ENDED 31 DECEMBER 1968 (ii)

	\$	\$	\$
Balance, 1 January 1968		59,533,946	
<i>Add:</i> Transfer from Income and Expenditure Statement	863,482		
<i>Plus:</i> Previous Year's Income and Expenditure Adjustments	14,616		
	878,098		
Gifts received other than in cash		4,262	
Commonwealth Grant for capital works and services		5,560,000	
Purchases of assets from Restricted Funds		137,974	
Profit on sale of houses sold to staff		8,882	
Transfer funds from University Reserve (vi)		28,328	
		6,617,544	
			66,151,490
<i>Less:</i> Disposal of equipment and adjustment of book values	226,649		
Transfer to Research School of Physical Sciences Reserve	1,739		
Transfer to Tandem Generator Tube Replacement Reserve	24,000		
Transfer to Halls of Residence Reserve	5,000		
Transfer to University House Profits Equalisation Fund	13,500		
Proceeds of houses sold to staff and transferred to Staff Housing Replacement Reserve	60,433		
		331,321	
Balance, 31 December 1968 as Contra to Assets in Statement of Assets and Liabilities (i)			65,820,169

STATEMENT OF INCOME AND EXPENDITURE

FOR THE YEAR ENDED 31 DECEMBER 1968 (iii)

	\$	\$	\$
<i>Income</i>			
Commonwealth Grant for Running Expenses		17,617,000	
Student and Examination Fees Received		573,811	
Rentals Received		275,612	
Sundry Income		92,925	
		<hr/>	
<i>Expenditure</i>		18,559,348	
The Institute of Advanced Studies (<i>see</i> Analysis attached—iv)			
The John Curtin School of Medical Research	2,030,986		
The Research School of Physical Sciences	2,738,058		
The Research School of Social Sciences	1,170,783		
The Research School of Pacific Studies	1,426,119		
The Research School of Chemistry	585,934		
The Research School of Biological Sciences	485,141		
	<hr/>	8,437,021	
The School of General Studies (<i>see</i> Analysis attached—iv)			
The Faculty of Arts	1,093,047		
The Faculty of Economics	387,812		
The Faculty of Law	167,873		
The Faculty of Oriental Studies	355,571		
The Faculty of Science	1,894,421		
Language Laboratory	12,412		
	<hr/>	3,911,136	
Scholarships		1,032,925	
Department of Adult Education		55,145	
The Library			
Salaries and Wages	449,867		
Pay-roll Tax	11,237		
Superannuation Provision	33,975		
Binding Costs	29,062		
Administrative Expenses	34,077		
	<hr/>	558,218	
Administration			
Salaries and Wages	1,119,980		
Pay-roll Tax	27,767		
Superannuation Provision	107,027		
Administrative Expenses	321,483	1,576,257	
	<hr/>		
Carried forward		15,570,702	18,559,348

STATEMENT OF INCOME AND EXPENDITURE

FOR THE YEAR ENDED 31 DECEMBER 1968 (iii)—*continued*

	\$	\$	\$
Brought forward		15,570,702	18,559,348
Miscellaneous			
Council and Committee Expenses	8,928		
Conferences and Functions	38,413		
Subscriptions, Donations and Grants to Other Organisations	22,092		
Bad Debts and Fees Written Off	1,236		
University Calendar and Public Relations Materials	24,376		
Private Audit and Miscellaneous Expenses	23,425		
Subventions			
Art Fund	5,000		
University Films	3,000		
Performing Arts Council	4,000		
Drama Committee	500		
Medical Teaching—Investigation Expenses	25,400		
University House Facilities Provided for General University Purposes	10,000		
Staff Centre for Special Facilities	7,878		
University House—Master's Stipend and Secre- tarial Assistance	16,768		
Warden's Stipend and Secretarial Assistance			
Bruce Hall	17,299		
Burton Hall	17,361		
Garran Hall	7,330		
University Union—Secretary's Salary and Secre- tarial Assistance	10,579		
University Fellowships	5,895		
Creative Arts Fellowships	9,774		
Supplementary Superannuation	13,000		
Cultural Exhibitions	596		
		272,850	
General Services and Maintenance			
Australian National University Press—Salaries and Expenses	73,724		
Translation Unit—Salaries and Expenses	23,123		
Data Processing Unit—Salaries and Expenses	92,538		
University Counselling Service	29,536		
University Health Service	21,846		
Visual Aids Unit	34,666		
Efficient Reading Course	6,344		
Maintenance—Buildings	700,747		
Maintenance—Other	584,214		
Watchmen	32,117		
Freight, Supply and Disposal Expenses, General	5,004		
Telephone Exchange Costs	106,147		
Computer Centre	141,758		
Northbourne House Interest and Outgoings	4,505		
		1,856,269	17,699,821
Carried forward			859,527

STATEMENT OF INCOME AND EXPENDITURE

FOR THE YEAR ENDED 31 DECEMBER 1968 (iii)—continued

	\$	\$	\$	\$	\$
Brought forward	.	.	.	.	859,527
Halls of Residence					
University House					
Operating Loss (including de- preciation)	..	290	..	..	..
Undergraduate Halls					
Operating Profit (including de- preciation)					
Bruce Hall	.	1,622	.	.	.
Burton Hall	.	161	.	.	.
Garran Hall	.	1,545	.	.	.
		<u>3,328</u>			
			3,038		
Staff Centre					
Operating Profit (including de- preciation)	.	.	.	917	.
				<u>3,955</u>	
					<u>3,955</u>
Transfer to Capital Accumulation Account (ii), the predominant part of this balance having been used for the purchase of equipment which is capitalised in the statement of assets and liabilities	.	.	.	.	<u>863,482</u>

