Creative design from Wollongong students
POPULAR EVENT PRODUCES HIGHLY WORKMANLIKE DESIGNS

On the exercise chair is Greg Moon and with him are, on the left, Carol Thomson and, right, Julie Sheppard.

THE concept of confronting first-year Engineering students with “real life” engineering problems was introduced at The University of Wollongong in 1971. Since then the Creative Design competition has been a popular annual event in the Department of Mechanical Engineering — one which has received both moral and financial support from local government and industry.

The projects for the 1984 competition, supervised by Dr Arnold McLean, included the design of a fishing platform for the Windang Bridge over Lake Illawarra, an animal and bird-proof rubbish bin for Illawarra beaches, foldaway skis, an exercise chair and an adjustable workstation. Having originally prepared a written report outlining the design problems and possible solutions, the students were then required to construct a working model and make an oral presentation before a group of judges.

Final judging was then conducted by a team which comprised some of the district’s leading engineers and managers as well as University staff members.

Winners of the Creative Design competition for their bird-proof garbage bin were the team comprising, back row: Steven Rowley, Ian Hodges, Peter Harris and, front row: Michael McManus, Carol Thomson and Julie Sheppard. Ranged on the right are, rear: Alderman Frank Arkell, Lord Mayor of Wollongong, Dr Arnold McLean and Professor Peter Arnold of the Department of Mechanical Engineering.

On the exercise chair is Greg Moon and with him are, on the left, Carol Thomson and, right, Julie Sheppard.

The Lord Mayor of Wollongong, Alderman Frank Arkell, presented the team above with a prize for their design of the garbage bin.

Professor Peter Arnold made the presentation of the Perpetual Trophy to the group while Beth Urwin presented the People’s Choice Award.

The competition has a number of goals. By involving students in contemporary problems for which no known solution exists, students are motivated to explore and find an answer to the problem. They then have the opportunity to translate these ideas into workable solutions. By having to construct a workable model as part of the exercise, students gain an insight into all aspects of the design process.

Because each student works as a member of a group which has a limited time to solve the problem, the concept of work distrib-
There are six Mechanical Engineering departments in tertiary institutions in NSW. They are at the University of Sydney, NSW Institute of Technology, Royal Military College, University of Newcastle, University of NSW and the University of Wollongong.

It was a case of the last being first when the awards were announced by Robert F. Kynaston, Chairman of the Industrial Design Council of Australia, at Milsons Point, North Sydney.

The $200 first prize went to three Wollongong students — Guy Barnsley, Mick Robertson and David Joyce — all of whom are studying for the degree of Bachelor of Engineering (Mechanical).

The idea of the competition was to involve second-year students in a specific objective contest which could draw on some of the machine element theory that they are acquiring at that stage of their course.

The problem selected was to design and build a machine for firing 20 cent coins an accurate, pre-selected distance in the range one to four metres.

The distance was announced just before the trials and the machine could not use materials costing more than $10.

While most machines used a helical compression spring as the energy-storing device, the winning entry from Wollongong used gravity.

The landing surface was a box containing sand 12 mm in depth.

The first task was to arrange the correct trajectory so that the coin would not skip on landing.

The coin had then to be fired five times so that it landed just short of the range line: the closer the line the higher the score, while over the line scored zero.

The students’ supervisor, Dr Brian Howard, was pleased with the win, which shows that Wollongong is up with the best of them in inventiveness and ingenuity.

MR DES DAVIS, Senior Lecturer in English Literature and Drama and Artistic Director of Theatre South, has been appointed by the Premier and Minister for the Arts, Mr Wran, to a two-year appointment as Chairman of the New South Wales Cultural Grants Advisory Council.

The council is a body of professional Arts personnel set up to advise the Premier on the funding of the Arts in New South Wales and related matters.

Former chairmen have been John Clarke, Principal of the National Institute of Dramatic Art, Ken Tribe, Chairman of the Board of Directors of the Nimrod Theatre Company, and John Bailey, Principal of Sydney College of the Arts.

Among the present Council members are Ruth Cracknell, A.M., Kim Williams, former Manager of Musica Viva and now Executive Director of the Australian Film Commission, Harlan Hall, Director of Sydney’s Maritime Museum and Pat Rolfe, Literary Editor of The Bulletin.

