



MONASH REPORTER

An unofficial bulletin for the information of members of Monash University

INSIDE :

Snake Gully's Denizens

The Reader Writes

Gun Bunker on Campus

Engineering Exercise

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THE DENIZENS OF SNAKE GULLY

The Jock Marshall Zoological Reserve in the north-east corner of the campus is popularly known as "Snake Gully".

Few people appreciate the aptness of the nickname.

Members of the Zoology Department have identified Tiger, Black and Brown snakes in the 10-acre reserve.

The snakes have always been there, but a wide variety of other animals has come by invitation.

The rare Cape Barren Goose and the Scrub Turkey have done so well during their stay that there are now too many of them for the small area. We are now exporting geese to the Fisheries and Wildlife Research Farm at Serindip and turkeys to Healesville Sanctuary.

Among other animals running free in the reserve are Echidnas, Bandicoots, Tasmanian Pademelons, two Bennett's Wallabies, Grey Kangaroos, Red Kangaroos, Emus, two Platypuses and a Koala.

In special pens, there are Parma Wallabies, Native Cats, Ringtail Possums and a Wombat.

The extent of the research work being conducted in the reserve is not realised by many members of the University.

One important project involves the Cape Barren Goose, which is unpopular with some farmers because they claim that it feeds heavily on



Picture by Vladimir Kahout Department of Psychology

their pastures.

Postgraduate Zoology students are now measuring exactly how much the animal eats to see whether the complaint of the farmer is justified. They are also analysing what it eats to see if it is selective of certain plants in pastures.

Further work with the Cape Barren Goose showed that as young birds paired they selected "territories" which they then defended against "invasions" by other geese. These territorial disputes often involve quite spectacular chases and are accompanied by much noisy trumpeting by the rival males.

An experiment with the Echidna has just been completed. Small transmitters capable of measuring body temperatures were attached to the animals. Among a number of discoveries, it was found that the body temperature of thin Echidnas dropped to ground temperature seven to eight times during the winter. Fat Echidnas, on the other hand, retained their normal body temperatures (32°C) throughout the winter. It was also found that when air temperature became lower than ground temperature echidnas would dig into the ground - always choosing the least cold environment.

Special temperature recorders have been planted in the large mounds built by Scrub Turkeys. It has been found that the mounds are maintained at a constant temperature of 36°C throughout the breeding season. The necessary heat is generated by the fermentation of the compost which forms a large part of the mound. It has been discovered that when the temperature exceeds 36°C the turkey scratches open part of the mound to let the heat escape and bring the temperature back to 36°C .

The breeding physiology of the rare Parma

Wallaby is also being looked at. This aspect of the animal seems to indicate that it is closer to the Grey Kangaroo than to any other member of the Wallaby family. Studies of growth and rate of eruption of molar teeth make it possible to age these animals with some accuracy.

Other experiments in "Snake Gully" include a behaviour study of Ringtail Possums, and a look at the Plankton (floating organisms) on the lake which takes up three acres of the reserve. The lake, incidentally, has many thousands of Gold Carp in it. These will be the basis of a future research project.

All this work will be greatly helped and extended by the provision of 16 environmental laboratories, with observation facilities, which will be built in the reserve during the next triennium.

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FESTIVAL OF CAROLS

MONASH UNIVERSITY CHORAL SOCIETY will present a programme of Old Favourites plus some you won't know but will want to when you have heard them.

The Carol Festival which is free will be held in the Religious Centre on Thursday, December 18 at 8.15 p.m.

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WHAT THE READER IS WRITING

The following interview with Mr. G.J.F. Troup, Reader in Physics, is the seventh in the series of articles on Readers at the University.

Question: Why are you a Physicist?

Answer: One has to live . . .

Q: We'll try again. Why are you a Physicist?

A: I often wonder. However, it seems to have turned out quite well, so I guess I'll stick to it.

Q: Well, what made you become one?

A: It all began when I read a book called "At home among the atoms", and became intrigued by the physical sciences. The kind of chemistry one did then was all precipitates and fruity smells of esters; I was rather slow at mathematics; so physics was the obvious answer.

Q: But don't you need to be good at maths for physics?

A: Not terribly; so long as you keep friendly with the theoreticians, you can get a lot of problems solved!

Q: You're an experimentalist?

A: Fundamentally yes; but somehow the odd theoretical paper gets produced now and then, usually with a co-author. It all interrelates, especially if you get fascinated by a particular field.

Q: And what field fascinates you?

A: Quantum electronics, basically - the controlled generation of radiation by atoms and molecules, as in masers and lasers. And the absorption of radiation too, particularly in the radio and microwave regions, by magnetic nuclei and atoms. Put these into a large molecule or a living cell, and you get biophysics of a kind. That fascinates me too.

Q: Isn't that too big a spread?

A: Not really. The basic processes and the underlying theory are similar overall. It's just the environments and the various conditions that are different. From one viewpoint, an iron atom behaves similarly whether it's an impurity atom in a solid, or alone in a huge molecule like haemoglobin. And microwaves and light waves are both electromagnetic radiation, and both their wave lengths are much bigger than a single atom.



Mr. G.J.F. Troup

Q: Can you tell us about some of your projects?

A: Well, I'm interested in the behaviour of light as light, so we're studying how photons behave in laser beams and in scattered laser beams. We're also studying the reasons for colours in certain minerals and gemstones. This is usually tied up with the presence of magnetic atoms, so when we identify the atom, we study its behaviour in the solid in order to find out more about how the solid is bonded together. We also study the magnetic properties of magnetic-atoms in large biological molecules like ferritin (the iron-transport protein in mammals), and haemocyanin (the analogue of haemoglobin in certain sea-creatures like crayfish - it contains copper instead of iron).

Q: How did you get interested in this field?

