



MONASH REPORTER

An unofficial bulletin for the information of members of Monash University

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Volume 6 Number 49 September 1969

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WHAT THE READER IS WRITING

The following interview with Dr. D.A. Lowther, Reader in Biochemistry, is the fifth in the series of articles on Readers at the University.

Question: You are a biochemist whose research is concerned with the structure and properties of Connective Tissue. What are Connective Tissues?

Answer: The cells of connective tissues have the special role of producing chemical substances which can be organised outside them into permanent structures which support and bind other cells into organs. Every organ is therefore permeated by a continuous fabric of connective tissue which determines the shape and spatial relationships between cells. A similar fabric surrounds organs as a capsule, and connects organs with the skeleton. The whole organism is enveloped in a further protective capsule the skin.



Dr. D. A. Lowther

The skeleton is a connective tissue with two main functions; on the one hand it pro-

vides a rigid framework which supports organs, on the other hand it provides a system of levers (the bones) on which the force of contraction of muscles is exerted to provide movement. Several types of connective tissue are concerned in movement. Tendons serve as tough non elastic ropes which connect muscles to the bony levers, joints represent a region where the levers can move in relation to each other with minimal frictional loss. The tough smooth layer of cartilage connective tissue lining the joints provides an almost frictionless surface with a coefficient of friction less than that of ice on ice. The skeleton not only allows movement; it also acts as a spring suspension and shock absorber. An important component is the cushion of cartilage between each pair of vertebrae in the backbone. Without these connective tissue shock absorbers it would be difficult to dance the twist, jump on a trampoline or survive a ride on a Melbourne tram without dislocating our necks.

Connective tissues are therefore structures formed outside cells which connect cells into organs and organs with the skeleton, itself a specialised connective tissue. Basically all connective tissues perform some kind of supporting role and one of the major research tasks is to relate the structure of a particular tissue and its mechanical properties to its physiological function.

Q: Surely skin and cartilage are different sorts of tissue. What have they in common to justify their classification as a single group?

A: From a biochemical viewpoint they are variations on a theme in which two fundamental chemical components, protein fibres and a jelly matrix are intermingled. The jelly matrix consists of entangled carbohydrate chains each linked to a protein core the whole forming a hydrated meshwork

extending in three dimensions and enveloping the collagen and elastin fibres.

Q: How do these two components vary in the different tissues?

A: Firstly in their proportions, for example the transparent jelly-like vitreous humor from the eye-ball has very much more jelly component than heart valve which is rich in fibrous components.

Secondly, in the degree of hydration of the tissue and this again is related to the proportion of jelly and fibrous component.

Thirdly, the proportion of the rigid collagen fibres in relation to the elastic fibres, for example, tendon contains little or no elastin fibres and its parallel collagen fibres behave like an inextensible rope whereas skin which is a network of both collagen and elastin fibres can stretch in several directions. Again the walls of large arteries have a high proportion of elastic to collagen fibres to allow them to cope with the pulsatile blood flow, in contrast to veins which have mainly collagen.

Fourthly, chemical structure of the polysaccharide component in the jelly matrix can vary in terms of the monosaccharide composition chain size of polymer and net charge. These in turn affect the interaction of these molecules with each other and the protein fibres and therefore the properties of the jelly. The overall physical and mechanical properties of any soft connective tissue are determined by various combinations of each of these four factors. In tissues, such as bone and teeth, rigidity is achieved by the addition of a third major component, micro crystalline calcium phosphate.

Q: What aspects are you working on at present?

A: Until recently we have been largely concerned with the difficult task of isolating and determining the chemical structure and physical properties of the polysaccharide proteins in skin, heart valves and cartilage, and the changes in these components with increasing age.

Our present studies are intended to examine how these molecules are synthesised in the tissues and using our isolated molecules we are attempting to re-construct in the test tube connective tissue systems by producing gels and fibrous networks under controlled conditions. We are of course hoping to produce artificial connective tissues which have similar properties to those found in nature, and in particular to examine whether the altered chemistry of these components during ageing can be related to changes in the physical and mechanical properties of these tissues.

Q: Do you, like the previous readers we have interviewed, spend much of your time reading?

A: The answer of course is yes. Apart from research papers, I am currently editing and writing a considerable part of a book on Connective Tissues and also a review on skin.

Q: Does your work have any practical clinical application?

A: Ultimately this work will, I believe, have application in several clinical fields. Basic concepts on the chemical composition and function of components in heart valves obtained in my laboratory will be applied to examining animal valves used in human heart transplants. We are also

currently producing rheumatoid like lesions experimentally in the knee joints of rabbits with a view to studying the mechanism by which these cartilage structures are destroyed by rheumatoid disease, and whether the process of disintegration can be reduced by treatment with various anti-rheumatic drugs. An integral part of our Connective Tissue studies has been to examine the changes in the chemistry of these components during physiological ageing. We have been able to demonstrate changes in the chemical composition of protein polysaccharides in nasal cartilage, and intervertebral disc cartilage, skin and heart valves with increasing age, however the relationship between these changes and the altered mechanical functions of the tissue still remains to be demonstrated.

Q: Why do you do research in a University rather than a Research Institute?

A: Basically I feel it is a question of temperament. I spent the first ten years of my career in Research Institutions but have felt more fulfillment and personal satisfaction during my stay at Monash. In part this is due to the excitement of participating in the creation of a department.

Devising undergraduate and postgraduate courses can be as experimental and challenging as the research programme itself. However, I am also aware that personally I work better under pressure. Research is more precious to me if it has to be squeezed in between the many other demands that teaching and administration make on my time. I enjoy lecturing and I agree with Roger Brown that there is nothing quite so satisfying as the feeling that one has given an effective lecture. However, perhaps the most important factor is the constant

interaction with both undergraduate and post-graduate students in the University.

The enthusiasm of students is infective, many a casual conversation has resulted in a useful idea or a reappraisal of results and I feel that research would be dull without them.

PARENTS HAND OVER PORTRAIT



The Monash University Parents' Group presented the Vice-Chancellor with a portrait of himself during a ceremony in the Alexander Theatre on Wednesday, September 24.

The oil painting is the work of English-born Christine Backhouse who is pictured with the Vice-Chancellor during the ceremony.

The portrait was handed over by Mrs. Pat Hutson, President of the Monash Parents' Group. It will eventually hang in Robert Blackwood Hall.

The Parents' Group also handed over cheques totalling \$2,500 to the University.

A LOOK AT THE A.U.C. REPORT

The Comptroller has provided the following information on the recent Australian Universities Commission report:

1. STUDENT NUMBERS:

The A.U.C. report does not envisage Monash having external students in the 1970-72 triennium, and predicts significantly fewer F/T enrolments for the degree of Ph.D than we predicted in our submission. The relevant figures are:

UNDERGRADUATE:

1970:

	F/T	P/T	Ext.	Total	E.F.T.S.
Monash Submission	8,120	1,783	180	10,083	9,101
A.U.C. Report	8,165	1,690	-	9,855	9,010

1971:

	F/T	P/T	Ext.	Total	E.F.T.S.
Monash Submission	8,737	1,864	318	10,919	9,828
A.U.C. Report	8,755	1,830	-	10,585	9,670

1972

	F/T	P/T	Ext.	Total	E.F.T.S.
Monash Submission	9,242	1,931	405	11,578	10,409
A.U.C. Report	9,245	1,930	-	11,175	10,210

POST-GRADUATE:

1970

Ph.D.

	F/T	P/T	Ext.
Monash Submission	350	87	-
A.U.C. Report	285	90	-

Masters

	F/T	P/T	Ext.
Monash Submission	222	206	-
A.U.C. Report	225	240	-

	Total	E.F.T.S.
Monash Submission	865	1437
A.U.C. Report	840	1350

1971

Ph.D.