Mr Wran expressed his ‘appreciation of the contribution (Mr Davis had) made as a member of the Cultural Grants Advisory Council’ and praised his ‘valuable contribution to the development of the Arts in this State’.
**University growth maintained**

by the Vice-Chancellor

IN 1985, The University of Wollongong will continue to build on the growth pattern established over the past three years. The increasing popularity of the University is again evidenced by the 13,000 applicants expressing their first preference for a course at Wollongong (1984 — 10,000; 1983 — 5,500). Of these, only some 14 per cent secured a place (1984 — 24 per cent).

The unprecedented growth of new enrolments in 1984, totalling approximately 2,400, meant that quotas had to be introduced for most courses in 1985, resulting in almost 1,800 new enrolments, excluding those which will be forthcoming by way of second round offers. However, the planned reduction of new enrolments was counterbalanced, as anticipated, by the "pipelining" effect in re-enrolments, which may well reach 3,500 as against 2,800 in 1984.

The number of equivalent full-time students (student load) generated by these figures is somewhat below that expected, primarily due to a reduction in the proportion of students undertaking full-time study.

The introduction of quotas on a large scale in 1985 will ensure a more balanced enrolment profile throughout the current triennium. However, another very pleasing and important feature of the planned quota system is the overall increase in the average H.S.C. aggregate of new students coming directly from school. Thus the significant growth in the University over the past three years has been accompanied by a substantial increase in the entrance standards of new students. The University's academic standards are being significantly augmented by a pattern of growth uniquely enjoyed by this University.

The University is continuing to examine ways through which more Illawarra students may be admitted to the University and is also exploring the means of providing extra facilities for disadvantaged groups.

Two new courses — Bachelor of Applied Science (Human Movement) and the Diploma of Applied Science (Nursing) — will add a new dimension to the offerings of the University.

Ken McKinnon

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**A welcome to all new students**

Here are a few, spotted enrolling

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Some were nervous...

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Most were pensive...

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A few carried the crest...
Curriculum Resources Centre

"I am entirely certain that twenty years from now we will look back at education as it is practised in most schools today and wonder that we could have tolerated anything so primitive."

John W. Gardner

EDUCATIONALISTS recognise the value of visual aids as teaching and learning tools for students of all ages. This fact is borne out by the ever-increasing usage of posters, slides, movie films, videotapes, and graphics-based computer programs in schools, colleges, and universities.

The Curriculum Resources Centre in The University of Wollongong, located upstairs in Building 22, houses an extensive collection of resource material specifically related to primary and secondary school curricula and to the teaching of these curricula. It was established so that prospective teachers would become aware of, and have opportunities to use and evaluate, 'state of the art' learning aids and teaching tools.

Every effort has been made to include materials which exemplify the wide range of such devices used extensively in schools and the collection is being constantly updated to the extent that available funds allow.

The Centre, administered by Ms Rosemarie Dowe in consultation with the CRC Management Committee, chaired by Mr J. Chappie, has a wide range of material including books, learning kits, teaching aids, pictures, films, film-strips, videotapes, records, audio tapes and computer software packages. These resources are used by teachers and lecturers in presenting their courses and by students for research and for teaching in schools.

The Centre has already accumulated a range of micro-computers and educational software so that prospective users can evaluate a program without having to purchase it beforehand. Commodore VIC 20, BBC Microbee, Apple 11+ , Atari 800, and TRS 80 micro-computers are available for use with a selection of educational software packages for each. A recent acquisition was a beam-operated facility for the BBC computer which can be used by the physically disadvantaged.

While the services of the Curriculum Resources centre are available only to members of staff and students of the University at this time, it is anticipated that they will eventually be extended to schools and the general public as well. Funded by the Faculty of Education at this stage, and staffed by the Library, one way of providing service to non-University users may be financed by imposing an annual membership fee.

It is hoped that the service can eventually be upgraded to a standard offered by AMIC: a joint project of the Royal Melbourne Institute of Technology's Technisearch, the Computer Industry, and the Federal Government. With the AMIC project member companies, including manufacturers and software suppliers, are able to display their products for public access. AMIC then charges the public a fee for service which may be on either a self-help basis or via a demonstrator.

