



THE UNIVERSITY OF WOLLONGONG GAZETTE

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Autumn 1984

Summer Session a great success

THE 1984 Summer Session proved an outstanding success, with over 600 participants taking credit and non-credit courses. As happened in the 1983 sessions, the majority of those taking part were students already enrolled at the University seizing the opportunity to complete extra subjects toward their degrees. Indeed, many students who were one or two subjects short of completing requirements for their degrees enrolled in the Summer Session and will now be graduating at the 1984 Graduation Ceremonies.

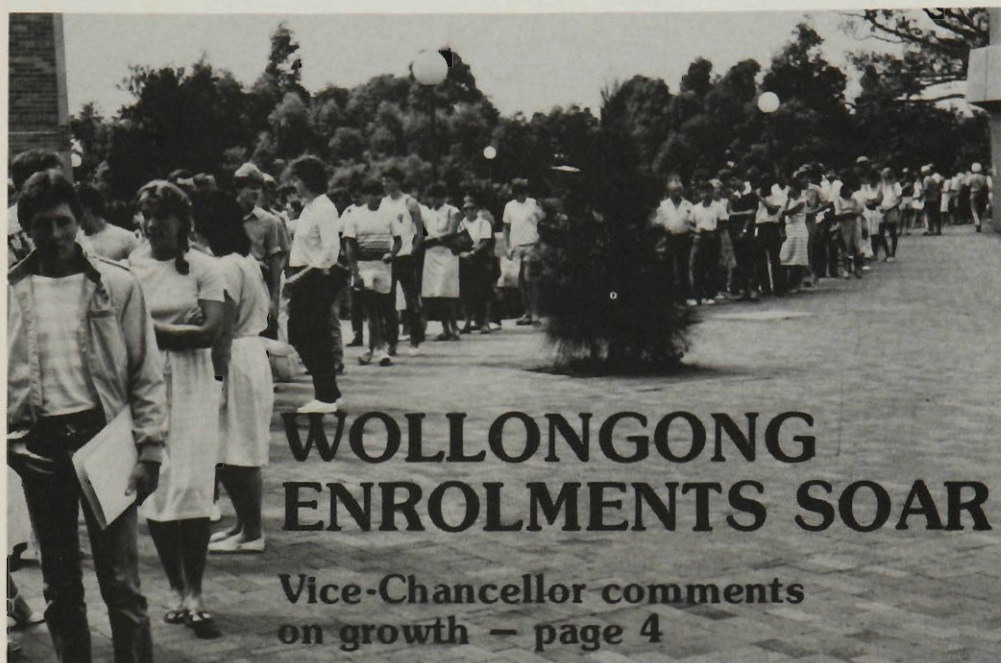
Fifty-five of those enrolled in the credit subjects were people who had not previously enrolled at The University of Wollongong, and a further 234, mostly people not previously enrolled at the University, were enrolled in the non-credit courses.

It is thus obvious that the Summer Session is fulfilling its two major aims of providing students already at the University with the opportunity to undertake extra subjects towards their degrees; and to open the campus and to allow people who might not otherwise do so the opportunity to undertake university-level and other subjects.

It is also obvious that the Summer Session is becoming more widely known. Witness, for example, the fact that, even though the advertising did not start until two weeks after the corresponding period for the 1983 session, the number of applications increased by over 20 per cent; even before the advertising began, the University had had many inquiries.

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A scene during enrolment at Wollongong University, as hopeful applicants queue ahead of doors-opening time. Below are typical scenes once students-to-be were inside — and being 'processed' by toiling University staff



Seventeen credit subjects were offered. One of the most popular was 'Australian Studies: Wollongong 1834-1984, One Hundred and Fifty Years of Development' — a course specifically introduced for the Summer Session and most appropriate since this year is the 150th anniversary of Wollongong. Another subject to generate a great deal of interest was the 200-level subject 'Computers in Society' which trace the development, role and implications of computers in contemporary and future society.

Six non-credit subjects were offered. One, the Fifth South Coast Summer School in Computing, was run for the first time as part of the Summer Session. A separate report appears elsewhere in this issue.

What of the future? There is little doubt that there will be a great demand for Summer Sessions and that they will attract enough students to make running them worth while. One area, however, that needs to be further explored is the need for more bridging-type courses and/or univer-

Please turn to page 2



Participants and some of the staff members at the 5th South Coast Summer School

Summer School on Computing Two different but two perfect results after five hours' work

THE Fifth South Coast Summer School on Computing, held at the University from December 7 to December 14, produced an unusual tied result in a programming contest. Participants were specially selected talented Year 11 High School students. A few younger students of exceptional ability were also admitted.

The morning of each day was taken up by lectures on the science of programming and laboratory exercises on computer terminals. Instruction was at three levels: beginner programmers (19 participants); advanced programmers (40 participants) and master class (34 participants).

The master class included two students selected and funded by the National Computer Board of Singapore, three selected by the Computer Education Group of Queensland and two selected by the Computer Education Group of South Australia. Peter Liu, winner of the nationwide Gestetner Computer Whiz Kids Competition, was among those taking part.

