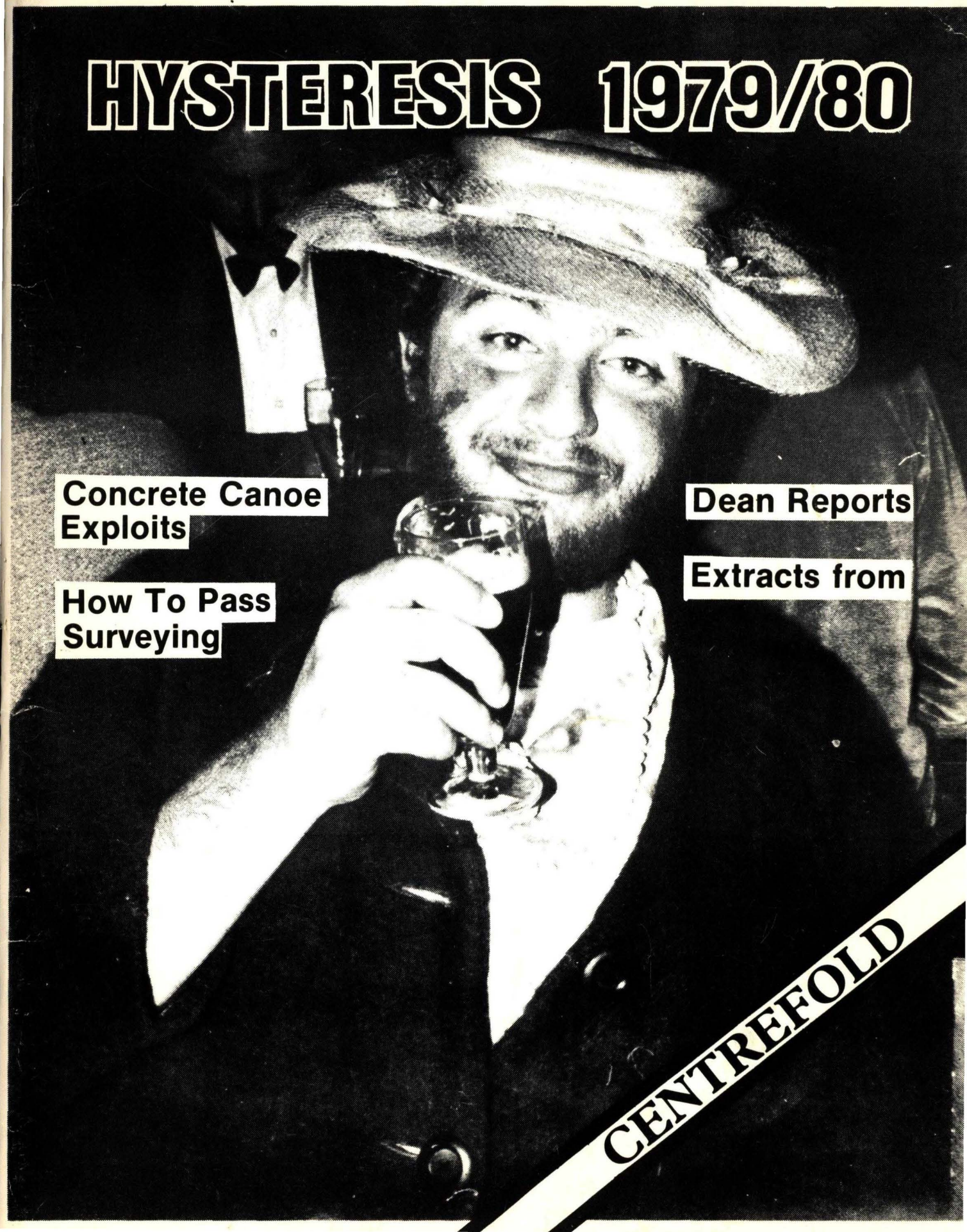
HYSTERESIS 1979/80



Concrete Canoe Exploits

How To Pass Surveying

Dean Reports

Extracts from

CENTREFOLD

HYSTERESIS 1979/80

EDITORIAL

EDITORIAL

Well, *Hysteresis* has finally been printed and hopefull it's been worth waiting for. We are now, moving into the '80's, the era of 1984 and we've got our energy crisis. Will the so called mining boom really happen.

The start of this latest mining boom has meant that the job prospects for engineering students are excellent and graduates are in a position to select the job that suits them.

However, there is a shortage of experienced engineers. Graduates are increasingly being given greater responsibility and are expected to have the professional skills that can only come with experience.

Compounding this problem is the lack of students prepared to undertake postgraduate studies and enter the academic arena. The better students, that previously would have gone on with further studies are being attracted into working for the big mining and oil companies by higher salaries.

In the next few years I believe we are going to see great changes in the structure of the Australian economy. Our mineral wealth will be exploited by overseas companies and raw materials exported overseas. Unless Australians and Australian companies can share in this mineral wealth, both in mining and *processing*, we have lost control of our future.

It is the task of an editorial to comment on relevent matters. Also, as the person coerced into writing the editorial, I would like to thank those students and staff who helped with articles and in the layout.

The last year saw the resurgence of interest in the Engineering Society. The society went fom the red in 1979 to end 1980 on a profitable note. Many successful functions were held including the dinner, football carnival, and concrete canoeing. It was unfortunate to note the lack of staff participation in attending these events. Students opinion of the staff were not helped by the "brick wall" of indifference that was encountered when staff were sent invitations to the annual dinner. Few even had the courtesy to reply!

On a more pleasant note, I have been told that this year, attitudes have changed. It was pleasing to see an excellent turnout of staff at the freshers welcome and also at the concrete canoe day. Mixing socially helps both staff and students to relate better in the "classroom" environment.

OBITURARY

This year Dr. Bill Bodley passed away after a short illness. We pass on our sympathies to his wife and family.

Dr. Bodley was a popular lecturer who showed concern and consideration for his students and was always prepared to answer student's questions in a helpful and honest manner.

DEAN'S REPORT

Dr A.M. Parker

In offering this view from the Dean's desk in the last few days of 1980, I welcome the opportunity to pause from the usual frenetic end-of-year activities and take stock of the present position of the Engineering Faculty and to share with you some of my thoughts on its future. You won't find here a list of detailed research achievements within the Faculty, even though these have been very noteworthy in the past year - I am leaving this to the eloquence of the Departmental Chairmen who are closer to the scene and hence can speak with more authority (and probably more accuracy) than I can command. What I will try to do is concentrate on issues which affect us all as present or aspiring professional engineers.

It will have been obvious to you from a number of sources that the immediate market for graduates in engineering is buoyant, and that the signs from several reliable indicators are that the situation will not change (at least for the worse) in the next few years. I think it is important, however, to maintain a sense of proportion in this, and not accept without question some of the more extreme predictions - "10,000 engineers short by 1990" and so on - without at least examining some of the assumptions upon which they are made. It so happens that I have on my desk at the moment a copy of an article written in 1971 which sketched a scenario for the future very similar to the present one and used this in support of a plea for another tertiary school in Engineering - in Victoria! In the short term that analysis proved woefully wrong as graduates in the 1975/1977 era discovered. Having said that, however, the present predictions seem much more strongly based on facts, and there is strong evidence of expansion in engineering activities already underway, particularly in the energy and mineral resources fields.

How is this situation affecting the Faculty? The most immediately apparent effect is in the interest evoked in school-leavers. We have just received from SATAC the statistics for tertiary preferences of students matriculating in 1980. The number nominating Engineering at the University of Adelaide as first preference is 53% higher than for 1979 and the latter figure was already a record. We think that this is not only a reflection of the "market forces" referred to above but also an indication that the Faculty's programme of activities aimed at school students and their teachers is becoming increasingly effective. What we consider to be a vitally important goal in this programme is to reduce as far as possible any mismatch between the demands of a tertiary engineering course and the hopes and expectations of students entering the course. The fact that we will inevitably have a higher average academic standard in our entrants for 1981 means that, *provided that we can maintain our standards*, the profession can look forward to a high calibre of recruits (and probably a higher number than at present) for years hence.

That important proviso deserves some explanation. I have no doubts whatever about the quality of the staff in the Faculty of Engineering. We are extremely fortunate that we have a body of people who are not only technically of the highest standard - and their research achievements are self-evident - but who apply their professional integrity to all their contacts with students. The Adelaide graduate has therefore had the advantage of a thorough and broadly-based education, and it is almost entirely due to staff quality that this graduate is held in such high esteem throughout the world.

The staff are under considerable and increasing pressures at the moment however. I have just re-read Professor Luxton's contribution to the last *Hysteresis* in which he expressed the same concern. The situation has deteriorated further since he wrote, in that the effective cut-back in Government funds to Universities is forcing staff reductions at Adelaide to balance the budget. There is no prospect whatever of replacing a staff member who leaves the Faculty, so that the workload on all staff is insidiously increasing. As well as the very real physical strains this imposes, it means that any individual lecturer must reduce the scope of his activities and, in an indirect way, this cuts down the range of experiences which he can bring to bear on his teaching. The professional integrity of which I spoke earlier is the one saving feature which I am certain will ensure that the teaching programme is influenced as little as possible by this process.

Having expanded at some length on this gloomy theme, let me nevertheless finish by saying quite simply that I am convinced that we offer an education of the highest quality, and that the Adelaide B.E. is the ideal first step in what promises to be a very exciting professional future. I wish you well in your studies and your future careers, and as I come to the end of my Deanship I am happy to be able to leave you in the capable hands of Professor Bogner.

CHEMICAL

T.N. Smith, Chairman of Department.

Our students may take great encouragement in their torment from the return this year of a very strong demand for Chemical Engineers.

This is a result of heavy investment by industry over the last two years and the immediate prospect of even more rapid development. The expansion is on a broad front. Petroleum refiners have been obliged to build additional flexibility into their plants in order to cope with crude oil from new sources and to be able to respond to changing patterns of product demand. A large increase in polyethylene and polypropolene capacity of the petrochemical industry has taken place. With this has come the necessary expansion of plants to supply the required feedstock. Further facilities for the production of ethylene dichloride, vinyl chloride and polyvinyl chloride are under construction and there is a strong likelihood of a decision to establish a plant of this type in South Australia. Huge investments in alumina and aluminium plants are being made. Recognition of the abundant energy sources in this country has turned the interest of the industry from export of the raw material, bauxite, to the production of aluminium metal.

All these developments call for the services of Chemical Engineers, not only in design but also in technical supervision and the processing plant during its commercial life. A continuing intake of graduates is required.

It was in the light of such broad horizons that that we undertook last year a review of our course in its entirety. Changes are made from year to year to the content of individual subjects in response to new ideas or to shifts in emphasis of engineering effort. These take place within the current structure of the course. From time to time it is necessary to stop to look where such changes seem to be leading us, to judge the suitability of the whole structure and to integrate and rationalise material. This is what we have just done. I trust it will be a comfort to those in the final year that we believe we are still on the right track. There will be some minor changes that we expect to introduce in 1981.

A particular development of our course, one that we have already begun, is in the control of processing plants by digital computer. Given adequate modelling of the process and plant, together with a suitable objective for control, digital computers can be utilised for surveillance and regulation of much of the function of the chemical plant. Though the principle has been good for a long time, the practice has become realistic only with recent developments in equipment for the acquisition, processing and display of process data. Last year the Department acquired a DECLAB 11/03 computer for the Process Control Laboratory. Under the direction of Dr. Carl Jeffreson, who was able to review ideas and developments during a period of leave in the United Kingdom, a programme of lectures and associated laboratory work has already been incorporated into the course.

An indication of the importance of computer control is the interest that Dr. Jeffreson's endeavours have aroused in industry. We have accepted a contract from Australian Iron and Steel Pty. Ltd. for the modelling of a system of blast furnace stoves and the development of a proposal for computer control. The objective of the control is to minimise fuel consumption by optimizing storage of heat in these stoves over several cycles of operation of the blast furnace.

Steel is a particular interest of Professor Ross Miller and his Materials Engineering group. Certain manganese steels containing small additions of vanadium or molybdenum exhibit exceptional properties of strength and hardness. Such qualities are derived from the peculiar, fibrous distribution of carbid precipitates through the austenitic matrix. Research into the reactions concerned and the growth of structure in the precipitate has been supported by the Australian Research Grants Committee for some years past and has attracted wide interest. Recently Professor Miller spent several months working with the Department of Metallurgy and Materials Science at Cambridge University, U.K. on a project. The Department had the pleasure of a reciprocal visit by Professor R.W.K. Honeycombe of Cambridge in September.