An interesting project is the planned publication of a book of photographs with accompanying commentary and annotations on Early Education/Schooling and Schools in the Illawarra and the South Coast based on a collection of early photographs held by the CRC.

A committee consisting of Mr K. McClellan (convenor), Dr K. Davies, Ms R. Dowe, Dr P. Hamilton, Dr H. Kyle and Mr B. Rogers has been appointed, by the Faculty of Education, to undertake the task and a submission has been made to the Australian Bicentennial Authority for funds to support the project.

The CRC is also considering the publication of a pictorial diary to be produced as a Bicentennial issue and then annually and marketed to raise funds for the Centre.

Award for former Wollongong biologist

DR PAUL ELSE, a former postgraduate student in the Department of Biology, has been awarded a CSIRO Post-doctoral fellowship.

Only ten of the fellowships are awarded each year.

Paul will spend this year working at the University of California in Irvine, California, on the effects of temperature on muscle function.

In 1986 he will return to Australia to work for another year on the effects of dietary fat on heart muscle at the CSIRO Division of Human Nutrition in Adelaide.
Writing for Year 11

"An author in his book must be like God in the universe, present everywhere and visible nowhere..."

Gustave Flaubert, author of 'Madame Bovary'

TEACHERS at writing workshops at Wollongong University had often remarked to Dr Brian Cambourne, Head of the Centre for Studies in Literacy, that many schoolchildren sadly lacked expertise in written expression. This was particularly evident in secondary school where written assignments and written examinations were the dominant form of individual assessment.

It was considered that primary schoolchildren were taught the basic principles of writing but that, on attaining secondary school status, students were usually left to fend for themselves.

It was generally agreed that writing technique could not be taught on a part-time basis and that an intensive training course would be a more effective approach to the problem. Dr Cambourne discussed this concept with Greg Wythes, Resource Teacher at Wollongong High School, who agreed that it could have merit and was worthy of trial.

And so, on the morning of February 4, 130 students from Wollongong High School's Year 11, ten Wollongong High teachers and an Inspector from the Department of History and Philosophy in the Pentagon to attend a week-long course in writing technique, organised by Brian Cambourne.

Brian noted a distinct attitude of negativism when he addressed the students on the first morning. Of the 140 there, only two liked to write and three considered themselves to be average writers.

During the ensuing week Dr Cambourne asked the students to write an essay on a subject of their choice. He explained the theory of writing, and the importance of spontaneity. The power of intimate detail in relating an experience was also discussed and Dr Cambourne advised that students should analyse techniques used by other writers to develop style.

The theories of assignment writing were then examined, with emphasis on data gathering, ordering and topic control. The importance of revision and rewriting to 'tighten' was explained. Towards the end of the week the techniques of examination writing were discussed, along with recommended procedures for improving comprehension and study technique.

Dr Cambourne stressed that writing can be a powerful tool if one is trained to use it correctly. He was delighted with the cooperation and enthusiasm of the students and teachers and was amused to find that some of the teachers had found their writing experience to be 'traumatic'.

Brian considers his writing course to be very much like a learn-to-swim class. 'You learn to swim because you never know when you may have to do it. Writing is much the same.'

He added that the final test of any writer is to 'go public' or, as he puts it, 'to slurp your soup in public'. He intends to have the students' work published to show the potential which exists if creativity is allowed to blossom.

His enthusiastic and innovative approach to the subject was reflected by the appreciation of the Year 11 group who presented him with a pair of inscribed silver goblets and thank-you card.

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Technological change committee of ASTEC

PROFESSOR Ron Johnston, Chairman of the Department of History and Philosophy of Science and Director of the Centre for Technology and Social Change, has recently accepted membership of the Technological Change Committee of the Australian Science and Technology Council (ASTEC).

This Committee was established as a standing committee of ASTEC in May 1981 following a request by the Government to maintain a continuing review of the processes and trends in technological change in Australia and elsewhere, and to evaluate and report on the direct and indirect effects at the national level, including social, economic and technological effects.

The Committee is empowered to carry out studies and evaluation of new and changing technologies and the community attitudes to and awareness of them.

Professor Arnold appointed to chair

LATE last year Professor Peter Arnold was appointed to the Chair of Mechanical Engineering. His appointment followed from the death of Sam Marshall, the first Professor of Mechanical Engineering in Wollongong.