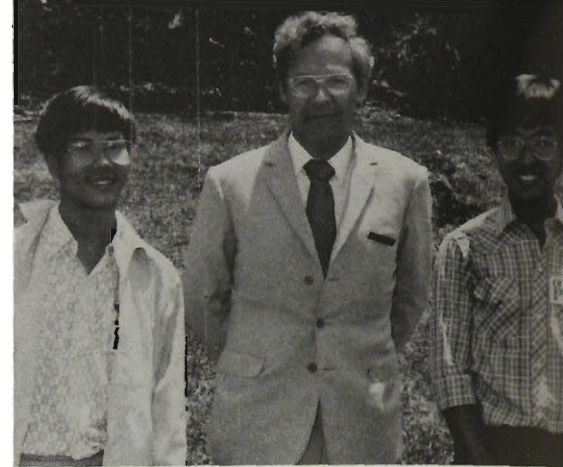
A programming contest along the lines of the American National Scholastic Programming Contest was held on Tuesday, December 13. Master class participants had to solve the Dutch National Flag Problem — made famous by the writings of Dijkstra and Gries.

After five hours of work of problem

solving, programming, program testing on the computer and debugging two students submitted two different, but equally perfect, solutions within one minute of each other. The students were Chih Chao Lam, Hwa Chong Junior College, Singapore, and Timothy Withers, Brisbane Grammar School.

Unable to separate the two entries, the competition judges declared two equal first-place winners. With only one major prize, a coin was tossed. Mr Lam called heads. It came up tails and Mr Withers won the Apple microcomputer system (donated by Apple Computer Australia Pty Ltd). Mr Lam obtained the consolation prize — a Microbee computer (donated by Applied Technology Pty Ltd).

Afternoons were taken up by specialist interest groups on microcomputers, graphics applications and computer-aided learning. Competitions were held to design the cover of next year's summer school proceedings and a Department of Computing Science Christmas Card. The laboratory component of the master class contained the development of a simple



Singapore participants Mr Chih Chao Lam (one of the perfect-score contestants) and Mr Eng Leok Chng with Professor Juris Reinfelds

'expert system' under the direction of Dr N. A. B. Gray.

In the evening a forum was held on the Fifth Generation Syndrome. Panelists were Prof Y. Wilks, University of Essex, Prof J. Bennett A.O., University of Sydney, and Dr J. Debenham NSWIT. A 'Towards 1990' night brought together some up-to-date personal workstation computers. Firms participating were; Computer Shop with Aple Lisa; IBM with the IBM PC; Progeni with Poly; Perkin Elmer with their 7500 Model workstation; NEC with their portable computer; ICL with a PERQ; and NCR with their personal computer system.

Financial support for the school came from the University of Wollongong, the Australian Computer Society, Perkin Elmer Australia Ltd, Computer Education Group NSW and others who sponsored interstate and overseas participants as well as from students and staff of the Department of Computing Science of The University of Wollongong who donated a lot of time and effort to make the fifth SCSSC a success.

*Juris Reinfelds,
Professor of Computing Science*

STUDY OF OLD AGE

Associate Professor Linda L. Viney has received a grant for 1984 of \$42,148 from the Commonwealth Department of Health to study the maintenance of independence in old age.

The new project will involve the development and evaluation of family and individual therapy programmes for the elderly.

Summer School success ... from page 1

sity preparation courses. From inquiries received, before the session, it is obvious that many people, mature-age people as well as school-leavers, are looking for some sort of briefing or refresher course before actually beginning studies. Two such courses were offered this year 'Bridging Course in Chemistry' (two-week course) and 'Reading and Writing at University' (one-week course) and each attracted 45-50 students. There is an obvious demand for more of these courses, particularly in subject areas offered at the University which are not covered in schools (e.g.,

Philosophy and Psychology) and for courses in Mathematics and Physics.

There is also demand for a wider range of credit subjects to be offered to allow students a wider choice of subjects that are more appropriate to the particular degrees they are undertaking. Where departments are not in a position to be able to offer subjects usually, the staff available in the Department, lecturers from other tertiary institutions have been used for some of the subjects offered this year.

*Peter Wood,
Summer Session Organiser*

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Screening – No longer the cinderella of size separation methods

THE SEPARATION of fine from course particles by sieving and screening is probably the oldest and most widely used size-separation method. It is also a very simple method. Just take a sieve, place on it the materials to be sieved and shake. There is no thinking required and the result is always guaranteed — the fines pass through the screen and the course particles don't.

This great simplicity of the process at a time when the energy costs were low, was an operation hardly worth thinking about let alone requiring scientific investigation. Moreover, industrial screening has never been a glamorous or headline-consuming operation. Who, for example, has ever heard of screening contests?

In short, until recently, screening has been the Cinderella of size separation methods. It did all the hard work and received little consideration.

However, with the cost of energy becoming more and more of an important consideration generally, the efficiencies of screening operations are now being re-examined.

As may be expected, screen manufacturers are re-examining traditional screen designs and the result has been an introduction to the market of some weird looking screens with appropriately catchy names. By way of an example, Flip-Flow Screens are like perforated trampolines, Ro-Pro Screens are essentially bicycle wheels and, of course, the Japanese Kinki screens are not unlike perforated washing machines.

The research being carried out at The University of Wollongong by Associate Professor Nick Standish in the Department of Metallurgy, considers the traditional simple screens and the factors governing their efficiency. He started from elemen-



Professor Nick Standish

tary consideration that, for a given production, the longer the screening time the greater the energy consumed — and, conversely, the shorter time the less the energy required.

In short, the research deals with the kinetics of screening or, in other words, what variables influence screening rates and why.

One of the first things that had to be done was to characterise definitively the so-called near-mesh particles because the literature on what constitutes this material was very confusing to say the least. An example of one of our results plotted on a Wollongong diagram is shown in fig 1. This diagram shows that the near-mesh particles, i.e., those that take a very long time to pass through the screen, were, in our study, the 1.56 mm particles. Many other important results, some hitherto unexpected, have also emerged.