Vast quantities of energy are used in the production of chemicals, metals and other materials. Escalating fuel costs have obliged industry to begin to increase its investment in systems for improved regulation and in equipment for recovery of energy and recently to begin to provide for conversion to alternative fuels. Such ventures lent urgency to recruiting campaigns last year.

Within the field of energy conservation, Dr. John Roach has continued to develop his absorption cycle for heating and refrigeration. The outstanding feature of the system is that it can utilise low-grade sources of heat such as exhaust or solar collectors to achieve useful refrigeration. Good coefficients of performance have been demonstrated and the State Energy Research Advisory Committee has provided a further grant for development of the system towards commercial application.

The 1979 Plant Trip to Sydney under the heroic leadership of Dr. Keith King proved to be a revelation to students. We are confident that the Melbourne visit this year will be no less enlightening.

ELECTRICAL '79

ELECTRICAL ENGINEERING

D.W. Griffin, Chairman of Department.

Tradition established in past issues of *Hysteresis* suggests that a review of departmental activity in 1979 would be appropriate grist for this page. The trends in our teaching and research and community roles are understood more readily if a little more effort is spent from time to time reviewing what Electrical Engineering (EE) is all about. It is one of the fastest growing fields of human endeavour - a veritable ongoing revolution in thought, practice and benefits for mankind. Fed by remarkable technological innovations, which in turn have been nourished by developments in physics, mathematics and chemistry, EE has been evolving in ways that have required the development and application of many new concepts. EE is now an umbrella term that covers such fields as electrical power, machines, communications, control, computers, discrete and integrated circuits, digital techniques, electromagnetics, electronics, instrumentation, propagation, signal processing, materials, microwaves, acoustics, antennas and so on. One of the leading international professional organisations, the IEEE (Institute of Electrical and Electronics Engineers), has no less than 34 professional groups and societies each publishing its own transactions. Individual members are encouraged to describe their technical interest profile (TIP) by choosing from no less than 415 specific identified areas of activity for electrical engineers such as "1390 Automated Manufacture, Numerical Control and Robotics" and "3443 Production and Application of Light" or "2821 Adaptive Systems" and one of the newest areas of rapid expansion and social consequences, "0288 Microprocessor Applications and Control". Have you thought about your TIP recently?*

Many simple ideas can be cited as the basis for the rapid growth in EE. One such idea that is simple enough is the integration of electrical components. Improved methods of *integration* have progressively replaced methods of *assembly* whether they be manual or automatic. Thus integration of a large number of electronic devices, by creating them all in a thin wafer of single crystal silicon and "wiring" them together as the desired circuit by allowing evaporated metal to condense in the required pattern, is the modern technology that has made the programmable pocket calculator possible. The hand assembly of discrete electronic components to form complicated circuits is fast becoming as obsolete as the hand striking of coins as practised in ancient Rome.

The technology advances, like those that have created integrated circuits from amplifiers to microprocessors, have brought about profound changes in the perspective from which the feasibility of solving a wide range of engineering problems must be assessed. Such changes usually involve the need for new and abstract concepts. This occurs to such an extent that hitherto separate areas of knowledge and study are drawn in as relevant to the problem solving role of the electrical engineer. As an example, information theory has been developed to a large extent by and for the electrical engineers who deal with the complexities of communication system design. But these EE gems are to be found in the library under the Dewey decimal classification number 384 shelved with more verbose works on propaganda, the media, broadcasting, etc. It would definitely be inappropriate for "information experts" to prescribe syllabus detail that would be appropriate for an electrical engineering course and yet in other subject areas from time to time experts from other fields do insist that certain topics are most appropriate.

What qualities are desirable in those who would profess in the education of electric engineers, given the nature of the expansion of knowledge in this field that has been ever-so briefly indicated above? I would summarise these qualities by saying that the educators need to be participating electrical engineers with fish-eye lens views of the realm of EE knowledge that they find expanding around them and an ability to zoom in on the most basic and the most relevant. Spectators with a key-hole view can offer little. The staff members of the department demonstrate through their teaching and research and their community roles that they compare very favourably with the ideals of this criterion.

Research in the department relates to several major areas of current endeavour in the EE world including communication and signal processing, control and power, digital systems, mind-matter interactions and microwave engineering and materials. The current brochure available from the Department on Research and Postgraduate Study gives details of some 40 specific research projects and 33 publications within Australia and overseas. In such an evolutionary field of endeavour it is to be hoped that an increasing proportion of what are well-motivated students will realise that fulfilment of their potential involves the academic endeavours of higher degree work. The department is providing extension and postgraduate courses with enthusiasm but can only do so where demand justifies it. The academic staff is not only numerically small for the task that EE knowledge as such presents, but it carries a heavy burden as indicated by a student-to-staff ratio higher than most other comparable departments in the University. The fact that it has done so for many years is one indicator of the efficiency and hard work of the department.

Innovations in the teaching programmes are a continuing process within a course structure that allows a certain amount of departmentally controlled change. There is satisfaction for both staff and students when desired changes can be implemented without undue delay. Major changes such as the introduction of microprocessor courses are invariably initiated by academic staff but soundly based comments from students are always welcome and do help and influence improvements. Changes in the EE laboratory programmes are being planned at present and will be introduced in 1980. It is hoped that they will be an improvement in learning opportunities for the students that also allow a marginal reduction in demonstrator effort to occur in time for economic cuts foreshadowed in that area for 1981.

Opportunities in employment are primarily a function of the impetus in the field of work but other factors, sometimes of a national nature, also have an effect. Despite the fall off in opportunities in Australia during the 1970's the world-wide demand for electrical engineers has been strong and a significant number of our graduates have taken positions with leading electrical engineering organisations overseas. There will always be openings for good electrical engineers and our aim is to achieve standards that are internationally accepted. I hope you support our endeavours as students, and in due course, as graduates.

* The author can provide a TIP form.

ELECTRICAL '80

by Dr Donald W. Griffin (Chairman of Department)

Most who read this article will do so because of a direct association with or involvement in the work of the Electrical Engineering (EE) Department as students, and most will be at an early stage of their undergraduate career. During 1980 they will have become aware of the serious budget problems affecting the University and they may even view the next few years with some pessimism. The factors that I wish to focus attention on are the following:

First of all, *student demand* for education in electrical engineering (EE) at this university has risen to record levels in that first year EE enrolment in 1979, and again in 1980, was over forty percent of the quota for Faculty of Engineering enrolment and about fifty percent above the long term average for EE. The reasons for this increase have not been studied but perceived career opportunities may be the major factor. Media coverage of the impact of microprocessors and industrial demand for EE graduates provide a basis for the opportunities that may be foreseen by freshers. Record first year enrolments inevitably lead to record final year and honours classes within four or five years. Thus by 1982 the Department will face an unprecedented challenge, with staff effort at all levels fully extended, equipment more heavily utilised than ever before and accommodation fully occupied but hopefully not overcrowded.

Secondly, *national and international developments* during the past several years have given rise to a strong demand for professional electrical engineers. The range of work and responsibility for which an electrical engineering graduate is the most suitable choice is very great. In recent years the impact of international developments on the supply of graduates to meet national needs has probably been underestimated.

The third factor on my list is that *innovations* in the past have had a major influence on the direction of our activities and will continue to do so in the future. They have expanded the realm of electrical engineering, creating new fields of work, new solutions to old problems and scope for further innovations. I quote from my article of a year ago that EE "is one of the fastest growing fields of human endeavour - a veritable ongoing revolution in thought, practice and benefits for mankind." In planning for the future we appear to be fortunate in having within the Department the talents, and the resources, to interpret the innovations in terms of essential developments within our undergraduate courses and our research endeavours. In this respect academic leadership is an activity and responsibility that is shared in the EE Department.

Fourthly, *the staff* of the EE Department are directly responsible for the range of academic work and the standards of achievement. On average, academic staff are at mid-career with about 15 years experience in university teaching and research and a shorter period of experience in other engineering fields of work. A careful examination of the standard of education being offered, the up-to-date curricula, the equipment and research opportunities and the achievements of individual members of staff and recent graduates both nationally and internationally, indicates that the Department has all of the appearances of being in its prime of life. Developments in the academic programmes and updating of laboratories, with a significant proportion of the funds coming through individual staff efforts, have been accompanied by important increases in the technical level of the contributions from members of the ancillary staff.

The final factor that I draw attention to in my short list is the *allocation of resources* for teaching and research. The University through its administrative procedures, may accept and is able to respond to the changes brought to its attention by the EE Department. It thus effectively controls the extent to which Departmental aims may be implemented. The question may well be asked, "what procedures exist for the reallocation of resources to meet needs arising from changes in environmental patterns?" If in overall terms the University's total resources are gradually diminishing then there is no reserve available, and the extent to which the resources can be transferred from one area to another is limited by the way in which the resources are spent in each area. In fact, the emphasis at the present time in the University is on containing a budget. Academic positions that fall vacant between now and the end of 1981 will be frozen and the policy beyond 1981 is not known.

It is inevitable that a significant increase in first year enrolments in electrical engineering will lead to increased demands for staff effort on undergraduate teaching in competition with research, postgraduate teaching and supervision, administrative responsibilities and work arising from the broader role that the University has for serving the community. Staff welcome this student interest and regard the immediate future as a pleasing challenge. During 1981 it has been possible to update laboratories and teaching equipment ready for the larger classes of the next few years. The funds for those improvements have come from special courses provided for the professional community. New curriculum initiatives will be implemented in 1981 at first, third and final year level. There is every indication that the opportunities for students in Electrical Engineering in the next several years will be better than ever before.

CIVIL '79 '80

CIVIL ENGINEERING

R.F. Warner, Chairman of Department

The Department of Civil Engineering has undergone some significant changes in 1979 and 1980, firstly with the arrival of three new members of the academic staff, and secondly, with the commencement of extensive alterations to the Chapman Laboratory to modernise and upgrade the structural testing facilities.

A serious shortage of academic staff had developed in the Department over several years as a result of retirements and resignations. Fortunately, the situation was partly alleviated in 1979.

Mr. L.J. Schmid arrived in March 1979, just in time to take on a full teaching load. He specialises in the fields of structural dynamics and finite element analysis. He has had wide experience in structural analaysis and design, having worked for some years with the Boeing Company in Seattle on the design of jumbo jets and supersonic transports. Mr. Schmid has also worked as a structural consultant in Melbourne and Adelaide, and with previous teaching and research experience at the University of New South Wales, is a valuable addition to the Civil Engineering staff.

Dr. G.C. Dandy, a civil engineer with a doctorate in systems engineering from M.I.T., joined the Department in mid year. He brings expertise in the fields of systems planning, transportation and water resource systems. He was previously a research fellow in the Centre for Environmental Studies at the University of Melbourne, where he undertook various research studies, including an assessment of the environmental, economic and social effects of port development in Melbourne. With Dr. Dandy's arrival, we look forward to increased interest within the Department in the application of operations research techniques and economic analysis to the planning and management of engineering projects.

As the third new member of staff in Civil Engineering, I joined the Department as Chairman at the end of 1979, having previously been Head of the Department of Structural Engineering at the University of New South Wales. My main professional interests are in the behaviour, analysis and design of concrete structures. In my first year in Adelaide, I have been trying to complete work on the second edition of a text on reinforced concrete design.

While the new members of staff have brought additional expertise and research interests to the Department, they have also brought some relief from the very heavy teaching loads of previous years, thus allowing other staff to undertake a more balanced work load with greater emphasis on research.

A variety of new research and development projects has thus commenced, in many cases with significant outside funding. The attraction of external support for research work is particularly important in the present climate of meagre government finance. Some of our new projects include a dynamic simulation study of derailments, an analysis of earthquake effects in multi-storey buildings, and an investigation of fatigue in parially prestressed concrete structures. Other ongoing studies in fields such as in-situ soil testing, strength and stability of load-bearing brickwork, salt-damp problems, fluid transients and transportation planning provide a balanced range of civil engineering research.

During 1980, significant physical changes have occurred in the Department within the Chapman Laboratory. Vintage testing machines have been relocated and obsolete equipment has been moved to make way for a large and modern strong-floor test facility. The strong floor, constructed in 1980, is a solid block of concrete one and a half metres deep and extending over a floor area nearly thirty metres long and eight metres wide. The floor is prestressed vertically as well as in both horizontal directions, and contains holding-down bolts on a 1.2 metre square grid.