	F/T	P/T	Ext.
Monash Submission	406	93	-
A.U.C. Report	345	105	-

Masters

	F/T	P/T	Ext.
Monash Submission	257	264	-
A.U.C. Report	280	265	-

	Total	E.F.T.S.
Monash Submission	1020	1683
A.U.C. Report	995	1620

1972

Ph.D.

	F/T	P/T	Ext.
Monash Submission	458	100	-
A.U.C. Report	370	115	-

Masters

	F/T	P/T	Ext.
Monash Submission	289	305	-
A.U.C. Report	320	285	-

	Total	E.F.T.S.
Monash Submission	1152	1899
A.U.C. Report	1090	1780

2. RECURRENT FUNDS - PROVISION PER STUDENT:

The A.U.C.'s Fourth Report, which has apparently been accepted by Governments, recommended the following grants for Monash - they amount to just under 70% of the funds requested:

	1970 \$	1971 \$	1972 \$
Normal recurrent	15,380,000	16,540,000	17,660,000
Research & Post-graduate training, say -	300,000	310,000	320,000
	<u>15,680,000</u>	<u>16,850,000</u>	<u>17,980,000</u>

The A.U.C. estimates our equivalent F/T student (E.F.T.S.) numbers as

Average provision for such E.F.T.S. is

	10,360	11,290	11,990
	\$1,513.5	\$1,492.5	\$1,499.6

The corresponding figure for 1969 is:- \$1,524

3. STAFFING:

The Report claims that funds have been provided to enable all universities to achieve a staff : student ratio of at least 1 : 11 by 1972, provided that additional staff recruited to that end are appointed "close to the commencing salary of a lecturer" (\$5,400). After adding vacant E.A.S. posts (some 44) Monash has in 1969 on the A.U.C. basis of computing the full-time equivalence of part-time staff, 802 equivalent full-time staff (E.A.S.) positions. Thus, as we would need $\frac{11,990}{11} = 1090$ E.A.S. positions in

1972, we would need to establish another 288 positions by 1972 and, if all posts are to be filled, to recruit by then a nett $288 + 44 = 332$ E.A.S. If this increase is to be spread evenly over the triennium we need a net recruitment of 111 E.A.S. per annum, 96 of them requiring new funds. Our staff : student ratios would then improve as follows : -

1970 - 1 : 11.92, 1971 - 1 : 11.52, 1972 - 1 : 11.

4. FINANCIAL VIABILITY

4.1. It is assumed that Monash will wish to achieve the 1 : 11 staff : student ratio objective as defined by the A.U.C. for 1972.

4.2. The \$760,000 for additional staff positions each year is computed as follows : -

96 academic posts averaging
\$5,400 each = 518,400

Support staff in Faculties
(1968 a/cs show 30.07% expenditure on support compared with academic staff = $\frac{155,883}{674,283}$)

Add "loadings" - super	
P.R.T. & W.C. @ 13.0%	87,657
	<hr/>
	761,940
say -	762,000

- 4.3. There is an increase from \$8,729,000 for "loaded" Teaching and Research salaries in the 1969 budget to \$9,250,000 in the 1970 budget.
- 4.4. There is a marked decrease from 1969 to 1970 in both the rate and the absolute provision for Departmental M. & E. (Maintenance and Equipment) and "Other" including M.G.S. (Monash Graduate Scholarships). However, it is fair to comment that Monash's provision for both M. & E. and M.G.S. has hitherto been generous by Australian university standards. And other sources, such as the A.R.G.C. and N.H. & M.R.C. provide funds for research, and the A.U.C. has also recommended a grant to Monash of \$160,000 for especially expensive equipment. All this is additional to amounts available in the buildings for equipment for new buildings.
- 4.5. This "macro" view suggests that if we do not again have to face abnormally big increases in costs in areas other than academic salaries (which would presumably be separately funded) we could achieve the A.U.C. directive. This deduction is helped by the knowledge

- (a) that as the big majority of our present part-time staff (68 E.A.S. according to A.U.C.) is remunerated at \$4 per hour, so that on the A.U.C. parameter of 700 hours of part-time tutoring and demonstrating equalling one F/T staff member, each such E.A.S. would cost only \$2,800 compared with \$5,400 plus "loadings" for a lecturer, and
- (b) that the average salary of our present F/T academic staff is \$7,253.

Thus not all the new staff need to be appointed at the lower and non-tenure level. The maximum percentage of the new staff to be appointed to tenure positions will need to be determined for each Faculty in view of their differing success in recruiting so far to tenure positions - in this way their equity can be preserved for the future.

- 5. The recurrent grants for our hospital commitments indicate a complete acceptance of our corresponding requests except for libraries, where a revised formula has been applied.

6. CAPITAL GRANTS - CAMPUS PROJECTS

	Submission	Revised Submission	Grant
	\$	\$	\$
1. Hargrave extension	319,500	No change	255,000
2. Menzies extension	2,348,000	N/C	790,000
3. Sc. Lec. Theatres	335,900	N/C	340,000
4. Science North extension	1,630,000	N/C	1,480,000
5. Physics extension	1,430,500	N/C	970,000
6. Chemistry extension	2,119,700	N/C	990,000
7. Chemistry alterations	87,000	N/C	89,000
8. Zoology extensions	432,000	390,000	395,000
9. Science South extension	305,200	1,013,000	910,000
10. Psychology	1,341,000	-	-
11. Med-Biochemistry	538,000	N/C	345,000
12. Medical School alterations	270,800	130,000	51,000
13. Med-Animal House	263,900	N/C	-
14. Engineering Building 6.	2,634,000	N/C	1,320,000
15. Engineering Building 5	333,000	N/C	340,000
16. Architecture	754,500	N/C	-
17. Audio Visual Services	346,000	N/C	-
18. Administration Annexe	310,700	N/C	-
19. Maintenance Building extension	61,000	N/C	-
20. Student Services	335,400	N/C	102,000
21. Great Hall	180,000	N/C	180,000
22. Vice-Chancellor's House	69,000	N/C	-
23. Union	411,000	N/C	-
24. Faculty Club	70,000	N/C	-
25. Sports Field House	300,600	N/C	122,000
32. Site Works	1,225,000	N/C	1,000,000
33. Minor Works	100,000	N/C	122,000
34. Planning	60,000	N/C	60,000
Total	18,641,700	17,825,700	9,861,000
- Halls of Residence Stage 2.)		1,014,000	1,000,000
- New Type Hall of Residence)	2,686,000	1,648,000	-
- Central Building)		156,700	-
Total - Halls	2,686,000	2,818,700	1,000,000
<u>Break-up of Minor Works</u>			
Information Centre)		18,000	20,000
Childminding Centre)		30,000	-
Entrance Controls)		30,000	30,000
Environmental Laboratory)	100,000		
in Zoology Reserve)		22,000	22,000
Audio-Visual Services)			50,000
Total - Minor Works	100,000	100,000	122,000
<u>Affiliated College</u>			
Commonwealth grant for Marist College			41,500

HINTS ON RESEARCH GRANTS

The following is the text of a talk given by Professor W. M. O'Neil, Deputy Vice-Chancellor of the University of Sydney, who is a member of the Australian Research Grants Committee for 1969.

His remarks will interest all staff members who apply to the A.R.G.C. for grants to support research projects.

1. I shall concentrate on those phases of A.R.G.C. activities that directly concern university administrative officers and indirectly concern them through their having to explain its activities to members of academic staff. In addition to trying to give you a clear account of these activities I shall try to explain the rationale of them as the A.R.G.C. sees it.

Three general points should be borne in mind: first, the A.R.G.C. has fairly specific terms of reference. Some things it is asked to support it does not support because they seem to it to be outside its terms of reference either in the letter or in spirit.

Second, the A.R.G.C. has tried to refrain, within limits I shall indicate, from exerting an influence as a matter of policy on the research being done in universities and other non-governmental research laboratories, institutes and the like and from unduly affecting the established procedures and practices of those institutions.

