

CAMPUS NEWS

A MAGAZINE FOR THE UNIVERSITY

VOL. 3, NO. 6

WEDNESDAY, JUNE 29, 1977

FUNDS FREEZE STUNTS GROWTH

The Vice-Chancellor, Professor L.M. Birt, believes it would be most unlikely that the University of Wollongong would receive funds to allow its \$4,600,000 building programme to go ahead in 1978.

He said that he doubted whether any of the three major projects will proceed next year.

The three major projects approved for planning with a view to construction in 1978 are:

| | |
|----------------|-------------|
| Social Science | \$2,400,000 |
| Science | \$1,500,000 |
| Administration | \$ 700,000 |

"Design on all three projects is well advanced." If two teaching hospitals for Sydney and Newcastle are omitted, Wollongong had the largest building programme approved for planning purposes of any Australian University," he said.

The Minister for Education, Senator the Honourable J.L. Carrick, announced guidelines for university funding for 1978 in the Senate on June 3.

The statement relates to funding for the whole university system, and makes no mention of individual universities. The new Tertiary Education Commission (formally established on June 22) has been asked to present its report, with specific recommendations for each university, by the end of August.

Professor Birt said it would therefore not be possible at this stage to know precisely what the University of Wollongong will get for 1978.

"It is however possible, by making some assumptions, to forecast what might be the situation for the University of Wollongong," he said.

Firstly, CAPITAL WORKS.

The Government will provide in 1978 (in Dec. 1976 cost levels) \$21.7 million for the university system. After the end of 1977 there will be no cost supplementation for capital programmes, partly as a reflection of the "more favourable tendering climate", and also as an incentive to achieve economies in operations.

Much of this sum — roughly one-third — would be needed merely to maintain the level of funding provided in 1977 for minor building works, site works and site services.

Professor Birt said a further amount would be needed to meet design costs already incurred for buildings that the universities had assumed would be commenced in 1978.

"Some universities may also have sub-

stantial contractual commitments that have to be met.

"The amount available for starting new buildings in 1978 is therefore likely to be small.

"A further complication is that the Minister has indicated that there might be some flexibility between capital and recurrent grants.

"The universities might press for some of the capital allocation to be used for recurrent purposes, or the Tertiary Education Commission might see the need to recommend this."

He said that against the background that has been outlined above, it was most unlikely that the University of Wollongong would get funds to allow its programme to continue in 1978.

Secondly, RECURRENT COSTS.

The Government will provide in 1978 \$612.1 million (in December 1976 cost levels) for the university system.

Cost supplementation in 1978 will be limited to increase in respect of the wages and salaries components of recurrent grants.

This figure of \$612.1 million appears to be exactly the figure recommended by the Universities Commission in its report for the Triennium 1977-79, updated for cost rises.

"The difficulty here, however, is that in 1978 there will be no supplementation for costs other than wages and salaries."

The University of Wollongong's recurrent expenditure is made up of about 82 per cent salaries costs and 18 per cent non-salary costs.

It has three other substantial non-salary grants recommended by the Universities Commission for 1978:

| | |
|-------------------------|-----------|
| Equipment | \$375,000 |
| Earmarked Library Grant | \$170,000 |
| Research | \$ 55,000 |

"Under the new arrangements, and assuming that funds are distributed between the universities as the Universities Commission proposed in its last report (an assumption which may not be correct), the universities will be worse off than they had expected to an extent which will increase in proportion to the rate of cost inflation that occurs in 1978," he said.



PROFESSOR L. M. Birt.

Prof. Karmel takes top T.E.C. post

Professor Peter Karmel is head of the Tertiary Education Commission, which came into operation on June 22.

The commission replaces the three former post-secondary commissions: the Universities Commission, the Commission of Advanced Education, and the Technical and Further Education Commission.

In announcing the commission's establishment, the Minister for Education, Senator Carrick, said that it would co-ordinate the Commonwealth's programmes in the whole post-secondary area and oversee the allocation of resources and co-operative arrangements with the States.

It will also advise the Federal Government on programmes of development and expenditure in universities, colleges of advanced education and technical and further education institutions.

Other full-time members of the commission are Mr. H.K. Coughlan, Professor D.N.F. Dunbar and Dr. H.S. Houston.

There are another eight part-time members of each of the three councils, which have taken over the functions of the previous commissions.

Professor Karmel, who has chaired the Universities Commission since 1975, was Professor of Economics at Adelaide University, Vice-Chancellor of Flinders University from 1966 to 1971, and Chancellor of the University of New Guinea from 1969 to 1970.

METALLURGY AWARD HANGS IN UNION



PROFESSOR Geoff Brinson (second left), chairman of the Department of Metallurgy, and Metallurgy lecturer, Dr. Gordon Delamore (right) discuss the Trebor Snibor award hanging on the wall in the Union with Metallurgy Society secretary, David Bendeich and Society president, Peter Burgess (left).

In 1961 the Wollongong University College Metallurgy Society was formed and, along with the institution of the famous (infamous?) Red and Green Tap Night, one of the first activities was the sponsorship of student metallography.

Three Metallographic Exhibits were held in those early days, with entry open to students from anywhere, but it is with the first two that this tale is concerned.

At that time, one Bob Robins (now U.N. S.W.) was senior lecturer in extractive metallurgy, and being a bit of a lad he conceived the idea of sabotaging that first exhibit with a spurious entry.

He smoothed some damp sand, poked the corner of a cube into it here and there, and proclaimed "Etch Pits in Lutecium". The entry, under a pseudonym, was cast aside by the judges, for in their opinion nobody could have access to lutecium metal and, therefore, the photomicrograph must be a fake.

These learned gentlemen, visiting from Kensington, decided, however, that the Robins effort should be suitably rewarded, and from somewhere up the hill collected some rather damp cow dung in a rather fragile paper bag.

This token of their estimation of him (they were old friends from way back) was presented in a suitable ceremony at the official judging.

Coincidentally, a metallurgy student had the same kind of idea for lousing up the second exhibit. Paul Jacob cut an onion in

half, performed the necessary photographic work, and produced a rather plausible "Frank-Read Source".

Plausible, yes; but again the judges were no fools. That's only my opinion, you might say, for on that occasion they were none other than Brinson and Kennon.

The Jacob effort was disqualified, but nonetheless recognised as a most creditable attempt to foul the system.

During the following year, the concept of an award for the best foul-up perpetrated on or in the department jelled, and a plaster facsimile of the highly appropriate subject, that had been awarded to Bob Robins, was prepared and mounted by the laboratory staff.

It was then presented retrospectively so that Paul Jacob 1965 has the honour to be first recipient of the Trebor Snibor award.

But who was this Trebor Snibor person? There is no mystery. Trebor Snibor is the lad whose name was appended to the entry "Etch Pits in Lutecium" in the first exhibit. Some say he was a rather backward Robert Robins, but there are others who are not so sure.

Article by Leon Nonnek

Illawarra fishermen attend Uni. seminar

Fishermen, teachers and naval cadets participated in a seminar on **LIVING RESOURCES OF THE OCEAN** at the University on May 25.

Students in Natural Resource Economics, working under the supervision of Professor Ken Blakey and Mr. Arthur Partridge, organised the seminar.