A demountable modular superstructure, consisting of steel beams and columns, allows a custom-designed 'testing' to be constructed around each test specimen. The third component in the strong-floor testing facility is an electronically controlled hydraulic jacking system, which we hope to have installed and operating in 1981.

The strong-floor test facility will provide the Department with a versatile and adaptable means of testing individual structural components, such as beams and columns, as well as complete assemblages, varying in size from small models up to full size prototypes.

The installation of the strong floor test facility has come about as a result of years of planning and hard work by Dr. David Brooks, Dr. George Sved and many other members of staff.

Although the laboratory modernisation programme has been focussed on the structural testing facilities, some significant improvements have also taken place in the hydraulics teaching laboratory, with the replacement of obsolete measuring equipment.

In October, 1980, the Department of Civil Engineering was fortunate to have Professor Bruno Thurlimann, of the Swiss Federal Institute of Technology, as a visitor. Professor thurlimann, who is President of the International Association for Bridge and Structural Engineering, took part in a short course on the design of masonry structures which was presented jointly by the Department and the Concrete Institute of Australia as part of a programme of continuing education for practicing engineers. Several short courses have already been successfully presented by the Department, and in the future we hope to make these a regular feature of our academic year. A short course on the design of partially prestressed concrete structures is planned for 1981.

Turning to our more formal programme of post-graduate study for the M.Eng.Sc. degree, I hope to see a significant increase both in student numbers and in subjects offered in coming years. the long term benefits to the profession and to the community of a relevant post-graduate programme in Civil Engineering have already been clearly demonstrated in other states. Those benefits are needed in South Australia. This Department will be looking to its graduates for support of this development, and will be offering improved facilities for post-graduate study leading to the Master's Degree.

Towards the end of 1980, a review of our undergraduate teaching was commenced, with an analysis of our overall goals and objectives in the B.E. course programme. During 1981, we plan to look carefully at subject content in the various strands, such as structural engineering, etc., with a view to achieving more effective course in Civil Engineering in accordance with out objectives. To help us in our assessments, we would be very happy to obtain suggestions and opinions from our recent graduates concerning their civil engineering and its relevance to their work since graduation.

I am very happy to be able to conclude this report on an optimistic note concerning the beginning of 1981, a significant increase in demand was evident, and a number of requests from local and interstate firms during 1980 for Civil Engineering graduates in the next few years, it appears that supply may not keep pace with demand in the 1980's.

MECHANICAL '80

Students: hail and farewell

This year we farewell an unusual final year class. Unusual for the larger than usual number of honours degrees awarded and unusual in that it contained our first woman graduate, Ms. Rosalyn Growden. However it seems that she might be the last for a while since there are no women in the earlier years of the course.

Although Mechanical Engineering does not seem to attract the fair sex, engineering as a whole seems to be riding a wave of popularity at the moment. There have been 434 first preference applications for the 180 available places in engineering, an increase of 153 on last year. it appears that the public and the schools are at last realizing that society will not survive without technology and that technology is what grows in the minds of engineers. One only hopes that continued cuts in Government funding do not entail serious curtailment of the scope and quality of the engineering courses at Adelaide, as they presently threaten to do. Such cuts have forced the University to rule that academic teaching staff who retire or resign cannot be replaced. In the next three years we shall lose three staff through retirement and if they are not replaced not only shall we be unable to adequately teach their speciality, but the additional load on the remaining, already overloaded, staff will mean that they have less time for individual student's needs and problems. Students will be the first to suffer but, finally, it will be the country that loses, in terms of less well educated and less competent engineering graduates.

Comings and Goings

The year has seen the usual flux of (academic) humanity through the department. In February we welcomed Dr. David Walker from Victoria, British Columbia. David arrived in Australia with his wife, who was on a year's exchange with the Education Department, but found being a home-person somewhat irksome. he applied for an advertised position as a research assistant and was snapped up. His background in medical instrumentation and data processing has been invaluable and we shall miss him greatly when he returns to Canada in December. The Mechanical Engineering Lunch-time Runners will miss him too. While he was here he ran his first half-marathon and then full marathon, and was a member of the Mechanical Engineering team that won the team prize in the University Spring Fun-run. His sore knees will keep his memories of Adelaide fresh for a while.

Another welcome visitor was Mr. Brian Davis from University College, London who was here during second term. his main reason for coming was to see the research that Mr. Euan Semple was doing into robotic manipulatorsis Brian's speciality, but he also made contributions to the department's design teaching, which was welcome and opportune.

In September Dr. Stuart Stephenson arrived to take up a position as Senior Teaching Fellow. Stuart graduated from Sydney University but has been in Switzerland for the past four years working for a Ph.D. on the design of equipment to measure the mechanical properties of polymer melts. He will be a welcome and valuable addition to the staff.

Nineteen eighty also saw a great influx of research students and we now have a veritable United Nations amongst our post-graduates. To our Belgian, Vietnamese and Australian students we suddenly added a Sri Lankan, and an Indian, a Pole, an American and another Australian born in England.

In addition to the gains, we have had some losses however. Distastrously we lost both our electronics technicians within a month at the end of 1980, Mr. Paul Boult to take a Senior Technician position at Flinders University, and more recently Mr. Phil Walker to private industry. We can only hope that the statutory, money-saving, six-month freeze on the replacement of technical staff can be circumvented in some way.

There have been sad losses too. This year saw the death of Mr. Bruce King, one-time lecturer in the department, who was instrumental, with Professor Harry Davis (now retired), in designing and building the fine set of acoustical test chambers which are the basis of much of our department's research.

Earlier in the year, Richard Jennings (graduated 1978) was killed in Brunei, a sad loss, but his memory lives on in the R.J. Jennings Memorial Prize for Mechanical Engineering Design endowed by his parents and friends - an appropriate memorial since design was one of the areas in which Richard excelled.

Digital Mechanical Engineering

Computing has taken a big leap forward in the department since Mr. Rod Curtin joined us in late 1979 and this year has seen a significant expansion of our computing and data collection facilities under his guidance. In addition to our PDP 11/34, we now have three LSI 11 minicomputers used for data collection in the laboratories, all coupled to the larger PDP machine. We have also taken our first steps in the computer graphics/drafting/design area with the purchase of a colour graphics monitor. The programming for this set-up was done as a final year project. There are also numerous microprocessors around the department used as controllers for the robot arm, an automatic lathe,

student experiments, hot wire traverses for wind tunnels, etc. It highlights the fact that no Mechanical Engineer can these days afford to be ignorant of the potential and application of microprocessors and minicomputers. Indeed a reorganization of the first year course will provide our Engineering I students with an introduction to micro-processors, and we intend to follow up the programming course in Applied Maths IIB with a course on Engineering Uses of FORTRAN for our third year students. A special course will be mounted for final year students who need to use digital data processing and microprocessors in their project work.

Research

The department's good research record has ensured a steady increase in research funding from about $120,000 in 1978 to nearly $250,000 in 1980. Next year we can look forward to a similar level of support, indeed we could not handle a much greater commitment. Much of the money goes in salaries for technicians, and graduate research staff who make an invaluable contribution to the academic life of the department.

Our largest projects are in the areas of energy utilization and noise control. One study is concerned with the design and development of a more efficient burner for gaseous or pulverized fuels. This exciting project is on the verge of full-scale trials in ETSA's Port Augusta power station. Another project seeks to rationalise the design of energy systems, such as that providing process steam and electrical power in a large manufacturing company, by optimizing the choices at each stage of the design process so that the overall performance of the whole system is optimum, in terms of cost, efficiency or any other desired performance criterion.

Noise control has been an important component of the research activity in mechanical Engineering since 1964. The main financial support in this area comes from the South Australian government. This funding has produced useful noise control measures for circular saws which are now being implemented in the timber mills of the South East and in government workshops in the State. Work on reducing the noise of punch presses appears to be producing significant results.

Employment Prospects

Mechanical engineering has always been one of the most broadly based of the engineering disciplines, increasingly so as technology develops. To the detailed knowledge of the thermal and dynamic behaviour of mechanical and fluid systems the Mechanical engineer must today add some of the structural skills of the Civil engineer and some of the understanding of the electrical power engineer and the digital electronics engineer. The Mechanical Engineerie at Adelaide has developed to meet these developing needs, and will continue to do so, and the demand for its graduates seems sure to continue, both here and overseas.

PRESIDENT'S REPORT '79

AUES PRESIDENT'S REPORT

When I was first asked to write the annual AUES President's Report, my immediate impulse was to advise the next President to scrap the Coke machine and cash the money in on a false ID and a one-way ticket to Kangaroo Island.

However, this sober sense of cynicism was but brief and upon deep thought and a dozen home brews, I embarked upon the following, more glorified, account of the adventures of AUES 1979.

Understandably, the inception of the idea for the first AUES function emerged from the dregs of a beer jug somewhere in the British Hotel, January 1979. The idea was horrific in its simplicity. A Klu Klux Klan attack was to be launched upon the Engee Freshers in the Flentje lecture theatre during Orientation Week. This plan was carried out to devastating effect, resulting in a record enrolment of AUES life members during the subsequent tranditional freshers' booze-up.

In fact, this was easily the most financially successful of the year. What went wrong? To what aspect of the Engineering Student's psyche could I attribute this subsequent massive decline in patriotic enthusiasm? Many a night I laid awake while conjecturing this worrying aspect, finding solace only in the knowledge that many other great Presidents must have suffered the same plight: Nixon, Mao, Amin, Breshnev, Judge Brebner, Collin Norris, etc.

However, despite the loneliness of my position and my secret misgivings, I presented a brave front to my fellow members of the AUES Committee. This lasted until our next major function which resulted in my first nervous breakdown.

On the first of April we held what was to become known as "The April Fool's Show" at the Old Merino Golf Clubrooms. For the twenty-five odd who turned up to enjoy the total of forty-six gallons of beer and cider, the show was a raging success. It was a Sunday and an education, I think, to find that Engee students would rather contribute $2.00 to a collection box than to a hangover on Monday morning. Incomprehensible! However, we wrote off the cost on the Barr Smith Lawns during the following week in the appropriate way.

Next there was a car rally which was postponed three times due to the conflicting Engineering syllabus, which I found was a fruitless philosophy. My humble advice to future AUES committees is to adhere to a chosen date, irrespective of "unforeseen" exams, etc., because various groups of students are always involved in this kind of activity. Nevertheless (I didn't use HOWEVER this time), rally was immensely enjoyed by the twenty-five who tried it out. The shear thrill of braving SA country roads on a Sunday makes this event an AUES must.

To continue in this sober mood, I should mention that 1979 was the first time that AUES, traditionally a social body, affiliated itself with a professional Engineering body, namely "The Association of Professional Engineers, Australia". Many thanks are due to this Association as they, in conjunction with AUES, turned on a rather lavish show (tonnes of food, drink and humour) for the third and fourth year students. Naturally they did this in the hope of procuring new affiliates which they did with considerable success. The financial backing from outside is a great financial lurk and without the backing of APEA and the Uni. itself, AUES committee members would have been looking for jobs without degrees.

For me, the climax of AUES 1979 "came" with the Annual Engineering Dinner, a successfully organised and surprisingly couth event which was held at the Grenfell Tavern. I still think we should have invited the lecturers.

Maybe I was a little too critical in the beginning. It was not a bad year at all, even though the Coke machine attendant did embezzle the Coke profits to become the wealth owner of a network of international massage parlours.

So charge your beer steins with Hagar and scull a toast to AUES 1980.

PRESIDENT'S REPORT '80

CURRICULUM VITAE

NAME:	Hugh MIDDLEMIS	BIRTHDATE:	September 22, 1958
ADDRESS:	Flat 9, 34 Addison Road, BLACK FOREST. South Australia 5035	AGE:	21
		MARITAL STATUS:	Single

WORK EXPERIENCE:

1978-79 HIGHWAYS DEPARTMENT (S.A.), ROAD DESIGN BRANCH

Working with Road Design Engineers, I was involved for eight weeks in the following aspects of the design of urban roads and intersections:- preliminary design, horizontal alignment and vertical design, lighting and drainage design. I have a report available, and the Personnel Branch will assist with any enquiries regarding my employment.

1979-80 CAMERON McNAMARA - MINENCO JOINT VENTURE, PROJECT MANAGERS FOR THE JABIRU TOWNSHIP PROJECT (N.T.)