Third, the A.R.G.C. has recognised its responsibility in ensuring that the substantial public funds whose distribution it recommends are used for the purposes for which they are granted. I should like to emphasise that the A.R.G.C. does not make grants; it makes recommendations to the Minister to whom it is responsible on the making of grants. Successful applicants understandably speak of receiving a research grant from the A.R.G.C. and it will be equally understandable if I adopt their inaccurate usage.

2. Let me first embroider a little the second of these general points. The A.R.G.C. has considered its central task to be that of passing judgment on the basis of such evidence as it can obtain, on the merit of the applications made to it for the support of research projects. Its judgment is made on the joint criteria of the merit of the project

and the merit of the applicant in the field of the project. The evidence it considers consists of the applicant's own submission and the confidential reports provided by the Head of the Department of the applicant (where the applicant is not himself the Head of Department), by referees chosen by the applicant and by individual assessors or panels of assessors chosen by the Committee. In some cases, ambiguities in the evidence may be clarified in an interview with the applicant, though it is important to stress that the interview has quite different primary functions to which I shall return later. There are two corollaries of the A.R.G.C.'s conception of its task. Its task is not to shape or direct research in Australia through establishing priorities in research to be done or through laying down to research workers how they should do their research. Research institutions established for specific purposes must, of course, establish priorities. It is important to preserve alongside such programmes the University tradition that an established member of staff be free to find his own research problems and work on them the way he thinks best within the limits of reasonable facilities provided for him.

It is, nevertheless, inevitable, indeed perhaps desirable, that the A.R.G.C. exercises a little influence. Occasionally a referee or an assessor will say that a project would be improved if it were widened or narrowed or if some other technique were employed or if the experimental design were strengthened in some particular way or if two independent applicants would put their heads together. It would seem unhelpful, to say the least, were the Committee not to pass such suggestions on to the applicants concerned. They are free to adopt or to reject the suggestions. It is true, of course, that the success of their applications may depend on the decisions they make, but this would be so only in cases of borderline merit.

Funds available to the A.R.G.C. are not sufficient for it to support all the applications it deems meritorious or all the successful applications to the extent it would like. Having in effect lined up its meritorious applicants in an order of merit, it has some extraordinarily difficult decisions to make. How far should it go in denying its most meritorious applicants some of the support they deserve in order to give the less meritorious some help? Which of those in the queue usually bunched together around whatever is the cut off point will it include and which will it reluctantly exclude? Not unnaturally, indeed it is justified in so doing, it tends to include those with projects in fields under-represented amongst applicants higher in the queue and exclude those borderline projects in fields already strongly represented among the clearly successful.

One issue troubles the Committee. Though it recognises that it knows far from all that is happening in research within all disciplines in Australia, it does believe that it probably knows more about what is happening in university research than any other existing body. Within its admittedly limited knowledge, it has a strong impression that some fields are relatively neglected or are being worked on in inadequate ways. Three of some practical significance are education, marine sciences and water resources, but there are many others. The issue is whether the A.R.G.C. should do anything to encourage in unusual ways research in these fields.

In some of them the basic facilities, including the personnel, are not available. On several considerations, the A.R.G.C. decided that with its limited finance it should not provide basic facilities. Universities have a complex of tasks ranging over teaching, research training and research. In making their cases for capital grants and for recurrent expenses grants to the A.U.C., the universities have all these tasks in mind. In the last two triennia the A.U.C. in recognition of the special

need to strengthen research and research training has recommended block grants to the universities for the last two tasks. In the present triennium, through what I can only say was an unfortunate break-down in Commonwealth-State relations many universities received smaller block A.U.C. research grants than both Commonwealth and State authorities seemed to have agreed they should have received. Nevertheless, it appears right for the A.R.G.C. to assume that there is a substantial ground-swell of research in the universities and that, in the context of its terms of reference, its duty is to ensure that crests are placed on the stronger of the waves already formed.

Analogous research-grant making bodies in the U.K. and in the U.S.A. and in Canada are encouraged to take another view, namely to build up from the ground research facilities in neglected fields. This often involves the provision of basic facilities such as buildings, basic laboratory equipment or library resources and personnel not only for the research programme itself but also for research training and even senior undergraduate teaching. However, it should be recognised that only in the U.K. is there any body analogous to the A.U.C. and that in all these other countries there is no central provision of research studentships as there is in Australia from the Department of Education and Science through its Commonwealth Postgraduate Awards.

It should also be added that in the other countries I have mentioned there is in some form or other, a science policy advisory body independent of the government grant-giving bodies. It could be unwise of the A.R.G.C. to launch out on tasks additional to those it has defined for itself within its terms of reference in the absence of a clearly formulated general research policy.

Before leaving the second of the general points made in Section 1, let me say more briefly a few other things. The A.R.G.C. deals with its university applicants, except when interviewing them, through the administration of their university, because it does not want to put any university in the position of having to accommodate something it does not believe it can readily fit into its preferred programme. The relevant Head of Department has an opportunity of saying that a proposed project would fit uneasily into the work of the department as he sees it and the chief executive of the university or his delegate has a similar opportunity of making a similar judgment in a wider context. Though some members of university staff may view this as needless bureaucracy, the Committee sees it as an essential safeguard of university autonomy.

At the outset the Committee decided that it should not in the interests of uniformity intrude on the diverse practices, established no doubt for good reasons, of the several Universities. Its members were aware of the embarrassments caused universities by other Commonwealth research grant giving bodies in insisting on uniformity. Consequently it decided that it would abide by the practices of the several universities in which grantees were working, whether they be rates of pay for research fellows, research assistants and technicians, the methods of procuring equipment and putting it on inventory, or charges for computing. In the event, it would seem that only in respect of computing costs has this policy led to any changes in previous university practices. On the face of it, the A.R.G.C. decision may seem untidy but several of its members were well aware of the consequences of a seemingly more logical decision.

3. The Committee has been aware of a problem of balance in respect of the subsidiary principle just stated and of its responsibility for ensuring that grants are expended as intended. Members of the Committee readily agreed on the basis of their experience through serving on individual university research committees or on other research grant-giving bodies that three categories of expenditure could be readily distinguished, namely for supporting personnel, for equipment and for maintenance or running expenses. The orders of magnitude were thought to be very different amongst these three so it was thought that complete freedom should not be given to the grantee to make at will transfers from one fund intended for it to any other. A two-tiered system was adopted nevertheless in the interests of flexibility. Within certain specified limits transfers approved by the university were allowed and beyond those limits Committee approval was required. In the course of time the first limits have been liberalised. Travel expenses were seen to present a special problem. The Committee has no doubts that research and scholarship are promoted by consultations between workers on closely related topics and through conferences of workers in a broad field. It felt, however, that its finances did not allow it to provide funds for travel and accommodation away from home that was not an integral part of the project being supported. Travel expenses for anthropologists, for field workers in biology, geology and geography and for humanists and social scientists wishing to use libraries away from their centre of employment provided no problems. Nor was there any problem in the rare instances of geographically separated investigators working in collaboration on the one project. And for that matter the Committee has never been reluctant to think of funds being diverted from other classes of approved expenditure in order to support consultations where in the course of the prosecution of the project these have emerged as having critical importance. Nevertheless, it has felt unable to provide funds in support of the general benefits flowing from consultation and attendance at relevant conferences. Hence it has held a tighter rein on travel expenses than upon those in any other category. Its attitude here has sometimes been mistaken for an absolute inflexibility.
4. Before turning to the central considerations listed first, in Section 1, I should like to say a little about the purpose of interviews with applicants by some members of the Committee. Members of the Committee have no doubt that the purpose of these interviews are misunderstood despite their best efforts to explain their purposes. A fundamental misunderstanding is that those who are not interviewed are already "out" whereas those who are interviewed are "in" or have a marginal chance. It is true that the Committee rarely interviews those who on the judgments of referees and assessors are resoundingly "out". But it is equally true that it does not interview some who are almost certainly "in" but whose applications present no problems. A second common misunderstanding is that what transpires in the interviews will determine the fate of the applicant. In borderline cases it probably does. An applicant who in the interview provided evidence resolving doubts raised by referees and assessors may well get a grant and those who do not may not get a grant. Applicants are sometimes worried, it would seem, that the members of the Committee who interview them would not themselves profess to have any expertise in the broad field of the applicant's proposed project. A committee of limited size cannot have an expert in every field within the very broad spectrum with which the A.R.G.C. is concerned. Further, recognising that all the members are part-time, it should be understandable that the most relevant member cannot always be present at a given interview.