ATTACHMENT TO INCOME AND EXPENDITURE STATEMENT

31 DECEMBER 1968 (iv)

	<i>Research and Teaching Materials</i>	<i>Salaries</i>	<i>Pay-roll Tax</i>	<i>Super- annuation Provision</i>	<i>Field Research and Travelling Expenses</i>	<i>Adminis- trative and Service Expenses</i>	<i>Total</i>
	\$	\$	\$	\$	\$	\$	\$
THE INSTITUTE OF ADVANCED STUDIES							
<i>The John Curtin School of Medical Research</i>							
Department of Biochemistry	41,943	148,004	..	..	..	..	189,947
Department of Physical Biochemistry	24,445	110,745	..	..	..	..	135,190
Department of Medical Chemistry	26,298	171,930	..	..	..	..	198,228
Department of Microbiology	39,944	142,163	..	..	..	..	182,107
Department of Experimental Pathology	30,847	151,357	..	..	..	..	182,204
Department of Physiology	23,927	154,904	..	..	..	..	178,831
Human Genetics Group	8,645	20,405	..	..	1,773	..	30,823
Urban Biology Group	78	16,106	..	..	..	..	16,184
Director's Group	87	12,133	..	..	..	..	12,220
Department of Clinical Science	14,064	60,390	..	..	3,228	3,394	81,076
Electron Microscope Unit	9,403	31,361	..	..	..	..	40,764
General Administration	37	174,398	35,205	137,704	9,869	171,499	528,712
Animal Breeding Establishment . . . . .	..	58,662	..	..	..	25,690	84,352
Workshops . . . . .	..	135,276	..	..	..	35,072	170,348
	219,718	1,387,834	35,205	137,704	14,870	235,655	2,030,986
<i>The Research School of Physical Sciences</i>							
Department of Engineering Physics	37,328	286,744	..	..	..	28,019	352,091
Department of Nuclear Physics	50,497	229,726	..	..	..	..	280,223
Department of Theoretical Physics	829	95,859	..	..	..	..	96,688
Department of Geophysics and Geochemistry	67,053	332,324	..	..	22,217	..	421,594
Department of Astronomy	49,548	366,324	..	..	..	49,816	465,688
Department of Mathematics	515	128,196	..	..	..	6,607	135,318
Diffusion Research Unit	4,893	25,079	..	..	..	..	29,972
Physics of Ionised Gases Unit	2,427	12,823	..	..	..	..	15,250
General Administration	142,939	126,934	45,995	200,548	15,590	185,927	717,933
Workshops	8,067	115,224	..	..	..	..	123,291
Electronics Workshops	9,601	46,285	..	..	..	..	55,886
Electron and Ion Diffusion Unit	4,973	39,151	..	..	..	..	44,124
	378,670	1,804,669	45,995	200,548	37,807	270,369	2,738,058
<i>The Research School of Social Sciences</i>							
Department of Law	365	52,217	..	..	4,499	..	57,081
Department of Economics	440	63,212	..	..	668	..	64,320
Department of Political Science	1,502	113,636	..	..	3,142	..	118,280
Department of History	3,500	125,851	..	..	15,186	..	144,537
Department of Demography	2,067	81,031	..	..	9,911	..	93,009
Department of Statistics	122	42,034	..	..	290	..	42,446
Department of Philosophy	166	83,718	..	..	813	..	84,697
Department of Sociology	1,089	50,298	..	..	5,571	..	56,958
Department of Economic History	625	65,982	..	..	1,830	..	68,437
Director's Section . . . . .	..	17,427	..	..	..	..	17,427
General Administration . . . . .	..	67,174	24,012	86,009	461	101,902	279,558
Archives Section . . . . .	..	29,006	..	..	..	11,168	40,174
Visitors . . . . .	..	36,693	..	..	..	..	36,693
Education Research Unit	1,162	21,845	..	..	1,280	373	24,660
Urban Research Unit	380	38,488	..	..	3,638	..	42,506
	11,418	888,612	24,012	86,009	47,289	113,443	1,170,783

continued on following page

ATTACHMENT TO INCOME AND EXPENDITURE STATEMENT

31 DECEMBER 1968 (iv)—continued

	<i>Research and Teaching Materials</i>	<i>Salaries</i>	<i>Pay-roll Tax</i>	<i>Super- annuation Provision</i>	<i>Field Research and Travelling Expenses</i>	<i>Adminis- trative and Service Expenses</i>	<i>Total</i>
	\$	\$	\$	\$	\$	\$	\$
<i>The Research School of Pacific Studies</i>							
Department of International Relations	3,951	97,764	..	..	11,841	..	113,556
Department of Anthropology and Sociology	11,037	205,737	..	..	36,094	..	252,868
Department of Pacific History	2,869	97,973	..	..	21,612	..	122,454
Department of Human Geography	5,644	111,826	..	..	19,651	..	137,121
Department of Far Eastern History	3,679	95,664	..	..	8,897	..	108,240
Department of Economics	1,057	112,959	..	..	15,393	..	129,409
New Guinea Research Unit	3,761	78,136	..	..	14,061	8,421	104,379
Department of Biogeography and Geomorphology	2,844	44,608	..	..	3,949	..	51,401
Director's Section . . . . .	..	25,757	..	..	..	7	25,764
General Administration . . . . .	..	76,482	23,271	92,683	7,802	131,489	331,727
Visitors . . . . .	..	32,184	..	..	..	..	32,184
New Guinea School Service Unit . . . . .	..	8,211	..	..	..	8,805	17,016
	34,842	987,301	23,271	92,683	139,300	148,722	1,426,119
<i>The Research School of Chemistry</i>							
Research Units . . . . .	..	242,630	..	..	..	..	242,630
General Administration	136,763	73,208	9,140	34,094	1,054	45,219	299,478
Workshops . . . . .	..	43,826	..	..	..	..	43,826
	136,763	359,664	9,140	34,094	1,054	45,219	585,934
<i>The Research School of Biological Sciences</i>							
Research Units . . . . .	..	225,866	..	..	..	..	225,866
General Administration	107,227	35,134	6,529	23,235	6,278	59,560	237,963
Workshops . . . . .	..	21,312	..	..	..	..	21,312
	107,227	282,312	6,529	23,235	6,278	59,560	485,141
Total: The Institute of Advanced Studies	888,638	5,710,392	144,152	574,273	246,598	872,968	8,437,021
THE SCHOOL OF GENERAL STUDIES							
<i>The Faculty of Arts</i>	8,967	893,907	22,936	98,280	8,814	60,143	1,093,047
<i>The Faculty of Economics</i>	2,426	312,553	7,933	31,985	3,839	29,076	387,812
<i>The Faculty of Law</i>	2,064	137,266	3,475	14,515	2,050	8,503	167,873
<i>The Faculty of Oriental Studies</i>	6,644	291,968	7,578	37,686	1,631	10,064	355,571
<i>The Faculty of Science</i>	210,392	1,367,360	34,424	131,266	30,547	120,432	1,894,421
Language Laboratory	1,992	10,118	107	..	82	113	12,412
Total: The School of General Studies	232,485	3,013,172	76,453	313,732	46,963	228,331	3,911,136