Jabiru will be the town to support the Ranger and other mines in the north-east of the Northern Territory. As a member of the design office team in Darwin for six weeks, I worked on the design, drafting and checking of roadworks for the residential area. On the construction site at Jabiru, I spent three weeks assisting the Project Management Staff of engineers and supervisors and gained a valuable insight of the relationship between project management and supervision and the construction work and its progress. I found that I worked well in both situations, and I have a report of my work and a reference available.

EXTRA-CURRICULAR ACTIVITIES:

Adelaide University Union Councillor 1979-80
Planning and Development Committee
Finance Committee

Clubs and Societies Council Executive 1979
Adelaide University Engineering Society: Editor 1979, President 1980
Adelaide University Swimming Club: President 1979, Member 1980
Adelaide University Water Ski Club: Member 1979
Chairman of Strata Plan No. 2574 (34 Addison Road) 1980
Member of social tennis club, 1979, 1980

VOCATIONAL INTERESTS:

Throughout my course, I have become progressively more interested in the project management and construction aspects of engineering work. My extra-curricular activities show that I have an aptitude for leadership, along with organisational capabilities developed from my involvement with clubs and societies. I also have experience in policy and decision making, with considerations for planning and finance, from my position on the Adelaide University Union Council. This experience, coupled with the planning, design and management components of my course, provides me with an excellent basis to begin work in a position that will be the first step towards my goal of working in a management capacity.

REFEREES:

Mr. R. Culver, Reader in Civil Engineering, Adelaide University.
Dr. D.S. Brooks, Senior Lecturer, Adelaide University.
Mr. S.B. Lade, Planning Engineer, A.N.R., Adelaide.
Mr. D.D. Muir, Chief Executive Officer, Adelaide University Union.

2/.....

TREASURER'S REPORT

ADELAIDE UNIVERSITY ENGINEERING SOCIETY: (AUES)
TREASURER'S REPORT - GENERAL ACCOUNT

RECEIPTS:		PAYMENTS:	
Bank Balance (21/9/79)	469.73	Printing	87.10
Subscriptions	327.00	Cost of T-shirts	224.00
T-shirt Sales	152.06		
Coke Sales	1741.41	Postage	21.54
Transfer from No 2 Account	77.94	Coke Machine	2085.80
Concrete Canoe Race	128.60	Concrete Canoe	357.76
Car Rally	161.18	Freshers Welcome	203.74
Football Carnival	90.00	Concrete Canoe Race	175.83
AUES Dinner	1160.00	Car Rally	78.70
Grants and Donations	842.40	Football Carnival	97.24
Miscellaneous	9.83	AUES Dinner	1195.00
	$5170.15	Miscellaneous	23.60
		Bank Balance at 14/10/80	619.84
			$5170.15

Without cooking the books too much the receipts and payments were "found to be" equal, which is always the treasurers first task. His second task is to ensure a profit. A quick glance at the general account shows the society $619.84 in the Black on the 14/10/80 compared with $469.73 on the 21/9/79. This should give next years AUES executive some spending money.

The important consideration of the AUES is not to make as much profit as possible but to participate in a multitude of activities throughout the year. I think this years AUES achieved the latter. As well as the usual activities of the Fresher's Welcome, the Car Rally, the Football Carnival and the Annual Dinner; the AUES participated in two Concrete Canoe Races, one in Adelaide and the other in Melbourne, and the Gawler Foot and Mouth Cup (all of which we won). Also through the AUES the 4th Year Civils built a concrete canoe early on in the year and it is hoped that this will now become an annual tradition.

Since the AUES is basically a non-profit organisation, Grants and Donations as can be seen from the General Account are critical in keeping the society in the black. Over the past year J. Rundell and H. Middlemis, (although "silver tongue" Rundell gained the best results) have relentlessly sought grants for our varied activities. It is hoped someone will follow in their footsteps.

Eddie Sandrini, Treasurer

PERRY. MEETING THE CHALLENGE OF THE 1980'S.

In no decade since the establishment of Perry Engineering in 1897 has the challenge to succeed been greater than it is at this present moment.

The changes brought by the 1970's, while being a challenge in themselves have brought with them exciting new thresholds to be reached and broken by those with the vision to recognise them as such.

At Perry's for example we now participate in engineering and construction projects, the scale of which was virtually unimaginable only twenty years ago.

The new technology touches virtually everything we make and to meet these demands we have had to develop new talents and new skills in areas that simply did not exist prior to 1970.

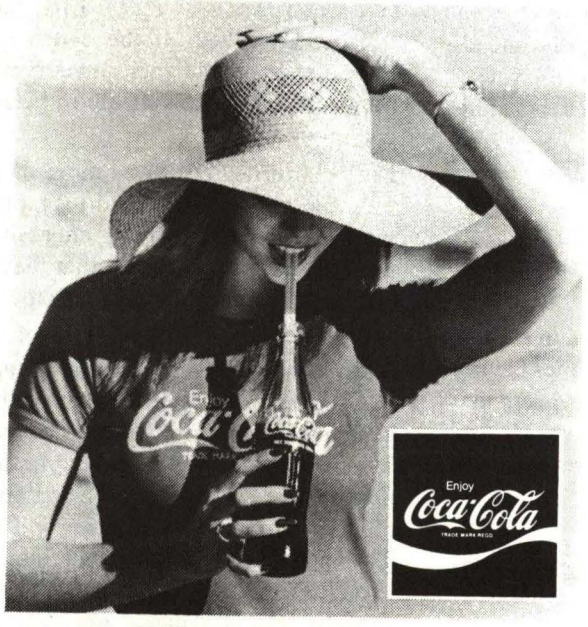
With the aid of computers and other electronically based systems we can now explore the limitless possibilities of engineering design and get answers in a fraction of a second.

At Perry, having learnt the lessons of the past, we face the future with enthusiasm and an eagerness to meet the challenges of the 1980's.

PERRY

JOHNS PERRY —
PERRY ENGINEERING DIVISION
Railway Terrace, Mile End South,
South Australia, 5031.
Telephone 352 1777.

JOHNS PERRY



Smile Coke adds life
TRADE MARK REGD

1979 SURVEYING CAMP, DEC. 2ND-DEC 14TH.
LOCATION: CHURCH OF CHRIST CAMP SITE, MILANG

On Sunday the second of December 1979 twenty eight exam-scarred and bleary eyed grass root engees made their way to the Church of Christ Camp site near Milang for ten days surveying. Under the guidance of Dr M.F. Yeo In fact, this was easily the most financially successful event of the year. What went wrong? To what aspect of the Department of Civil Engineering. In fact, by the time the whole seedy affair was finally completed in June 1980, it was just another big yawn in the career of twenty eight undergraduates.

Preliminaries: On Sunday evening, a briefing session was held in which groups drew lots for legs to be surveyed and equipment to be used, and any enthusiasm that had then existed was quickly dispelled with the thought of circular or spiral curves, double reverse curves, straights and cut and fill calculations.

Round 1: Surveying began in earnest on Monday morning when Messrs Yeo and Dillon established starting and finishing pegs for each group under a hot clear sky. Of course, this surveying exercise was to be completed like any Thursday afternoon second year exercise - as fast as possible, but we grass root engees had few ideas on what was to follow. Tacheometric surveys followed by theoelolite traverses which were to be followed by tape surveys followed by level surveys which were to be followed by pegging of battens and berms, were to be repeated ad-nauseum until the required accuracy was obtained. All theodolite traverses were to be accurate within 100mm and 150mm for level surveys, and where necessary errors were to be distributed by the theodolite rule. One group under the guidance of 'SUPER' achieved an error of only 7mm on their level survey, but this result must be viewed with suspicion when a certain point X was found to have two elevations, differing by 150mm!

All through the first week surveying continued in earnest in hot and blustery conditions and for those groups having trouble in obtaining precise measurements on leg lengths, fancy fandangled equipment such as an EDM was available for checking. While all this was going on every engee was under close scrutiny from Dr Yeo's telephoto lens.

Each group was keen to show its intellectual prowess and many professors were seen to expose their remarkable general knowledge.

After each day's surveying groups returned from "THE FIELD" for dinner followed by either hours of calculations or hours at the local. Being typical engees the latter course of action was usually adopted and everyone including Dr Yeo, excluding Mr Ewers, was suitably

happy. At this stage one might be forced to ask "Who was the approachable guy in the pub in the yellow track-suit top?"

By the end of the first week, or Round 1, all groups were on schedule with their surveying and no float was used, but Round 2 promised new and few exciting things to come.

Round 2: Round 2, like Round 1, began in earnest and all engess were keen and expected to complete the exercise by Wednesday 12th at the latest. Surveying once more continued at a furious pace with everything that had been double checked from the previous week being rechecked, and soon it was all over. OVER!, calculations by the pad full quickly rolled off the benches with every possible combination of gradients, and curves being investigated to achieve every engee's dream of balancing cut and fill, by one group only.

Round 2 turned out to be more of the same of Round 1 plus a lost contact lens and maggotty sausages. One still moonlit evening two young engees were seen heading for the hills, and rumour has it that they were carrying out an investigation into the case of the missing contact lens! Say no more!

Days passed blearily and soon it was to be all over. BUT WAIT, bulk copies of the same calculations, one to each person of each group were to be submitted by the following morning. In times reminiscent of swat vac., many engees were seen to be copying calcs until all hours of the morning, and one engee was seen to be still at it at 3.00 a.m. That's what dedication is all about, go to it 'SUPER'.

In passing one might ask, "Who was the engee who spent more time in his car going back and forth between Milang and Adelaide, rather than surveying furiously with his mates so that his sprained ankle could be treated by a physio?"

Definitely a date not to be missed by anybody.

1979

HOW TO PASS SURVEYING

By JULIUS PEDRO ECKES (B.Ox.)

THE AUTHOR: *Mr. Eckes was born on September 19, 1960, at Adelaide, a suburb of Elizabeth and was educated at school. Following the completion of his secondary education, he passed through the Adelaide University, obtaining a parking sticker en route. Mr. Eckes has spent many years studying Surveying I and is consequently a leading authority on failing the subject. In 1961 he found it advisable to change his name following the publishing of an article on surveying and has not been heard of since.*

Definition: Surveying is a subject which, had you heard of its existence when you chose your course, you need not have done.

The Decision: Fortunately for our faculty, there is always a certain percentage of freshers who have never heard of surveying, and it is not until their second or third year that they discover their mistake. They are then faced with four choices which, in order of preference, are:

(1) To change their course.

(2) To wait until the course is changed.

(3) To commit suicide.

(4) To do surveying.

However, it must be remembered that at the time of their choice, they still do not know just what is involved in surveying, and are consequently not capable of a rational choice. Naturally, they do not want to change their course at this stage, and if they wait until the course is changed they may have to wait for six or seven months. To commit suicide is inconvenient, since the lift well would have to be cleaned out, and the department cannot afford the power to electrocute them, so the students are left with only one choice—to do surveying.

This article has been written in the hope that the ideas and suggestions illustrated may give students a better understanding of the essential principles of surveying. The article has been divided into three sections—instruments, field work, and computations—but before considering each section in detail, the student should have a general knowledge of the uses of surveying.

Why study surveying? This is a question that has puzzled students for many years.

How does surveying affect the engineer? Because of the lack of space, this question cannot be answered in any detail, but it is sufficient to say that it generally does.

Once the student has understood the significance of these two questions, he is in a position to read the first chapter of his surveying book.

INSTRUMENTS

All instruments that have more than one part have some means of adjusting each of its parts. At first sight this seems unnecessary, since the means provided for adjustment of the instrument merely provide a means of getting the instrument out of adjustment. However, the fact that the instrument can be adjusted means that you, and not the instrument, are responsible for the errors produced. Consequently you can be given any one of a historic collection of instruments—including the Wye* theodolite—and be expected to obtain accurate results.

Adjustments are of two kinds—temporary and permanent. The distinction is best illustrated by an example. A surveyor, levelling an instrument with a bubble, manages to get the bubble in the centre in twenty minutes by using the levelling screws and level tube screw. This is a temporary adjustment. He then proceeds to take fifty readings, but while he is doing this the centre of gravity of the earth shifts, and the bubble races up to one end of the tube. Consequently, fifty minutes later, having taken all his readings, and checked them, he discovers that the bubble has disappeared. At this he picks up the nearest ranging pole and strikes the instrument with such force that he bends the horizontal axis, vertical axis, and level tube screw, thus effectively preventing any further rotation of the instrument. This is a permanent adjustment.