Dr Arnold was born in 1938 and from the University of New South Wales received the degrees of Bachelor of Engineering with First Class Honours in 1962 and Doctor of Philosophy in 1968. Dr Arnold is a Member of Institution of Engineers (UK) and a Fellow of Institution of Engineers (Australia).

Before joining the academic staff of Wollongong University in 1962, Dr Arnold had been a Cadet Engineer at Australian Iron and Steel Pty Ltd. A lectureship was held until 1970 when Dr Arnold was promoted to Senior Lecturer and in 1976 he was promoted to Reader. Since 1981, Dr Arnold has been Chairman of the Department of Mechanical Engineering.

During his service, Peter Arnold has been on overseas study leave on four occasions and has had many short visits to attend conferences and to visit universities and industry.

He has an extensive record of publications and consultancies and has attracted in excess of $500,000 in research grants.
Chinese discuss technology

A technology forum jointly sponsored by the University of Wollongong and the Department of Science and Technology brought a Chinese delegation to the university for discussion concerning current policies on science and technology in the People's Republic of China. The visitors in the picture are, from left, Mr Huang Xing, Mr Liu Xiaocheng, Mr Guo Pingxin (leader of the delegation, Adviser, Administration of Computer Industry, Ministry of Electronic Industry and Trustee of the International Federation for Information Processing of the People's Republic of China), Mr Trevor Brew (University of Wollongong), Mr Pei Yingwu, Mr Lin Zhiqun and Ms Chen Luzhong.

Wollongong attracts OECD educational adviser to chair in Education

WOLLONGONG University is continuing its run of outstanding recent appointments with the acceptance of a chair in education by OECD's Administrator at the Centre for Educational Research and Innovation (CERI), Dr Carla Fasano.

Dr Fasano's interest in Australia was fostered when she was brought to Australia by the federal government in 1983, for an advisory tour, consulting with government and non-government systems and academics in all states. As a scientist and educator of world distinction she will be warmly welcomed in Australia.

Dr Fasano's initial career was in physics and astro-physics research after she had taken her doctorate in astro-physics at the University of Geneva (winning the Amelia Earhart Award for women who have distinguished themselves in aeronautics and space science on three occasions). She has published research papers in German, French and English in that field. Subsequently, she took an advanced degree in Psychology at the London School and joined OECD in the education program.

For the past nine years she has been Administrator at CERI where she has been involved in three main fields — curriculum, youth policies and education and technology, publishing books and studies and convening international conferences in these fields. Her most recent work relates to the potential and problems of using computers and other new technology in education.

Commenting on the appointment, the Vice-Chancellor, Professor McKinnon, said he was delighted that Dr Fasano would be coming to Wollongong, where she would add further strength to the already strong primary and secondary teacher education programs as well as contributing to the Centre for Policy Studies in Education. Having published in international literature in space science, psychology and education in three other languages in addition to her native Italian, she would be an important addition to the faculty.

Professor McKinnon also commented on the excellent calibre of staff being attracted to the University for all vacancies advertised recently, confirming both the availability of a pool of very good young academics in Australia and the reputation of the University.

FROM early January and into March members of Theatre South have been to Eden, working on a project which has led to "... and tonight we anchor in Twofold Bay." Research for the play (which began with the working title of Fish & Chips) was carried out by interviewing the people of Eden about the past and present of the township and its residents.

The material gathered has been worked up into a semi-documentary musical revue. The performance will be a celebration of the uniqueness of this interesting community. Eden people will see themselves and their enterprises portrayed and the rest of the country will see and appreciate them also.

After a season in Eden the company will tour the production to a number of South Coast towns and travel to inland New South Wales. A Wollongong season will take place ahead of one at the home of the Sydney Theatre Company.

The play opens this month (March 22) at Eden's Fishermen's Club and then tours the South Coast until April 4.

In Wollongong the play opens on April 10 at the Wollongong Town Hall Theatre.