A: More by luck than good management, in a sense. I was told to keep a watch on masers, because of their importance as sensitive amplifiers, while I was at the Royal Aircraft Establishment as an attached scientist on behalf of the Australian Department of Supply. The solid-state masers that developed used magnetic atoms; so did the first laser (the ruby laser); from then on, everything 'just grewed'.

Q: You haven't always been with a University, then?

A: No, I spent 9 years in government research and development work, mainly with the Weapons Research Establishment in South Australia.

Q: Why did you leave?

A: Well, the desert sands pall after a while.

Q: Why did you choose Monash?

A: Luck again. It was beginning at the right time; I happened to be interested; and we've got on reasonably well ever since.

Q: Do you prefer being at a University?

A: Very much so. Within reason and the budget, you have great freedom for your research work, and you are constantly kept on your toes by colleagues, postgraduate and undergraduate students. It's the constant saying 'I don't know, so I'll have to find out' that advances your knowledge.

Q: How about teaching?

A: I don't teach.

Q. What?

A: Not in the usually accepted sense of the word. I do my best to help people to teach themselves. How on earth can you actually teach 250 people anything when you're only 1? You can't pour knowledge into people like you pour beer into a bucket. Acquiring knowledge has got to be worked at, it's hard, and often the knowledge itself is difficult. And you can be hung up for weeks seemingly on trivia. I once spent a fortnight chasing a lost factor of two between two authoritative textbooks.

Q: And where did you find it?

A: Eventually, in my misunderstanding.

Q: Wouldn't it have helped if you'd had guidance?

A: I had guidance, and good guidance too, but finally, it was just a question of sorting it out by myself for myself. You have to understand things in your own way, which can be totally different to anyone else's.

Q: Does that mean you don't think the lecture is an efficient way of communicating information?

A: It depends. If the audience is prepared and sympathetic or even hostile, in the scientific sense - as at an international conference or a research seminar, to give obvious examples, it can be an extremely efficient way of communicating. But, as you know, there's a tremendous exchange of reprints and papers between scientists. It's a bit like the Stage - the plays and MSS survive long after the actors are gone.

Q: Do you enjoy teaching?

A: Immensely. It keeps one alert. And I've never had a year where some problem hasn't emerged from the teaching side and carried over into research. And vice-versa. You keep getting new questions, new problems, new points of view, which all go to making you into a better researcher, and a better lecturer.

Q: Do you enjoy research?

A: Well, there are times when the frontiers of science in your corner seem more likely to fall on you than to be pushed back; but you keep banging your head against the wall, in the hope that the wall will give way, not because it's so lovely

when you step. But of course I enjoy it - as far as I'm concerned, it's a necessity.

Q: What else do you enjoy?

A: Let us say that although Physicists have their heads in the clouds, their feet are well and truly planted in the earth.

Q: Do you consider you have enough time for your research?

A: A modified Parkinson's Law applies here. The research always expands to fill the time available, and the work always raises more problems than can be solved by you alone. So however much time I had, the answer would still be 'no'. I'd like more time, but then, so would we all. This is something we will all have to watch carefully; we mustn't become a sausage-machine for meal tickets, if you see what I mean.

Q: Do you ever expect to do anything tremendously significant?

A: The chances are against me, as against most research scientists. One keeps trying, and hoping, and mainly, adding bits here and there to the overall knowledge of the world. I think the application of physics to biology and biochemistry in a really concentrated fashion will probably yield tremendous results. I don't mean necessarily by physicists becoming expert biochemists, say, or vice-versa, but by the physicist and the biochemist working together as a close-knit, communicating team. We've co-operated with biochemists from Sheffield and Melbourne, and are starting to do so with colleagues here, and it really is

extremely fruitful.

Q: Why not here first?

A: The problems weren't common, or the interests weren't sufficiently mutual. That's not terribly important, now that it's begun. Anyway, cross-fertilization makes a good healthy breed, as the Bishop said to the Actress.

Q: Any other comments?

A: Just two. I think 'Ancora Imparo' is a wonderful motto for anyone, be he at a University or not. Some of my Italian friends tell me that, at 93, Michelangelo was mad when he said it, but I think they're only jealous. Finally, 'Physics is Life' - if you don't believe me come and see our Burnell collection etchings . . .

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THE REPORTER

This is the final issue of the Reporter for 1969. We take the opportunity of wishing our readers a Merry Christmas and prosperous New Year.

Copy for our first issue in 1970 will close on Monday, February 24.

We are considering the possibility of running a small "Letters to the Editor" column next year, and would-be correspondents are asked to forward their letters (brief ones, we hope) to the Editor, Monash Reporter, Vice-Chancellor's Department, by the above date.

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ULTRA-HIGH SPEED CUTTING

OR

TURNING SWORDS INTO PLOUGHSHARES

By Mr. R.H. Brown, Department of Mechanical Engineering

On October 13 at 4.10 p.m. a 40 mm Bofors anti-aircraft gun was fired on the campus. Apart from those involved in the test firing, it appears that no one was aware that a shot had been fired. This was as expected, but now that experimental evidence has indicated that an artillery piece can be fired without disturbing anyone who may be asleep at his or her desk, Messrs. G. Arndt and R.H. Brown plan a regular series of firings for the advancement of Production Science.

The gun is used to cut materials at very high speeds (up to 8,000 feet per second). The reasons for wanting to do this are: firstly, to study the behaviour of materials deforming at very high speeds and, secondly, to investigate the feasibility of using very high cutting speeds in the production machining of metals.

The high speed cutting tests are being conducted in a bunker which was designed and built (under sub-contract) by the Buildings and Grounds Branch. The bunker is located under a mound of earth to the East of the Engineering Laboratories. It can be distinguished by its small white control shed and six white ventilators projecting skywards. When firing tests are in progress, notices are displayed and a light flashes from the roof of the control hut. During each shot the bunker is completely sealed to contain noise.