There are four primary functions of the interviews with applicants. The principal function is to sort out with the applicant the priorities within his budget in the event of his receiving a grant - at the time of the interview it is by no means determined whether or not he will receive a grant. Three subsidiary functions are (i) clarifying ambiguities and possible deficiencies in the project to which attention has been drawn by referees and assessors - as a result of these enquiries some applicants who had seemed to be "out" move into a higher and competitive place in the queue, (ii) in a few cases passing on to applicants suggestions made by referees and assessors - this is sometimes done by letter before the interview and (iii) providing the members of the Committee with better information that can be gleaned from the technically written application about research which members of academic staff wish to undertake. The third of these needs an explanatory gloss. Approximately 1000 applications have to be considered by the Committee each year. In order to give its best attention to them the Committee breaks up for the greater part of the time into a series of sub-committees each concentrating respectively on the humanities and the social sciences, the physical sciences, the chemical sciences, the biological sciences, and engineering and technology. There is, of course, joint discussion between or reference from one to another of the sub-committees in respect of border-land projects. However, it is in the interview that a humanist member of the Committee can gain greater insight into what a chemist applicant wishes to do or a chemist member can gain greater insight into what a humanist applicant wishes to do. Some seemingly silly questions may be asked by non-expert members of interviewing panels, but the answers contribute to their enlightenment for the total task the Committee has to perform. I am sure that the Committee's recommendations have served to promote research across a broad spectrum in Australia, but I am even more sure that in serving on it, its members have had their own horizons broadened. The principle recommended by the Committee not long after its initial constitution and adopted by the Minister that there should be a regular turnover in its membership will in the course of time spread this benefit widely.

Let me now return to the first and principal general point made in Section 1, namely what the Committee feels able to support and what it does not. This is a complex matter and the Committee's conceptions of it are naturally undergoing some changes. In addition it recognises the need for clarification of some of its conceptions that seem to have been misunderstood.

I shall begin with an example of the latter sort of clarification. The Committee from the outset saw that it could not within its terms of reference support a project that had as its prime aim research training nor pay the salary or stipend of a person undergoing research training (being a candidate for a higher degree seems to be a clear indication of this). Some universities make a clear distinction between a research student working under supervision on what is to a greater or less extent his own project for a higher degree and a research assistant who is a graduate employed to help a member of staff carry out a project of the latter's devising. The distinction is easy to state but there are many cases where it is difficult to make. Some universities do not or did not bother to make it. As a result the Committee found itself being asked to provide stipends for what it regarded as research students who could not succeed in the competition for Commonwealth Postgraduate Awards or university research studentships. It knew that such provision was outside its

terms of reference. The Committee, however, did not mean to preclude at least two worthy possibilities. A research assistant like many other gainfully employed graduates may be able to work in his own time for a higher degree; it would be hoped that he could use the skills developed as a research assistant to this end but on a problem that is his own and not that of the investigator supported by an A.R.G.C. grant. This is a fine distinction especially in some fields where even research students seem to be working on problems of their supervisor's devising, but it is one most research-workers should be able to understand. The other possibility, and it recognises the difficulty of the distinction just made, is where a research student is caught up in some part of a project being carried out by a member of academic staff who is his higher degree supervisor. The Committee cannot provide such a research student's stipend but if his work is an integral part of his supervisor's own research project, the Committee is ready to allow the equipment it provides to be used by the research student and the maintenance grant it makes to be used on his work that is an integral part of his supervisor's project. May I say parenthetically that I consider it the problem of the university concerned to decide in these cases whether the supervisor or the research student should receive the higher degree; but this has nothing to do with the Committee. Its assumption is that the university is best able to distinguish between a research student and a research assistant. Its terms of reference do not allow it to provide stipends for the former so it must ensure, as best it can, that the research assistants it supports are indeed research assistants and not research students under another name.

A more difficult problem centres on what is to be regarded as a research project. The Committee appreciated the frankness of an applicant in an early round who said the aim of his project was to obtain for his department a certain piece of apparatus it needed. Such frankness is more common in the humanities where on occasion it is made clear that a grant is being sought to strengthen the library collection in a specified field in the interests of senior teaching and later research as yet unformulated.

The concept of a research project is readily understood in the natural sciences, both in their pure and applied aspects, and in the more quantitative, perhaps more tough-minded, forms of the social sciences. Essentially it consists of a definite question being asked, perhaps in the form of a hypothesis to be tested, and a plan of campaign, often in the form of an experimental design and specified techniques to be used, in the attempt to answer it. In the technological aspects of the applied sciences, what is referred to as research and development is often put forward; where the emphasis is on research rather than on development, the Committee is not confronted with any serious problem, but where the emphasis is on development it often is. The problem is more acute in pure mathematics, in the humanities and the more humane scholarly undertakings, in the social sciences. I have great sympathy with the attitudes and aspirations of scholars in these fields, but I shall probably give them offence in stating what my sympathy is. I feel that there is a basic intuitive feature in what they are doing, or put in a less abstract way they often and quite rightly elect to work on a topic with no very clear plan and follow their noses. Some of them have very sensitive noses and some have not.

I suspect that the task for a grant-giving body is to find a method of distinguishing between the sensitive and the insensitive and not to decide who has a clear plan of campaign and who has not. I suspect too that it should recognise that these intuitive, perhaps creative would be

a better adjective, contributors to knowledge and understanding have different ways of going about their tasks from the well-organised research-workers in other fields. If I can put this crudely, mathematicians find it profitable to sit down with like-minded persons, as I jokingly put it, working out sums and humanistic scholars find it profitable to browse. It is my conviction that the A.R.G.C. should find formulae to accommodate them. I am sure that the implementation of the formulae will not be unduly expensive if they are not extended to fields where the project concept is most important.

It is easier in the natural sciences and in mathematics to distinguish between projects aiming to add knowledge and projects aiming to review and sum up existing knowledge than it is to make this distinction in the humanities and many areas of the social sciences. This is largely a matter of the nature and state of development of the subjects concerned. It may not be a significant contribution to research in mathematics and the natural sciences to produce a review or summing up of existing knowledge (I am not talking about theoretical integrations) but I have little doubt that in the humanities and in some of the social sciences, workers are helped to decide where to strike out next by such reviews and summings up.

The test, perhaps if one can only find a way of applying it, is whether the review and summing up is addressed to fellow scholars or essentially to students. A similar problem arises in these fields in distinguishing between research aids and teaching aids. Scientists and humanists alike often set out to write a book. Except for handbooks or basic re-interpretations or theoretical integrations, the scientists' books are usually text-books for secondary pupils, junior undergraduates or senior undergraduates and postgraduate students. The common medium for the scientist is the journal article or the monograph incorporating his empirical inquiries. Humanists also write text-books for secondary pupils and junior undergraduates, but many of their books are written for senior undergraduates, postgraduate students and their peers; the fact that a book may be used in senior teaching is not a sign that it is not an original scholarly contribution.

In almost every field though the occurrence is most evident in less well developed fields, applicants propose full-scale investigations the feasibility of which is doubted by referees or assessors. Where the proposals seem to have distinct promise, the Committee tends to invite the applicant to make a modified initial proposal for a pilot or feasibility study. It hesitates to do so for reasons that I believe I have already made clear. It would prefer to have the applicant carry out the pilot or feasibility study on resources available to him elsewhere before making his application or where they are not available to ask the Committee to support a preliminary study, explaining what his ultimate objectives are.