Surveyors during the past 500 years have developed many useful and ingenious instruments, and several hundred useless ones. Surveying dates back to the days of the early Egyptians, when Slowcomb (inventor of the slow combustion stove) noticed that if the top was left off the stove pipe you could sometimes see through it. With this ingenious device he found that he could observe the female species at close range while appearing to be doing something quite different. The idea caught on so rapidly that by the 16th century A.D. the female species noticed what was happening, and kept further away. This necessitated equipping the tube with lenses to compensate for the extra distance—hence the telescope.

Using the telescope, all went well until the beginning of the nineteenth century, when the secret of the lenses was discovered, and the

* This valuable instrument was manufactured by Galileo in 1610, and given to his mother-in-law as a Mother's Day gift. She threw it on to the rubbish tip, where it remained rusting until discovered by a scrap metal merchant in 1812. He sold it to the Russians, who used it in the Crimean War to frighten the Turks. In 1855 it was hit by a cannot ball, which bent the barrel so much that it was impossible to see through it. The Russians abandoned it, and it fell into the hands of the British Light Brigade, who brought it back to England as a souvenir. In the process several of the parts were lost, and have never been found. In 1930 it was given to the South Australian Museum, who sold it to the Adelaide University for 2/8½.

Whether you enjoy field work or not depends on you. Provided you ignore the flies, snakes, heat, dirt, bad-tempered instructors, and the calculated malice of inanimate objects such as blackberry bushes and barbed-wire fences, you can really enjoy field work. It is the calculations which you have to do afterwards that mar an otherwise perfect day.

COMPUTATIONS

A quick look at field books from past years shows that our accuracy is already down to 1 part in 12. Consequently we cannot afford to lose any more significant figures in our computations. Hence the use of 7-figure logarithms. At present 8-figure logarithms are not readily obtainable, but printing was begun in 1932 on a book of 33-figure logarithms (to the base $\overline{\Pi}$), and the first book should be available early in March, 1987. For those doing Surveying I this year this should be of great assistance in solving question 3 of set 5.

SURVEYORS HARD AT IT!

Normally, surveying calculations are done by computers in a matter of a few minutes. However, this would mean that the rest of the three hours allocated to Surveying I computations would be wasted. Besides, "I had to use 7-figure logarithms, so I don't see why you shouldn't."

Normal students always have difficulty in obtaining the right answer when using 7-figure logarithms. However, this trouble may be overcome by using one of several techniques, two of which are outlined below.

(1) Try setting your work out neatly. For example:

Aim: To divide 4 by 2.

Calculations:

Number		Logarithm		Antilogarithm
4	——›	1.7020600		
2	——›	1.3010300		
		0.4010300	——›	2.00000000

Answer: 2.00000000.

NOTE: (i) You still make mistakes, of course, but there is a better chance that you will get it right (approx. 1 in 10^{19}).

(ii) In problems like the one given above the student is sometimes tempted to guess the answer. This is dangerous. It is far better to spend a few extra hours on the problem, and be sure.

(2) Calculate the answer to 2 significant figures on a slide rule, and get the remaining 5 significant figures from someone else.

Another excellent method is to take the total number of results obtained in the class (n) and find the root mean square of all n values.

To allow for errors in this calculation, this should be repeated n! times to obtain the results A_1, A_2, A_3, - - - - - -. This method should then be repeated, using A_1, A_2, A_3, - - - - - - instead of (n), to obtain B_1, B_2, B_3 - - - - - -, and so on. The final result (Z) occurs when a set of answers is obtained such that $Z_1 = Z_2 = Z_3 =$ - - - - - -. The method is therefore self-checking.

At present I am working on a solution to question 1, set 1, using this method, but since I have not yet reached a solution, I hesitate to recommend this method.

Once the student has mastered the art of using 7-figure logarithms, he is in a position to solve his first problem. This is when he discovers that surveyors are allergic to the F.P.S. and M.K.S. system of units, and prefer instead to record measurements in rods, poles, perches, chains, acres, links, etc., etc. At first sight this seems most unreasonable, but this random collection of historic units has many advantages over the F.P.S. system.

Firstly, since you have bought a book of 7-figure logarithms, you should take every opportunity to learn how to use them.

Secondly, all the units are related by natural physical constants. For example, to convert acres into square fathoms, all you have to do is multiply by K, given by the equation:

$$K = \frac{CR_\infty h}{E_o}\left(\frac{N}{\pi}\right)^{\sqrt{\frac{7}{10}}}$$

Where C = velocity of light in a vacuum,
Roo = Rydberg wave number for infinite mass,
h = Planck's constant,
Eo = energy associated with le. v.
and N = number of beans in a cup of Nescafe.

If you have any doubts about the validity of this relation, try it for yourself. Similarly, the relation between any two units can be shown to be a dimensionless combination of naturally occurring physical constants. This, of course, simplifies calculations quite considerably.

CONCLUSION

By now you will have realised that reading this article was a waste of valuable time which should have been spent doing surveying. However, I would not worry about it, since the author spends much more time writing these articles than you do reading them, and he passed. For those doing Surveying I for the first time, remember that the first year is the worst. After that you get used to it, and there is always the chance that you might pass, anyway.

scenery resorted to high speed in order to avoid detection. Not to be out-done, man's genius was revived, and the result—a vertical and horizontal axis, by which the telescope could be swung around at high speed like an anti-aircraft gun.

Then came the greatest discovery of all.

Previously surveyors had found great difficulty in obtaining vital measurements owing to lack of co-operation on the part of the subject. With the discovery of the Tacheometer the problem was solved. All the surveyor now has to do is to measure the three diameters (from a safe distance), and multiply by $\overline{||}$, assuming a circular cross section.

Because of the large number of instruments available, only a few of the instruments are discussed here. The rest are just as useless.

Tripod: It does not take the potential surveyor long to realise what a time-consuming device the tripod is. Just because an object is stable, with only three points of support, does not mean to say it has to have only three legs. In my opinion a polypod would be a much more useful device.

Imagine a polypod with nine legs. To set up the instrument all one has to do is to splay the legs out at random angles and set it on the ground. Then, while an assistant holds the plate horizontal, you simply walk around the instrument and lift all the legs that are not doing anything useful. If the polypod has enough legs then, by the laws of probability, it will have at least three legs in the correct position, and these may easily be identified from the fact that the instrument collapses when they are lifted.

The legs not being used for support may then be put where required, and used for coat hangers, towel racks, aerial poles, firewood, etc.

Plumb-bob: No sooner has the student beaten the tripod into submission with a ranging pole than he is faced with another problem — the plumb-bob is not over the peg. Usually his first reaction is to burst into tears, but the solutions are really quite simple.

Either (1) Shift the peg,

or (2) Use steel pegs and magnetise the plump-bob.

Both methods are satisfactory, but care must be taken with (2) to ensure that the peg does not follow the plumb-bob when shifting the instrument. This sometimes happens when the ground has been ploughed up by excessive applications of (1).

Optical Square: This is a compact hand instrument which enables an experienced surveyor to see his left eye with his right, and vice versa. (Otherwise useless.)

Level Tube: This is a device attached to most instruments to amuse bored surveyors. The aim of this game is to get the bubble in the middle while leaning on the tripod. (If you do succeed, do not be tempted to turn the vernier plate through 90°, as this is fatal.)

Ranging Pole: A stout pole, preferably steel, for use in case of attack by an irate surveyor or other wild animal encountered in the undergrowth.

Cross Staff: This is what you have to cope with when you accidentally leave your theodolite on a road and it gets mangled by a passing semi-trailer or bus.

Chain: A device used by surveyors before the introduction of the push-button type.

FIELD WORK: SURVEYING CAMP

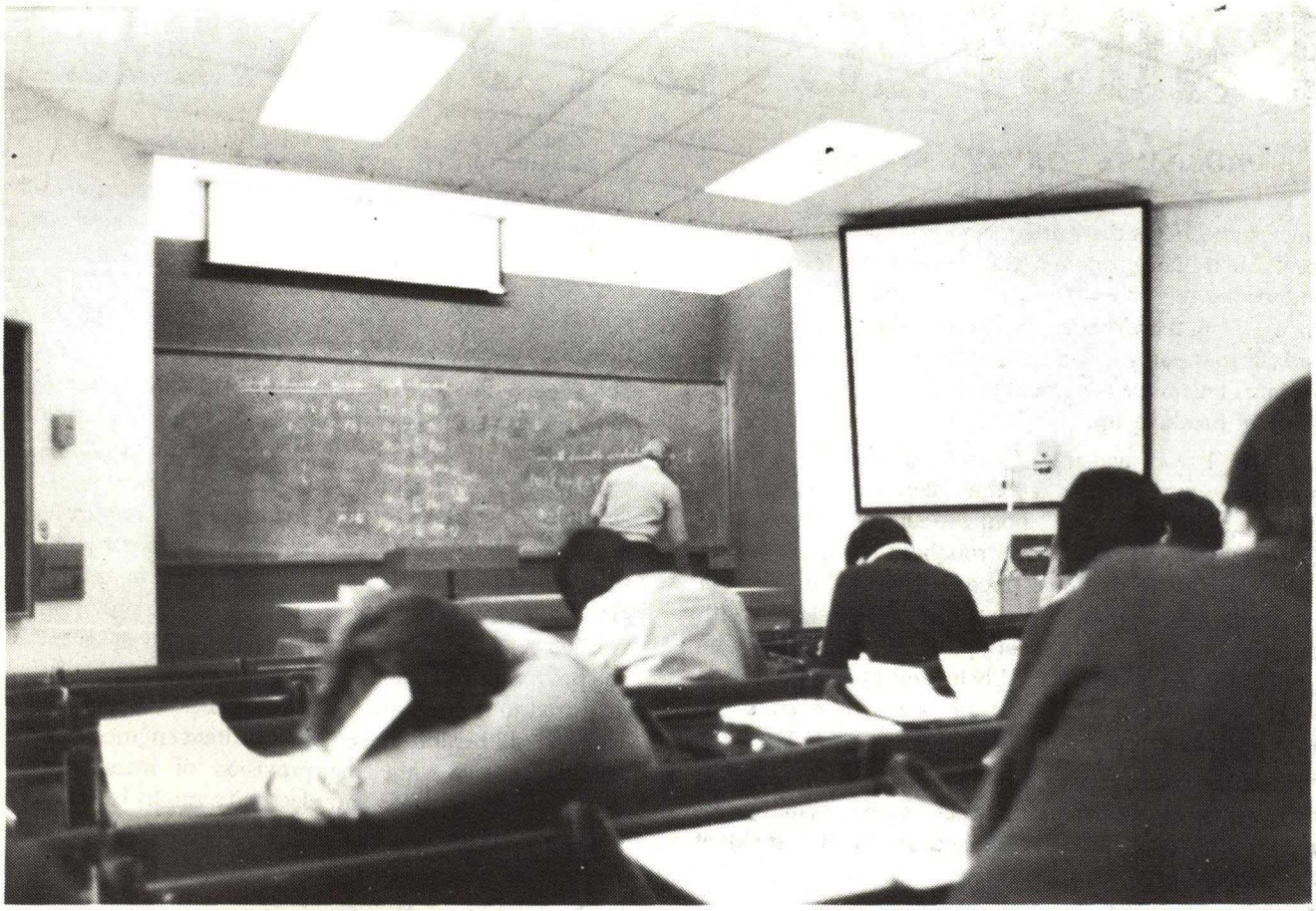
As soon as the exams. have finished at the end of each year, everyone celebrates the return of freedom—everyone, that is, except the poor surveying student. Why is this? What has he done that would prevent him from celebrating with his friends?

The answer lies not in what he has done, but in what he has not done—namely, surveying camp. During the year the student has few opportunities to show his ignorance, and so the University has decided that every surveying student will attend a surveying camp.

While in camp the student is required to report the finding of any human remains, as such reports are vital evidence in tracing missing surveying students. In the past many students have disappeared during surveying exercises, and in most cases very little is known of the circumstances of the disappearance. However, there are one or two notable cases which should serve as a warning to future surveyors.

In 1897 two parties, A and B, each equipped with a theodolite and tape, set out from two points, X and Y, with the object of setting out an arc of a circle, radius 2,000 feet. Unfortunnately, due to slight errors and a misunderstanding as to which side of X Y the centre was, they failed to meet in the centre of the arc. Confident that they would meet, both parties continued to plot their curves, and if it had not been for an observant surveyor from another party, who noticed both parties go past twice, they may have been lost for ever.