HALLS OF RESIDENCE

CONSOLIDATED OPERATING STATEMENT

FOR THE YEAR ENDED 31 DECEMBER 1968 (v)

	<i>University House</i>	<i>Bruce Hall</i>	<i>Burton Hall</i>	<i>Garran Hall</i>	<i>Staff Centre</i>	<i>Total</i>
	\$	\$	\$	\$	\$	\$
<i>Income</i>						
Tariff Received—Residents	195,987	141,543	156,452	153,634	..	647,616
—Visitors . . . . .	..	38,848	22,101	15,442	..	76,391
Membership Fees	5,569	..	..	..	3,215	8,784
Registration Fees . . . . .	..	1,090	1,450	1,390	..	3,930
Reimbursement of Board—House Staff .	4,802	4,732	..	4,610	..	14,144
Income from Casual Meals and Catering	31,493	18,800	9,419	9,419	..	69,131
Sundry Income	2,766	80	..	..	1,001	3,847
Beverage Sales—Net Proceeds	10,100	..	..	..	..	10,100
Canteen Sales—Net Proceeds . . . . .	..	1,752	1,694	1,694	..	5,140
Subvention from University	10,000	..	..	..	..	10,000
Rent from Lessee . . . . .	..	..	..	..	1,922	1,922
	260,717	206,845	191,116	186,189	6,138	851,005
<i>Less Expenditure:</i>						
<i>Operating Costs</i>						
Cost of Foodstuffs	60,033	57,521	63,802	61,754	93	243,203
Fuel, Light, Power and Heating	14,805	14,517	16,836	16,295	173	62,626
Cleaning, Laundry and Sundry Materials	6,393	8,191	8,403	8,134	326	31,447
Domestic Staff Wages	114,932	82,634	70,812	68,540	..	336,918
Losses, Breakages and Replacements . .	1,581	2,537	982	924	23	6,047
Local Transport, Freight and Supply Expenses	1,768	218	419	415	31	2,851
Other Operating Expenses	967	148	570	524	2	2,211
	200,479	165,766	161,824	156,586	648	685,303
<i>Administrative Costs</i>						
Administrative Salaries	21,496	14,610	7,975	7,719	1,836	53,636
Pay-roll Tax, Workmen's Compensation Insurance and Superannuation	6,418	4,688	3,889	3,764	40	18,799
Posts, Telegrams and Telephone	460	1,352	531	536	122	3,001
Stationery, Printing and Office Expenses	1,480	721	656	583	105	3,545
Newspapers and Periodicals	571	..	2	2	..	575
Master's, Fellows' and Residents' Com- mittee Entertainment Expenses	749	..	..	..	..	749
Warden's Entertainment Expenses . . . . .	..	400	400	400	233	1,433
Other Administrative Expenses—Ad- vertising, Appointment, Travelling, etc.	950	379	508	416	135	2,388
	32,124	22,150	13,961	13,420	2,471	84,126

continued on following page

HALLS OF RESIDENCE

CONSOLIDATED OPERATING STATEMENT

FOR THE YEAR ENDED 31 DECEMBER 1968 (v)—continued

	<i>University House</i>	<i>Bruce Hall</i>	<i>Burton Hall</i>	<i>Garran Hall</i>	<i>Staff Centre</i>	<i>Total</i>
	\$	\$	\$	\$	\$	\$
<i>Property Maintenance and Service Costs</i>						
Rates and General Services	1,046	187	888	860	61	3,042
Sundry Repairs	4,766	1,426	946	841	374	8,353
Building Maintenance and Repairs	8,921	2,325	2,645	2,760	..	16,651
	14,733	3,938	4,479	4,461	435	28,046
Total Costs	247,336	191,854	180,264	174,467	3,554	797,475
Operating Profit	13,381	14,991	10,852	11,722	2,584	53,530
Adjustment of Non-depreciable Items of Inventory	1,392	1,924	819	472	169	4,776
Estimated Depreciation on Furniture and Equipment	12,279	11,445	9,872	9,705	1,498	44,799
Net Operating Loss						
Transferred to University's Statement of Income and Expenditure	290	..	..	..	..	290
Net Operating Profit						
Transferred to University's Statement of Income and Expenditure . . . . .	..	1,622	161	1,545	917	4,254

STATEMENT OF FUNDS GRANTED FOR RESTRICTED PURPOSES

FOR THE YEAR ENDED 31 DECEMBER 1968^(vi)