One of the simpler results of the studies so far is that by adding a handful of oversize particles the reduction of the screening time of the near-mesh particles is phenomenal. Figure 2 for example shows how the sieving time of 200 seconds has been reduced to approximately 4 seconds (a 50-fold decrease!) simply by adding a handful of larger particles. The reason for this phenomenon can be seen from the sequence of high speed movie frames (fig. 3) as being caused by the large particles nudging the near-mesh particles through the screen opening.

It is hoped that many more valuable results will come from this study when the necessary funds become available to continue it.

Finally, it is very important to note that these results and their publication internationally have been possible only by the recognition by The University of Wollongong that this hitherto apparently idle scientific pursuit should receive a grant of \$11,000 to see if there is something in it.

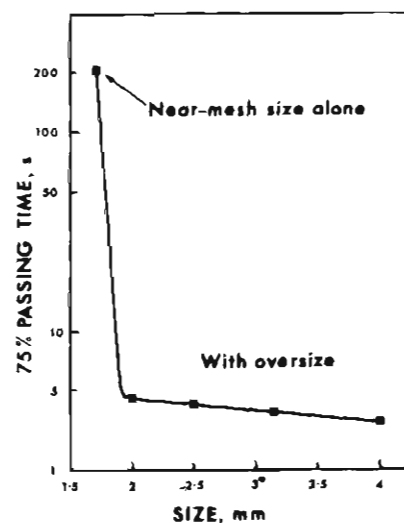


Figure 2

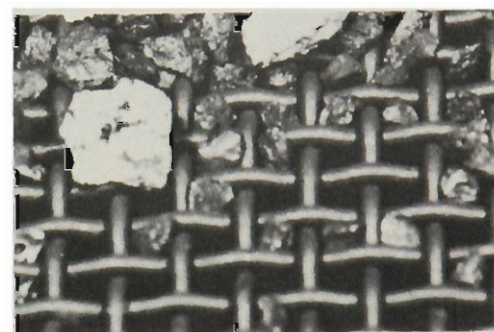


Figure 3(a)

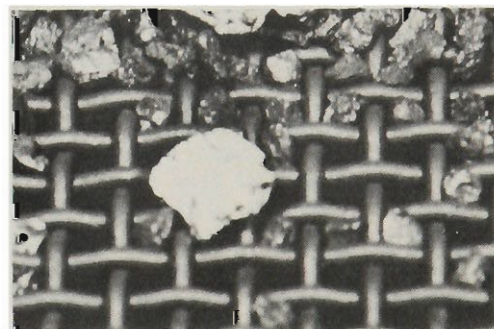


Figure 3(b)

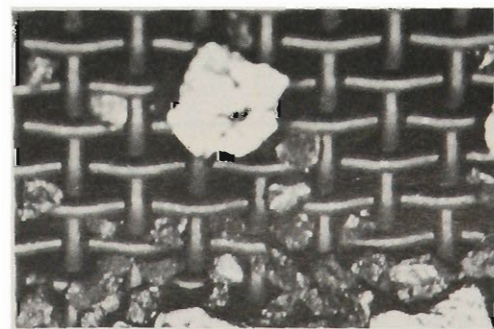
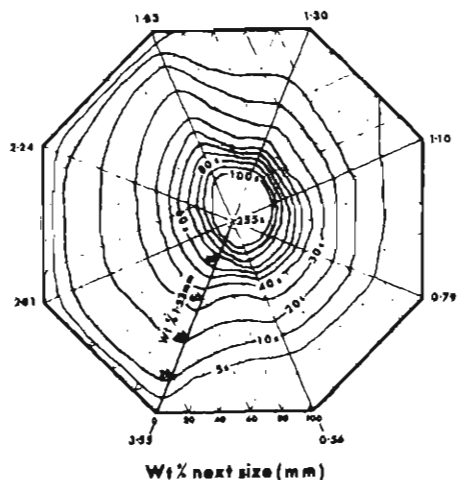


Figure 3(c)



The fact that there is, and that screening is something that should now be considered seriously, will be discussed in Wollongong next August at the first-ever Symposium on Screening, being organised by the Illawarra Branch of the Australasian Institute of Mining and Metallurgy.



Growth of the University

by the Vice-Chancellor

THE University of Wollongong will continue growing strongly in a number of ways during 1984. In evidence of our increasing popularity, over 10,000 applicants expressed a preference for a course at Wollongong this year — nearly double any previous year.

Some of the increase may have occurred because we joined the Universities and Colleges Admissions Centre, making the name of the University known to more students across the state. Some has occurred because of a general increase in applications for enrolment in higher education. Undoubtedly, however, a great deal of the increase comes from the University's strengthening reputation.

We were unable to take all the applicants but we have enrolled approximately 1,700 new students in the Faculties Sector and 800 in the Institute Sector — fewer than 24 per cent of the applications.

Overall our expectation was that when postgraduate enrolments closed the total number of students enrolled would be just over 5,500, representing in equivalent full-time students a student load of about 4,300. These figures represent an increase of 15 per cent in student numbers and 13 per cent in student load over the 1983 figures. Enrolments at the University — quite apart from the effect of amalgamation with the former Wollongong Institute of Education — have increased by 40 per cent in the past three years.

We have been able to accept increased enrolments in part because of a special supplementary grant for an extra 200 students made by the Federal Government in December. This was specifically to enable us to increase the enrolments of disadvantaged students, including

students from the south-western suburbs of Sydney. We will be well over the student-load estimated for the triennium, even after taking into account the additional grant. The Commonwealth Tertiary Education Commission, however, has promised that the strong enrolment picture at the University will be taken into account in deciding grants for the triennium 1985-87.