Further news of Theatre South is that Wollongong City Council has passed unanimously a move to give Wollongong's professional theatre company exclusive use of the present Coniston Hall. The hall will be converted into a comfortable 150-180 seat theatre with box office, bar and comfortable seating.
Supermarket trends under the microscope

THE potential impact of 'cashless society' technologies such as electronic funds transfer (EFT) and laser product-code scanning is being examined in a major study now under way at The University of Wollongong's Centre for Technology and Social Change (TASC). This study is funded to the tune of $50,000 by the Victorian Ministry of Employment and Training, which will rely on the study to determine whether legislation, codes of practice or other regulation may be necessary.

The study is the first large-scale, systematic investigation into the workforce effects of technology on a particular industry in Australia and has included surveys of both management and employee expectations of, experience with, and attitudes to, technological change.

Professor Ron Johnston and Stewart Carter from the Centre for Technology and Social Change are being assisted by Dr John Hill from the Department of Administrative Studies at Monash University.

Early work on the study suggests that the cashless society is still a long way off, but there can be little doubt that the new retail technologies could potentially have a profound impact on the nature and patterns of retail industry employment. EFT in particular has the capability of breaking down many of the divisions within and between the finance and retail industries. With banking facilities available in stores, petrol stations, and even at home, the future for banking employees may not be bright.

The increasingly rapid introduction of point-of-sale scanning, linked to products marked with bar-codes, threatens to transform retailing on a scale not seen since the development of self-service. It can be used to improve the range of goods stocked, their freshness (where appropriate), service to customers and sales administration. On the other hand it offers the potential for productivity improvements and hence job loss, closer monitoring of check-out operator performance, and the collection of detailed information on personal shopping habits and preferences.

The study is seen as especially important by all parties involved because of the major contribution to overall employment growth, and especially female employment, that growth in retail industry employment has made while other industries have been reducing employment. However, a substantial portion of the employment growth in retailing has been in part-time and casual jobs which may be at risk from the new technologies.

Australian retailing is at the forefront of the international retail technology revolution with regard to POS and EFT. Hence, experiences here, and the recommendations of this Report, may have far-reaching implications for government policy into the 1990s and beyond.

Australian College for Seniors

THE UNIVERSITY, through its involvement with the Australian College for Seniors, conducted a number of one-week programs for Senior Citizens during the recent Summer Session.

The courses, which were available to those in the over-55 age group, included studies on the Australian and American Constitutions (Dr Winifred Mitchell), Illawarra heritage (Mr Malcolm Harris) and Ecology of the Illawarra area (Dr Rob Whelan).

The programs were held in conjunction with Eelderhostel, a similar organisation in the United States. Four groups of 40 American senior citizens participated in the courses.

The Australian College for Seniors is a consortium of Universities and colleges (ANU, UNE, Newcastle, Sydney, Mitchell CAE, Orange CAE, and Riverina CAE) offering one-week courses for Australians at Australian tertiary institutions.

Successful Summer Session

THE Summer Session continues to be extremely popular, with over 800 applications received and over 600 actual enrolments in the credit and non-credit courses that were offered in January and February.

In 1985, in its third year, the Summer Session attracts many students already enrolled at The University of Wollongong, who seek to spend the vacation doing an extra subject or two towards their degree. Then, too, the session has attracted a number of non-students who attempt the credit courses to see whether they can handle university-level subjects.

A wide range of credit subjects was offered this year, including Society and Culture, Australian Studies, Human Rights, the Vikings, Children's Literature, Computers and Society, as well as a number of Engineering subjects.

The non-credit courses included Sign Language, bridging courses in Chemistry and Physics and Reading and Writing courses for both university and high-school students.

Language courses also proved very popular: German and Spanish (both credit) and Japanese (non-credit).

It is intended to expand the concept overseas in the near future, in conjunction with the Eelderhostel program, so that Australian senior citizens will be able to study in the US, Great Britain, Europe and Israel.

Mr Barry Russell, formerly of the Goulburn campus of the Rivera College of Advanced Education, is the co-ordinator of the Australian College for Seniors and from the beginning of March has been located on The University of Wollongong campus.

The American Seniors are seen here during a lecture on the Australian and American Constitutions by Dr Winifred Mitchell.
Bulk solids research passes $1m mark

THE Bulk Solids Handling Research Group in the Department of Mechanical Engineering has been awarded a total of $544,008 for three research grants concerned with —
- Feeding of bulk solids from mass flow hopper outlets ($268,631).
- Pneumatic conveying of flyash and pulverised coal, especially over long distances ($275,377).