Considerable time has elapsed from the con-

ception of this project until the first firing. Much of this time was taken up in convincing the whole range of authorities that the project was a safe one and that it would not constitute a nuisance. For the information of anyone else who may be thinking of acquiring an artillery gun it may be useful to know that it does not have to be licensed - "if you can't put it in your pocket, you don't have to register it". Once all the permits to proceed had been obtained a lot of time and energy was spent in re-designing the gun to achieve a very high muzzle velocity, designing and constructing a track for guiding the projectile, various fixtures for instrumentation, firing circuits, etc. Now that the equipment is operating, it is expected that testing will progress at a reasonably rapid rate (or even at ultra-high speed?) in the next few months.

The Australian Army and the Defence Standards Laboratories have given valuable practical assistance and advice on the ballistic problems associated with this work. The cost of all equipment, including the bunker has been met by a grant from the Harold Armstrong Memorial Fund.

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BIG GRANT FOR DIABETES RESEARCH

The Federal Minister for Health, Mr. Forbes, has announced a \$262,000 grant to Professor J. Bornstein, of the Department of Biochemistry. It will enable Professor Bornstein and his team to continue and expand their research in the field of diabetes.

The grant, from the Medical Research Endowment Fund, is to cover a period of three years commencing in 1970.

AUTHENTIC INVOLVEMENT IN ENGINEERING DESIGN

By Dr. Peter Dransfield and Dr. Arthur Williams

One of the distinguished features of an engineer should be that he is able to design things. This is the way he translates his thoughts into drawing, models, reports, etc., which other people can use to construct the object of the engineer's attention. Some projects are so complicated that they need millions of man-hours of time by a team of engineers, and the final design may occupy thousands of drawings and reams of associated reports. Any error at this stage may become an inbuilt feature of each specimen of the final product, and the retrospective corrective action which may be required after a long production run may be almost ruinous to the manufacturer. One has only to consider recent cases of urgent and retrospective modifications to the brakes or steering mechanisms of some new motor cars, or to essential components of some aircraft, to appreciate the import of correct design.

It is difficult to effectively teach engineering design in a university, as many of the influencing factors are absent. These factors range through considerations of time, costs, availability of convenient methods of manufacture, availability of suitable manpower, availability of existing or improved materials, competition from rival manufacturers etc., and even to such mundane matters as being pressed hard by one's supervisors. Students may be aware of the existence of such factors, but usually have little or no experience of them. In an attempt to gain experience of this type, the Mechanical Engineering

Department's final year design course, organised by Drs. Peter Dransfield and Arthur Williams, has included one term's design work with local industrial companies.

For the Authentic Involvement Scheme local companies were approached with a view to obtaining current, challenging design problems which could be tackled by teams of three students. Each problem had to be "live" in the sense that the Company wanted an early and effective solution which was quite likely to be utilized by them in the near future. The problems were selected for size, scope, innovation, and technical challenge. For the six problems chosen, the companies' project engineers led seminars with the class to outline the nature of the requirements. Though the student teams had access to the firm's nominated project engineer, and to the class academics for general discussion, the whole initiative and responsibility for making progress was in their own hands.

This included the organization within the team, the generation and development of ideas, and the choice of "designs" to be followed up in detail. In effect each student team functioned as a consulting group to the Company, charged with the solution of a particular current problem. The students were "pushed from the nest" as far as the class supervisors were concerned. Although only one half day per week was allocated for this design work, the actual time spent became progressively more as the interest and involvement became deeper. Teams were required to present periodical accounts of their progress to the assembled class and also to the companies.

The topics, Companies, and Company engineers involved were as follows :

- (1) "Optimization of Hydraulic Press Frame Design" by Marfleet & Weight Ltd. (Mr. J. Stecki).
- (2) "Dynamic Analysis and Control of Shuttle Conveyor" by Marfleet & Weight Ltd. (Mr. J. Stecki).
- (3) "Design of a Rear Wheel Disc Brake Caliper Incorporating a Parking Brake" by Patons Brake Replacements Pty. Ltd. (Mr. V.K. Keane).
- (4) "Layout of Plant for Casting Light Alloy Components" by Lolley Piston Co. Pty. Ltd. (Mr. C.A. Lee).
- (5) "Investigation into the Elimination of Contaminants in Refrigeration Systems using Remotely Located Unitary Equipment" by Email Ltd. (Mr. G. Cunningham).
- (6) "Design of a Universal Test Facility for Heat and Mass Transfer Equipment" by Email Ltd. (Mr. G. Cunningham)

The exercise concluded with the presentation of a written report and drawings. Oral presentations were given at the university and at the companies, the latter being to audiences of the companies' senior engineers, who also helped as assessors in awarding grades to the students. The high grades received reflected the enthusiasm and efforts of the students.

All the participants feel that this was a useful and interesting venture, and should be repeated. It brought into the university classroom an atmosphere of the urgency of an industrial problem, with acceptable solutions constrained by some of the factors described earlier. It might also be construed as a successful exercise in improving industrial links with the university; it certainly achieved this whether by design or otherwise.

DEPARTMENTAL NEWS

History

The Eldershaw Memorial Lectures at Hobart and Launceston were given this year by Professor A.G.L. Shaw, who spoke on Sir George Arthur: a colonial governor in two hemispheres.

The department had a visit in October from Professor Dani, a distinguished Pakistani Archaeologist, who gave an illustrated lecture on The Art of Gandhara.

Ann Hone left at the end of second term to study for the D.Phil. at St. Anne's College, Oxford. Her place as Research Assistant will be taken by Frances Garner.

Geoffrey Serle, Reader, has taken six months sabbatical leave to finish writing the second volume of his History of Victoria.