One especially pleasing feature has been the much stronger demand for humanities courses. The very strong demand for Engineering, Commerce and other similar vocationally oriented courses in previous years built up an imbalance in enrolments in those areas. The enrolment pattern for 1984 will show a more balanced picture.

The heavy demand has led to a marked increase in the cut-off scores at the HSC for students coming directly from school. In order to keep numbers down to manageable levels, in most faculties the aggregate cut-off score has had to be increased by an average of 40 points. For example, our second round offers to Arts candidates had a cut-off level of 270 points in the HSC aggregate.

The other side of that healthy increase in the standards of entering students is the increased difficulty for Illawarra students in obtaining admission to the University. In the past, fewer Illawarra students have aspired to tertiary studies than in many other parts of the state. The growing popularity of the University will make access more difficult for those who do have these aspirations. Accordingly, the University during 1984 will be examining ways through which more Illawarra students may be admitted.

There will be more students about, including a greater sprinkling from overseas, making the campus a more lively place. The continuing swing to full-time tertiary education has meant that 66 per cent of undergraduates will be full-time in 1984, compared with 47 per cent in 1982.

During the year a start will be made on the new \$6.5m Science/Engineering building, which will take about 18 months to complete, but will begin to transform the look of the campus by the end of the year.

We are also moving with our own funds and a sizeable bank loan to build additional self-contained student accommodation. Construction of accommodation units for 50 students begins in April.

Other developments have been the association of the Conservatorium with the University, recently announced by Premier Wran. Recently, too, there has been a strong development of micro-computer laboratories in the school of Industrial and Administrative Studies at the Institute. The University has been asked by the State Government to report on ways in which it can assist in technology development in the region — with a strong possibility of early action. Elsewhere in the University other important developments are taking shape.

In academic government too there have been advances. The Faculty structure has been reorganised to combine the Academic Senate and the Academic Board into one Academic Senate. The Education Department and the School of Education have been formed into one Faculty of Education. We will be considering other aspects of emerging needs during 1984.

All these developments point to a vigorous, healthy situation. We have something of an embarrassment of plenty but are enjoying the challenge of transforming from a small to a medium-size University. I hope graduates have opportunities during 1984 to return to the campus to share in some small way in this exciting stage of the University's development.

Ken McKinnon

For your diary

There will be six Graduation Ceremonies, this year, all in the University Union Hall.

Dates are:

10.30 am, Wednesday, May 2: Engineering, Mathematical Sciences and Metallurgy.

2.30 pm, Wednesday, May 2: Commerce and Science.

10.30 am, Thursday, May 3: Arts.

2.30 pm, Thursday, May 3: Arts and Education.

10.30 am, Friday, May 4: Education (all Institute courses by internal study).

2.30 pm, Friday, May 4: Education (all Institute courses by external study) and Creative Arts.

Associate Diploma in Creative Arts.

Major new building

APPROVAL has been given for the construction of a major new building at The University of Wollongong. The new facility will be known as the Engineering/Science Building. Estimated cost in \$6.5 million.

The Engineering/Science Building will be located adjacent to, and on the eastern side of, the Austin Keane Building. It will provide laboratories ancillary facilities and office accommodation. There will be two wings each of two storeys. Gross floor area will be approximately 5,000 sq. m.

The northern wing will house the Department of Electrical and Computer Engineer-

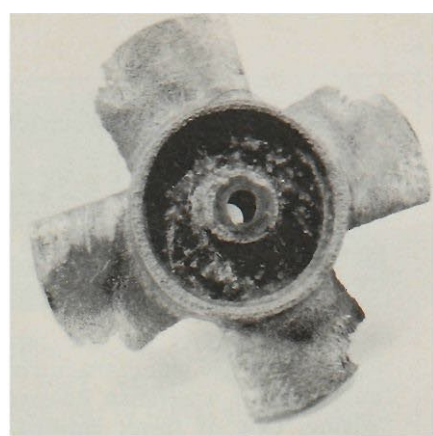
ing. Area of each wing will be around 2,500 sq. m. The Vice-Chancellor comments above.

A first in Australia

The volume *Italian Writers in Australia — Essays and Texts*, 329 pp. edited by Gaetano Rando, University of Wollongong, and sponsored by the Wollongong Chapter of the Dante is now available. The volume includes an introductory essay on a socio-historical survey of Italian writers in Australia, a study of selected poets, a critique of Australian society, works by Italo-Australian poets (from the 1981 Seminar) and the proceedings of the 1982 National seminar on Italo-Australian Narrative and Drama Writers. Contact Mr Rando at the University for copies: the price is \$12 each.