	<i>Fund Balances 1 Jan. 1968</i>	<i>Subsidies and Donations Received during 1968</i>	<i>Funds Disbursed or Trans- ferred during 1968</i>	<i>Fund Balances 31 Dec. 1968</i>
	\$	\$	\$	\$
THE UNIVERSITY				
John Curtin School of Medical Research Reserve	20,000	..	..	20,000
Research School of Physical Sciences Reserve	18,261	1,739	..	20,000
Research School of Social Sciences Reserve	10,000	..	..	10,000
Research School of Pacific Studies Reserve	10,000	..	..	10,000
School of General Studies Reserve	10,000	..	..	10,000
University Art Reserve	8,449	3,000	8,284	3,165
University Film Reserve	5,327	3,000	1,287	7,040
Australian National University Press	71,446	89,331	128,000	32,777
Mount Stromlo Observatory Fund for Accumulated Furlough	2,923	..	..	2,923
University Theatre Group Reserve	328	500	365	463
University Performing Arts Association Reserve	2,000	4,000	..	6,000
Rockefeller Foundation Grant for General Purposes	4,961	108	..	5,069
Staff Housing Replacement Reserve	268,492	69,557	95,043	243,006
University General Reserve	77,943	..	28,328	49,615
Halls of Residence Reserve . . . . .	..	5,000	..	5,000
THE INSTITUTE OF ADVANCED STUDIES				
<i>The John Curtin School of Medical Research</i>				
Anonymous donation for general purposes	100	..	..	100
Department of Biochemistry				
U.S. National Institutes of Health grant for research in mechanism of action of A.T.P. guanidino phospho transferases	155	..	34	121
U.S. National Institutes of Health grant for research— coenzyme B12 in ribotide reduction to deoxyribotides	2,286	50	2,237	99
U.S. National Institutes of Health grant for research in metabolism of aromatic compounds by micro-organisms	1,847	25	1,219	653
Department of Physical Biochemistry				
Australian Dairy Board grant for research in lactoglobulins of milk	458	..	431	27
Department of Microbiology				
World Health Organization grant for maintenance of regional reference laboratory for anthropod-borne viruses	3,923	172	..	4,095
Nuffield Foundation grant for biology and human affairs project	3,553	3,185	3,988	2,750
Department of Experimental Pathology				
National Heart Foundation of Australia grant for study of the ultra structure of the aortic wall	141	3,893	4,477	443Dr
National Heart Foundation of Australia grant for research— Dr E. G. Cleary	122Dr	3,270	3,473	325Dr
Department of Physiology				
U.S. National Institutes of Health grant for research—Dr D. R. Curtis	1,360	..	785	575
Burroughs Wellcome Fellowship . . . . .	..	6,107	2,026	4,081
Fund for re-equipment	32,951	..	7,676	25,275
U.S. Public Health Service grant for research in neuro- chemistry of central synaptic transmission	1,301	2,263	2,182	1,382
U.S. National Institutes of Health grant for research—Dr Ellen S. Takahashi . . . . .	..	448	448	..

continued on following page

STATEMENT OF FUNDS GRANTED FOR RESTRICTED PURPOSES

 FOR THE YEAR ENDED 31 DECEMBER 1968 (vi)—*continued*

	<i>Fund Balances 1 Jan. 1968</i>	<i>Subsidies and Donations Received during 1968</i>	<i>Funds Disbursed or Trans- ferred during 1968</i>	<i>Fund Balances 31 Dec. 1968</i>
	\$	\$	\$	\$
<i>Department of Clinical Science</i>				
National Heart Foundation of Australia—Dietitian's Grant	..	1,500	615	885
National Heart Foundation of Australia grant for research	400	4,239	5,129	490 <i>Dr</i>
Life Insurance Medical Research Fund of Australia and New Zealand grant for research	156	..	130	26
National Heart Foundation of Australia grant for research	1,529 <i>Dr</i>	4,635	3,987	881 <i>Dr</i>
National Heart Foundation of Australia grant for research	2,064	2,854	4,346	572
Life Insurance Medical Research Fund of Australia and New Zealand grant for research	290	1,944	1,736	498
<i>The Research School of Physical Sciences</i>				
<i>Department of Nuclear Physics</i>				
Australian Institute of Nuclear Science and Engineering grant for research in ionisation times for light ions in a plasma	..	3,111	3,045	66
Tandem Generator Tube Replacement Reserve	12,185	24,000	..	36,185
<i>Department of Geophysics and Geochemistry</i>				
Metropolitan Water, Sewerage and Drainage Board and Snowy Mountains Hydro-Electric Authority grants for seismological research	3,461	4,200	963	6,698
Electron Probe Micro Analyser Fund	2,744	121	..	2,865
Commonwealth Scientific and Industrial Research Organiz- ation grant for co-operation with Division of Plant Industry in carbon-14 work	716 <i>Dr</i>	4,250	3,541	7 <i>Dr</i>
<i>Department of Astronomy</i>				
Myer Foundation grant for International Astronomical Union Symposium	218	..	..	218
International Astronomical Union grant for distinguished visitors	202	..	..	202
Grant for Anglo-Australian 150-inch telescope project	..	8,996	8,996	..
Lowell Observatory grant—Mount Stromlo equipment rehabilitation fund	..	11,641	..	11,641
<i>The Research School of Social Sciences</i>				
<i>Department of Law</i>				
Department of Territories, Territory of Papua and New Guinea grant for New Guinea legal research studies	296 <i>Dr</i>	692	1,900	1,504 <i>Dr</i>
<i>Department of Economics</i>				
Australian Banks' grant for visiting professors	401	..	..	401
Special Travel Fund	676	..	..	676
<i>Department of Political Science</i>				
Australian Institute of International Affairs grant for research in strategic problems	221	..	221	..
University of Michigan grant for nation-wide interview survey of Australian electors	18,342	41	18,383	..

continued on following page

STATEMENT OF FUNDS GRANTED FOR RESTRICTED PURPOSES

FOR THE YEAR ENDED 31 DECEMBER 1968 (vi)—*continued*

	Fund Balances 1 Jan. 1968	Subsidies and Donations Received during 1968	Funds Disbursed or Trans- ferred during 1968	Fund Balances 31 Dec. 1968
	\$	\$	\$	\$
Department of History				
W. M. Hughes grant for W. M. Hughes biography	469	..	450	19
Parliamentary Papers Index	233	..	233	..
Grant for Australian Dictionary of Biography	2,305	53	135Cr	2,493
Australian Dictionary of Biography—Sales, Volume 1	70	162	191	41
Australian Dictionary of Biography—Sales, Volume 2	68	232	269	31
Assistance for preparation of guide to manuscripts relating to Australia and South-West Pacific	4,115	90	..	4,205
Department of Demography				
Australian Institute of International Affairs grant for research in migration problems	947	..	..	947
U.S. National Science Foundation grant for Fellowship	447	..	447	..
Department of Statistics				
Anonymous grant for Australia's educational statistics	2,031Dr	2,031	..	..
National Capital Development Commission grant for survey of school leavers	544Dr	544	..	..
Department of Economic History				
Wm Cooper & Nephews (Aust.) Pty Ltd grant for research	1,637	93	25	1,705
Goldsbrough Mort grant for research	562	19	25	556
Social Science Research Council grant for research	300	..	300	..
R. Schalkenbach Foundation grant for research	489	..	..	489
Nuffield Foundation grant for survey of health services	620Dr	3,045	1,500	925
Anonymous grant for study of Melbourne's urban sector . . . . .	..	3,054	2,394	660
Australian Institute of Urban Studies grant for assistance with publication of <i>Australian Planning Institute Journal</i> . . . . .	..	200	200	..
Commonwealth Advisory Committee on Advanced Education grant for research into characteristics of students entering colleges of advanced education . . . . .	..	..	1,807	1,807Dr
I. B. Fell Bequest for a research program on urban develop- ment . . . . .	..	1,022	1,000	22
The Research School of Pacific Studies				
The Ford Foundation grant for international research and training program	16,827	84,767	71,771	29,823
Director's Special Fund	3,431	154	223	3,362
Anonymous grant for study of economy of Indonesia	15,057	4,750	5,157	14,650
Department of Anthropology and Sociology				
E. M. Symon Bequest for research	1,227	53	..	1,280
Special Purpose Fund	91	..	91	..
Nuffield Foundation grant for Prehistory	943	..	..	943
Australian Institute of Aboriginal Studies grant for lin- guistic research	92Dr	10,030	9,776	162
Department of Pacific History				
Republic of Nauru Fund . . . . .	..	10,218	..	10,218
Pacific Manuscripts Bureau . . . . .	..	8,000	5,449	2,551
Department of Biogeography and Geomorphology				
Commonwealth Scientific and Industrial Research Organiz- ation grant for research	100	..	100	..
Commonwealth Scientific and Industrial Research Organiz- ation grant for visitor	1,509	..	1,509	..