Dr. Dan Potts, Dr. Milton Osborne and Dr. Ian Mabbett will all be overseas during the long vacation. Dr. Potts has received a grant from the Australian Humanities Research Council to travel to India and England to consult essential manuscript and other sources in connection with a research project. Dr. Osborne is going to visit Singapore, Vietnam, Cambodia and Thailand on an A.R.G.C. grant, and Dr. Mabbett is off to India, where he will be conducting research in Delhi, Benares and Calcutta.

Professor Legge has now left Djakarta, where he was continuing his research, and is established

in Singapore in his position as Director for one year of the Institute of Southeast Asian Studies. The Department often gets news of him from people who have dropped in when passing through Singapore on their overseas travels. Professor Legge will be back in his position in the department on August 1 next year.

Electrical Engineering

In November, Professor D.G. Lampard was in Mexico for one week attending the I.E.E.E. Regional Activities Board Meeting in Mexico City and the I.E.E.E. Directors meeting in Cuernavaca. Earlier, Drs. K.C. Ng and A.B. Gardiner attended a C.S.I.R.O. "Workshop on Small Computers in the Experimental Environment" held by the Division of Computing Research in Canberra. The Department has now taken delivery of its own small digital computer for on-line experimentation.

A new staff member, Kevin E. Forward, B.E., Ph.D., will be arriving in January. Dr. Forward is a graduate of the University of Western Australia and is coming to us from the University of N.S.W. Military Studies College at Duntroon. He will be working here in the field of Solid State Electronics.

Two of our temporary members of staff will be leaving in December. Dr. Kim C. Ng who has been here for the past year on sabbatical leave from the University of Warwick, U.K., will be returning there after visiting his parents in Malaya. Post Graduate Fellow Dr. Donald Stenhouse will be returning to Scotland for a short time before taking up an appointment in Auckland.

On November 1, the department were hosts to Professor Moorhouse and the members of the Electrical Engineering Department of the University of

Melbourne. After being shown round the department, discussions were held on matters of mutual interest.

Mechanical Engineering

Chairman Returns

Professor R.G. Barden was welcomed back recently after a long stay with the Sound and Vibration Research Institute at the University of Southampton where he interested himself primarily in environmental studies.

Return Trip

Mr. F. Fricke leaves the department at the end of the year to take up a Research Fellowship in the Sound and Vibration Research Institute at the University of Southampton where he will study noise pollution.

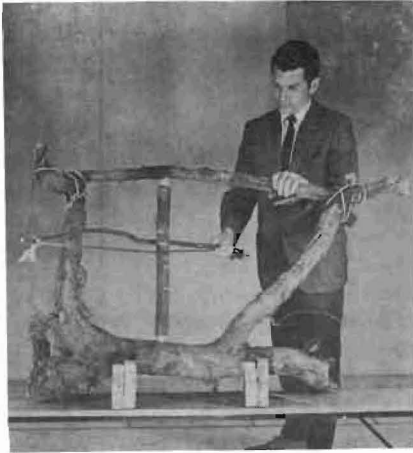
Homeward Bound

Late in November Dr. A. Williams, Senior Lecturer, set sail for the U.K. on study leave where he will spend six months as a Visiting Research Fellow at the Central Electricity Research Laboratories, Leatherhead, Surrey, working on problems of heat transfer in very large electrical machinery of the type proposed for advanced nuclear power stations. He plans also to visit the University of Warwick to discuss noise control in mining machinery, and several Universities in the U.S. to give short lecture courses on heat transfer across metallic joints.

Return from the Desert

Early December brings the return of Mr. R.J. de Laine, Lecturer, from Broken Hill where he has concluded his study leave by working with Conzinc Riotinto of Australia on machinery and materials handling problems in the mining industry.

Trees and Technology



We congratulate Mr. G. Arndt on his appointment as Lecturer. His teaching and research interests lie in Production Science and a recent talk to the Institution of Production Engineers gave him an opportunity to display some early developments in machine tools. The object depicted on the left is not an apple tree but a demonstration of man's first drilling machine which was used about 4,000 B.C. Rotated through a right-angle as depicted on the right (an operation which took man about 3,000 years to realise) the drill becomes a lathe. Such manually driven machine tools were used through the middle ages, and some are still in use today; the two artisans shown on the right are in the process of turning an ashtray for the Professor of Engineering Dynamics.

The Developing South-East

At the end of October Dr. J.B. Hinwood, Senior Lecturer, was guest speaker at the Symposium on South-East Development in Dandenong. He represented the department by displaying the "Torpedo", an underwater instrument designed and built by the department to measure turbulence and currents in the sea. It is now being used by him and Dr. Blackman for research into the movement and dispersion of pollutants discharged into Westernport Bay.

Fluid Power

The Fluid Power Society is to mount the first national Symposium next February in Melbourne, concerning itself with the role of fluid power in automation and control in power transmission. Dr. P. Dransfield, Senior Lecturer, has been asked by the Society to organize the Symposium.

Mechanical Drawing

Mr. R. Gani, Lecturer, has been invited to join the Standing Committee on Mechanical Drawing of the V.U.S.E.B.

Motor Vehicle Crash Safety

We were pleased to join with the department of Mechanical Engineering of the University of Melbourne in sponsoring two lectures given by Professor L. M. Patrick of the Biomechanics Research Center, Wayne State University, Detroit. Professor Patrick is an authority on the behaviour of the human body during crash deceleration and conducted a research seminar at Melbourne University and also delivered a public lecture on vehicle safety. We were pleased to welcome him for discussion in the department.

Music

The department has had its busiest term ever, and there is much to report after our long silence in the Reporter!

Professor T.A. Jones, Mr. L.P. Harris and Dr. Margaret Kartomi each presented papers at the UNESCO Seminar on Music in Tertiary Education held at the University of Queensland recently. The seminar was also attended by Mr. G. Nutting, Miss Juliet Lewis (Music Librarian) and Mrs. Jill Lowrey (Research Assistant).