Dr D. C. Gibson, Chief of the CSIRO Division of Energy Technology, and Professor Blake discuss theoretical aspects of cavitation



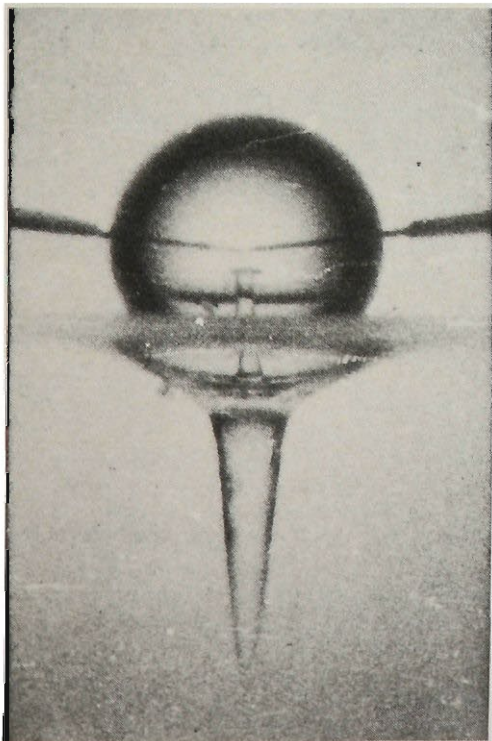
Cavitation damage to a pump impeller blade

University theoreticians study cavitation damage to hydraulic machinery

A PROBLEM commonplace in high-speed hydraulic equipment such as ships' propellers, turbines and pump impeller blades is known as cavitation — a term used to describe the formation and collapse of vapour bubbles (or cavities) in liquids. These bubbles, which are formed as a result of a local lowering of the pressure in the liquid, can be responsible for just the sort of damage illustrated above right.

The problem has been around for a very long time, and has resulted in ships becoming disabled, and machinery plants

Collapse of a cavitation bubble near a free surface. The opposing liquid jets are clearly visible



having to be shut down. It is now the subject of a research study by Professor John Blake of the Department of Mathematics, working closely with Dr Don Gibson of the CSIRO Division of Energy Technology. Also involved are Dr G. Doherty, Dr R. Paull, Mr P. Castle and Mr Bachok Taib, also of the Department of Mathematics. Funding for the research has come from ARGs, University of Wollongong, CSIRO and through the Illawarra Credit Union to undergraduate prize winners.

Main objectives of the research are to gain a better understanding of the potential mechanism causing cavitation damage. For although the phenomenon became apparent as long ago as the late 19th century with the arrival of fast, propeller-driven steam boats, Leonard Euler had postulated the possible existence of vapour bubbles in a fast-moving liquid over a century earlier.

The famous fluid dynamicist Osborne Reynolds was the first to observe and report on the existence of cavitation bubbles — also in the late 19th century. During the early 1900s cavitation damage

to ship propellers reached such a magnitude that the British Admiralty instituted a special commission of investigation.

The University research is looking primarily at an earlier theory (propounded by the brilliant Lord Rayleigh) to take account of the asymmetric collapse of bubbles near flexible boundaries.

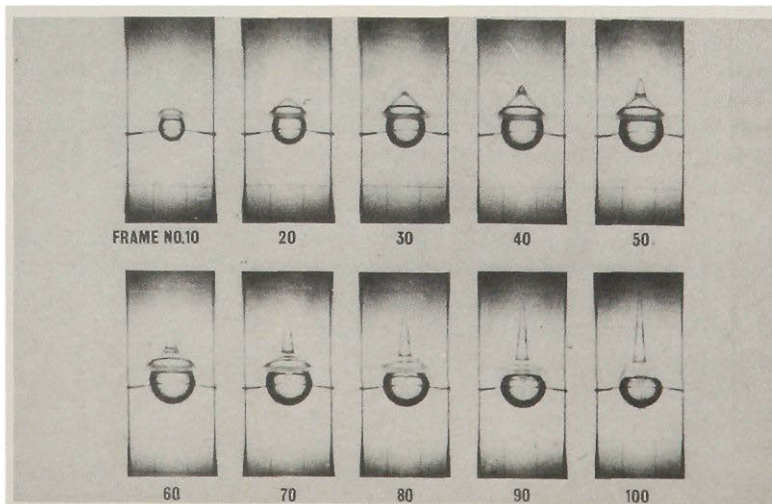
Contrary to the ideas of Lord Rayleigh, it is now thought that the primary damage mechanism is due to a very-high-speed liquid jet, formed during bubble collapse, which may impact against solid boundaries such as propeller and turbine blades and their surrounds.

Recent research has shown that the direction and speed of the jet depends on the properties of the boundary: for example, a rigid boundary 'attracts' bubbles with the jet directed towards the boundary, whereas a free surface 'repels' bubbles with the resulting jet directed away from the free surface.

Figure 2 shows the growth and collapse of a vapour bubble near a free surface. This picture, by Don Gibson, has formed the basis of an extensive study by Professor Michael Longuet-Higgins, a Royal Society Research Professor at Cambridge, and which also appears in the recently published *Album of Fluid Mechanics*, produced by Professor Milton Van Dyke of Stanford University. Of particular interest is the formation of two fine sharp jets: one on the free surface, the other in the bubble.

The University study seeks to determine the parameter space for the physical properties of the compliant surface which will just repel collapsing cavitation bubbles and hence reducing, or even eliminating, cavitation damage to hydraulic machinery.

Pictures of the growth and collapse of a cavitation bubble near a free surface. They were taken with a high-speed camera operating at 11,000 frames per second. Frame numbers as indicated



There is no shortage of questions! Competition among plants for pollination

SEVERAL studies on the reproductive ecology of native plants are currently being funded by the Australian Research Grants Scheme. One of these, entitled 'Competition among Plants for Pollination', is being conducted by Dr Robert Whelan assisted by Ross Goldingay (Research Assistant) and Brian Copland (M.Sc. student). The aim of this study is to examine whether competition between plants for the services of pollinators reduces the reproductive success of the plants.