continued on following page

STATEMENT OF FUNDS GRANTED FOR RESTRICTED PURPOSES
FOR THE YEAR ENDED 31 DECEMBER 1968 (vi)—*continued*

	<i>Fund Balances 1 Jan. 1968</i>	<i>Subsidies and Donations Received during 1968</i>	<i>Funds Disbursed or Trans- ferred during 1968</i>	<i>Fund Balances 31 Dec. 1968</i>
	\$	\$	\$	\$
Department of Human Geography				
Rural Credits Development Fund grant to cover costs of aerial photographs of the Chimbu Sub-District in New Guinea	713	..	278	435
Rural Credits Development Fund grant for research in transport and land use in northern Australia . . . . .	..	1,488	1,086	402
Department of Far Eastern History				
Morrison Papers project	111	..	..	111
Department of Economics				
Nuffield Foundation—Computer assistance for pollen analysis . . . . .	..	2,036	804	1,232
Various grants for study of American investment in Australia	2,265	99	..	2,364
Rural Credits Development Fund grant for study of indigenous cash cropping in Territory of Papua and New Guinea	3,000 <i>Dr</i>	3,000	..	..
Rural Credits Development Fund grant for a cost-benefits study of Coleambally Irrigation Area of New South Wales	1,289	..	1,263	26
Atlantic Trade Survey grant for Australian project	1,595	2,720	3,902	413
Rural Credits Development Fund grant for study of nucleus estate development in rural sector of Papua and New Guinea . . . . .	..	7,084	6,333	751
New Guinea Research Unit				
Rural Credits Development Fund grant for study of economic aspect of indigenous agriculture in Territory of Papua and New Guinea	270	..	..	270
Mr and Mrs C. Banks grant for field-work in Territory of Papua and New Guinea	679	..	..	679
Rural Credits Development Fund grant for study of co-operatives in Territory of Papua and New Guinea	6,590	14,247	9,236	11,601
Australian Frontier grant to Mr N. D. Oram . . . . .	..	2,500	2,563	63 <i>Dr</i>
The Research School of Chemistry				
Imperial Chemical Industries Limited grant for Mr D. L. Milner	249	..	249	..
U.S. National Science Foundation grant for Fellowship	441	..	441	..
U.S. National Institutes of Health Fellowship—Dr C. E. Davis . . . . .	..	897	897	..
THE SCHOOL OF GENERAL STUDIES				
The Faculty of Arts				
Commonwealth Literary Fund grant for lectures	65	..	..	65
Department of Classics				
Fund for purchase of classical antiquities	1,143	900	2,086	43 <i>Dr</i>
Department of Geography				
Australian Conservation Foundation grant for national parks survey	563 <i>Dr</i>	9,469	8,535	371
Wool Board Inter-disciplinary Committee for study of Yass Valley	1,910	8,993	9,074	1,829
Wool Board grant for studies of Australian shearing industry	256	..	241	15

continued on following page

STATEMENT OF FUNDS GRANTED FOR RESTRICTED PURPOSES

FOR THE YEAR ENDED 31 DECEMBER 1968 (vi)—*continued*

	<i>Fund Balances 1 Jan. 1968</i>	<i>Subsidies and Donations Received during 1968</i>	<i>Funds Disbursed or Trans- ferred during 1968</i>	<i>Fund Balances 31 Dec. 1968</i>
	\$	\$	\$	\$
Department of General Linguistics				
Australian Research Grants Committee grant for research in distinctive features of Dutch speech	122Dr	2,000	1,888	10Dr
Department of German				
Australian Institute of Aboriginal Studies grant for linguistic research	306Dr	6,558	6,252	..
<i>Faculty of Economics</i>				
Department of Economics				
Anonymous grant for study of Australian manufacturing industry	1,500	66	..	1,566
Anonymous grant for study of company reporting	144	..	15	129
Anonymous grant for econometric study of Australian inflation	823	750	1,573	..
Rural Credits Development Fund grant for study of economic effects of taxation and other fiscal devices on agricultural production in Australia	150	..	67	83
Australian Research Grants Committee grant 'small sample' investigations of time series regression method . . . . .	..	2,200	2,148	52
Australian Institute of International Affairs project—Japan and Australia in a Pacific Economic Community . . . . .	..	7,385	1,960	5,425
Department of Statistics				
Wool Research Fund grant for national drought reserve study	3Dr	10,948	9,898	1,047
<i>The Faculty of Law</i>				
Law Notes Fund	3,433	2,759	390	5,802
Federal Law Review Fund	154	1,726	66	1,814
<i>The Faculty of Oriental Studies</i>				
Department of Indonesian Languages and Literatures				
John Galvin Trust grant for English/Malay dictionary	9,926	15,131	23,858	1,199
Department of South Asian and Buddhist Studies				
Australian Research Grants Committee grant for participation in the British Museum Archaeological Expedition to Thailand	3,198Dr	3,198	3,200	3,200Dr
Australian Research Grants Committee grant for bibliography of Chinese history	260Dr	5,043	4,025	758
Australian Research Grants Committee grant—Dr J. D. Frodsham . . . . .	..	104	93	11
<i>The Faculty of Science</i>				
Department of Botany				
General Purpose Fund	953	1,324	1,307	970
Food and Agricultural Organization grant for collection of special tree seeds	1,640	26	1,858	192Dr
A.P.M. Forests Pty Ltd grant for research in eucalypti at Coffs Harbour	903	4,035	4,036	902
Champion Research Fund . . . . .	..	7,607	1,973	5,634