I could go on with a listing of further problems of this sort but it would not be fair to worry you with them. I have raised the matter simply to suggest to you that the A.R.G.C. has not put itself in a straight-jacket so that you may explain to the staff who come to consult you what its policies, in formal detail and in general principle, are. Its task is to foster good research in universities and other non-governmental research institutions. It is not rule-bound though it must have rules. It is not infallible, rather it is docile, in the sense that it can learn but not in the sense that it will yield to every imperative demand from applicants that what they want to do must be supported in the name of research. It wants to help good research-workers with bright ideas. It is reluctant to impose burdens on universities that can be shown to be

unnecessary. It does not wish to tell those who know their own business how to go about it, but it would like to pass on such hints, as occur to it or are brought to its attention, about how this business might be improved - provided that it is not misunderstood in so doing. It sees its task as akin to the joint task of the judge and the jury. Though judges do not in the main make the law, they cannot avoid, in a common law system where precedent counts, reshaping the law. To continue the image, though it is the universities which have to run the rehabilitation service, the A.R.G.C. feels it would be irresponsible if it failed to pass on to some applicants hints, a stronger word would scarcely be appropriate or acceptable, as to how they might mend their ways.

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GANDHI CENTENARY COMMEMORATION

1969 is being celebrated as the Gandhi Centenary Year, and various activities are being held to commemorate Gandhi all over the world.

To mark this event at Monash, a Gandhi Commemoration will be held on the centenary anniversary of Gandhi's birth, on October 2, at lunch time in the Religious Centre. It will take the form of a few readings from the Gita, from the Bible and from the Koran. A short address will be given by Emeritus Professor A. Boyce Gibson, formerly Professor of Philosophy at Melbourne University. Members of the Indian community will sing some Gandhian songs including the famous Raghupati Raghava.

It is fitting that the memory of this great man be commemorated, and it is hoped that staff and students will support this simple commemoration. THURSDAY, OCTOBER 2, 1.15 p.m. - RELIGIOUS CENTRE.

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BRITISH PHYSIOLOGIST HONOURED

The University Council this month conferred the degree of Doctor of Science honoris causa on Sir Lindor Brown, Principal of Hertford College, Oxford.

Sir Lindor has been a Visiting Professor in our Department of Physiology for two months.

The Vice-Chancellor, Dr. J.A.L. Matheson read the following citation:

Mr. Chancellor,

Speaking as a former Whitworth observer I commend to you another former Whitworth observer for admission to an honorary degree.

Sir Lindor Brown and I have at least three things in common - we are both graduates of Manchester University; we both, as post-graduate students, earned a modest, midnight penny by reading and recording the instruments in the small meteorological observatory in Whitworth Park; and we have both been known to play the flute. It could even be that we share other experiences but I must now stop reminiscing in order to concentrate on Sir Lindor's scientific achievements which, as you doubtless know, are very great:

Between 1934 and 1949, as a physiologist on the staff of the Medical Research Council, he played a major part in demonstrating that communication between one nerve cell and another, or between a nerve and a muscle cell is commonly chemical in nature. The process by which an

electrical nerve impulse changes to a chemical one by liberating molecules of acetylcholine from the nerve endings was demonstrated by Sir Lindor with outstanding experimental skill and he thus was able to provide crucial evidence in support of what was then a revolutionary theory. As I understand it, Mr. Chancellor, this means that we all have a series of Eveready dry batteries up and down our arms and legs.

In 1949 he became Jodrell Professor of Physiology at University College, London, where his ability to stimulate research and to teach experimental methods led to widespread recognition of the scientific activities of his department and of the Department of Biophysics which he helped to form.

In 1960 he moved to Oxford as Waynflete Professor of Physiology where he has continued to carry out and to stimulate important work on the chemical agents that act as transmitters of nervous information. He has also been very active in scientific and university affairs generally, having been Biological Secretary of the Royal Society and one of its Vice-Presidents for several years; Foreign Secretary of the Physiological Society and President of the International Union of Physiological Sciences. He was a member of the Franks Committee, which enquired into the governance of Oxford University, and he is doubtless now watching, with the enviable detachment that goes with a reasonably safe vantage point, to see whether any more notice is taken of Franks than of the many other reformers who have tried to influence Oxford over the centuries.

Sir Lindor, who is now Principal of Hertford College, Oxford, is visiting the Department of Physiology at this University as a Senior Fellow

of the Australian Academy of Science and continuing here, in collaboration with our own colleagues, the studies to which he has devoted his scientific life.

Mr. Chancellor, I present to you Sir Lindor Brown, Commander of the Order of the British Empire, Fellow of the Royal Society, for admission to the degree of Doctor of Science, honoris causa.



The Chancellor, Sir Douglas Menzies (right), confers an honorary Doctorate of Science on British physiologist Sir Lindor Brown (centre). The Vice-Chancellor read the citation.

THE BIGGER, BETTER BOOKSHOP

The Chairman of the Monash Bookshop Board, Professor Maureen Brunt, has provided the following report on the Bookshop:

1. Financial Aspects

Sales for the first six months of this year were at \$345,000 - somewhat above the comparable figure of \$303,000 for 1968. This figure was slightly below the budget figure, but due to close merchandising and cost controls the net profit was a few hundred dollars above budget.

Funds on loan to the Bookshop, mainly to finance stocks, totalled \$131,435 on June 30, 1969.

2. Management Considerations

The new Manager, Mr. E. Plumb, reached Australia from Britain in mid-July and took up duty immediately. The Monash Bookshop Board continues to meet regularly and consider policy and other important aspects of the business.

3. New Bookshop late in 1969

The Bookshop expects to move into new and larger premises in the eastern extension of the Union Building late in 1969. The selling space will be approximately doubled and this will make possible a much more comprehensive service than hitherto. The move is being planned so as to have the minimum adverse effect on service to customers.

4. Textbook Ordering for 1970

This is well under way. The Bookshop is introducing new systems which it is hoped will improve markedly the efficiency of the ordering service.

September 15, 1969.

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AUSTRALIAN INSTITUTE OF MANAGEMENT

Mr. John Herrick M.I.R.E.E., A.M.I.E.C., A.F.A.I.M., of Teleprinter and Data Systems, Group A.W.A. Australia will speak on "Communications in Management" (Part 2) at the Australian Institute of Management, 31 Queens Road, between 6.30 p.m. and 8.30 p.m. on Tuesday, October 21.

Anyone interested in attending should telephone Miss M. Elms, Extension 2859, Faculty of Education, Monash University.

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UNIVERSITY HOLIDAYS

The Vice-Chancellor has declared Friday, January 2, 1970, a University holiday under Section 1(b) of Statute 1.3 University Holidays. The University will resume after the Christmas vacation on Monday, January 5, 1970.

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INTERIM RESEARCH REPORT

H. P. Schoenheimer, Faculty of Education

- Title:** A Preliminary Investigation into the Promptness and Reliability of the Internal Mail Service, Monash University.
- Hypothesis:** That the Service is not to blame for the delays that appear to occur when colleagues in other departments explain that "they put it in the internal post a few days ago, so it must be held up in the machine".
- Experimental Design:** During the course of Monday, August 18 and Tuesday, August 19, I addressed to myself a total of NINE sealed 'internal' envelopes. These were placed in the Faculty's internal posting box at various periods throughout the day, carefully calculated in relation to mail pick-up and delivery times.
- Of the nine envelopes -
- TWO were promptly recovered by a dedicated and lynx-eyed office girl so that they failed to enter the pipeline and have been omitted from the statistical data.
- THREE were returned within seven hours of posting, i.e. on the same day (9.20 and 11.20 postings).
- FOUR were returned within 24 hours (Noon postings).
- Findings:** The hypothesis is proven and the Service vindicated at the 24-hour level.
- Further Research:** An investigation into the veracity of Monash academics has been outlined and awaits Carnegie funds. It promises to be a major project.