Many plants that flower simultaneously share the same pollinators. For example, honeyeaters in native gardens will visit *Banksias*, *Grevilleas* and *Bottlebrushes* one after the other. Competition between groups of plants may take two forms:

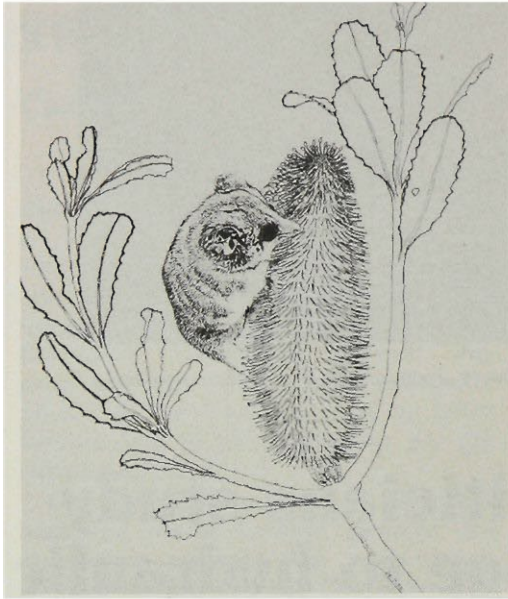
- i. one plant species may be more attractive (i.e. produce more nectar) than another, thereby cornering more than its share of the pollinators.
- ii. by being catholic in their choice of flowers, the pollinators may 'mix-up' the pollen from different plant species, thereby wasting most of their visits to flowers.

How much of this competition occurs in nature? How do plants that flower simultaneously avoid suffering reduced seed production from competition? These are two questions currently under investigation. As the study has just started, there are few answers as yet. There are, however, some interesting techniques and preliminary findings.

How much pollen gets transferred to the 'wrong' plant species? The small size of pollen grains makes this difficult to measure. However, a fluorescent powder, which is applied to the pollen, can be seen easily with an ultraviolet light after dark. The powder is applied to a source plant at dawn and, after the honeyeaters have been pollinating during the day, neighbouring plants of all species are checked just after dark with a portable U-V light. In this way it is easy to determine how many plants of the 'right' and 'wrong' species the source plant has donated pollen to.

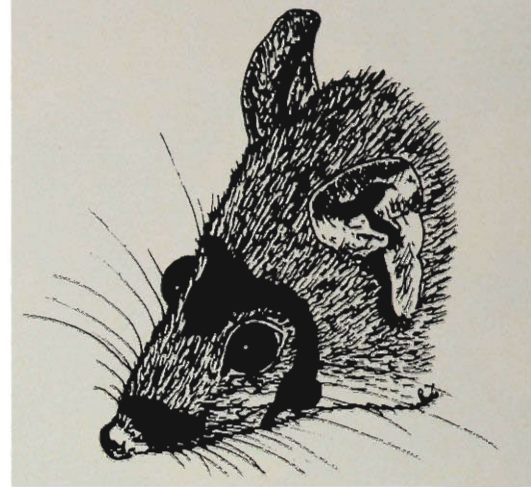
How do simultaneously-flowering plant species avoid competition? There are several possibilities. First, they may attract their own set of pollinators and encourage them to remain constant. Secondly, they may attract pollinators at a time of day when no other plants are producing nectar. Thirdly, pollen may be placed on a precise area of the pollinator, ensuring a minimum of mix up even if the pollinator visits other species of plants before reaching a second individual of the source species.

The fluorescent dyes are assisting in answering this question too. *Banksia spinulosa* (hairpin banksia), *Banksia ericifolia* (heath-leaved banksia), *Banksia serrata* (old man banksia) and *Banksia paludosa*



Drawing by Ross Goldingay of a tiny Pygmy Possum drinking nectar from a swamp banksia inflorescence. Pollen from the hundreds of flowers will rub off on the possum's fur and be transported to the next inflorescence the animal visits

(swamp banksia) are common inhabitants of Barren Grounds Nature Reserve, overlooking Jamberoo. Birds are thought to pollinate most *Banksia* species and all but *B. serrata* flower through the winter. By applying fluorescent powder to source plants of *Banksia paludosa* at dusk and checking for dye movement just before dawn, it has been established that most pollination is done by mammals — overnight, thereby avoiding mixing of pollen with bird-pollinated plants. This finding has been confirmed by the mammals them-



The head of an *Antechinus* (marsupial mouse) showing the places in which dyed pollen was found. *Banksia spinulosa* pollen shows up around the eyes and under the chin while *Banksia paludosa* pollen is deposited just at the tip of the nose — clearly avoiding any mix-up of pollen

selves, breaking into fibreglass-netting bags which had been constructed to prevent pollination of some flowers. Faecal pellets in the bags put the blame on the marsupial mouse (*Antechinus stuartii*) and pygmy possums have also been caught in the area.

Antechinus has also been trapped in the foliage of both *B. ericifolia* and *B. spinulosa*. It seems that mammals do more pollinating than has been thought! What about the mix-up of pollen on a marsupial mouse? The *B. paludosa* and *B. spinulosa* flowers have different structures — the latter has a long, hooked style. Using fluorescent dyes of different colours, we have demonstrated that this difference in flower size and shape results in different sites of pollen deposition on an *Antechinus*.

Thus these two *Banksias* avoid mixing up their pollen — but what of *B. ericifolia* which has a flower structure nearly identical with *B. spinulosa*?

There is no shortage of questions!

Friends 1984 programme

April 8-15: Heritage Week. Co-ordinators — Winifred Mitchell and Ben Meek.

April 8: Lunch-time fundraising function at the Fraternity Bowling Club for the History of the Italian People of Illawarra Project. Co-ordinator — Giles Pickford.

May 1: Annual General Meeting of the Friends, followed by the Graduation Eve Champagne reception for the Graduands. Co-ordinator — Giles Pickford.