continued on following page

STATEMENT OF FUNDS GRANTED FOR RESTRICTED PURPOSES

FOR THE YEAR ENDED 31 DECEMBER 1968 (vi)—continued

	Fund Balances 1 Jan. 1968	Subsidies and Donations Received during 1968	Funds Disbursed or Trans- ferred during 1968	Fund Balances 31 Dec. 1968
	\$	\$	\$	\$
Department of Chemistry				
Abbott Laboratories grant for research	1,502	..	835	667
Wool Research Committee grant for wool research	891	12,324	18,628	5,413 <i>Dr</i>
Australian Research Grants Committee grant for time resolved electronic spectroscopy	157	1,343	1,500	..
The Junior Rothmans Fellowship grant	62 <i>Dr</i>	220	158	..
Rural Credits Development Fund grant for research— naturally occurring insect attractants as potential agents for eradication	2,781	54	2,835	..
Australian Research Grants Committee grant for studies using spectrometry	63	..	63	..
Australian Research Grants Committee grant for pyrolysis and mass spectrometry of carbon compounds . . . . .	..	4,215	471	3,744
Australian Research Grants Committee grant for molecular collisions . . . . .	..	1,000	794	206
Department of Geology				
Australian Research Grants Committee grant for Patagonian orocline project	23	..	23	..
Esso Standard Oil (Australia) Limited grant for advance- ment of earth sciences	590	1,058	459	1,189
Department of Physics				
Australian Research Grants Committee—high temperature solid state diffusion . . . . .	..	12,590	11,740	850
Australian Atomic Energy Commission grant for research Australian Research Grants Committee grant for study of hyper-velocity aerodynamics	5,992	179	4,333	1,838
	15,214	23,545	38,412	347
Department of Psychology				
Australian Research Grants Committee for studies in space perception; binocular vision with aniseikonic lenses . . . . .	..	4,015	3,824	191
Northern Territory Administration grant for Aboriginal infant morbidity and mortality project	66 <i>Dr</i>	..	3,984	4,050 <i>Dr</i>
Social Science Research Council grant to assist in processing data from study of attitudes towards Aborigines	145	..	..	145
Australian Research Grants Committee—the effect of intensive group discussions on student rehabilitation . . . . .	..	2,350	2,385	35 <i>Dr</i>
Australian Research Grants Committee—environmental heat, body temperature and behaviour . . . . .	..	5,412	4,271	1,141
Department of Zoology				
Heron Island Pty Ltd grant for ecology of Queensland sea turtles . . . . .	..	1,000	1,000	..
National Capital Development Commission grant for lake biology research	55	..	55	..
Wool Research Committee grant for studies on growth and nutrition of hydatids	18	2,936	4,079	1,125 <i>Dr</i>
Commonwealth Scientific and Industrial Research Organi- zation grant for marsupial research	264	3,029	2,304	989
Rural Credits Development Fund grant for research	3,658	73	3,555	176
Insect Ecology grant	3,568	107	2,007	1,668
World Health Organization grant for hydatids research	1,460	967	1,309	1,118
Rural Credits Development Fund grant for aphid research	2,024	..	2,007	17

continued on following page

STATEMENT OF FUNDS GRANTED FOR RESTRICTED PURPOSES

FOR THE YEAR ENDED 31 DECEMBER 1968 (vi)—continued

	Fund Balances 1 Jan. 1968	Subsidies and Donations Received during 1968	Funds Disbursed or Trans- ferred during 1968	Fund Balances 31 Dec. 1968
	\$	\$	\$	\$
Department of Zoology—continued				
World Health Organization grant for research	3,416	1,954	3,358	2,012
Australian Research Grants Committee grant for investi- gation of electron transport systems in helminths	624	..	624	..
U.S. National Institutes of Health grant for research <i>in vitro</i> cultivation of <i>Echinococcus granulosus</i>	2,406	5,419	4,613	3,212
Department of Forestry				
Nuffield Foundation Grant—inventory of indigenous uneven aged broadleaved forests . . . . .	..	3,629	1,625	2,004
Forests Department of West Australia Grant for the study of the fungus phytopthera affecting jarrah . . . . .	..	6,100	4,603	1,497
Australian Timber Producers' Panel grant for purchase of timber panelling for new Forestry Building	1,072Dr	1,566	494	..
Australian Research Grants Committee grant for research on the effect of growth rate on wood quality	5,702Dr	8,600	2,804	94
Australian Research Grants Committee grant for research on the ecology of trees	642	3,697	4,019	320
National Capital Development Commission and Depart- ment of the Interior grant for the study of multiple land use in Canberra region . . . . .	..	4,945	2,277	2,668
A.P.M. Forests Pty Ltd—wood density of <i>Pinus radiata</i> . . . . .	..	3,500	1,182	2,318
Department of Biochemistry				
Australian Research Grants Committee—biochemical aspects of development during insect metamorphosis; mitochondrial biogenesis in <i>Lucilia</i> . . . . .	..	12,669	11,827	842
SCHOLARSHIPS				
Commonwealth Postgraduate Scholarships	14,693	202,400	192,769	24,324
General Motors-Holden's Pty Ltd grant for scholarships	7,345	6,076	6,109	7,312
British Commonwealth Scholarships and Fellowships and Colombo Plan Scholarships	14,753	..	4,976	9,777
Wheat Industry Research Council Scholarship grant	1,886	..	349	1,537
U.S. National Academy of Sciences Aero-space Post- doctoral Fellowship	756	..	756	..
Queen Elizabeth II Fellowship grants	6,815	38,345	37,745	7,415
Australian Wool Board Scholarships	240Dr	11,937	11,461	236
U.S. Public Health Service Fellowship . . . . .	..	896	..	896
Brunei-Malaysia Department of Education Scholarships	96Dr	2,121	1,953	72
National Parks and Wildlife Service Studentship Awards	5,123	715	2,623	3,215
Leverhulme Trust Fellowship grant	8,000	8,596	11,904	4,692
Commonwealth Scientific and Industrial Research Organiz- ation grants-in-aid for scholars . . . . .	..	1,846	998	848
Broken Hill Mining Managers' Association Studentship	637	2,550	2,343	844
Agricultural Development Council Fellowship	2,123	..	2,062	61
I.B.M. Australia Limited Graduate Fellowship	1,110	2,500	2,492	1,118
Drapers Company Scholarship . . . . .	..	2,034	2,034	..
Imperial Chemical Industries of Australia and New Zealand Limited Research Fellowship	2,465	2,702	2,423	2,744
U.S. National Science Foundation grant for Fellowship	440	..	260	180
National Heart Foundation Fellowship . . . . .	..	7,560	7,881	321Dr
Leverhulme Trust Fellowship (Keio University)	3,600	2,797	803
Department of Supply Studentship	800	280	520