OUR TEAM FOR THE ELECTIONS

Four members of the University will be standing as candidates in the Federal elections next month. They are :

- * Mr. Stephen Graves, a Ph.D. candidate in Microbiology, who is standing as an Independent for the seat of Melbourne Ports. He has been endorsed by the Council for the Defence of Government Schools;
- * Mr. Robert Ray, Monash Arts graduate who is now taking the Diploma of Education course, is standing as endorsed A.L.P. candidate for Henty;
- * Dr. Alan Roberts, a Senior Lecturer in Physics, is the endorsed A.L.P. candidate for Isaacs. He is a member of a Labour committee on science and technology.
- * Dr. Duncan Waterson, a lecturer in Australian History, is the endorsed A.L.P. candidate for Casey. Dr. Waterson, who has written two books, recently won a Harvard Fellowship.

A former Monash staff member, Mr. Alan Jarman at present holds the Federal seat of Deakin for the Liberal Party.

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EDUCATION THROUGH ART

The Mary Cecil Allen Memorial Lecture was established by the Art Teachers Association of Victoria in memory of the late Mary Cecil Allen in 1963. Arranged in conjunction with the Council of the Trustees of the National Gallery of Victoria and the Herald Chair of Fine Arts, Melbourne University, the lecture is an annual event. On alternate years a visitor from overseas and a distinguished Australian are honoured.

This year the lecture will be held in the Assembly Hall of the Toorak Teachers College, Glenferrie Road, Malvern, on Friday October 3, 1969 at 8.15 p.m. Mr. Arthur Cantrill, at present holder of a Fellowship in Creative Arts at the Australian National University, will lecture on the place of film in "Education through Art".

Mr. Cantrill's interest in creative arts began with the Children's Library and Craft movement in N.S.W. He is a former Director of the Puppet Theatre. In 1965 he moved to London where he and his wife continued their own film making while working for the firm of Hales and Batchelor Cartoon Films. As a result of his film successes Mr. Cantrill was awarded a Fellowship in Creative Arts at the A.N.U.

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THE REPORTER

Copy for the October issue will close on October 6, and for the November issue on November 7. Copy should be addressed to the Editor, Monash Reporter, Vice-Chancellor's Office.

DEPARTMENTAL NEWS

Chemical Engineering

Professor O.E. Potter has recently returned from his study leave at Cambridge University where he was engaged in research in Fluidization and Gas Absorption which are two of the interests of his Cambridge colleagues.

Dr. G.A. Holder presented a paper on the crystallisation of n-paraffins to the Division of Macromolecular Science of the I.U.P.A.C. Conference which was held in Sydney recently.

Dr. D.V. Boger spoke at a Symposium of the Australian Institute of Food Science and Technology. His paper was on heat exchanger design.

Civil Engineering

Dr. Brian Cherry has been nominated as this year's visitor to Leningrad under the exchange scheme between Monash University and Leningrad University. He expects to be in Leningrad between January 21 and March 21 and whilst there will be lecturing on "The Surface Physics of Polymers".

Dr. K.G. Kent, Research Fellow in Materials Science, is visiting England at the end of September in order to present two papers on the subject of weldable aluminium-zinc-magnesium alloys to a select conference being held at the Welding Institute Research Laboratories, Cambridge. Dr. Kent's visit is the result of an invitation from the Welding Institute and the Ministry of Defence, the joint sponsors of the conference.

Professor I.J. Polmear delivered the closing address at the recent Annual Conference of the Australian Institute of Metals held in Perth and Dr. P.F. Thomson, Senior Lecturer in Materials Science, presented a paper at one of the technical sessions.

Electrical Engineering

After a long period of quietly going about our business, the department is suddenly bursting with news.

Professor Lampard, Chairman of the department, has arrived back after spending an interesting six months as Visiting Professor in the Physiology Department at the University of Bristol. Professor Lampard returned by way of an IEEE Directors Meeting in Ottawa.

Dr. Stephen Redman, Queen Elizabeth Fellow, is overseas presenting a paper and attending a three week course at the Neurosciences Research Program of the University of Colorado. He is also spending some time at Oxford University.

Dr. Lucian Gruner, Senior Lecturer and specialist in microwave techniques has gone on study leave and will spend a year working with Professor Barlow at Imperial College, London.

A new appointment to the staff is Gregory K. Cambrell, B.E., B.Sc., whose interests are in the field of Electromagnetic Field Theory.

Associate Professor Karol Morsztyn and research scholar James Brown delivered a paper on Circuit-Breaker Modelling to a conference on Arc Research and Circuit Interruption at Sydney University recently.

Dr. W.A. Brown and Mr. K.P. Dabke attended the Fourth Australian Computer Conference in Adelaide and Associate Professor Morsztyn and research scholar Peter Seligman have both given lectures to the Institution of Radio and Electronics Engineers, Australia. Professor Morsztyn's lecture was on Electrets, the electrostatic analogue of a permanent magnet, and Peter Seligman's talk was on instrumentation for a blind electronics engineer.

On the campus, Mr. J.A. Phillips and Drs. A.B. Gardiner and K.C. Ng, with lecturers from Mechanical and Chemical Engineering Departments, ran a very successful one week intensive course for industry on the subject of Control Engineering. About thirty professional engineers from local industry and technical colleges attended the course.

Drs. W.A. Brown and A.B. Gardiner have successfully negotiated the purchase of a Data General Nova digital computer for the Department. This is expected to arrive later this year and will be used in both teaching and research in the "systems" field.

English

Miss Margery Morgan and Associate Professor David Bradley have been invited to give Kathleen Robinson Lectures (on dramatic literature) at Sydney University in 1970.

Mr. Peter Naish recently gave a lecture on Keats at Mentone Girls' Grammar School.

Miss Margery Morgan's essay on Major Barbara will appear in The Shavian Playground (Twentieth Century View Series) in Spring 1970.

First part of a study of "Gegan McMahon and

politan and country candidates totalled seven hundred.

In preparation for the thirteenth A.U.L.L.A. congress which will be held at Monash from August 12 to 19, 1970, there will be a joint meeting in Melbourne on September 28 of the Standing Committee and the Organizing Committee.

Recent visitors to the department have included: Professor Richard O'Gorman, who recently returned to the University of Iowa where he is chairman of the Department of French and Italian; Mr. Kevin O'Neill, Senior Lecturer in French at the University of Melbourne, who gave a graduate seminar on the critical thought of André Gide; and Associate Professor Ross Chambers, of the University of New South Wales, who lectured on Ionesco.

Students and staff of the department have also had the pleasure of hearing three lectures on Rimbaud, delivered by Emeritus Professor A.R. Chisholm, of the University of Melbourne. Friends and former students may be interested that Numbers 2 and 3 of the Australian Journal of French Studies for 1969 will be issued as a combined Special Number in honour of Professor Chisholm. Twenty contributions, mainly on symbolism, have been received from Australia, New Zealand, the United Kingdom, the United States, France and Germany.

Performances of Jean Cocteau's Orphée by students of the department will be given in the Union Theatre on September 8, 11 and 15. The producer is Monsieur Jacques Baulande.

The annual Language Laboratory Workshop organized by A.U.L.L.A. was held in Brisbane during the August vacation. Associate Professor Rivers and Miss Margaret Davies attended. Professor

the Australian Theatre" by Miss Magery Morgan and Mr. Dennis Douglas will appear in KOMOS II (2), in September 1969.

Dr. Dennis Davison's Restoration Comedies is to be published in Oxford Paperbacks in January 1970.

Dr. Peter Sucksmith is on study leave in London engaged in research on Charles Dickens.

Mr. Graham McInnes, the Australian-Canadian writer, visited the department recently and spoke about his own books and about current Canadian writing.

Mrs. Helen Thomson gave a paper on Tennyson at a departmental seminar.