They have made a special study of the economics of fisheries development, and are concerned about problems of the use and conservation of resources of the ocean, especially on the South Coast.

Mr. Peter Knott said that he and the other students, working in this area in the Department of Economics, had been encouraged to study the economic significance of developing scientific and technological knowledge, and the prospects of the Australian fishing industry related to the proposed extension of territorial waters to the 200-mile limit.

They contacted Dr. Frank Moss, of Kiama, who gave up a medical career to study microbiological chemistry and who became Associate Professor of Microbiological Chemistry at the University of New South Wales. In retirement, he has maintained an interest in marine life.

Discussion involving Dr. Moss and Professors Ken Blakey and Duncan Brown (Biology), and scientists in the Sydney universities resulted in the organisation of the seminar.

It was introduced by Dr. John McIntyre, senior lecturer in Zoology, University of New South Wales, who has published works on *The Continental Shelf of Australia* and *Lake Macquarie* and who is currently working on *The Ecology of Estuaries*.

Apart from University economics and biology staff and students, and Dr. Moss and Dr. McIntyre, participants included a party of naval cadets from Jervis Bay, high-school teachers, fishermen from as far as Ulladulla, and members of the general public.

SCIENCE COUNCIL MEETING HELD HERE

The New South Wales Science and Technology Council will hold its monthly meeting in Wollongong next month — the first held outside the metropolitan area.

The Vice-Chancellor, Professor L.M. Birt, was appointed to the Council last year.

The Council advises the N.S.W. Government on science and technology policy, the co-ordination of scientific activity and on priorities based on community needs and state resources.

The council meeting will be held on July 14 between

9.30 a.m. and 12.30 p.m.

Members will lunch at the University Union Bistro and invitations have been extended to include Chairman of Senate, Professor Geoff Brinson; Wollongong Institute of Education lecturer, Mr. Bill Chapman; Technical College principal Mr. Bruce Short; University Bursar, Mr. Ben Meek and Professor Stephen Hill.

Robyn gives men dressing down



ROBYN Rowland . . . her research may have destroyed the "tough-man" image of Australian men.

Research by a University of Wollongong postgraduate psychology student, Ms. Robyn Rowland, may have destroyed the "tough-man" image of Australian men.

About thirty percent of men who took part in a survey conducted by Ms. Rowland obtained a score on a Sex Role Inventory which described them as feminine or near feminine, that is, for men they had an unusually large number of "female" characteristics in their self-description.

This is compared with only eleven percent of men in America who took part in an identical survey.

Ms. Rowland, who is also a part-time tutor in psychology, published the results in an article in the Australian Psychological Society's journal, the *Australian Psychologist*.

She said her research showed two significant results. "The large proportion of men with feminine characteristics compared with their American counterparts was significant as was the fact that twenty-eight percent of men and women saw themselves with both masculine and feminine characteristics," she said.

"All results were compared with a similar survey, which was developed by American, Dr. Bem.

"The only substantial difference between the results from the two countries was the number of men with feminine characteristics," she said.

In the survey, Ms. Rowland interviewed 226 fulltime and part-time students, including professional and working class people, whose ages ranged from 18 to 55 years.

Ms. Rowland hopes to complete her Ph.D. thesis, "Attitudes of men and women towards traditional cultural sex role stereotypes", by September next year.

TOUGH IMAGE DESTROYED

She has had a second article, on "Attitudes Towards Women", accepted by the *Australian Psychologist*, which rejects eighty percent of works submitted as unsuitable for publication.

She said that interviews conducted for the second article showed that, between 1975 and 1976, there was a significant change in the attitude of men towards women.

"Although women's attitudes became less traditional, perhaps International Women's Year had an even greater effect on men's attitudes towards women. Where men had a quite conservative attitude towards women in early 1975, in 1976 there was no difference between the attitudes of the men and women interviewed," she said.

Ms. Rowland has been invited by four New Zealand universities to give lectures and conduct seminars for staff and postgraduate students on her research into sex roles in July.

In August, she will convene and chair a symposium at the Australian Psychological Society Annual Conference in Adelaide.

The symposium will be entitled, "Sex Roles: Research on Women and Men", and will involve six papers to be given by academics from a number of Australian universities.

Education association proposed

A meeting will be held at the University on July 7 in an effort to establish an Association of Educational Administrators.

Assistant Registrar, Mr. Challice Moldrich, said that the idea to establish the association in the Illawarra region followed informal discussions among a few interested persons.

He said it was believed that support for an Association would come mainly from people associated with schools, institutions of post-secondary education, relevant government departments and instrumentalities, and private sector organisations which provide education through job training.

The preliminary meeting for all interested persons will be held at the Pentagon (Lecture Theatre 5) on July 7 at 7.30 p.m.

PROFESSORS RE-ELECTED SENATE OFFICERS

Professor Geoff Brinson and Professor Lauchlan Chipman have been re-elected, Chairman and Deputy Chairman of the University Academic Senate.

At the opening of Senate in May, the Vice-Chancellor, Professor L.M. Birt, welcomed the members of the Senate to the first meeting of the body constituted after changes had been approved in its composition by the University Council.

He said Council approval flowed from acceptance of the view that internal communication within the University would be improved by a different structure - communication, that is, between departments, faculties and Senate; between departments; between the academic units and the student body, the administration, and finally the Council itself.

"It is, I think, obvious that in the short period in which the University undertakes its last assured growth (we hope until 1979-80) our means of internal communication should be as effective and economical as we can possibly make them," he said.



PROFESSOR Geoff Brinson (right) was recently elected Academic Senate chairman and Professor Lauchlan Chipman (left) deputy chairman.

ALTERNATIVE ENERGY.

A Sydney physics lecturer told a meeting at the University on May 31 that a cautious approach should be made to nuclear power development.

Dr. Ian Falconer, of the Uranium Power Study Group, School of Physics, University of Sydney, was speaking at a lunchtime meeting organised by the recently-formed University of Wollongong Social Responsibility in Science group.

He said that, although nuclear power could provide a practical alternative energy source to fossil fuels, there were disadvantages in the increasing reliance the world was placing on nuclear power for electricity generation.

"Nuclear power would reduce the demand on fossil fuels, which provide a portable power source for transportation, and a valuable raw material for the chemical industry," he said.

"These advantages must be balanced against the problems of the safety of nuclear reactors, the disposal of the highly radioactive waste products, the proliferation of nuclear weapons, and terrorist exploitation of nuclear materials."

Dr. Falconer made the following points in his talk.

- * Thermal nuclear reactors, which are currently being used for power production, will contribute significantly to the world's energy requirements for only a few decades.

It has been estimated on the basis of the predicted growth of the number of nuclear power stations in operation to the end of this century, that the uranium recoverable at a reasonable cost (less than \$60 a kilogram) will essentially all be used in just over one hundred years.

Nuclear power can only significantly contribute to the solution of the world's energy problems if breeder reactors are developed.

- * Nuclear energy is produced when a neutron causes a nucleus of uranium-235 to "fission" or break into two pieces of almost equal mass. These pieces move off at a high speed.

They collide with other uranium nuclei, and heat the uranium fuel of the reactor. This heat produces steam to drive turbines and is the useful product of nuclear fission.