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STATEMENT OF FUNDS GRANTED FOR RESTRICTED PURPOSES
FOR THE YEAR ENDED 31 DECEMBER 1968 (vi)—continued

	<i>Fund Balances 1 Jan. 1968</i>	<i>Subsidies and Donations Received during 1968</i>	<i>Funds Disbursed or Trans- ferred during 1968</i>	<i>Fund Balances 31 Dec. 1968</i>
	\$	\$	\$	\$
GENERAL				
Australian Newsprint Ltd grant for sculpture—New Forestry Building		1,275	1,275	..
Grants for publication of <i>Campanian and Lucanian Pottery</i>	1,201	1,440	203	2,438
Donations for McDonald Collection	1,559	..	..	1,559
Research Scholars' Thesis Typing Scheme	27,291	9,142	12,242	24,191
Fund for repair of New Guinea Research Unit houses	6,311	5,049	1,991	9,369
Fund for repair of Fijian house	408	92	243	257
Art and Library Fund—Library	610	1,801	2,184	227
Art and Library Fund—Bruce Hall	219	75	169	125
Art and Library Fund—Burton Hall	437	410	288	559
Art and Library Fund—Garran Hall	111	304	344	71
Bruce Hall Staff Amenities Fund	21	305	309	17
Bruce Hall Junior Common-room Fund	171	..	155	16
Bruce Hall Fellows' Fund	535	124	..	659
Burton Hall Junior Common-room Fund	2	1,505	1,362	145
Garran Hall Junior Common-room Fund . . . . .	..	1,186	1,164	22
Burton and Garran Hall Staff Amenities Fund	24	2	..	26
Linguistic Circle Publications Fund	31	633	751	87Dr
Fund for special art acquisition	6,817Dr	9,000	11,183	9,000Dr
Australia and New Zealand Bank grant for art purchase	300	100	..	400
Staff Amenities Fund	15,757	8,414	48	24,123
Computer Facilities Fund	1,147	..	..	1,147
Chancelry Murals Fund	2,000	2,000	..	4,000
Fund for Nichol Smith Seminar	2,010	..	67	1,943
Donations for Special Purchases for University House	288	259	319	228
Special Purpose Fund for University House	259	..	259	..
University House Staff Amenities Fund	58	1,989	1,380	667
Seminar—Proposed Faculty of Medicine	18,623	25,400	22,152	21,871
Professor B. H. Neumann Fund for Prize, Department of Mathematics	5,595	..	5,595	..
Vice-Chancellor's Special Fund	3,750	1,341	2,766	2,325
Mount Isa Mines Limited grant . . . . .	..	50	..	50
Timbind Utilization Prize Fund . . . . .	..	23	23	..
Mobil Oil Australia Limited grant to University Counseling Service	100	..	..	100
Bank of New South Wales grant for purchase of graphics for Halls . . . . .	..	1,000	1,000	..
Burton Society Fund . . . . .	..	120	..	120
Staff Centre Maintenance Fund . . . . .	..	3,978	4,000	22Dr
Staff Centre Building Fund . . . . .	..	4,000	..	4,000
Professor J. W. Davidson's Fund for Publications Assistance . . . . .	..	3,054	..	3,054
Western Australia Forests Department grant for jarrah in new Forestry Building . . . . .	..	1,000	1,000	..
UNESCO Seminar—Adult Education Department . . . . .	..	1,890	849	1,041
	860,594	1,030,817	1,073,645	817,766
Advances from Restricted Funds			10,770	
Prepayments from Restricted Funds			1,034	
Restricted Funds—Invested as at 31 December 1968			18,927	
Publications—Stock on Hand as at 31 December 1968			90,409	

STATEMENT OF TRUST AND AGENCY FUNDS

FOR THE YEAR ENDED 31 DECEMBER 1968 (vii)