May 2-4: Graduation Ceremonies.

June 24: High schools Chess Tournament sponsored by the Commonwealth Bank. Co-ordinator — John Tong.

June 30: Friends Festival of Choirs — the major contribution by the Friends to the 150th Anniversary of Wollongong. Co-ordinators — David Vance and Giles Pickford.

August 10: University Day Address followed by the Graduates Reunion Dinner. Co-ordinators — Giles Pickford and Ald. Keith Phipps.

August 20-23: International Scientific

Conference on High Strength Low Alloy Steel at The Northbeach International — the major contribution by the University to the 150th Anniversary of Wollongong. Co-ordinator — Tara Chandra.

August 25: Festival of Wollongong — Wollongong Open Chess Championship and the Simultaneous Chess Exhibition sponsored by the Friends. Co-ordinator — John Tong.

September 1: Festival of Wollongong — Festival Philosophy Lecture sponsored by the Department of Philosophy. Co-ordinator — Department of Philosophy.

September 22: Grand Final of the Friends Debating Competition sponsored by National Australia Bank Travel and the Illawarra Mercury. Co-ordinator — Joseli Munive.

October 20-21: University Open Day, 2WL 80's Lifestyle Expo, Town v Gown Cricket Match (Sunday), Town v Gown debate (Saturday) and Friends Book Fair. Co-ordinator — Giles Pickford.

December 7: Doreen's Party. Co-ordinator — Giles Pickford.



Equal Employment Opportunity Project

Equal Employment Opportunities Co-ordinator, Elizabeth Johnstone

SUBSEQUENT to the Vice-Chancellor's statement, 'Equality of Opportunity', in *The University of Wollongong Gazette* for Spring 1983, the University appointed an Equal Employment Opportunity Co-ordinator, Elizabeth Johnstone. Ms Johnstone took up duty in November.

Universities and colleges of advanced education have now been scheduled under Part IXA of the New South Wales Anti-Discrimination Act. They must now submit Equal Employment Opportunity (E.E.O.) Management Plans to the Director of Equal Opportunity in Public Employment (D.E.O.P.E.) by 1 June 1985.

An equal-employment opportunity management plan is a plan of action that details and co-ordinates affirmative action programmes in the areas of recruitment, selection, training and staff development, promotion, transfer, appeals and conditions of employment.

The plan is based on research including a statistical base and a review of all personnel policies and practices and conditions of service, and comprises a set of equal-employment opportunity objectives and strategies. The objectives and strategies of a management plan are designed:

- a) to eliminate and ensure the absence of discrimination in employment on the grounds of race, sex or marital status, and
- b) to promote equal employment opportunity for women and members of racial minorities.

During April it is anticipated that all University staff will be asked to complete two questionnaires — one demographic and one attitudinal. The surveys will be voluntary and confidential. Questionnaires are intended to establish a demographic profile of the members of staff: sex, racial and ethnic origin, age, qualifications, length of service and so on.

In addition, information about staff members' work experiences, including access to training, to useful administrative experience, to promotion, and to research opportunities will be sought. There will also be questions about staff members' experiences and assessment of procedures in The University of Wollongong, including possible existences of discrimination or harassment.

The members of the University's Affirmative Action Working Party (comprising representatives of the academic and general staff, staff associations and unions) will be fully involved in the drafting of the survey.

The Review of Personnel Practices and Conditions of Service is the second basic area of research. The purpose of the review is to identify policies, practices and conditions of service which are discriminatory and which prevent equal employment opportunity. The review is being carried out through observation of University procedures, including selection committees, through staff consultations, and an examination of existing documents and records. In addition, staff members will have an opportunity to comment on personnel practices and conditions of service within the questionnaires.

ROAD FREIGHT

The hidden subsidies and other factors examined

JUST over ten years ago, the NSW Government effectively deregulated all land freight movement within the state by the removal of 'co-ordination' charges. This was hailed at the time by Premier Sir Robert Askin as 'development of a more economic transport system . . . which will ultimately benefit all members of the community.'

Has it? Not so, according to an article 'Road Freight — the Hidden Costs' published in the December 1983 issue of *Current Affairs Bulletin* and a paper presented that month to the Fifth Conference of Australian Institutes of Transport Research at Brisbane by Philip Laird of the University of Wollongong, Department of Mathematics. His observations include

— MORE TRUCKS. Measured on a tonne-kilometre basis, the NSW Road freight task has doubled from 1971 to 1982 while the rail freight increase over those 11 years was only 17 per cent.

— ROAD SAFETY. Although articulated trucks form about 0.6 per cent of all NSW vehicles, they were involved in 119 fatal

crashes during 1982 with the overall road toll of 1,115. With heavy rigid trucks as well, the involvement of big trucks in fatal road crashes has increased to about 20 per cent.

— LAW AND ORDER. Problems as exemplified by Razor Back Mountain in 1979 continue. For example, overloading has increased since then and in 1981-82, over 8,100 heavy vehicles were reported as overloaded in NSW.

— ROAD FREIGHT DEFICITS being the difference between the costs of trucks on roads (using methodology used by the McDonell Commission of Enquiry into the NSW Road Freight Industry) and direct revenues to the NSW Government for road works from truck operators are estimated for NSW as about \$250 million for 1978-79 and \$400 million (preliminary) for 1981-82.

These figures far exceed the published NSW rail freight deficits. Currently heavy road freight has a hidden subsidy of about two cents per tonne-kilometre — double that of rail in NSW. Improved cost recovery from the commercial road freight

industry is seen as one way of reducing rail deficits.