In 1928 a small party was lost during an exercise in which the party was required to take levels along a road as far as they could go in the given time. This party was particularly fast, but unfortunately they became lost after half an hour, and since they could not understand what they had written down, they were unable to find their way back. After many minutes of wandering through the countryside they came across the local pub. As luck would have it, however, their surveying instructor knew the area well, and was soon able to locate the missing party.



PROSPECTS FOR CIVIL

PROSPECTS FOR CIVIL ENGINEERS IN THE 1980S

During the 1970s the world economy and, naturally, our local Australian economy, experienced the most severe and prolonged recession since the 1930s. The sudden change from the virtually uninterrupted growth of the 50s and 60s to the stagnation of the 70s seems to have caused a log jam of major development projects which is now on the verge of breaking up.

On the latest available figures, major mining and manufacturing projects at the "committeed" and/or "final feasibility" stages amount to almost $30 thousand million worth of investment throughout Australia. About three-quarters of this investment is confined to Western Australia, New South Wales and Queensland, with mining projects predominating in Western Australia (especially the North West Shelf) and Queensland, and with New South Wales being the major state for manufacturing projects.

Within the mining sector over 75% of expenditure will be directed to oil, natural gas and coal, while in manufacturing the aluminium industry will account for almost half of the planned expenditure.

In line with the depressed state of major development projects and construction work during the 1970s the labour market for civil engineers, the largest branch of engineering employment, eased, and significant levels of both underemployment and unemployment of civil engineers occurred. As often happens in occupations requiring lengthy training periods there was a lag in the adjustment of the supply of engineers and a subsequent over-correction to the depressed labour market. It now appears that the number of civil engineers graduating will not satisfy the growing demand for them and that within the next few years substantial shortages of civil engineers will develop.

Let's now look in more detail at where the jobs for civil engineers are likely to occur, when this might be and just what sort of work might be involved.

The latest data available on the distribution of civil engineers by industry (from the 1976 census) shows that in New South Wales, for instance, at that time there were 3338 civil engineers employed. Of these, about 18% were in consulting work, 17% in State Government administration, 16.5% in local government, about 15% in the construction industry (excluding building), 11% in water storage and supply, and about 6% in the construction of buildings. Only 12 civil engineers at that Census were females. As well, over half the profession was aged under 35 years.

The number of civil engineers grew quite rapidly in the first half of the '70s but since 1978 there has been a steady decline in the output from universities in Australia as a whole. It is expected that in 1983 the number completing civil engineering courses will be only about half the number who did so in 1978 whereas demand should by then, be much greater than it was in 1978.

It is expected that this increased demand for civil engineers will be spread across all the areas where they are currently employed, since there is a good deal of inter-dependence between them. For example, the construction of an aluminium smelter in the Hunter Valley requires the services of civil engineers in the design and construction of the smelter, in the design and construction of associated electricity generating power stations, in the provision of new power lines, water supply, railways and roads and in the provision of other services to the increased population attracted to the area by such developments. Some of this work would be undertaken by consultant engineers in the private sector, while the provision of infrastructure services such as roads and electricity might be done by engineers employed in the public sector.

In fact two major aluminium smelters are planned to be constructed in the Hunter Valley over the next six years and they will directly generate about 3500 construction jobs and around 1700 production jobs. Related to the increased demand in the Hunter region for electrical energy resulting from these smelters are two major power stations, Eraring and Bayswater which are scheduled for completion in 1984 and 1987 respectively, and they also will produce over 4000 construction jobs and over 1000 production jobs. Other major projects in coal mining are planned for the Hunter region and for the Lithgow area; the Lithgow area will also see an expansion of electricity generation at Wallerawang and Portland. A number of manufacturing projects are also scheduled for the Sydney metropolitan area, most notably the ICI ethylene plant to be built at Botany.

It appears that, with such a large number of projects taking off at about the same time, bottlenecks will occur in the supply of skilled labour, including civil engineers. In fact already there are indications that experienced civil engineers are in short supply and that the initial difficulties which new graduates have been experiencing in entering the profession are disappearing.

At present the majority of civil engineers live (and presumably work) in metropolitan areas, although it is apparent that the demand for them, particularly during

ENGINEERING IN THE 80'S

the construction phase of the major projects, will be stronger outside the metropolitan areas. As a result, engineers who are prepared to be mobile, should experience little difficulty in securing employment within the next five to six years at least.

It is hazardous to try to predict precisely when and by how much demand for civil engineers will rise. However, if the current schedule for major development projects is used as a guide, the following picture emerges. Note that these are conservative estimates, particularly for later years, as they include projects at the "committed" and "final feasibility" stages, but not projects at the "preliminary study" or "possible" stage.

At present it appears that demand for labour to work on major development projects will rise significantly in 1981 and remain at a high level for at least four years. In fact, it seems possible that shortages of some types of skilled labour, including civil engineers, will prevent some projects from proceeding on schedule, and thus we should see a smoothing out of demand over a longer period, with little chance of oversupplies of skilled construction labour being evident for some years. Over the next 18 months the demand for labour on major construction work could be as much as 80% higher than it has been over the last few years. One implication for civil engineers is that salaries could be expected to rise, and, for the growing number of civil engineers working on a contract basis, very high annual earnings have been reported recently.

SOURCE: *Focus*, October 1980.

GRADUATE JOB CHANCES

NEW GRADUATES' JOB CHANCES

New graduates in Engineering entering the workforce in 1979 were surveyed by the Graduate Careers Council of Australia as part of their complete survey of all university and college graduates in most subjects.

The table below summarises some of the detailed information in the Council's report and paints a picture of considerable interest to members:

DESTINATIONS - ALL FIRST DEGREE/ DIPLOMA GRADUATES IN ENGINEERING AS AT APRIL 30, 1979.

Extract from *PENEWS* Vol. 34, No. 1.

Universities %	Colleges %	
20.5	32.8	Government employment
45.5	43.9	Private employment
1.9	4.1	Teaching
0.6	0.4	Other
68.6	81.1	Total full time employment in Australia
11.9	10.3	
8.7	4.5	Seeking employment
1.7	1.4	Further study
9.1	2.5	Unavailable for full-time employment

Follow-up surveys were done in September of those seeking employment at April 30. These indicated in overall terms that 62.2 per cent of University graduates and 43.8 per cent of the college graduates in **all** courses seeking employment at April 30 had obtained employment four months later.

However, 30 per cent of both University and College graduates in this category did not respond to the later survey and this makes the figures somewhat inconclusive.

Overall, the impression to be gained is that a significant number (more than 10 per cent) of students graduating as professional engineers and seeking to enter the workforce early last year were unable to obtain employment in the first few months of 1979.

Even by September, it seems that well in excess of half of those were still in that situation.

The Association believes that this is much too high to be tolerated, despite claims by some that we need more graduates.

Before any expansion of student enrolments takes place, the teaching institutions and our profession generally need to seek the reasons for this situation.

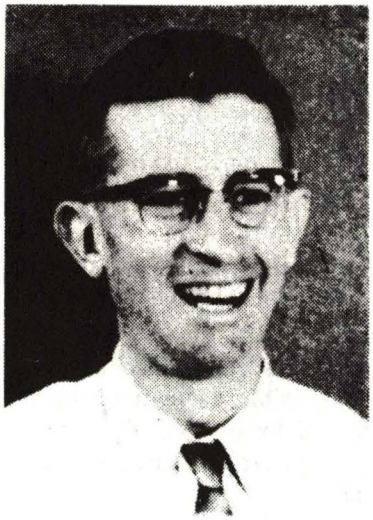
APEA will continue to study this closely and use its influence to amend, as far as possible, a situation where new graduates are unemployed for so long that their chances of obtaining professional engineering employment become remote.

ABOUT 20 YEARS AGO...

"Worrk is the curse of the drinking class."

"Looking for someone with a little authority? I have as little as anyone."

"SMILE! Later today you won't feel like it."



"I have a fine set of teeth, haven't I?"

A.U.E.S. Films are Popular!

Richard Duncan and Mr. Don Dunstan, M.P., following his talk to A.U.E.S.

HANDICAPPED ENGINEERING STUDENTS

ENGINEERING STUDENTS AID HANDICAPPED

The problems of children who are physically handicapped and in need of equipment to assist them have been taken up by undergraduates in Mechanical Engineering.

A strong working relationship has developed between the University and the Regency Park Rehabilitation Centre for Crippled Children, under the guidance of Professor R.E. Luxton and Mr. W.D. Doble.

As a result of the affiliation, a rehabilitation engineering section has been established at the centre and several mechanical devices for therapy have been made.

"The support of a professional engineering school is essential for the centre to achieve long-term research objectives on the one hand to act as a technological backup on the other, and the student projects have considerably promoted research," Mr. Doble said.

When Mr. Doble and one of his students first became involved with the centre in making a device to assist children to crawl, it became clear that both the professional and technical engineering services there should be improved. As a result, Dr. B. Seegar, a graduate from the University of N.S.W. and now an honourary member of the Mechanical Engineering Department, was appointed.

Since then, the quality of the centre's orthotic equipment has been greatly improved, and Dr. Seegar and Mr. Doble have begun a research project through the assistance of a Channel 10 Cripple Children's Appeal grant. The grant, which is for the study of bio-feedback, has been held for one year, and a further grant has been sought.

Apart from the assistance given to Regency Park by the hanical Engineering Department in the production of devices which can be manufactured from existing technology without the need for full-scale research techniques (this has included the making of a tremor monitor, a skin conductance meter and clockface selectors), considerable research has been carried out by supervised undergraduates.

Mr. Doble has worked with several fourth-year students since 1975 on design and research projects to aid crippled children. Initially, the work was related to problems of walking, and from this has developed Mr. Doble's interest in bio-feedback, as it is difficult to produce satisfactory walking performance without reasonable head control.

Mr. Doble said that engineers had an important part to play in assisting places such as Regency Park.

"While the role of the engineer in providing equipment and services is clear, his other skills of systematic analysis and organisation are not sufficiently utilised in the health care area," he said.

"Many of the devices that are produced for handicapped children made for one person only and are therefore too expensive — one person gets to use them but 1,000 don't.

"I think that one of the roles of the engineer in this situation is to look at the problem as one of a class. Perhaps as a result we won't make the best device for one particular individual, but if we can make one that opens up the perspective for a large number of handicapped individuals, that is the direction we should take."

Some problems had been created by the fact that some of the devices that were produced had failed to be attractive enough to appeal to the children and the therapists, although the engineering work was sound.

"Making equipment that is well turned out is difficult, because as people conducting research we are not concerned to produce a high quality piece of commercial equipment, nor should we be," he said. "When you are doing research you don't know if what you are making is going to succeed, and you certainly don't put your time and money into a cosmetically saleable product."

"We are making considerable progress with the problems we have had, and as well the student involvement is having the side benefit of promoting the image of the engineer among undergraduates." ©

EXTRACT FROM LUMEN, Vol. 18, No. 5.

What options are open to you after graduation.

You have four options open to you:-

1) Full-time employment
2) Full-time study
3) A combination of employment and study
4) Unemployment.

In some areas considerable effort and resourcefullness is now needed to avoid this. You may have to take a job that is not particularly interesting or challenging, but will provide experience upon which you can build, as well as earn an income.

The basic aim of the Torrens Advisory Board is to place students in full-time employment - this is achieved by arranging campus interviews, providing information on many of the larger employers in this state and interstate and providing possible employment contacts.

Full-time Employment

If you are still looking for employment and have not yet contacted the Professional Employment Office you should register there as soon as possible. It is located on the 12th floor, 45 Grenfell St. It is also at the P.E.O. Office that you register for unemployment benefits, and you should do this as soon as your studies are completed. You are normally eligible for benefits eight days after you register, and first payment is made about two weeks after that. You would also be wise to locate your nearest C.E.S. Office or Job Centre to find out about the range of jobs available there.

There are many ways you can go job hunting for yourself and you may obtain some useful suggestions such as how to go about this from the "Market Yourself Kit", which is now available from the Careers Advisory Board. As well as giving information on job hunting it emphasizes the importance of preparing a well thought-out, well printed curriculum vital to send to employers when you have located a possible opening. Your first goal is to obtain an interview, and if you do, you must prepare for it and find out as much as you can about the employer. To help you do this the Careers Advisory Board maintains information on many employers, you should not hesitate to make use of this.