Mr. Stephen Wild, our newly-appointed lecturer specialising in ethnomusicology, arrived in September from Indiana, where he has been pursuing post-graduate studies for the past three years. He has since departed for an extended period of field work at Hooker Creek, in the Northern Territory, where he will record and study aspects of aboriginal music.

Dr. Margaret Kartomi carried out field work at Yalata, S.A., in company with Mrs. Sally White of the Department of Anthropology and Sociology. Aboriginal children's songs were the primary area of interest.

Professor J.H. Kwabene Nketia, Director of the Institute of African Studies at the University of Ghana and a leading ethnomusicologist, visited the department in September and gave a lecture and a seminar for our students.

Mr. F. McCarthy, Principal of the Australian Institute of Aboriginal Studies in Canberra, visited the department on September 8. (The A.I.A.S. is now financing two Research Fellows, a Research Assistant and a Lecturer in the department.)

The department found itself presenting four concerts in eight days early in September, when, in addition to the regular Monday lunch-hour

recitals, the New York Chamber Soloists gave a Thursday lunch-hour recital and Leslie Howard (a fourth year honours student in music) gave an evening recital of Russian piano sonatas in the Alexander Theatre on September 5, in illustration of his thesis on this subject.

A reception in Sydney on October 3, at which the Prime Minister formally presented the Survey of Music by Australian Composers, was attended by Professor Jones as one of the composers represented.

The recently formed A Cappella Choir, a departmental activity, gave an evening concert under its conductor, Mr. L.P. Harris, in the Religious Centre in October, with associate artists Bruce Knox, Harold Love, Ian Donald, Meryl Axtens, Barbara Spicer and Francis Bate.

Monash is among several institutions named in credits in a recent series of four radio programmes entitled "Songs of Youth" issued by UNESCO in Paris for distribution throughout the world, with the co-operation of the International Folk Music Council. This mention occurred as a result of the inclusion in these programmes of two Australian Aboriginal songs recorded by Mrs. Alice Moyle.

Earlier this year Mrs. Alice Moyle, together with Miss Elphine Allen (choreologist with the Australian Ballet School and Company) and a camera team of three members of the Monash Audio Visual Aids section, chartered a 'plane to Groote Eylandt and made colour films with synchronised sound of a number of aboriginal dance ceremonies as part of a project on dance and music notation. The undertaking was jointly financed by grants to Monash from the Federal Office of Aboriginal Affairs, the Australian Council for the Arts, and the Australian Institute of Aboriginal Studies.

Zoology

Dr. B. Roberts has recently joined the department as a Lecturer. Dr. Roberts graduated B.Sc. in 1962, B.Sc. (Hons) in 1963, Dip. Ed. in 1964, M.Sc. in 1966 at the University of New England and Ph.D. in 1968 at Northwestern University, Illinois. In 1965 he won a Rotary International Foundation Fellowship to study overseas. He was appointed Research Associate at the University of Chicago in 1968-69. Dr. Roberts' main research interests are in the area of nucleic acid biosynthesis, gene expression and associated hormonal control.

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STUDENT HOUSING

The Student Housing Office would like to hear from any member of staff who is able, directly or indirectly, to help provide accommodation for students in 1970.

Students from overseas as well as from country areas and other states will be looking for somewhere to live; and finding enough suitable accommodation within easy distance from the University is an increasing problem.

Any help that you can give, either by offering accommodation yourselves, or by encouraging your friends to do so, will be greatly appreciated.

Further information can be obtained by phoning the Student Housing Office, extensions 3106/7.

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AUSTRALIAN RESEARCH GRANTS

The following members of staff received grants for their research projects in 1970. The Commonwealth Government provided a total of \$316,601 for Monash in 1970, compared with \$280,535 granted this year.

<u>Investigator</u>	<u>Project Title</u>	<u>Grant</u>
<u>Anthropology & Sociology</u>		\$
Dr. P.E.B. Coy	Identification of social integration factors.	2,689
<u>Classical Studies</u>		
Mr. A.S. McDevitt	A linguistic analysis of the dialect of Boeotia.	500
<u>German</u>		
Dr. M.G. Clyne	A study of Migrant German in Australia.	1,220
<u>History</u>		
Dr. M.E. Osborne	Political evolution in the secondary stage of the French dominance of Cambodia and Viet-Nam	1,219
Dr. A.G. Serle	History of Victoria 1850-1900	1,700
<u>Economics</u>		
Professor A.A.L. Powell and Professor F.H.G. Gruen	A systematic analysis of alternative Protective Policies for Australia.	27,384
<u>Politics</u>		
Mr. J.A.C. Mackie and Professor H. Feith	Political and Administrative Dynamics of Post-Sukarno Indonesia.	5,193
Dr. H.G. Gelber	Australia and the United States Alliance.	394
<u>Education</u>		
Professor P.J. Fensham	Comparison of two methods of teaching science.	2,750

<u>Investigator</u>	<u>Project Title</u>	<u>Grant</u> \$
Professor R. Taft	Educational and vocational aspirations and values of Australian and immigrant children and their parents and teachers.	4,380
Dr. T. Hore and Professor R. Taft	Teacher-pupil interaction with Australian and non-British immigrant children	9,338
Mr. L.D. Mackay	The development and testing of procedures for evaluation of physics curricula in secondary schools.	4,777
<u>Chemical Engineering</u>		
Dr. G.A. Holder	Mechanism of Crystal Growth Poisoning by Polymers.	2,000
<u>Civil Engineering</u>		
Mr. R. McPherson	Ultra fine dispersed phase ceramics produced by precipitation from metastable solutions prepared by plasma methods.	7,900
Dr. G.I.N. Rozvany	Minimum volume synthesis of prestressed plates and other floor systems.	2,186
<u>Electrical Engineering</u>		
Professor D.G. Lampard	Information Processing in the Nervous System using the technique of Stochastic Stimulation.	9,993
Dr. W.A. Brown	Identification stored-program control and adaptation for multi-variable continuous systems.	1,000
Associate Professor K. Morsztyn	The theoretical and experimental investigation of the influence of linear and nonlinear phenomena on transient voltages in High Voltage Transmission Lines and Transformers.	4,500
<u>Materials Science/ Civil Engineering</u>		
Dr. B.W. Cherry	Mechanism of deformation in semi crystalline polymers.	5,113
<u>Mechanical Engineering</u>		
Dr. W.H. Melbourne	Model Scaling of wind effects on structures.	5,221