The fission fragments are highly radioactive, and, when the fuel rod is removed from the reactor, these fission fragments must be separated from "unburnt" uranium, and isolated from the biosphere for thousands of years.

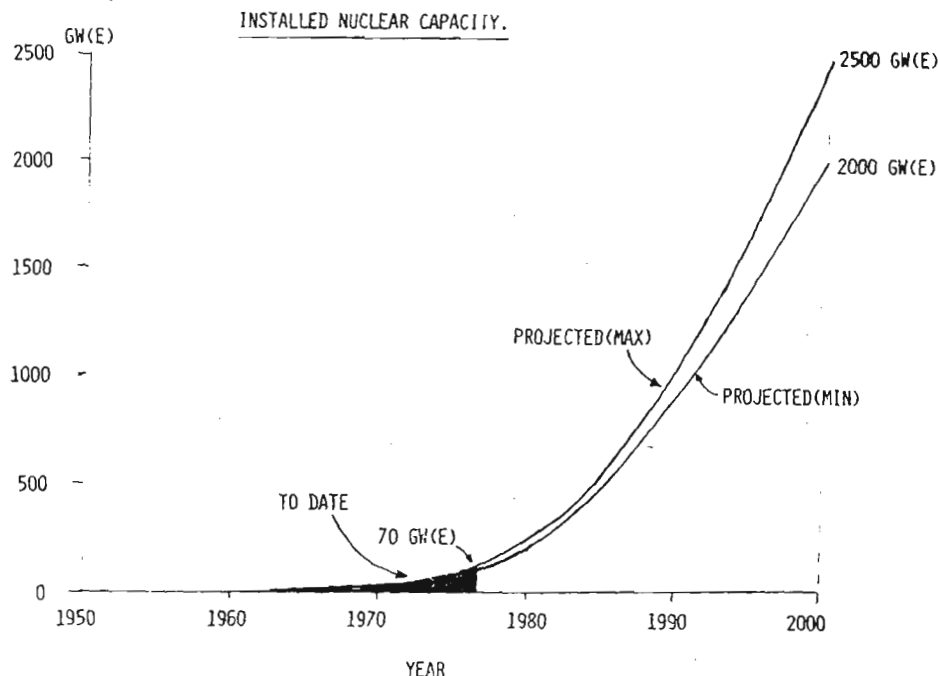
- * A single 1000-megawatt reactor produces 1000 kilograms of fission products a year. It has been estimated that one hundred grams of fission product in Sydney's water supply would be sufficient to give the maximum permissible strontium-90 concentration allowed by the International Commission for Radiological Protection.

It has been estimated that, by the year 2000, not one, but the equivalent of at least two thousand 1000-megawatt reactors will be in operation.

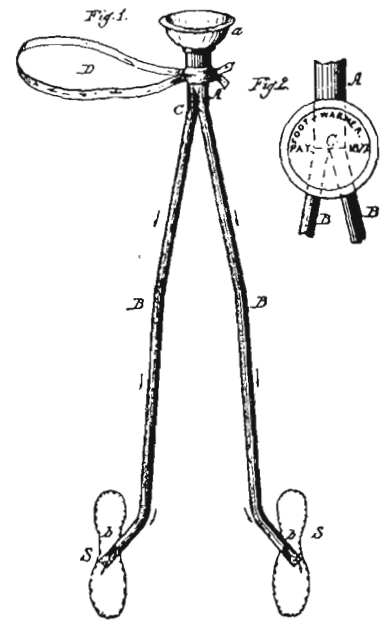
These figures indicate that it is imperative that waste products are completely isolated from the biosphere.

- * Under normal operating conditions a reactor releases very little radioactive material into the environment.

Fuel reprocessing plants release considerably more radioactive material into the environment, but this could be reduced to an acceptable level by improved processing techniques.



GROWTH of installed nuclear electrical generation capacitor to the year 2000 based on OECD-IAEA figures. 1GW (E) = 1000 megawatts (electrical generation capacity).



WITH the energy shortage perhaps we will have to revert to this foot warming invention of 1877.

Aust. leads solar research

Australia could become a world leader in solar energy, Dr. Chris Horwitz, of the University of Sydney Solar Energy Research Unit, said at the University of Wollongong on May 24.

It was just a matter of whether solar energy would be introduced in this generation or the next, he said.

Dr. Horwitz was speaking at the first of four public seminars arranged by the recently-formed University of Wollongong Society for Social Responsibility in Science.

More than eighty people attended the seminar in the Pentagon Building.

Dr. Horwitz, who is a member of a team of researchers at the University of Sydney, said that the team had developed a highly-efficient method of extracting energy from the sun which could make Australia the international leader in solar energy exploitation.

This method, which involved the use of "selective surfaces" to trap solar radiation, was capable of providing process heat for industry. This comprised forty percent of Australia's energy needs.

"Electricity generation, which is a further thirty percent of Australia's needs, could be done with large solar-power stations," Dr. Horwitz said.

He said that the United States was making a ten-megawatt power station in California and that solar power appeared to be "just economically feasible" at the moment.

"Selective surface developments, both at Sydney University and elsewhere, are likely to improve the situation even further," Dr. Horwitz said.

Drugs can affect efficiency

LECTURER ISSUES DRUG WARNING

University of Wollongong psychology lecturer, Dr. Neil Adams, claims that the use of drugs is extremely likely to detract from an individual's efficiency in coping with life's problems.

Dr. Adams believes that drugs reduce a person's attempts to achieve maximum fulfilment, and, in influencing the individual in this way, they must also adversely affect society as a whole.

"Therefore, they are a social problem and not simply a matter for individual choice," he said.



Dr. Neil Adams

Dr. Adams made these claims in a recent submission to the Joint Committee of the Legislative Council and Legislative Assembly Upon Drugs.

The submission was not based on any specific research but reflected the opinions and experience of the Wollongong Drug Committee, and his own twenty-five years experience of teaching and counselling in schools, universities, youth groups and other community groups.

Dr. Adams said the attitude taken in the submission was that, although drug use *per se* should not be regarded as a criminal behaviour, it was an indication of the individual's need for social intervention in his or her life.

"I urge that every reasonable effort be made to reduce the availability and use of drugs; to educate the public as fully as possible about the personal and social disadvantages of drugs and about socially and psychologically preferred alternatives," he said.

In his submission, Dr. Adams made specific recommendations. They are:-

1. a. Increasing the efforts to control and eliminate trafficking in illegal drugs. This may entail increasing penalties associated with criminal activities in this area.
- b. Discouraging the legalising of any drugs of addiction or possible addiction.
- c. By encouraging, perhaps even coercing, medical practitioners to review their own prescribing habits,

Dr. Adams urged people, whether pro or anti drugs or still sorting out their ideas, to read a newly published book **SENSUAL DRUGS**, by H. and H. Jones (Cambridge Press, 1977). The book gives clear evidence that marijuana is a drug of dependence.

d. Severely curtailing and closely supervising the advertising and availability of drugs of dependency through pharmacies and other outlets.