These hidden subsidies are one reason why so much export coal goes by road to Port Kembla with its adverse environmental and social impact. Attempts by the state government to regulate these coal movements, along with container movements near Port Botany, have met with very firm opposition and are yet to succeed.

Meanwhile, a National Road Freight Industry Inquiry is now under way. Along with severe problems facing the road-freight industry, the inquiry will consider some of the above issues. For as Federal Transport Minister, Peter Morris, recently observed: 'It is clear from the high level of bankruptcies in the industry and billion dollar deficits in the railways that something is dramatically wrong'.

Publication dates

It has been decided to increase the frequency of the Gazette. The next issue will therefore appear on May 23. It will be followed by issues on July 23, September 23 and November 23. It is proposed that there will be six issues in 1985.



Librarian John Howard Petrie

NEW academic staff seem to have been covering on Wollongong University in droves during past weeks. Among them is our Librarian, **Mr John Howard Petrie**, previously Librarian at Strathclyde University in the heart of Glasgow.

Strathclyde is not, strictly speaking, one of the 'new' universities which sprang up in Britain after World War II. It was founded as long ago as 1796, as Anderson's College, named after its benefactor, a professor of Civil Engineering, who left a legacy in his will setting up a college to concentrate primarily on science in industry. Changes took place in the 19th century when Andersons became a College of Science and Technology, and then a Royal College of Science and Technology, awarding Glasgow University degrees. Then during the 1960s Strathclyde was given its charter and became, in effect, the first of the new breed of universities. At that time it was producing ten per cent of all UK engineers. Today it has some 10,000 students — about 6,500 full time.

But library work at Strathclyde, calling for librarian and retrieval systems knowledge, was not Howard Petrie's only activity. Together with Dr Georges Anderla, he prepared a report on the state of the information market, the industry and its future for the Organisation for Economic and Cultural Development — the OECD.



Above: Herbert Flugelman's *Spiral and Wave* sculpture, a landmark of note, seen at the front of the Wollongong Art Gallery

Left: Out of retirement and a distinguished computer scientist from Canada — Professor John E. L. Peck

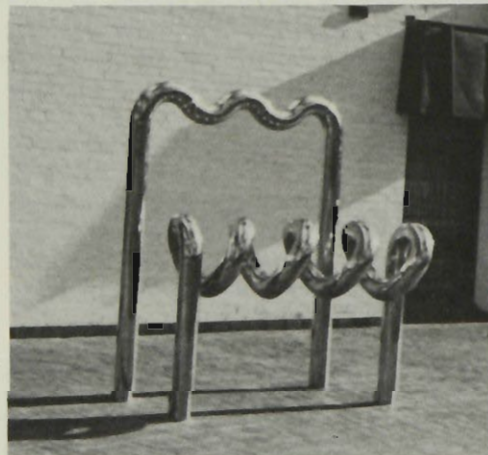
A welcome to new staff

ANOTHER new (albeit temporary) member of the academic staff to have travelled a long way to Wollongong is **Professor John E. L. Peck**. For the past 15 years he has been Professor of Computer Science at the University of British Columbia. He is in fact a South African, from Pietermaritzburg — and so is well equipped to accept with some sense of philosophical resignation our particular breed of cockroaches and other forms of insect nuisance.

Professor Peck studied for his doctorate (in Pure Mathematics) at Yale, where he met his wife, a Canadian and an artist.

Now retired (in a sense) Professor Peck has behind him a distinguished career in Computer Science. He is perhaps best known for his contributions to the development of the programming language ALGOL68 in the late 1960s. His more recent interests have been software tools, portable programmes and microcomputer systems.

ONE of the most distinguished sculptors in Australia, **Herbert Flugelman** took up an appointment as Lecturer in the School of Creative Arts on February 1. 'Bert' Flugelman has a reputation not only as a sculptor but as a fine teacher. He has previously taught at the University of NSW, University of Sydney, National Art School and left the position of Head of School, School of Art, South Australian College of Advanced Education, to come to Wollongong.



Welcome newcomer to the School of Creative Arts — Richard W. Hook

Bert Flugelman is also, of course, known in Wollongong as the creator of the sculpture, *Spiral and Wave*, in front of the Art Gallery, and in Sydney for his *Pyramid and Tower* — a vertical column of tetrahedra — in Martin Place. His work is also to be seen in Kurnell, NSW, and Adelaide, and is in fact represented in the state galleries as well as in the National Gallery of Australia.

Setting up a new university department is a task Bert Flugelman is tackling with considerable resource and energy. He has been calling on manufacturing concerns in the area, turning to industry for donations of disused or even obsolete machinery — sheet-metal guillotines, rollers for sheet metal, a folder, welding equipment, a small fork-lift and so on. All donations will be warmly welcomed.

AND yet another newcomer to the teaching staff in the expanding School of Creative Arts is **Richard W. Hook**, who will be lecturing on print making, and probably painting and drawing. Richard Hook, when we met him, was preparing for an exhibiton of his work to be held at Newcastle, NSW. The painting he is seen working on above is based on *Port Tower* at Newcastle and in the background is a work depicting two silos. As well as paintings, the Newcastle exhibition was to feature also two 'constructions'.

Richard Hook is an Arts graduate from the University of Western Australia. He completed a Post-graduate Certificate of Education at London University. He has an Associateship in Fine Art, Western Australian Institute of Technology, in the areas of painting, printmaking, drawing and art history. And he is a Master of Fine Arts, from the Tasmanian School of Art, University of Tasmania.

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