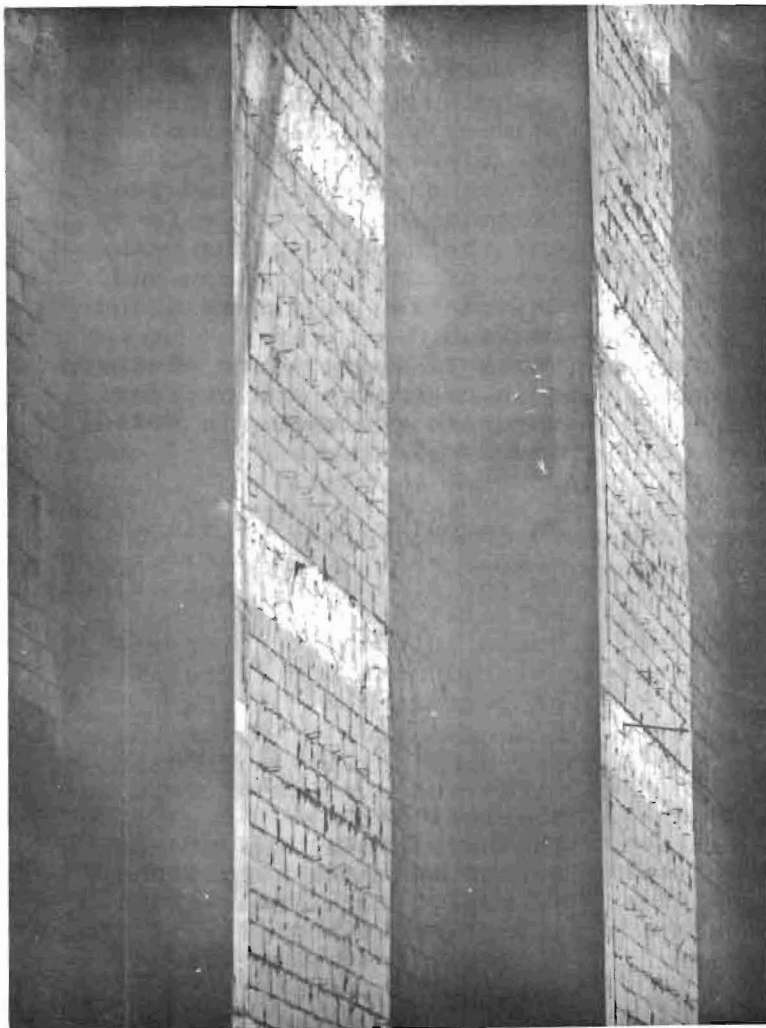
<u>Investigator</u>	<u>Project Title</u>	<u>Grant</u>
		\$.
<u>Law</u>		
Miss E.M. Eggleston	Aborigines and the administration of justice. A critical analysis of the application of the criminal law to Aborigines (in Victoria, S.A. and W.A.)	5,450
<u>Biochemistry</u>		
Professor A.W. Linnane	Effect of Antibiotics on Mammalian Tissues and on Human cells in Tissue Culture.	7,186
Professor A.W. Linnane and Dr. H.B. Lukins	Biogenesis of Mitochondria.	6,121
Dr. L. Austin	The Origin of Axonal Protein.	4,574
Dr. D.A. Lowther	Structural Studies of Connective Tissues, including factors involved in the maintenance of Cartilage.	5,437
Dr. B.N. Preston	Physico-Chemical Studies on Model Connective Tissue Systems.	2,973
<u>Microbiology</u>		
Dr. R.C. Bayly	Regulation of the Enzymes of the "Meta-Fission" Pathway in Pseudomonas Species.	3,000
Mr. G.F. Cross	Mycoplasma - cell interaction.	1,000
<u>Pathology</u>		
Professor R.C. Nairn	Immunological Studies of Biological Specificity.	4,500
<u>Physiology</u>		
Dr. R.F. Mark	Behavioural and electrophysiological investigation of vision in fish.	5,648
Dr. I.R. McDonald	Adrenal function in Australian monotremes and marsupials.	4,671
Dr. R.A. Westerman	Communication between cells in the nervous system of teleost fish.	3,487
<u>Botany</u>		
Professor M.J. Canny	Physiological and Structural Studies of Phloem	2,843
Dr. T.P. O'Brien	Cell Biology of Grasses with Special Emphasis on Cereals.	13,881