	<i>Income Received</i>				<i>Trans-ferred to Reserve</i>	<i>Fund Balance 1 Jan. 68</i>	<i>Fund Balance 31 Dec. 68</i>
	<i>Subsidies, Donations and Subscriptions</i>	<i>Interest and Capital Appreciation</i>	<i>Total</i>	<i>Disbursements</i>			
	\$	\$	\$	\$	\$	\$	\$
<i>University Funds</i>							
The Supplementary Superannuation Benefits Fund	147,818	35,047	182,865	70,904	111,961	597,706	709,667
1966 Supplementary Superannuation Benefits Fund	108,704	2,679	111,383	13,962	97,421	35,676	133,097
The Staff Superannuation Scheme—Members' Accumulations	103,857	10,369	114,226	34,311	79,915	144,416	224,331
Non-Academic Staff Retirement Provision—Cash Accumulations	31,294	1,364	32,658	3,234	29,424	28,414	57,838
Interest Due to Members' Fund . . . . .	..	571	571	211	360	384 <i>Dr</i>	<i>Dr</i> 24
Mount Stromlo Observatory Fund . . . . .	..	187	187	..	187	4,985	5,172
<i>Gifts and Endowments</i>							
The Lord Rutherford Memorial Trust Fund . . . . .	..	815	815	753	62	14,804	14,866
Morrison Oration Trust Fund . . . . .	..	75	75	50	25	1,410	1,435
Sir Littleton Groom Memorial Scholarship Trust Fund . . . . .	..	141	141	..	141	2,519	2,660
Norwegian-Australian Cultural Trust Fund . . . . .	..	270	270	..	270	4,872	5,142
Danish-Australian Cultural Trust Fund . . . . .	..	273	273	725	452 <i>Dr</i>	5,135	4,683
Swedish-Australian Cultural Trust Fund . . . . .	..	188	188	..	188	3,690	3,878
Canberra University College Public Subscription Fund . . . . .	..	4	4	..	4	90	94
R. G. Menzies Scholarship Fund	6,747	1,170	7,917	2,803	5,114	28,823	33,937
A. M. Cohen Trust Fund . . . . .	..	58	58	..	58	4,016	4,074
<i>Prize Funds</i>							
The John Deans Prize Fund . . . . .	..	10	10	10	..	206	206
The Lady Isaacs' Prize Fund . . . . .	..	14	14	26	12 <i>Dr</i>	293	281
The Robert Ewing Prize Fund . . . . .	..	28	28	51	23 <i>Dr</i>	588	565
The Andrew Watson Prize Fund . . . . .	..	5	5	5	..	112	112
The George Knowles Memorial Prize Fund . . . . .	..	23	23	23	..	490	490
The W. J. Lind Prize Fund . . . . .	..	4	4	4	..	110	110
The Alliance Francaise de Canberra Prize Fund . . . . .	..	10	10	10	..	224	224
The Tillyard Prize Fund . . . . .	..	21	21	21	..	442	442
The J. B. Chifley Memorial Prize Fund . . . . .	..	39	39	35	4	782	786
Rachel Dorph Memorial Prize Fund . . . . .	..	12	12	12	..	230	230
The W. B. Clarke Prize in Geology Fund . . . . .	..	2	2	35	33 <i>Dr</i>	81	48
Peter William Stroud Prize Fund	5,150	451	5,601	..	5,601	..	5,601
Priscilla Fairfield Bok Prize Fund . . . . .	..	64	64	44	20	1,194	1,214
Schlich Memorial Trust Prize Fund . . . . .	..	25	25	..	25	538	563
Sundry Prize Funds	1,282	4	1,286	481	805	156	961
The Australian Society of Accountants' Prize Fund	60	..	60	..	60	3	63

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STATEMENT OF TRUST AND AGENCY FUNDS
 FOR THE YEAR ENDED 31 DECEMBER 1968 (vii)—continued

	<i>Income Received</i>						
	<i>Subsidies, Donations and Sub- scriptions</i>	<i>Interest and Capital Appreci- ation</i>	<i>Total</i>	<i>Disburse- ments</i>	<i>Trans- ferred to Reserve</i>	<i>Fund Balance 1 Jan. 68</i>	<i>Fund Balance 31 Dec. 68</i>
	\$	\$	\$	\$	\$	\$	\$
<i>Agency Funds</i>							
The Saionji Hamersley Scholarship Fund	468	2Dr	466	150	316	169Dr	147
The Vice-Chancellor's Discretionary Fund	605	1,160	1,765	3,918	2,153Dr	32,024	29,871
The Research School of Physical Sciences Faculty Fund	..	..	..	..	..	..	..
The Department of Biochemistry Fund	..	2	2	..	2	39	41
The Research School of Social Sciences Faculty Fund	..	1	1	..	1	26	27
The Research School of Pacific Studies Faculty Fund	..	3	3	..	3	67	70
The R. G. Menzies Building of the University Library Retention Fund	..	250	250	8,250	8,000Dr	8,000	..
Australian Japan Business Co-operation Committee	..	1	1	41	40Dr	11Dr	51Dr
Total	405,985	55,338	461,323	140,069	321,254	921,597	1,242,851

STATEMENT OF TRUST AND AGENCY FUNDS
FOR THE YEAR ENDED 31 DECEMBER 1968 (vii)—*continued*

	Face Value	Purchase Price Appreciated to Date	Purchase Price	Total
	\$	\$	\$	\$
<i>Investments</i>				
The Supplementary Superannuation Benefits Fund	727,530	723,054		
1966 Supplementary Superannuation Benefits Fund	126,250	126,000		
The Staff Superannuation Scheme—Members' Accumulations	195,120	192,420		
Non-Academic Staff Retirement Provision—Cash Accumula-				
tions	46,950	46,523		
Mount Stromlo Observatory Trust Fund	5,490	5,490		
The Lord Rutherford Memorial Scholarship Trust Fund	14,960	14,430		
Morrison Oration Trust Fund	1,400	1,400		
Sir Littleton Groom Memorial Scholarship Trust Fund	2,520	2,502		
Norwegian-Australian Cultural Trust Fund	4,650	4,590		
Danish-Australian Cultural Trust Fund	4,600	4,557		
Swedish-Australian Cultural Trust Fund	3,250	3,230		
Priscilla Fairfield Bok Prize Fund	1,150	1,150		
The Vice-Chancellor's Discretionary Fund	20,800	20,795		
Robert Gordon Menzies Scholarship Fund	33,900	33,840		
			1,179,981	
Schlich Memorial Prize Fund	480		480	
Canberra University College Public Subscription Fund	36		36	
John Deans Prize Fund	160		160	
Lady Isaacs Prize Fund	248		248	
Robert Ewing Prize Fund	456		456	
Andrew Watson Prize Fund	100		100	
Sir George Knowles Prize Fund	420		420	
W. J. Lind Prize Fund	100		100	
Alliance Francaise Prize Fund	200		200	
Tillyard Prize Fund	420		420	
J. B. Chifley Memorial Prize Fund	700		700	
Rachel Dorph Memorial Prize Fund	200		200	
P. W. Stroud Prize Fund	5,000		5,000	
A. M. Cohen Trust Fund	4,000		4,000	12,520
	1,201,090			1,192,501
Loans from Vice-Chancellor's Discretionary Fund				7,148
Cash at Bank—Commonwealth Savings Bank of Australia—S.2				43,202
				1,242,851