The grants have been provided by The National Energy Research Development and Demonstration Program, and the Electrical Research Board and cover the period 1985 to 1987. They will allow the employment of two professional officers and two technical officers to assist with the research and provide $246,000 for equipment and materials.

Professor Peter Arnold, leader of the research group and principal supervisor of the projects, says the grants will provide an important boost to the research effort of the team, and that the bulk solids research has the prime aim of improving the productivity of processes and procedures involving bulk handling. These projects have the broad objectives —
- Feeding of coal and other bulk solids from mass flow hoppers, paying particular attention to —
  - the geometry of the hopper/feeder interface, especially with regard to the design of skirts, gates and tie beams across slotted outlets,
  - loads generated on feeders,
- establishment of design procedures for predicting feeder power requirements,
- verifying, by experiment, the design procedures developed.
- Long distance pneumatic conveying of pulverised coal and flyash will be carried out using the NEI John Thompson (Australia) test rig installed in the bulk solids laboratory. Particular attention will be paid to —
  - transporting solids over distances up to 100m in pipelines ranging from 65mm to 100mm diameter,
  - correlating the work with that already carried out over short distances up to 90m and verify scaling procedures developed,
  - establishment of design criteria for stepping diameters of conveying pipe,
  - methods of controlling blowtank pressure and feeding rate to achieve optimal conditions.

The grants from NERDDP represent the second phase of major funding from that source and takes total funding received for bulk solids research since 1979 from sources such as NERDDP, Electrical Research Board and ECNSW, to more than $1 million with, in addition, equipment loans or donations exceeding $150,000 in value. In that period more than 70 research papers have been written by the group while consultancies have been carried out for over 45 companies and other bodies in Australia and overseas.

Trade promotion

UNIADVICE has received a pleasing response for its first-ever effort in overseas trade promotion. Following a display at Illawarra products at the International Exposition for Technology Transfer in Brighton (UK) 16 firms or organisations have requested information on local products.

Inquiries came from representatives of Great Britain, China, Canada, Denmark, Holland, France and the United States. The display included computer products, materials handling processes, water processing technology and robotics hardware, and has established the competitiveness of local products and technology in overseas markets if initial interest is any indication.

Uniadvice representative at the expo was Associate Professor Noel Kennon from the Department of Metallurgy at The University of Wollongong. Arrangements for the display were made by Uniadvice with the assistance of Mr Ron Jackson from the Department of Trade.

Dr Chowdhury in Canada

DR R. N. CHOWDHURY, of the Department of Civil and Mining Engineering in The University of Wollongong, was the only invited speaker from Australia at the fourth International Symposium on Landslides held in Toronto, Canada, in September.

State-of-the-art lecturers were selected from the USA, France, Hong Kong, Australia, Peru, Japan, Canada, the UK, Romania, People’s Republic of China, Switzerland, Norway, Sweden and India.


Dr Chowdhury reports that his Paper was given a good reception; and that considerable interest is being shown in this new trend — the use of probabilistic methods in slope engineering.

There is an urgent need, he says, for the application of probabilistic methods to practical problems involving risk assessment. Relatively simple approaches need to be developed to assist engineers who are not yet exposed to probabilistic methodology.

Topics covered during the course of the symposium were: Climatic and Groundwater Aspects of Landslides; Slope Movements in Hard Rocks; Slope Movements in Weathered Rocks and Residual Soils; Landslides in Heavily Over-consolidated Clays and Soft Rocks; Landslides in Soft Clays; Landslides in Silts, Sands and Loess; Including Subaqueous Slides; Recent Developments in Landslide Studies: Analytical and Probabilistic Methods; Landslide Risk Mapping; Instrumentation and Slide Warning Systems.

STAGE I of the student accommodation complex on campus was opened by the University Chancellor, Mr Justice Hope, in early March. The accommodation comprises three types of accommodation: five single-storey five-bedroom units; four double-storey five-bedroom units; and one block of five self-contained one-bedroom units. Fifty-five students will be accommodated.

Stage 2 of the project has been approved and is going ahead.

Leisure Coast Triathlon

THE Third National Australia Bank Leisure Coast Triathlon will be held on March 31, and it looks like becoming the biggest in the State. It is already the second largest.