New Issue of Komos

The September issue of KOMOS, a periodical devoted to drama and theatre arts, published from the department and edited by Miss Margery Morgan, is now on sale (and copies may be obtained either from the English department or at the Alexander Theatre).

Items include a play recently seen in Melbourne; NORM AND AHMED by Alexander Buzo; "The Name of Action" by Harold F. Brooks; "Bear's Case Laid Open: or, A Timely Warning to Literary Sociologists" by Harold Love; "Tragedy in the work of Brecht" by Rainer Taëni; "Gregan McMahon and the Australian Theatre" by Margery Morgan and Dennis Douglas.

French

For the second consecutive year the department has offered a French Matriculation (pre-university) course. Enrolments of both metro-

Rivers delivered four papers at the Workshop, before proceeding to an international conference at Cambridge, U.K., where she had been invited to read a paper on applied linguistics.

German

Professor Bodi addressed a seminar of the Education section of the ANZAAS Conference in Adelaide. He spoke on "Languages in Present Day Education".

Dr. Michael Clyne accompanied by six students conducted a field trip to the Wimmera where they taped the German spoken by descendants of German pioneer settlers.

Mr. Philip Thomson gave an honours seminar on modern poetry and a lecture on Brecht in Adelaide.

Mechanical Engineering

Mr. R. H. Brown, Senior Lecturer in the department has just returned from Study Leave, having spent 11 months as a Visiting Associate Professor in Mechanical Engineering at Carnegie-Mellon University, Pittsburgh, Pennsylvania. He was engaged in undergraduate teaching and in research on the mechanics of grinding. He also spent two weeks in England and one week in Japan, visiting Universities and Research Laboratories.

Mr. Brown made the following brief comments and comparisons:

The U.S. academic definitely seems "better-off" financially than his Australian equivalent - both in terms of real purchasing power and in comparison with the rest of the community. However the comparison is complicated by the higher cost of food and services in U.S.A., but lower

cost of most manufactured goods. Also the salary scales in U.S. universities are very flexible and there is considerable scope for subsidising salaries from research grants.

A striking difference between the engineering courses at Carnegie-Mellon and Monash Universities is the small amount of time spent on laboratory work at Carnegie-Mellon (average about 2 hours per week). The trend to reduce greatly laboratory time in engineering courses has apparently been in vogue for 8 or 10 years, all over U.S.A.

Pittsburgh, as do many U.S. cities, has a considerable pollution problem - both pollution of the atmosphere and of the water supply. It is claimed that the situation was far worse ten years ago. However, it is still unpleasant. Frequently a strong sulphur smell pervades the atmosphere and the water always has an unpleasant chlorine flavour. Many people buy bottled drinking water for home use. The difficulty seems to arise because "Big Business" controls the affairs of the city and it (Big Business) does not want to spend money on pollution control. It is hoped that Melbourne never reaches this condition.

Carnegie-Mellon University has not had any violent student unrest, but there is a feeling that it may develop at any time. In Japan the student violence seems to be completely out of control. Several academics expressed the opinion that they could see no end to the violence and that they expected it to get worse. At Tokyo University, student demonstrators had destroyed one large building and damaged others. Because of demonstrations during this year's entry exam, Tokyo University is not taking any freshmen for the academic year now starting. At Tokyo Metropolitan University I was involved in a small student demonstration. About 50 students wearing

tin helmets and face masks, each carrying a long wooden truncheon, stormed into the Administration building. They seemed well drilled and jogged through the campus in army style with two leaders shouting orders and encouragement (in Japanese) through electric amplifiers. Unfortunately I was in their path, but they apparently decided I was harmless!

The Westernport Bay Research Project -
Principal Investigator: Dr. J. B. Hinwood

To avoid permanent damage to the amenity of the Westernport Bay area and to facilitate its industrial development a study is being made of the hydraulic regime of the bay, in particular the diffusion of pollutants and the transport of sediment.

Two large scale dye tracing tests have been conducted and these have enabled some conclusions to be drawn about the likely behaviour of miscible pollutants introduced in the area between Hastings and the sea. More sophisticated field work is planned using the underwater instrument package known as the torpedo.

The torpedo, which was designed and constructed within the department, measures current velocities and turbulence, and records these quantities on an internal recorder. The torpedo's first sea trials, conducted in the last vacation, were successful and it is expected to be fully operational before Christmas.

Physics

We welcome Professor Bert Bolton and Dr. Logan Francey on their return from sabbatical leave at the Department of Theoretical Physics, Oxford, and the Department of Physics, St. Andrews University, Scotland, respectively. Professor Bolton gave

colloquia at Nottingham, Keele, and St. Andrews Universities during his stay in Oxford, and also guided his book (in collaboration with K.B. Beaton) "A German Source-Book in Physics," through the Oxford University Press. Dr. Francey, taking up an appointment as Visiting Lecturer in Theoretical Physics, delivered lecture courses on Special Relativity and Statistical mechanics, and assisted in the supervision of Honors undergraduate projects. He and Mrs. Francey are to be congratulated on the birth of a son whilst at St. Andrews.

The link between the department and the Clarendon Laboratory, Oxford has further strengthened by the arrival of Drs. Michael Baker and John Sanders on study leave. Dr. Baker's research is concerned with EPR and ENDOR of rare earth ions in crystalline solids, and it is hoped that, with his assistance, we will shortly obtain some results on polymer materials using one of our existing spectrometers which has recently been modified for ENDOR work. Dr. Sanders is interested in lasers and super-radiance in pulsed gas-discharge systems, and we hope that the 1000 ampere 1 microsecond pulses which he will shortly be producing will not disturb his present friendly relationships with colleagues operating sensitive EPR spectrometers in nearby laboratories. Martin Wood, also from the Clarendon Laboratory (see May issue) returned to England in mid-August, having supervised the assembly and testing of a helium 3 - helium 4 dilution refrigerator which now reaches temperatures as low as 0.08°K . In this context it is of interest to report that Dr. Geoff Wilson's research group have recently built an adiabatic demagnetization apparatus which they are now using to cool their metal-alloy specimens to even lower temperatures around 0.01°K .

Associate Professor Bill Rachinger left for a year's sabbatical leave at the Department of

Metallurgy, Washington State University, at the end of August, and the department turned out in force at a farewell dinner at Deakin Hall on August 20. Professor Rachinger was presented with a copy of Baring-Gould's "The Lure of the Limerick" in recognition of his own scholarly verse which has played no mean part in maintaining the morale of the department at a consistently high level since its earliest days. Some difficulty was experienced in attempting to circulate the presentation copy around the assembled company; it is understood that a significant fraction of the departmental staff now possess their own.

Finally we congratulate Alex McLaren, Jack Smith and Gordon Troup on their recent promotions. Professor Smith is currently visiting Japan as Monash out-going Fellow for 1969/70 under the terms of the Leverhulme Trust Fund Interchange Scheme (see June issue).

Physiology

Dr. J. G. Blackman, Senior Lecturer in the Department of Pharmacology, University of Otago, New Zealand has just completed ten months study leave in this department. He has been working in Dr. Mollie Holman's laboratory on transmission in autonomic ganglion cells. To conclude his leave he will visit Universities in the U.S.A., Canada and Great Britain.

Many members of staff and their students presented papers at the Australian Physiological and Pharmacological Society meeting held at Sydney University from August 27 - 29. The department was represented at the ANZAAS meeting in Adelaide by Professor A.K. McIntyre and Dr. Richard Mark.

We would like to offer our congratulations to Mr. Ian McCance, Senior Lecturer in the department

on being awarded the degree of Ph.D. for his Thesis entitled "Pharmacological Studies on Synaptic Transmission in the Central Nervous System".

Politics

Three members of the department have recently left for, or are to leave for overseas: Mr. Max Teichman (who is on sabbatical) and Mr. Joseph Camilleri are going to the London School of Economics, and Mr. Nick Allen is going to Canada.

Professor Davis and Professor Feith attended the APSA conference in Sydney, as did several other members of the department.