2. The potential disadvantages and dangers of continued drug use be made more widely known and, concurrently, access to and information about alternatives which are more beneficial should be improved,

This points to:

- a. Public education, preferably through subsidised self-help and community-based groups; the education to be directed towards information about physical, psychological and social effects of drugs and towards helping people develop more fully the personal resources they might use instead of reliance on drugs.
- b. Provision of counselling expertise in virtually every medical practice. This could well entail the need for financial assistance to each medical practice to establish facilities and obtain personnel for this service.

The major themes of Dr. Adams' submission were that drug use should be discouraged in every possible way and that, while drug use might be pleasurable or apparently beneficial for the user in the short term, its long-term effects were almost invariably personally and socially damaging.

UNI. ENROLS 2504 STUDENTS IN '77

There were 2504 students enrolled at the University at the Universities Commission audit date of April 30.

This is 228 more than last year's total and 62 more than the planned intake for 1977.

Total EFTS was 1964 compared with 1932 last year (the Universities Commission 1977 EFTS estimate for Wollongong was 2025).

There were 2191 students enrolled on April 30 for bachelor's degrees, and of these, 871 were new students, 1250 full-time students and 941 part-time.

The number of students enrolled for each degree were: Arts 951 (789 last year), Commerce 392 (357), Engineering 417 (438), Metallurgy 109 (110) and Science 322 (301).

Ninety-four students were enrolled for diplomas, 84 for masters degrees and 66 for doctor of philosophy degrees.

Assistant Registrar, Mr. Kevin Turnbull,

said that there had been a steady increase of enrolments despite the "steady state" policy for education by the Federal Government.

He said the biggest increase was in Arts, where 162 more students were enrolled compared with last year.

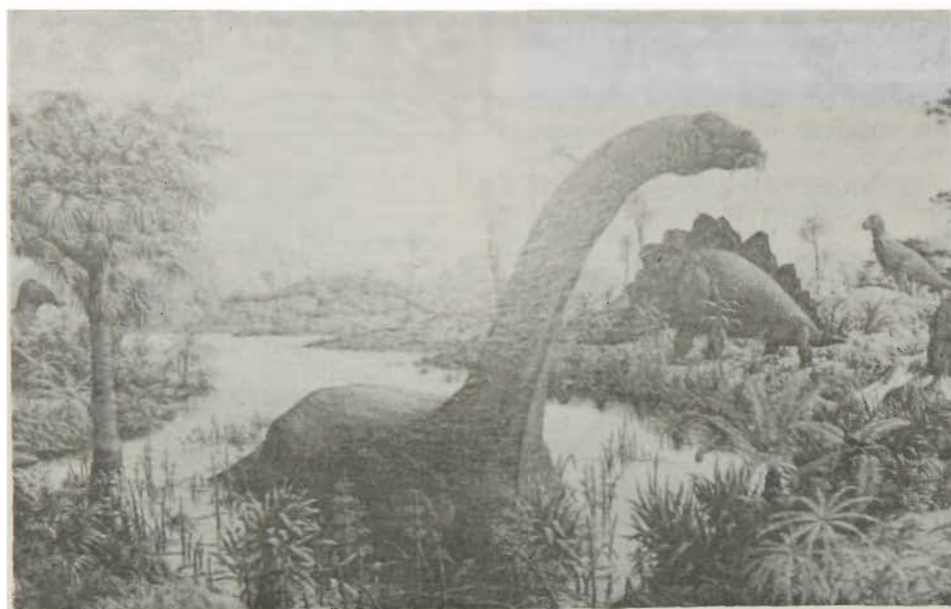
Mr. Turnbull said the University of Wollongong continued to maintain a high proportion of part-time students.

FOOTNOTE: EFTS stands for Equivalent Full-Time Students. It is the standard unit which the Universities Commission uses to assess the financial requirements of universities. The "number of students" figures would not be realistic in this area as a postgraduate student requires more staff and space than a full-time undergraduate student, who, in turn, generally requires more than a part-time student.



MR. K. E. Turnbull.

GEOLOGY ON DISPLAY



TWO charts purchased from Yale University depict the evolution of the mammals and the evolution of the reptiles. The part of the latter pictured here shows several types of dinosaurs but especially Brontosaurus in the swamp with carnivorous types on the banks.



THE new geological showcases in the foyer of the A.C.S. building contain examples of crystals, minerals, fossils and geological structures. The students looking at the exhibit are Glynn Phillips, John Bywater and Sue Hickory.



GYPSUM (hydrated calcium sulphate) occurs in a number of forms. Needle-like crystals of clear gypsum were deposited from calcic solutions in voids. Flower-like crystal growths of gypsum termed rosettes form by precipitation of gypsum from saturated ground-waters.

For more than a decade, geological displays have been a permanent feature of the campus.

More recently, however, the Department of Geology has received a special-purpose grant of \$3000 to expand significantly such displays.

This grant has enabled the construction of glass cabinets to exhibit portions of the now extensive geological collection in a manner which is secure, yet allows study of the displayed material — although the samples cannot be handled.

In addition to the grant, the department has enjoyed the benefit of important donations and loans of specimens and other materials.

The displays consist of a wide range of specimens, illustrations and related materials. Crystals and mineral, rock and fossil specimens obviously comprise a significant proportion of the exhibits, and these have been collected by staff members, donated to the department, and purchased to provide a wide range of examples (of rocks, and their contained fossils) from around the world.

To further emphasize specific points, photographs extend the rock displays to such diverse features as earthquake effects, photomicrographs of coal, and dinosaurs and mammals — it is difficult to present families of dinosaurs any other way.



And, of course, geological maps (and a three-dimensional model of the geology of the Illawarra) are important facets of the displays. The maps show both Australian and overseas geology; for example, a geological map of France is opposite the room used for French classes.

Two aspects of the displays are perhaps a little different. There is a series of photographs of eminent (late) leaders of Australian geology, with brief notes on their geological work. And the areas of research of staff and students are indicated on a map of Australia, with appropriate extensions for overseas research.

The maps and the displays of the type prepared by the Department of Geology form an integral part of teaching. And, importantly, they provide entertaining and informative details about geology — the study of the Earth.

Dr. Richard Facer

Vice-Chancellor examines China's education system

The Vice-Chancellor, Professor L.M. Birt, who recently returned from a visit to China, believes that China has very little interest in exporting anything but ideology and that it is in no normal sense an "imperialist" power.

He said that China appeared to be greatly pre-occupied with internal problems. "It really appears to be a 'third-world' country, relatively underdeveloped industrially, technologically and in the physical organisation of society, and in matching use of resources with the expanding needs of its large population," he said.

Professor Birt and his wife visited China for fifteen days with a group of Australian academics and students to examine the entire spectrum of educational activities.

He said that universities in China (both teaching and technical) were facing problems of selection and assessment, to try to ensure that appropriately qualified and able people were recruited and that a realistic attempt was made to assess their progress and ability.

"There is even a suggestion that in some places the otherwise universal requirement for work experience between school and university is being waived," he said.

"There also is evidence that there is an increasing volume of literature purchases from overseas in all fields."

He said that postgraduate work was also said to be a "problem". "Presumably China is still attempting to work out how best to train specialists in various fields, having recognised that they must in fact be trained.

"In all their work, they are said to be laying new emphasis on critical analysis by their students."