<u>Investigator</u>	<u>Project Title</u>	<u>Grant</u> \$
<u>Chemistry</u>		
Professor R.D. Brown	The study of short lived species by microwave spectroscopy.	11,561
Professor J.M. Swan	Design and Synthesis of Organic Compounds having Potential Therapeutic Value.	3,261
Professor J.M. Swan and Dr. Jean B. Youatt	Organic Chemical Aspects of Cell Differentiation.	14,955
Professor B.O. West	Some Chloro and Fluoro substituted Organometallic Compounds.	6,761
Dr. D.St.C. Black	Metal Template Rearrangements.	4,121
Dr. R.F.C. Brown	Synthesis of Mycelianamide and related compounds (cyclic hydroxamic acids).	5,302
Dr. R.F.C. Brown	Pyrolysis and Mass Spectrometry of Carbonyl Compounds.	4,021
Dr. G.B. Deacon	Structures of Halide Complexes of Organometallic Compounds.	2,111
Dr. G.B. Deacon	Main Group Element Organometallic Synthesis.	2,500
Dr. R.S. Dickson	Substituent effects in organometallic chemistry.	2,000
Dr. F.W. Eastwood and Dr. I.D. Rae	Synthesis of Sporidesmin.	4,487
Dr. B.M.K.C. Gatehouse	Crystal Chemistry of the Solid State.	3,220
Dr. J.E. Kent	A Spectroscopic study of small conjugated hydro-carbons in the near and vacuum ultraviolet.	3,613
Dr. A.D.E. Pullin	Weak Intermolecular Complexes.	1,861
Dr. I.R. Wilson	Quantitative studies of oxidation reactions.	3,030
<u>Genetics</u>		
Professor B.W. Hollo-way and Dr. V. Krish-napillai	Genetic control of enzyme regulation in <u>Pseudomonas aeruginosa</u> .	23,806
<u>Mathematics</u>		
Professor B.R. Morton	Source and Sink Flows in Stratified Fluids.	1,400

<u>Investigator</u>	<u>Project Title</u>	<u>Grant</u>
<u>Physics</u>		
Professor R. Street Dr. G.V.H. Wilson	Studies of Magnetic Materials at Low Temperatures in High Magnetic Fields.	
Dr. R.J. Fleming	The effects of ionizing radiation on some common organic polymer materials, studies at the electronic level.	11,458
Dr. A.C. McLaren	Direct observation and Identification of crystal defects and their role in the mechanisms of crystalization and deformation of minerals and rocks.	3,765
Mr. G.J.F. Troup and Dr. J.R. Pilbrow	Variable temperature electron spin resonance and nuclear magnetic resonance in solids and complexes.	668
<u>Psychology</u>		
Professor R.H. Day	An investigation of visual acuity with special reference to the effects of test object orientation.	6,200
Dr. J.L. Bradshaw and Mr. A.D. Perri- ment	Human information processing: determinants and correlates of performance.	6,151
Dr. C.S. Chen	A comparative study of the learning ability and memory of different strains of rats in a temporal maze.	4,221
Dr. K.I. Forster	The perception of sentence structure under conditions of rapid visual presentation.	1,880
Dr. J.C. Saunders and Mr. W.R. Webster	Single unit activity in the auditory system of unanaesthetized animals.	450
<u>Zoology</u>		
Dr. I.A.E. Bayly	Studies on osmotic and ionic regulation of animals in highly saline inland waters.	8,270
Dr. G. Ettershank	Microclimate Regulation in Desert Ant Nests.	700

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LIGHT AND SHADE ON ROBERT BLACKWOOD HALL



ANTONY AND CLEOPATRA AT THE ALEXANDER

Shakespeare's rarely performed Antony and Cleopatra will open at the Alexander Theatre on March 4, 1970 and run to March 14.

The cast will be chosen primarily from Monash staff, students and graduates, and the production will be professionally staffed and mounted.

In searching for a director many people were considered, but finally the university was extremely fortunate in attracting the interest and enthusiasm of Professor Keith Macartney.

Professor Macartney, who was, until his recent retirement, Associate Professor of Drama in the Department of English at Melbourne University, is a member of the Australian Council of the Arts. His accomplishments on the Melbourne stage both amateur and professional are well known, and his direction will ensure an exciting production of great value to students and of interest to all lovers of Theatre.

As an additional contribution for those interested in the play, it is proposed to hold informal 'green room' discussions. These will take place after the performance on Friday, March 6, 1970 and a special seminar only on Monday, March 16, 1970, at 7.30 p.m. The discussions will be led by Associate Professor David Bradley, from the Department of English at Monash, and Professor Macartney. There will be no entrance charge for the 'green room'.

Performances begin at 8 p.m. sharp and it is anticipated that the play will conclude at 10.45p.m. Bookings open at the Theatre on January 28, 1970.

SCHOLARSHIPS AND FELLOWSHIPS

St. Anne's College Oxford – Herbert Plumer Bursaries

St. Anne's College, Oxford is able to offer one or more Herbert Plumer Bursaries of up to £800 p.a. each according to need, to graduate women students from Commonwealth countries for courses of study beginning in Michaelmas Term 1970.

Closing date for applications - January 17, 1970.

For further particulars and application forms apply to the College Secretary, St. Anne's College, Oxford.

Australian Institute of Nuclear Science and Engineering A.I.N.S.E. Research Fellowships

Research Fellowships may be awarded to university graduates holding a degree of Doctor of Philosophy, or having qualifications considered equivalent by the Institute. The Fellowships are essentially post-doctoral in character and will not be offered to persons who propose to work for Ph.D. during tenure of the award.

They may be held directly with the Institute at Lucas Heights, New South Wales, or at any Australian University. Usually, in the case of a Fellowship held at a university, the Fellow will spend some part of his working time attached to the Institute at Lucas Heights.

A prospective candidate who wishes to request advice concerning the appropriate nominating organisations to approach in a particular case, should complete Part 'B' of the nomination form

and forward it with a covering letter to the Institute.

The closing dates for nominations to be lodged with the Institute by nominating organisations are February 28 and August 31 each year. All nominations, fully completed in the required form, which are received by the Institute after one of these closing dates, will be considered together after the next closing date.

Application forms and further information may be obtained from the Scholarships Office, 1st floor, University Offices.

Australian - American Educational Foundation Travel Grants 1970 - 71

The Australian-American Educational Foundation announces that travel grants are available to Australian citizens to go to the United States for study, research or lecturing at American universities and other institutions of higher learning during 1970-71.