Dr. John Dalton gave talks on Malaysia to the Melbourne Junior Chamber of Commerce, Footscray Technical College students and the Monash Centre of Southeast Asian Studies. He also took part in the NUAUS mock United Nations General Assembly debate at Monash on Czechoslovakia, and was a staff observer at the recent student Discipline Committee hearing.

Dr. John Playford addressed the North Balwyn Young Liberals, and he and Dr. Alastair Davidson attended the New Politics Symposium on Change in Australia.

Dr. Davidson also spoke to the Melbourne University Labor club, and Dr. Zaeer Hanfi addressed the New Left Group on Hegel.

Microbiology

A recent visitor to the department was Professor G. Charlton from the Department of Bacteriology, University of Sydney. Professor Charlton gave two special lectures "The Mouth as an Ecosystem" and "Dental Caries as an Infection".

Dr. D. A. Tyrell, who is Director of the Common Cold Research Unit in England, also visited us on Wednesday, September 3, during his stay in Melbourne, and gave a departmental seminar.

Professor S. Faine has been elected President of the Australian Society for Microbiology this year, and is a delegate to the International Association of Microbiological Societies.

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RECITAL BY A CAPPELLA CHOIR IN RELIGIOUS CENTRE

The newly formed Monash a cappella choir, conducted by Laughton Harris, is to present a programme of unaccompanied choral works in the Religious Centre on Wednesday, October 8, at 8.15 p.m.

The programme will include Britten's Hymn to St. Cecilia, Buxtehude's Missa Brevis, Renaissance motets and chansons, as well as early instrumental music by Harold Love, Bruce Knox and the Ad Fontes ensemble.

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COMMONWEALTH UNIVERSITIES YEARBOOK

Members of staff wishing to receive a copy of the 1969 Commonwealth Universities Yearbook should obtain an order form from the Publications Officer, 1st floor, University offices.

The Yearbook is a comprehensive guide to university institutions in the Commonwealth countries published annually by the Association of Commonwealth Universities.

SCHOLARSHIPS AND FELLOWSHIPS

The Myer Foundation – Asian and Pacific Fellowships and Grants-in-aid

The Myer Foundation wishes to announce the 1970 series of Fellowships and Grants-in-Aid for graduates in the Humanities and Social Sciences who are undertaking postgraduate work in the following areas -

South Asia, East Asia, Southeast Asia,
Papua-New Guinea, Southwest Pacific (excluding Australasia)

Applicants may be either research students or members of staff in Australian universities.

Details of the information required from applicants may be obtained from : The Fellowships Secretary, The Myer Foundation, 224 Queen Street, Melbourne. Victoria. 3000.

Applications, typewritten in quadruplicate, should be sent to the same address before January 19, 1970. Awards will be announced during March 1970.

Senior Hulme (Overseas) Scholarship at Brasenose College, Oxford

Brasenose College, Oxford has established a Senior Scholarship tenable at the College, to be known as the Senior Hulme (Overseas) Scholarship, for a male citizen of Australia or New Zealand who is a graduate of a recognised university in either of those countries. The awards are available to both junior members of staff and post-graduate students and it is the donor's hope that the scholar will return to his own country at the conclusion of the Scholarship.

Candidates must be citizens of Australia or

New Zealand and must have graduated or be about to graduate from recognised universities either in Australia or in New Zealand. The must not have exceeded the age of 27 years on October 1 of the the year in which they will first come into residence at Oxford.

The Oxford academic year begins in October. Applications close with the Registrar of the applicant's university on October 31 in the preceding year.

Further information and application forms may be obtained from university Registrars.

The Gowrie Scholarship Trust Fund - Post-Graduate Research Travelling Scholarships

In accordance with the Trust Deed, Gowrie Scholarships will be awarded to members of the Forces and children of members of the Forces, including, in the discretion of the Trustees, grandchildren or other lineal descendants of such members.

The Trustees offer annually Post-Graduate Research Travelling scholarships (normally two in number) to graduates of Australian Universities, for recognized research study overseas.

The value of these Scholarships is at present \$1800 per annum, tenable for two years at Universities, or similar approved establishments, overseas.

Applications in duplicate, typewritten on the prescribed form, must be submitted by November 30 (for awards to commence late in the following year), as follows -

Original to the Professorial Board or Education Committee of the University of graduation, care of the Registrar, and

Duplicate copy to the Trustees, The Gowrie Scholarship Trust Fund, Box E5, P.O., St. James, N.S.W.

Further information may be obtained from the Grants and Scholarships Officer, 1st floor, University Offices.

Australian Federation of University Women –

International Fellowships & Grants

International Fellowships and Grants are available to women graduates in the fields of the humanities, social sciences and natural sciences, to encourage advanced scholarship, by enabling university women to undertake original research in some country other than that in which they normally reside.

Candidates must be members of a National Federation/Association of University Women affiliated to the International Federation of University Women (I.F.U.W.). They must have completed at least one year of graduate work, and have begun a research programme. The Fellowships are intended to cover eight months of work – the Awards not more than four months.

Application forms for all these Fellowships or awards, and further information may be obtained from the C.I.R. of A.F.U.W., (Miss) Jean M. Randall, 13 Colin Street, West Perth. Western Australia. 6005.

Commonwealth Scholarship and Fellowship Plan –

Commonwealth Scholarships in East Africa

Under the Commonwealth Scholarship Plan various governments within the Commonwealth are providing scholarships, mainly for post-graduate study

tenable in their country, for men and women students from other parts of the Commonwealth. The East African governments are offering three such scholarships tenable at a constituent college of the University of East Africa.

All applications must be in six copies on the prescribed form, and accompanied by six copies of all supporting documents except the birth certificate of which only one copy is required. Application forms may be obtained from the Registrars of all Australian universities and the University of Papua and New Guinea, the Department of Education and Science, P.O. Box 826, Canberra City, A.C.T. 2601.

Anyone interested in applying should contact urgently, Mr. Warren Spence, Grants and Scholarships Officer, 1st floor, University Offices.

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1969 ABSCHOL STAFF APPEAL

Once again this year, Abschol is appealing to university staff members to support the Aboriginal Scholarships scheme.

Donations of \$2.00 or more made payable to the NUAUS Aboriginal Scholarships Fund are tax deductible. Donations should be sent direct to the National Abschol Director, N.U.A.U.S., 344 Victoria Street, North Melbourne. Vic. 3051.

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BOOKS FOR SALE

The Monash representative on the Women of the University Fund has the following books for sale in aid of the Fund's charities. They are all in good condition with hard covers, and anyone interested should telephone Netta McLaren at 25.3424.

Trevelyan, G.M.	England under Queen Anne; Blenheim Pub. Longmans 1930. With maps	\$2.00
Cunningham, K.S. (Ed.)	Education for Complete Living; Proc. New Education Fellowship Conf. 1937. Pub. A.C.E.R. 1938.	\$2.00
Farwell & Johnston. (Editors)	This Land of Ours - Australia. Pub. A. & R. 1949. Illus.	\$2.00
Fenn, Amor	Design & Tradition - development of Architecture & applied arts. Pub. Chapman & Hall 1920. Illus.	\$1.00
Scholes, Percy A.	Crotchets - essays on music. Pub. John Lane 1924	\$1.00
Mather, F.J.	A History of Italian Painting. Pub. Holt & Co., N.Y. 1944. Illus.	\$0.70
Carroll, Lewis	Alice in Wonderland & Through the Looking-Glass. Pub. Collins. Leather bound. Pocket size.	\$0.70
Cammaerts, Emile	Belgium from the Roman Invasion to the present day. Pub. F. Unwin 1921. Illus & Maps.	\$0.70
Maginnis, C.D.	Pen Drawing - An Illustrated Treatise. Pub. Bates & Guild, Boston, 1899. 6th Edition.	\$0.70
Thompson, E.P.	The Making of the English Working Class. Pub. Penguin 1968. (Paperback)	\$0.70

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