Professor Birt's overall impression of China was the courteous, dignified, warm and friendly people and the efforts required to feed them. He said there was a massive problem of feeding China's population.

"The sheer immensity of the agricultural effort and the agricultural output, brought home by every trip through city suburbs or countryside, is staggering," he said.

"The visible effort is probably magnified by the dependence on human labour rather than mechanisation, but it is powerful nevertheless."

He said that he believed China had evolved a very satisfactory system of government for dealing with its problems and present stage of development.

"China is undergoing a process of revision and rethinking of some of its recent attitudes.

"There seems to be some reshaping of the emphasis of public policies, and of course, with the broad sweep of the Writings of Mao as a text, it is perfectly possible to develop a whole range of quite sharply different approaches to problems."

Professor Birt said that the new rulers of China were said to be more pragmatic than those who held the reins more recently, even under Mao in his declining years.

"Nothing else was as important as correct ideology; and training programmes, the development of differentiated roles of society, and industrialization and economic prosperity were all made secondary to the imposition of a concern for uniformity of idealized thought on China's people," he said.

"Now, in recognition of some years of economic stagnation, China is attempting to improve its education system and make better use of its more able young and old; is seeking to upgrade its technological efficiency; and is accumulating greater reserves of capital to invest in the development of the future."

He said that the effects of this change were evident in the school system, universities, medicine and agriculture.

"Such changes as these will create quite new conditions for the continuation of the 'revolution'."

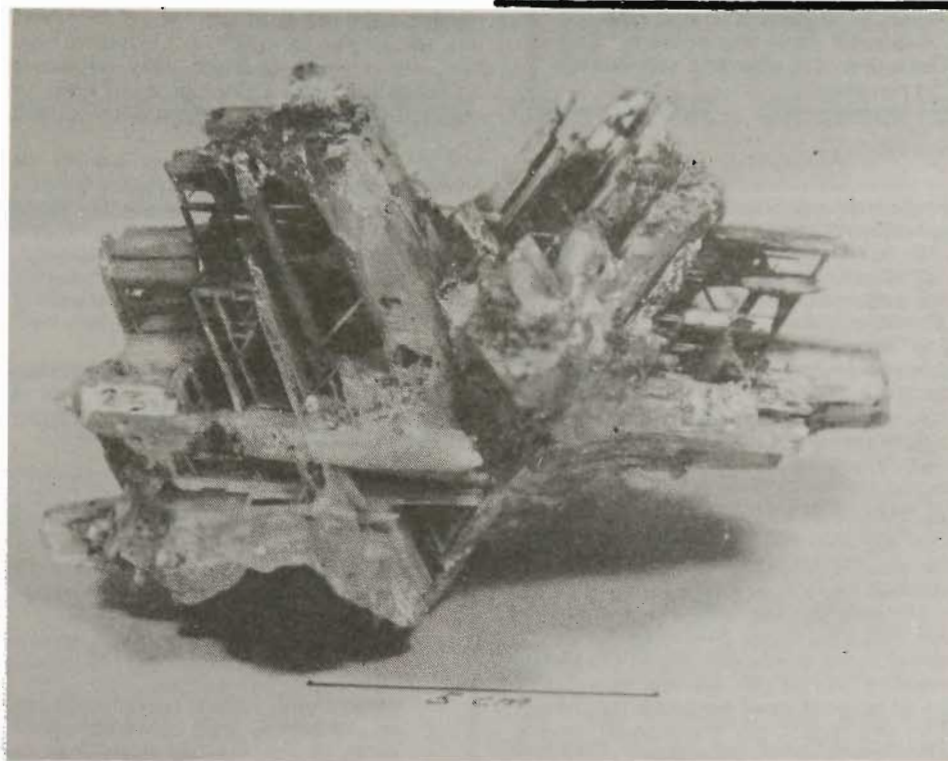
"It was essentially a rural phenomenon — eighty percent of China's people live in rural areas — and the cities have always been more difficult and troublesome."

"Much of the work programme and the philosophy of the dignity of manual labour as the basis for a genuine socialistic quality stem from an agricultural background."

"One wonders to what extent the move to rather different social views will increase the stresses in Chinese society."



WOODOCRINUS macrodactylus. Complete crinoids (sea lilies) such as this specimen from the Carboniferous (about 320 million years ago) of Britain are rare in marine rocks of Eastern Australia.



CERUSSITE (lead carbonate) forms as an interlocking boxwork pattern of tubular orthorhombic crystals in the oxidized near surface zones of some lead sulphide ore bodies. This sample is from Broken Hill, N.S.W.

Dr. Ausburn views waste problem

It is wise to first give broad, albeit superficial, consideration to the resources of "space-ship earth"; for without consideration of the general nature of these resources judgment on conservation issues at a parochial level can be decidedly *unwise*.

What follows on the natural resources of *Earth* is general knowledge to the average person, but nonetheless, vital general knowledge.

We are primarily concerned with the continuance on *Earth* of the thin film of living matter which covers much of the *Earth's* surface. On land and in the oceans, this may be considered at most to be 100 metres thick, and even then regional conditions of, for example, water turbidity and low rainfall produce the patchy world wide pattern of life forms with which we are familiar.

Within this 100-metre film of potential life there are even thinner films of vital importance; these occur at the air-water-solid interfaces. For example, the continued good health of the top 1mm of the oceans' surface is essential to the continuance of life in the oceans.

I believe that the most chastening single fact to be kept in mind, when discussing conservation, is that the oxygen in the *Earth's* atmosphere is only there because of the existence of green plants on *Earth*. Before the evolution of green plants there was no atmospheric oxygen.

It is not ridiculous when looking at the never-ending destruction of forests and erosion and poisoning of productive soils to contemplate a future atmosphere deficient in oxygen. This should serve as a salutary reminder that there can be no suggestion of allowing present monetary and social values to take precedence over fundamental conservation principles.

Unfortunately (or fortunately?) the time constant of the oxygen cycle is of the order of 2000 years; longer than one person's lifetime and certainly longer than the life of any one government.

The recycling times for other components of the biosphere are in some cases shorter and in other cases much longer. This means that the preservation of the biosphere depends on our state of civilization, that is, on the degree to which present generations are prepared to make sacrifices for future generations.

Until moral values associated with preservation of the biosphere override the pecuniary values of our aberrant human plague one cannot be sanguine for the future of planet *Earth*.

Turning now towards the local issues, it is necessary to point out that conservation—the wise use of resources — implies in some cases complete preservation.

For example, there are still a few areas on earth where complex ecological systems are still essentially in long-term equilibrium and serve man (and more importantly the other parts of the biosphere) by being the repositories of a vast, and as yet not understood, wonderland of interdependent plant and animal life.

Europe has no such areas left; Australia has a few but they are under threat and are everdiminishing in number, area and kind.

Only a very few viable ecological systems in Australia can be regarded as in any way secure for future generations.

The Illawarra has no areas unaffected by European migration but, it does have some very small but valuable areas which have only been moderately affected by man. Preservation should also be the aim for the rich arable land, in this high rainfall region, which was obtained with perhaps some contemporary justification by destruction of virgin forests.

However, while *preservation* is of paramount importance where it is relevant, there are many resources which are inevitably to be "used" for the "benefit" of man. In this area of utilization of resources, wisdom is also required. This conference is evidence of such developing wisdom.