All candidates must fulfil the following requirements:

- Hold a university degree or recognised professional qualifications.
- Possess a guarantee of financial support in U.S. dollars for the proposed period of the visit to the United States.
- Be affiliated with an approved American institution of higher learning.
- Minimum period of study in the United States for students is one academic year.
- Be Australian citizens

Applications are accepted in the following categories:

- Visiting Lecturers and Research Scholars - Senior Category: For scholars who possess a senior degree and have achieved some professional standing. The closing date for the receipt of applications is January 9, 1970.
- Postgraduate Students: For graduates under 35 years of age planning a regular course of study at a pre-doctoral level at an approved American university. The closing date for the receipt of applications is February 13, 1970.

Further information may be obtained from Mr. K. Farrer, 1st floor, University Offices.

Royal Commission for the Exhibition of 1851 Research Scholarships in Pure and Applied Science

The Scholarship stipend for £1000 per annum is to be regarded as including an allowance of £100 for University fees. The Commissioners wish to emphasise that the awards are open equally for research in pure science or in technological subjects.

The Rutherford Scholarship of the Royal Society

Candidates for an 1851 Overseas Scholarship who also wish to be considered for the Rutherford Scholarship are requested to state this in Section 15 of the 1851 Overseas Scholarship application form. No separate application to the Royal Society is necessary.

If any candidate wishes to enter for the Rutherford Scholarship only, the 1851 Scholarship application form should be completed in the ordinary way, but it should be indicated clearly on page one of the form that the application is for the Rutherford award only.

Considerable importance is placed by the Commissioners on the submission of copies of theses and other published or reported research activities

in assessing applicants for these awards.

Further information and applications for these awards should be made to the Scholarships Office in the University Offices building not later than January 9, 1969.

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OFF TO ADELAIDE

Mr. V.G. Brownie (Senior Assistant Registrar) has been appointed to the position of Deputy Registrar of the Flinders University of South Australia. He is an honours graduate in Arts of the University of Sydney.

Following graduation, he served for $2\frac{1}{2}$ years as an executive trainee with the Mutual Life and Citizens' Assurance Co. Ltd. in Sydney. He joined the administrative staff of Monash University in May 1960.

Mr. Brownie is married and has three children.



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PAYROLL ARRANGEMENTS
DECEMBER 1969 – JANUARY 1970

Monthly Payroll:

Monthly salaries will be paid on the following dates:

for December on December 17, 1969
for January on January 23, 1970

Fortnightly Payroll:

Fortnightly salaries will be paid as follows:

<u>Date of Payment:</u>	<u>Period</u>
December 4, 1969	2 weeks ending December 1, 1969.
December 18, 1969	4 weeks ending December 29, 1969.
January 15, 1970	2 weeks ending January 12, 1970.

Weekly Report Sheets in respect of the weeks ending December 22, 1969 and December 29, 1969 should be lodged by 11.30 a.m. on Monday, December 15 together with those for the week ending December 15, 1969.

(For the convenience of members of staff who may have queries regarding their salaries, the Salaries Office is open during the normal lunch period.)

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ANNUAL CHRISTMAS DINNER

The Staff Annual Christmas Dinner will be held this year on Thursday, December 18 from 12.30 p.m. to 2.30 p.m. The cost will be \$1.20 per person.

To assist the catering arrangements, will Departments please note that all the numbers of people who will be attending must be in the Caterer's hands no later than Monday, December 15, no late bookings or refunds will be given after this date.

MENU

Fruit Cocktail

Roast Turkey & Cranberry Sauce

Peas

Tomatoes

Roast Potatoes

Plum Pudding & Brandy Sauce

Coffee

B.Y.O.

THE UNION DURING VACATION

Monday, November 24th, 1969 – Tuesday, March 3rd, 1970

The Union Building will be open –

Monday to Friday 8.30 am. – 7.30 pm. *
Saturday 9.00 am. – 3.00 pm.
Sunday Closed.

* This time will be extended if the newspapers do not publish the exam results.

SERVICES AVAILABLE FROM MONDAY TO FRIDAY

Banks 9.30 am. – 3.00 pm. (until 5 pm. Fridays)
Oct. 27th – 30th Jan., 1970, inc.
9.00 am. – 5.00 pm. daily from 1st February, 1970

Bookshop 8.30 am. – 6.00 pm.

Post Office 9.00 am. – 5.00 pm. Closed from 24/12/69 – 27/1/70.

Agencies 8.45 am. – 5.00 pm. " " " "

Lost Property 9.00 am. – 5.00 pm. " " " "

Union Office 9.00 am. – 5.00 pm.

Hairdresser 9.00 am. – 5.00 pm.

Sports Centre 9.00 am. – 11.00 pm. week days
8.00 am. – 10.00 pm. week ends
9.00 am. – 5.00 pm. *December 24th only*

CATERING HOURS OF BUSINESS DURING VACATION

Coffee Lounge 8.35 am. – 5.00 pm.

Sandwich Room 10.30 am. – 2.30 pm.

Grill Room

Lunch 12 Noon - 2.00 pm.
Dinner 4.45 pm. – 6.30 pm. No evening meal service Jan. 6th – 27th.

Faculty Club 12 Noon - 2.00 pm.
5.30 pm. – 7.00 pm. No evening meal service Jan. 6th – 27th.

BOOK EXCHANGE

From Wednesday, 28th January, 1970 onwards.

9.00 am. – 5.00 pm. Monday, Wednesday and Friday
9.00 am. – 8.00 pm. Tuesday and Thursday.

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THE UNIVERSITY WILL BE CLOSED FROM 25th DECEMBER, 1969 –
4th JANUARY, 1970, INCLUSIVE.

PUBLIC HOLIDAY – Monday, 26th January, 1970