Full-time Study

Your choice here is between Honours or a higher degree, and a post-graduate vacational course. Information on the wide range of these courses is available from the Careers Advistory Board, and you should be aware that applications for many of the past-graduate diploma and degree courses in this state close at the SATAC Office on 31st October.

Other Strategies for 1981.

You may find that your plans for 1981, either for finding employment or for further study do not work out, and you would be most wise to have alternative strategies ready. These may include a combination of casual employment, part-time study, voluntary work travel. Further suggestions along these lines are in the "Market Yourself Kit".

You may be interested to see what happened to last year's graduates - details are given on the next page.

Sincere thanks are given to Mr. M.C. Kerby, Secretary of the Careers Advisory Board for his guidance and help throughout the year.

DESTINATION OF THE 1979 ADELAIDE UNIVERSITY ENGINEERING GRADUATES (AS AT APRIL 30, 1980).	Total Graduating	Full-time Studying for Higher Degree or Honours	Other Full-time Study	Tertiary Institutions	State Government Not Schools	Commonwealth Government	Other Public Authorities	Industry, Commerce and Other Employers	Other, Unemployed
Ph.D.	9	0	0	2	0	0	3	4	0
MASTERS	7	0	0	0	2	0	2	2	1
B.E. HONOURS DEGREE									
Chemical	5	0	0	0	0	0	0	5	0
Civil	16	1	0	0	2	1	0	12	0
Electrical	21	3	1	0	0	1	6	10	0
Mechanical	5	1	0	0	0	0	1	2	1
B.E. ORDINARY DEGREE									
Chemical	4	0	0	0	0	0	0	4	0
Civil	23	0	1	0	3	2	1	14	2
Electrical	12	0	0	0	0	0	0	9	3
Mechanical	9	0	0	0	0	0	0	8	1
TOTAL B.E. DEGREES	95	5	2	0	5	4	8	64	7

AUSSIE RULES O.K.

FOOTBALL CARNIVAL 1980

Some of the Adelaide Uni Engees donned footy guernseys for the annual Engees Footy Carnival, held in second term. The carnival was well attended considering it was held on a Sunday, that day which is spent re-covering from the night before.

The boozing and the B.B.Q. was interrupted for a short while to play footy. Many Engees were reluctant to play and were finally coerced after being allowed to take their beer with them.

The four faculties only managed to form three teams. The Chems, the smallest faculty, provided a full team led by Big Nick Lagonik. Big Nick encouraged his fellow Chems to practice before the big day or else he would do something nasty to their bodies. The results of Big Nick's training was a dedicated team with skills and natural talent only surpassed by the Port Adelaide mini league. The civilians were also well prepared for the footy carnival after weeks of rigorous training. Team members had to run from the final year room to the 5th floor of the Union Building and back. This exercise proved that the civilians were toally unfit as it took most of them several hours to run there and back.

The first clash of the day was between the Civilians and the Chems. With elbows and boots stuck in, the match displayed all the finer skills of Aussie Rules. There were many casualties on both sides and the occasional goal was scored. Top scorer for the Civilians was Steve (Mr. Engee) Bushnell who injured five Chems. including a broken collar bone in the final quarter. While top scorer for the Chems. was their Captain-Coach, Big Nick who besides kicking a few goals flattened four Civilians. It is interesting that John Rundell for the Civilians did not score that day due to the lack of tarts at the match. Play of the Day must go to the Chems. who ran the ball down the centre catching the Civilians off guard and setting up John Ditria. The talented Ditria capped off this beautiful piece of play by missing the goals from point blank range.

Both teams showed their athletic abilities by taking many spectacular overhead marks. The airial duels were hotly contested between the Civilians and the Chems. However it was the high flying Andrew Minns for the Civilians who took the mark of the day. Minns "leapedlike a startled gazelle" in front of goals to take a brilliant mark after being goosed from behind by one of the opposition. The Civilians completely out classed the Chems. by thrashing them by one point.

The second match played was between the Chems. and a multi-racial team consisting of Elects., Mechs. and a few Civilians. The game was a hard fought one with the Chems. just managing to beat the mixed team 23 goals 13 points to nil. It is hoped this year (1981) that all faculties manage to make a team for the footy carnival and that all years are invited to participate.

MR ENGEE 1980: STEVE 'THROAT WARBLER MANGROVE' BUSHNELL (Alias DENNIS)

AGE:	22
STAR SIGN:	Aquarius
VITAL STATISTICS:	2 and a pimple
LENGTH:	5ft + 6½ in.
HOBBIES:	Male Model, Sky Diving, Ballet, Surveying, Brick laying.

Hysteresis: How long have you had this fantastic body?
Mr Engee: I have been developing this immasculated physique since my mother's milk started tasting bitter.
Hysteresis: You have had a very successful year. What would you see as the highlights of this year?
Mr Engee: The first event to spring to mind was the occasion of my crowning as Mr Engee for 1980. To have received the Mr Engee award and with it the Mr Engee Show Bag gave me a great thrill. The prizes within the show bag were so useful and some came in very handy in a tight situation although the raincoat shrunk a bit.

The social events of the Engineering Society's calendar were all highlights of the year for me, such as the concrete canoe race, the car rally, the footy carnival and the dinner, because they all had a keg laid on. The footy carnival especially so, as with the grog came the opportunity to half kill some poor little Chemical Engineer (broke his collar bone).

The academic highlight came from the research project. The confidence inspired by our research supervisor Dr Brooks, for no matter what went wrong, fell down, fell off or blew up, he would confront every situation with the great confidence restorer of, "Of course I expected that. If you think about it it's obvious."

But the ultimate academic highlight has only just been achieved. I PASSED!

Hysteresis: Although you are a civil engineer, you've said that electronics holds much interest for you. In which particular areas do you find the more challenging aspects?

Mr Engee: Asteroids, Galaxians, Space Invaders, Missile Command and Alien Digger.

Hysteresis: As we are approaching the Christmas season, finally, if you were sat upon Father Christmas's knee, what would be your request?

Mr Engee: A polka dot bow tie and a striped shirt.

MR. ENGEE 1980

THE THROUBLE WITH VERBS

THE TROUBLE WITH VERBS

If someone does something which is considered visionary or masterful he is said to be the architect of the scheme, but if someone does something which is clever but at the same time cunning and sly he is said to have engineered it.

The problem, it seems to me, lies in the English language. The noun *architect* ("a designer of complex structures, esp. the Creator") has no corresponding verb, whereas *engineer* is both a noun and a verb. The verb has the colloquial meaning of "arrange, contrive, bring about" (Concise Oxford Dictionary).

"As far back as 1130 AD the (noun) engineer in its early forms (ingeniator, engyonur, incignerius, ingegnerius) meant one who applied ingenuity, creative spirit or invention to the planning and designing or contrivance of machines and other ingenious devices."

The general public is not aware of this, of course, but for all that, I don't believe the engineering profession is held in any less respect because the verb *engineer* is somtimes used in a way that suggests deviousness.

Engineers are not the only professionals troubled with verbs: to *doctor* means "treat medically, castrate, patch up, adulterate, falsify".

And how would a woman solicitor feel if she was asked if she was still *soliciting*'

TRACING

OUR

ORIGINS

TRACING OUR ORIGINS

The word "Engineer" (French: ingenieur; German; Ingenieur; Italian: Ingeniero; Portuguese: Engenheire) is derived from the Latin word "ingenium" meaning ingenuity, creative spirit, invention.

The historical evolution of the word "engineer" in form and in application is outlined (with dates of recorded use) in the following tabulation:

Latin — Injenium — ingenuity, creative spirit, invention.

Medieval Latin —

(1067) ingenium — contrivance, device, invention.
(1125) ingeniare — to contrive, to invent.
(1130) ingeniator — engineer, one who contrives, or invents.
(1140) ingenium — a contrivance, a military machine.

Old English —

(1131) engyonur — inventor and builder of military machines.

Medieval French —

(1195) incignerius — engineer.
(1196) encignerium communis — engineer of the city.
(1216) ingegnerius - engineer.
(1497) ingeniarius— engineer (applied to a man who was an architect, land surveyor, and hydraulic expert).

Germany —

(1571) Ingegnier — engineer
(1578) Ingenieur - engineer
(1620) Ingenier und Baumeister — engineer and architect
(1630) Ingenierus Schul — School for engineers (title of a textbook)
(1650) Supremus Ingeniarus (Latin) — chief engineer
(1686) Oberingeniur - chief engineer

France —

(1689) Ingenieuis constructeurs de la marine — official (royal) naval architects.
(1695) Corps des ingenieure geographes — organisation of geodetic engineers.
(1739) Ingenieurs de' architecture civil — civil engineers.
(1755) Ingenieur — "a man trained in mechanical science who, by the machines he invents, increases moving forces either for conveying or raising water".

Italy —

(1748) L'ingeniero civil — civil engineering (surveying and hydraulics).

England —

(1771) "Civil Engineers of the Kingdom" — an organisation of civil engineers.
(1793) "Society of Civil Engineers" — (reorganised under this name).

EXTRACT FROM PENEWS, Vol. 33, No. 3.

ENGINEERING DINNER

THE SAGA OF ED.

Once again the engineering dinner was the cultural event in every engineering student's social calendar. 120 staff and students (infact mostly students and very few staff) attended. Apparently many staff are still licking their wounds from the last dinner they attended, 10 or was it 20 years ago.

The committee had many headaches in organising the dinner. The major hassle was the closure of the Richmond Hotel five days before the dinner as a result of some battle in the board rooms of a major Adelaide retailer and deep within the Lord Mayors Chamber in the Town Hall. Rather than be caught within this corporate battle we decided to attempt to profit from the situation. This resulted in front page publicity in the Advertiser as well as an 'On dit' scoop which were both brilliantly ghost written by the Engineering Society. However the muck raking campaign succeeded and the Directors of the John Martins generously funded the Engineering dinner.

After these traumas we finally obtained a booking for the dinner at the Sturt Football Clubrooms. It looked as though it may have been John Martin's Buttery for a while!

The next saga was to find a guest speaker. This difficult task had involved extended negotiations with the booking agents of many well known Academics ranging from the Vice Chancellor to Harry the Cleaner. Finally in a desperate move, Jeff Scott from the politics department was blackmailed into this unenviable task. Apparently he hadn't spoken to us for only 30 years.

He was induced to attend we believe by rumours that many available female Arts students were coming along. He must be thanked as he was one of the very few staff that had enough faith in the organisers to attend and also to speak. Jeff Scott provided a pertinent and enlightening talk on engineering students, past reminescences and told of our unused political might.

Our other speaker was the new professor of Civil Engineering, Professor Bob Warner, who gave an enlightening speech on Road Accidents. It was pleasing to have him along and he even paid for his ticket!

Also in attendance was Mr. Phil Anderson, former Manager of the Richmond Hotel who donated two perpetual trophies to the winner and runner up in the Richmond Run Foot and Mouth Cup.

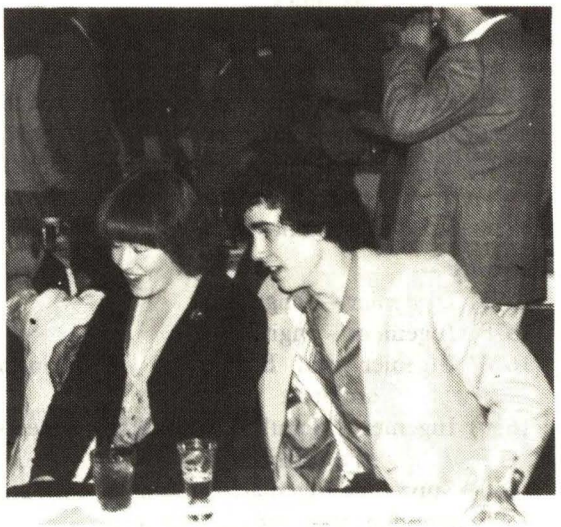
During the evening we presented the annual trophies.
Those successful were:
The De Facto Award — Phil Simm & Vicki Arch
(One presigned Marriage Certificate)
Ethnic of the year — Eddi Sandrini
(One tin of spagetti)
D.C. Award — John Rundell
(one can of dog food)

MR ENGEE 1980 — Mr Steven "Bushy" Bushnell
(a birthday kiss from Mrs Stock and a beautiful portrait photograph, courtesy Dr. Mike Yeo).

To provide entertainment we had well known international acts performing. These included, Dave and the P.G.'s as well as some talented acting by the Under G's. A line that still lingers from the acts is "We had Crawley for concrete". Apparently this speaks for itself.