It would be interesting and important to discuss at length and in depth the first and second reports of the Club of Rome and to contemplate alternatives to our present social and economic systems which could

Dr. K. J. Ausburn, senior lecturer in physics at the University of Wollongong and secretary of the South Coast Conservation Society, gave the paper printed here during a conference at the University on May 13.

He spoke to members of The Institution of Engineers Australia (Illawarra Group) at their twelfth annual engineering conference.

The conference theme was *Disposal of Industrial Waste*, and Dr. Ausburn's paper was entitled, "*Conservation—the wise and efficient use of resources*".

perhaps save us from some of the catastrophes which confront us.

We would then perhaps have completely different solutions to our current parochial problems. However, given the existing lack of public awareness and of resolution among those who are aware, it is necessary to make some pragmatic observations on the subject matter of this conference — in the context of current "wisdom".

Examination of methods of dealing with industrial waste in this district should, I believe, be based on the following criteria and in the order given:

1. All rain forest areas, however small, must be preserved. This not only means that industrial waste must not be dumped on top of rainforest but also means that pollutants from industrial waste (including wastes discharged to the atmosphere) must not be permitted to put at risk the continued existence of our pockets of temperate rain forest.

It also means the many small streams which flow down the escarpment — the rainforest gulleys — their very life blood must be preserved in quantity and quality of water. "Pitt street" farmers and industries should not be allowed use of the water of such streams.

2. While aesthetic considerations are secondary to the preservation of ecosystems, the scenic amenity associated with the escarpment should be preserved. This can be done within the bounds of present knowledge and monetary resources if there is good will and understanding.

Unfortunately, an aerial photograph of the Illawarra escarpment shows a lack of sensitivity and co-ordination by many utilities and companies. The preservation of the rain forest and scenic amenity of the escarpment implies, of course, that no industrial waste should be dumped within the proposed *Escarpment Park* area, except *perhaps* for purposes of specifically *improving* public amenity.

3. Beach fronts, headlands and frontal dune systems should not be degraded further. This is not a region generally available for industrial waste disposal.

4. The catchment of Lake Illawarra is not generally suitable for waste disposal. However, proper investigation by competent specialists of particular proposals may show that they are permissible.

5. Industrial "wastes" of intrinsic value should be conserved in the sense of being used wisely. The present reject material

from coal washeries cannot properly be called waste since it contains high levels of intrinsically valuable organic material.

Separation methods are at present aimed at optimizing profits not conservation.

6. If dumps for unusable wastes are to be established then consideration should be given:

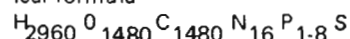
- (a) to the construction of one or two very large artificial hills in places where they may be considered as ultimately an addition to public amenity; and
- (b) to off-shore dumping subject to proper investigation and control.

It is unlikely that many of the above criteria will be properly considered and implemented in this district unless everyone involved argues for the paramountcy of conservation principles in discussions with those above and below in their hierarchy.

It is time for everyone to put conservation first in his thinking and not treat it as an afterthought forced on us by annoying bureaucratic regulations.

Edward S. Deevey, in "Mineral Cycles" (*Scientific American*, September, 1970), made the following profoundly moving statement:

"There is a unique and nearly ubiquitous compound, with the empirical formula



called living matter. Its synthesis, on an oxidized and uncarboxylated earth, is the most intricate feat of chemical engineering ever performed and the most delicate operation that people have ever tampered with".

Let us tamper with it cautiously and with integrity.

GOVT. APPOINTS SOCIOLOGIST TO ETHNIC COMMISSION

One of the seven part-time commissioners, appointed recently by the State Government to the Ethnic Affairs Commission, lectures on the sociology of migration one day a week at the University of Wollongong.

She is Mrs. Dorothy Buckland, who has spoken at seminars and conferences on migrant issues in Wollongong and whose research papers are available in the University Library.

Mrs. Buckland is also a part-time lecturer in the School of Sociology at the University of New South Wales.

A Greek born in Egypt, Mrs. Buckland was founder of the Australian Migrant Women's Association in Sydney and would like a branch formed in Wollongong.

"For the last nine years, I have been involved with every group or organisation that has anything to do with migrants," she said.

Mrs. Buckland, who is the only woman on the Ethnic Affairs Commission, said that one of her aims was to give the term "migrant" a new meaning in the hope that it would lose its derogatory connotation.

"Australians have to be educated into knowing migrants are fellow human beings with something to contribute," she said.

"This can be done by communication, as both groups would learn to respect each other more."

She would like to see more community centres for migrants in Sydney and Wollongong. "Very little has been done in Wollongong for migrants," she said.

Mrs. Buckland said that one of the

migrants' problems studied

biggest problems currently facing migrants was unemployment.

"It is a more serious problem for a migrant, especially when they are non-English speaking, than it is for an Australian."

"When there is plenty of work, it does not matter if a person speaks English if he or she is working in a factory."

"But when there is unemployment, the migrant, who is usually the last person to be employed, is the first to go, and without English finds it almost impossible to get another job."

"The situation is worse when they have no contacts and no money saved, and their health starts to deteriorate because of the tension."

Mrs. Buckland said that the media should be used more to unite people rather than to divide. "I am very concerned about the welfare of migrants and, as a sociologist, I'm concerned about society in general."

Library installs electronic device

A STUDENT leaving the library is stopped when the exit gate locks automatically after the new electronic book-detection system was activated. The device has been installed to prevent books being removed from the Library without being properly recorded.



BOOK DETECTION CLOSES EXIT GATE

The University Library has installed an electronic book-detection system.

Its purpose is to prevent books being removed from the Library without being properly recorded.

The Library believes the system will improve service because staff will know that a book is either on loan (in which case there is a record which can be checked) or somewhere within the Library.

The electronic system will normally remain inactive allowing free movement through the entrance and exit gates at the main entrance.

However, if a chime sounds and the exit gate locks when the user walks through the exit area, the person concerned should call a member of the Library staff to determine why the system was activated.

Overseas scientists on Aust. academy

The Australian Academy of Science has elected two distinguished overseas scientists to be Corresponding Members of the Academy. They are Professor Bart Bok and Sir John Cornforth, FRS.

Corresponding Members of the Academy are elected from distinguished scientists not normally resident in Australia. Other Corresponding Members elected previously are: Lord Adrian, FRS, Nobel Laureate; Professor Dorothy Hodgkin, FRS, Nobel Laureate; Professor Sir Harrie Massey; and Lord Todd, FRS, Nobel Laureate.

Professor Bok, who recently retired as Director of the Steward Observatory in Tucson, Arizona, was the Director of the Mount Stromlo Observatory. In that position Professor Bok was active and successful in promoting Australian astronomy.

He was responsible for the establishment of the Siding Springs Observatory. He has maintained his links with Australia since leaving to work in the United States.

Professor Bok is a Fellow of the US National Academy of Sciences and has served as President of the American Astronomical Society.

Sir John Cornforth was born and educated in Sydney and has done most of his scientific work in England. He was awarded a Nobel Prize in 1975 for his research in biochemistry. He is currently Royal Society Research Professor at the University of Sussex.

FRENCH FILMS IN SECOND SESSION

The Department of European Languages will screen a number of French films during second session.

The films will be held in Pentagon 3 between 11.30 a.m. and 1.30 p.m. on seven Tuesdays in July to September.

The dates are July 26; August 9-16-23; September 6-20-27.

The films are part of the French 222 Civilisation Course.

Details of films which will be screened will be published in the fortnightly edition of Take Note.

ENGINEER GIVES PUBLIC LECTURE

Dr. C.A. O'Flaherty, the First Assistant Commissioner (Engineering) with the National Capital Development Commission in Canberra, gave a public lecture at the University on June 9.

He spoke, at the invitation of the Department of Civil Engineering, on "Energy, Technology and Movement".

Dr. O'Flaherty is responsible for engineering works within Canberra, together with transport planning, including the public transport system.

He was project chairman for the investigation which resulted in the publication of the report, "Intertown Public Transport Alternatives for Canberra", in June last year.

Previously, Dr. O'Flaherty was Professor of Transport Engineering and Director of the Institute for Transport Studies, University of Leeds. In 1971, the Science Research Council gave him a \$340,000 grant to set up the Institute.

He is a chartered engineer and graduate of the National University of Ireland and of Iowa State University, U.S.A., and has worked for local and state governments in Ireland, the U.S.A. and Canada. In 1973, he was a Commonwealth visiting professor at the University of Melbourne.

Dr. O'Flaherty has published many research papers in the field of traffic and transport engineering and planning, and is the author of three well-established books.

GOVT. MAY GIVE STUDENTS LOANS

An independent committee has recommended that the Government establish a system of loans to supplement existing post-secondary student assistance schemes.

The scheme would be open to all post-secondary students - technical, undergraduate and post-graduate, full-time and part-time - regardless of their course enrolments. The exception would be students enrolled in hobby and similar courses at technical and further education institutions.

In its report, tabled on June 2 by the Minister for Education, Senator Carrick, the Committee on Student Loans said the system should consist of two inter-related schemes.

The first would provide relatively small loans, up to \$500, administered mainly by the universities and colleges.

The second would provide loans, up to \$8000, administered jointly by the educational institutions and financial institutions, such as banks.

Educational institutions would be responsible for determining eligibility under both schemes. Under the second scheme, financial institutions would issue the loans and be responsible for subsequent administration.

The committee recommended that the Government provide \$5 million initially for distribution to post-secondary institutions. These funds would be used for small loans.

It recommended also that between \$15 and \$30 million be made available annually for long-term loans by financial institutions. This figure would be subject to review but, in the first year of the scheme, \$10 million should suffice.

Under the first scheme, the educational institutions would decide if interest was to be charged on the loan and if a guarantee was required. Students would have up to two years from the time the loan was taken out to repay it.

Under the second scheme of loans up to \$8000, the committee recommended that interest be charged at the prevailing long-term bond rate, reducible, during the period of the loan. The Government would be responsible for interest payments to financial institutions while the borrower was studying and during the period of grace.

Borrowers would be allowed a twelve-month period of grace from the completion or cessation of study to the beginning of repayments. This period should be extended in cases of hardship.

Repayments should be made regularly, possibly monthly, and should be completed within fifteen years.

The committee recommended that loans under the second scheme should be guaranteed, preferably by the Government.

MINISTER HEARS UNI. VIEWS

Professor Ken Blakey (Economics) and Dr. Roger Bradbury (Biology) represented the University at a round-table conference on pollution in Wollongong on May 26, organised by State Planning and Environment Minister, Mr. Paul Landa.

Both took part in the discussion, and the Minister invited Professor Blakey to write him a note on a proposal to extend the operation of the State Pollution Control Commission.

The essence of Professor Blakey's proposal is set out below.

"The SPCC has made a good start by developing scientific, technical, and managerial skills, and by setting clean air and water standards, and by gradually tightening up its enforcement system. This appears to be based on the premise that it is the responsibility of people who generate pollutants to organise their disposal in such a way that there will be no significant pollution.

"This must be backed up, I believe, by a community waste-disposal and pollution-control service organised in the most efficient way possible, and, where possible, to be charged to the people who generate the potential pollutants. This would not replace the enforcement of standards for individual enterprises, but would supplement it.

"We need it for the following reasons:

1. Individuals and public and private organisation units that generate pollutants do not always have access to

the technology, management skills and resources required to prevent or abate pollution effectively or economically;

2. Often they do not have sufficient incentive to do so, even when they have the resources, and when enforcement is tried they often have strong motives for evasion;
3. Many cases of pollution are due to actions of a number of individuals or units, none of them alone responsible for or capable of preventing it;
4. An integrated waste-disposal and pollution-control system, backed by scientific, technological, and managerial know-how, and with adequate resources and authority, could provide an efficient and economical service;
5. Such a service should be cheaper than the proliferation of do-it-yourself schemes like those now operating, and, if charged to the units responsible for generating pollutants, should be less of a burden on industry and the community.

"It seems that SPCC alone has the expertise, management skills, and the strategic relationship with local and state planning authorities required to organise such a development. Also, the SPCC would have the support of the community and the co-operation of the firms, the unions and the other government instrumentalities including local government and the Water Board.

"Finally, it is apparent that disposal of pollutants, now entering Port Kembla or going directly into the ocean, cannot be considered in isolation.

"Surely, for our purposes, the harbour pollution is only one symptom of a bigger problem, and, unless we look at the whole pollutant disposal system of the industrial-residential complex, there is the danger of shifting problems from one part of the system to another."



Professor Ken Blakey

ACADEMIC SENATE

Professor L.M. Birt, Vice-Chancellor
Mr. J. Hazell, University Librarian

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Professor A.D. Brown, Biology
Professor B. Halpern, Chemistry
Professor C.A.M. Gray, Civil Engineering
Professor K.A. Blakey, Economics
Professor R. King, Education
Professor B.H. Smith, Electrical Engineering
Ms. D. Gillam, English
Professor R.B. Leal, European Languages
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(Deputy Chairman)
Professor P. Fisher, Physics
Professor A.M. Clarke, Psychology
Professor S.C. Hill, Sociology

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Assoc. Professor P.D. Bolton, Faculty of Science (Dept. of Chemistry)
Professor S.C. Hill, Faculty of Social Sciences (Dept. of Sociology)

ELECTED MEMBERS

Dr. P. Arnold, Engineering (Dept. of Mech. Engineering)
Dr. W. Mitchell, Humanities (Dept. of History)
Mr. P. Castle, Mathematics (Dept. of Maths.)
Dr. A.J. Wright, Science (Dept. of Geology)
Mr. A.J. Anderson, Social Sciences (Dept. of Accountancy)

STUDENT MEMBERS

Mr. G. Butler, Engineering
Ms. J.A.E. Symes, Humanities

CAMPUS NEWS

Published regularly throughout the academic year by the Information Office for The University of Wollongong, Northfields Avenue, Wollongong, N.S.W. 2500. Distributed to students and staff, and to local, regional, state and national individuals and organisations.

Campus News strives to provide objective coverage of matters of interest to the University community. Letters and submissions are welcome. Send to the Information Office, Admin. Building. Deadline next issue: Wednesday, July 20. Editorial matter may be reprinted freely; credit would be appreciated.

Janine Cullen Acting Editor
Beatrice Henderson . . Production Assistant



Mr. Jeff Hazell



Professor Barry Leal



Professor Peter Fisher

Staff changes

APPOINTMENTS

| | | | |
|--------------------|----------------------|-------------|---------|
| MISS L.A. FAHEY | Professional Officer | Education | 23/5/77 |
| MR. A. ABDIPRANOTO | Research Assistant | Chemistry | 23/5/77 |
| MRS. H. MAITLAND | Tutor | Psychology | 23/5/77 |
| MR. T. SMITH | Clerk | Finance | 11/5/77 |
| MR. R. HOGARTH | Clerk | Finance | 11/5/77 |
| MR. B. NGUYEN NGOC | Research Assistant | Mech. Eng. | 30/5/77 |
| MRS. B. RICKARD | Clerk | Finance | 30/5/77 |
| MISS L. MIDDLETON | Technical Officer | Metallurgy | 30/5/77 |
| MR. C. ALLPORT | Lab. Craftsman | Civil Eng. | 30/5/77 |
| MRS. V. MOON | Office Assistant | Library | 30/5/77 |
| DR. L.F. SMITH | Senior Lecturer | Physics | 14/6/77 |
| MR.T.S. NG | Lecturer | Elect. Eng. | 20/6/77 |

RESIGNATIONS

| | | | |
|------------------|--------------------|-------------|---------|
| DR.B.B. JONES | Lecturer | Elect. Eng. | 17/6/77 |
| MISS M. FINNEGAN | Library Assistant | Library | 10/6/77 |
| MISS C. WILSON | Library Assistant | Library | 30/6/77 |
| MISS K. STONE | Office Assistant | Library | 1/7/77 |
| MRS. A. SEERY | P/t Female Cleaner | Estate Div. | 8/6/77 |

SPORT

During the second week of the May recess, the University Table Tennis Club sent a two-man team to Perth to participate in the Intersvarsity Competition.

Five men's teams and three women's teams competed. The results for the University team were: Wollongong defeated Macquarie 6-5; lost to W.A. 1-10; lost to Murdoch 5-6; and lost to Monash 1-10.

The final placings were: W.A. 1; Monash 2; Murdoch 3; Wollongong 4; Macquarie 5.

Team captain, N.Q.Thoi, was ranked No. 5 out of six ranked players, based on performance during the entire competition, having lost four and won eight singles matches in the teams event.

Relatively, the team did rather well, considering having only two players, starting off any match by losing 4 rubbers on forfeit (3 singles, 1 doubles).

It was a very successful and well-organised I.V., lots of good table tennis as well as social activities.

The U.W.A. Table Tennis Club did a good job and they are to be congratulated.

Next table tennis I.V. is scheduled in Tasmania and if unsuccessful, the event will be held at Monash University.

So, all university players, get ready for the 1978 I.V.

Aust. rules popular

Uni. to host first intervarsity comp.



Australian Rules has become a major sport at the University, drawing many spectators each Sunday.

First Grade is running third and climbing strongly to the top of the ladder.

Reserve Grade has suffered recently at the expense of the successful First Grade and has fallen to fourth position.

Both teams have had internal conflicts over the indecision about the necessity for separate coaches. This has been resolved with Dave Woods' selection as Reserve Grade coach. Whether this choice will favour Reserve Grade, remains to be seen.

Individual players such as David ("Snake") Phillips and Peter Kala, both originally from Victoria, are turning in excellent performances. Thomas Thome, in the Reserves, is proving himself capable of a First Grade position as are many of the other Reserve Grade players.

The apathy that has plagued the Reserve team for the last month is becoming less apparent, and the team should again start to climb the ladder.

David Phillips, Peter Kala and Michael Khon were representatives in the Illawarra team which defeated Central Coast recently.

THIRDS LEAD THE WAY IN UNION

Wollongong University Rugby Union team is top of the third grade ladder in the Illawarra competition.

With only two games remaining in the first round, University is on twelve points, leading Technical College, Vikings and Teachers College.

In the seven games played to date the club has won all but one, which was against Technical College during the May recess.

Although University has not scored more than 11 points in any one game, the defence has proved quite sound, having conceded only one try in the seven games.

The scores in the last three games also indicate that the team has settled down to playing by the rules, as no points have been conceded in penalties.

Enthusiasm is at a high level compared to previous years, with seventeen to twenty players training every Wednesday night at 6.00 p.m.

For the first time in many years selectors are able to enforce a "no train, no play policy" when selecting the team.

There are now more than thirty registered players in the club, many of

whom are unable to train because of late lectures, and consequently are ineligible to play.

These players do, however, provide the team with the necessary depth to carry it over the holiday periods and their help is greatly appreciated.

These players do, however, provide us with the necessary depth to carry us over the holiday periods and their help is greatly appreciated.

The team is forming into a sound combination and the second round should see a considerable increase in the winning margins of its victories.

The club is confident of a good second round and the grand final trophy.

The club plays at the University Oval at 3.00 p.m. each alternate Saturday and is looking forward to continued and increased spectator support in the coming games. (Watch notice boards in Union for details.)

Brian Noone,

President, Rugby Union Club.

More than three hundred basketballers, representing fifteen Australian universities, later this year will play in the first Intersvarsity competition hosted by the University of Wollongong.

The Intersvarsity will be held at the Beat-on Park Basketball Stadium and the Institute of Education each day between 9 a.m. and 6 p.m. from August 29 to September 2.

Thirty teams, including a men's and a women's team from each university, will play two games a day for four days with the final held on the last day.

Three of Australia's top referees, Greg Love, of Adelaide, and Bob Hart and Syd Taylor, both of Sydney, will referee, as well as top local referees, including University Basketball Club secretary, Graham Morris.

University men's A grade captain-coach Hugh Brandon, said that his team would have a good chance this year of winning an Intersvarsity.

BASKETBALL

The team likely to represent Wollongong in the Intersvarsity will be: Hugh Brandon, Wally Hammonds, Bruce Andrews, Dross Mangos, Peter Hickey, Nigel Watler, John Mazzieri, Steve Lambert, Steve Napoleoni and Murray Robinson.

Hammonds and Andrews are members of the Illawarra Hawks, and Hammonds is the fifth top scorer in the men's A grade competition. Brandon is an ex-State and Illawarra representative.

University is currently running second in the men's A grade competition.

The women's team, which came sixth last year, will be captained by Chris Jones.

Organisers of the Intersvarsity are Graham Morris and Hugh Brandon. Graham Morris said he hoped the public would come along to the games, especially to the grand final.

He said that social activities were being organised for each night with a formal presentation dinner dance in the University Union Hall on September 2.

WOODEN SPOON

The University hockey team were the "wooden spooners" at the recent men's hockey Intersvarsity at La Trobe University, Melbourne.

The team did not win a match during the week but, to the team's credit, the largest margin of loss was 4-1 against A.N.U.

Other scores were 2-1 against Western Australia; 1-0 Melbourne, 2-0 Adelaide, 2-1 Monash and 2-2 draw against Newcastle.

Top players included Glynn Pulling, Allen Went, Brian Schofield, Peter Beaumont and John Chapman.