When finally we were forced to leave the Sturt Football Club, those all night ragers left standing departed for the Penthouse Club with their free passes in their grubby little hands. Others included drunkard lecturers, frustrated girlfriends and other assorted rabble wandered off home or wherever!

A superb evening was had by all who attended and once again we demonstrated that engineering students are NOT "the grubby food throwing chauvinists" that staff, feminists and arts students allege. To those staff that attended, many thanks for your faith in us and we look forward to seeing your attendance in future years. Remember it's those who are not attending that are missing out!



"Let's go to the Penthouse Dear..."
"We could use the $100 invitation strip prize for your engagement ring".

ENGINEERING DINNER AWARDS
Presented by Andrew Lane

1. George Karolyi Impersonation Award
Winner: Mark Skrebels
Prize: Dracula Kit consisting of Dracula book, crucifix, wooden stake, fangs and sprig of garlic.
Reason: unequalled G.K. impersonation on both stage and T.V. screen.

2. Deviant Award
Winner: Mark Whittaker
Prize: Deviance Kit - bottle of beer, empty toilet roll, lump of shit, "Tits and Clits" magazine, and a tea bag.
Reason: Consistent disgusting comments throughout the year.

3. Clumsiness Award
Winner: Angelo Capozza
Prize: Mop up kit consisting of sponge and a straw.
Reason: Continuous spilling of milk shakes in refec and lecture theatre.

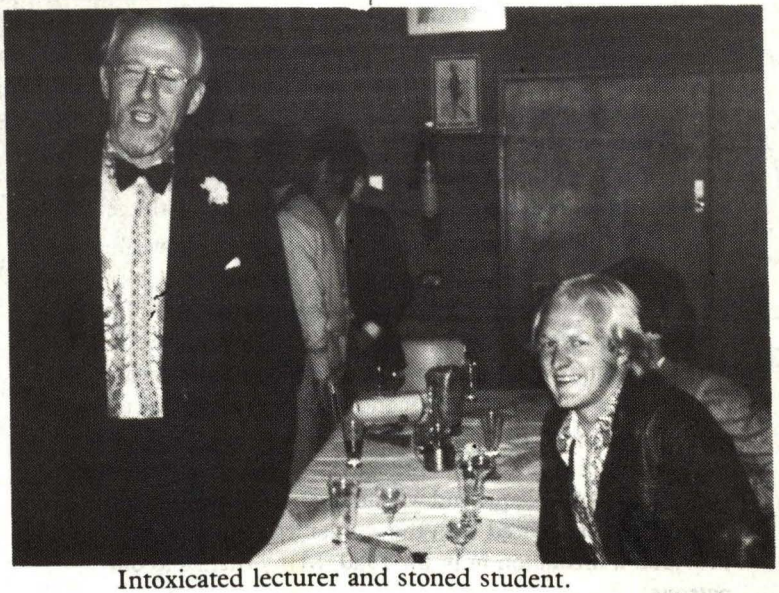
4. The Spiros Oreon Golden greek Disco Award
Winner: Terry Kallis
Prize: Three complimentary tickets to Sinartra's on Sunday night.
Reason: Complete nocturnal existance on Hindley Street.

5. The Garden gnome of the Year Award.
Winner: Andrea Rawson
Prize: Ian Bowyer (Couldn't find a garden gnome at short notice).
Reason: Andrea won this award by a short half head.

6. The Gourment Award
Winner: Bob Korbel
Prize: Alkaseltzer
Reason: Finder and promoting patron of the cheapest (and worst) restaurant in Adelaide.

Dave Walker and the Pee Gees
Band members: Riger Flint, Wimpy McDonald, Davo Foot'n'Mouth Walker, Claude Reagan and Dave Painful.

Did you hear about the Dog Catcher, the airline hostess and the Sasswatch...



Intoxicated lecturer and stoned student.

FOOT & MOUTH CUP

The inaugural race for the Dave Walker Foot and Mouth Cup (alias "The Richmond Run") was held on October 23, 1979. The race was inspired by Dave Walker, now a post-grad., and organised by AUES to cater for the masochistic foibles of the third and fourth year engees.

Simple in design, the first leg of the race is from the Civil Department to the Richmond Hotel - uphill all the way. At the Richmond, entrants must 'scull' one 15oz pint of beer before returning to the start/finish line. It is here that the first rule of the race is broken by most runners.

RULE NO. 1: Entrants must consume the entire pint - no spillage is allowed.

To the untrained observer, the entrants seem to be indulging in an orgy of spilling beer down their chins. As engees do not usually act like this, the only explanation for this gross act of profligacy is that the entrants assume that the Solo advertising executives are going to spot their obvious dribbling attributes, and whisk them away to perform in some fabulously well-paid commercial.

The second rule is, as expected, philosophically simple but rigorously enforced - NO POOFTERS!! This is never violated.

The third rule is probably the most testing and it helps separate the sprinters from the stayers.

RULE NO. 3: Entrants may not disgorge, regurgitate or otherwise discharge the draught consumed under Rule 1 (above) for a period not less than the length of the next lecture (i.e. ONE HOUR)

This rule has its roots in the legend behind the Richmond Run. Apparently Dave Walker and his cohorts would complete the run between lectures on specified days; although if the truth be told, the number of runs was quite small, and the time of about four minutes is easily beaten.

To ensure each entrant could get a pint in the bar, the required number were bought and set up a few minutes before the race. It wouldn't have been so bad asking for thirty-odd pints to be set up, if it wasn't for Vicki Arch, the only female representative. It was the request for one pint of raspberry cordial that destroyed our credibility with the barman and caused the comment "Do you want straws for all the pints or just the cordial?"

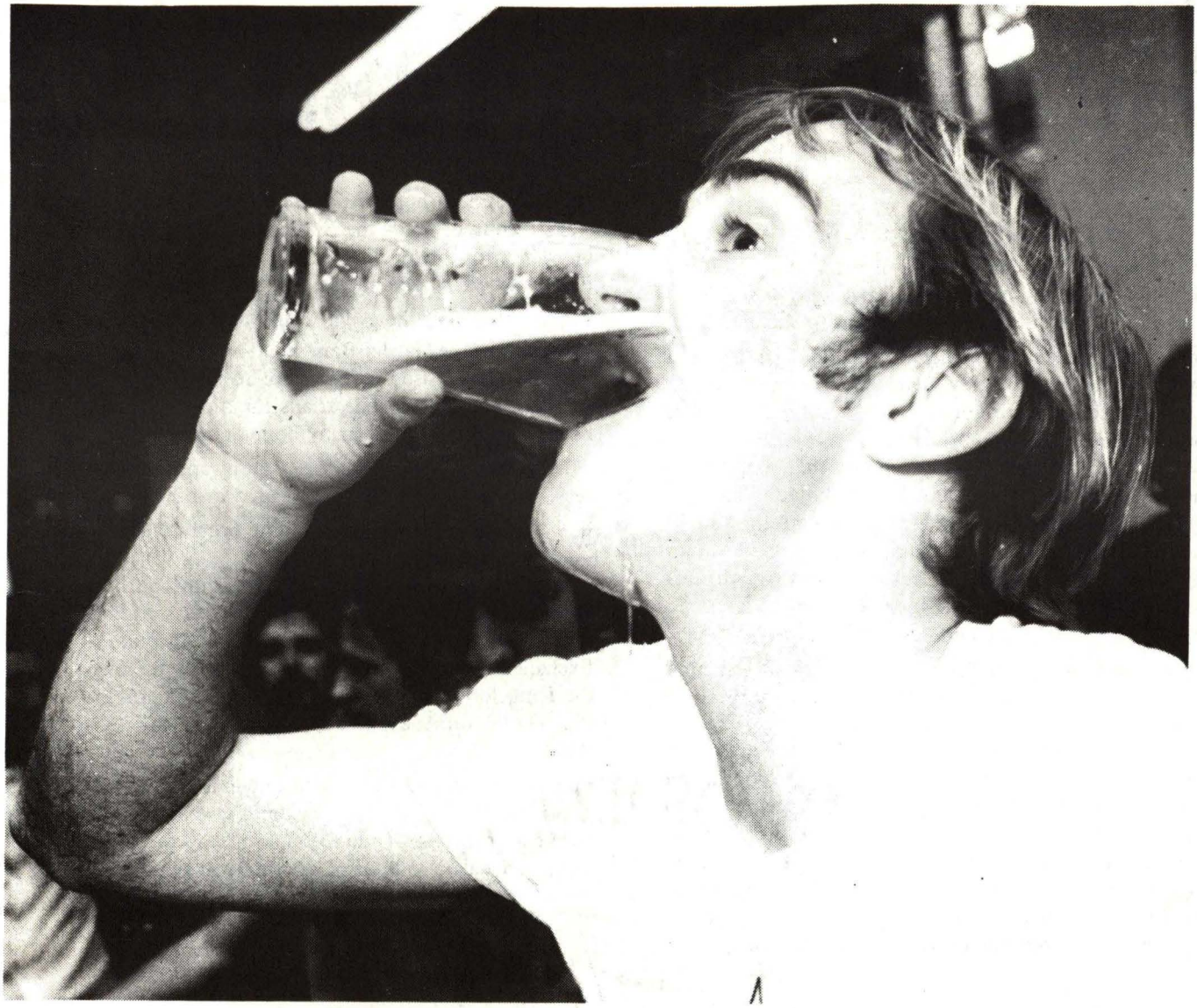
Prof. Warner, the new Civil incumbent, started both the 1979 and the 1980 races with a wave of his magnum cap gun and a flourish of a wine bottle. He kindly donated a bottle of NSW wine to the second placegetter - rather an appropriate prize. In 1979 the first prize was a foot, replete with ankle and upturned big toe, fashioned from wood, with an attached plaque and was donated by Dave himself. This item disappeared with the winner that year, so Dave provided a medallion only for 1980. Many thanks to our patrons.

The race itself is a sight to see with the slavering horde of two score engees reaming the corridors of the faculty and carrying all before them, innocent bystanders, doors and all. There were only as few fatalities - those of the front runners foolish enough to be within pushing or tripping distance of their best mates. From all reports, the best nobbling was by Woodie on Chris Ey who was surreptitiously introduced to a passing sign post. The best bad taste effort goes to THE MYSTERY RUNNER, who still dribbling at the mouth, deluged a little old lady with a gobful of insalubrious slag.

The event was enjoyed by all; students, staff and innocent bystanders alike. In fact, the comment was passed that the lecturers, while seeming to go about their daily business of discussing what new meetings they can have, were seen chuckling amongst themselves and wishing they were young enough to join in. It is hoped that next year's event will be a record-breaker with some veterans competing with added fervour and zest, and hopefully more intestinal fortitude.

The placegetters for the 1979 and 1980 races are listed below.

PLACE	1979	1980
First	Geoff Kneebone (3:47)	Phil Dunn (3:45)
Second	Terry Martin	Andrew Wood (3:52)
Third	Geoff Winter	Chris Ey (4:00)
4th	Andy Minns	Andy Minns
5ht	Brenton Harris (Pres.)	Geoff Winter
6th	Tezza Van Kalken	Mark Gobbie
7th	Phil Dunn	Brian Jenkins
8th	Andrew Wood	Mystery Runner
9th	Mark Hallam	Bryn Stevens
10th	Mike Poynter	Bill Ranford
11th	Hughie Middlemis	Garrett Dixon
12th	John Gasner	Greg McIvor
13th	Tim Polden	Harry Cox
14th	Bryn Stevens	Nick Whittle
15th	Mark Gobbie	Andy McArthur




ECIAL

Gawler Cup 1980

GAWLER FOOT AND MOUTH

After hearing about the exploits of the Engineers in the Richmond Foot and Mouth, the Gawler Jaycees decided to invite us "down" to add a little flair to the event.

To the uninitiated the Gawler Foot and Mouth Cup is a severe test of man against the elements; the elements being a 1.3 km course with seven hotels scattered over the course. Three basic requirements were needed for the event; firstly a wheelbarrow, secondly the competitors, and last but not least the sacred amber liquid. The competitors were Phil Dunn and Andrew Wood, the "gold" and "silver" medallists in the Richmond Foot and Mouth Cup. This two-man team was ably backed up the the pit-crew of Eddie Sandrini and John Rundell, both armed with oil can, tyre pump and echoes.

The event began with each team running, jogging, walking or staggering to the South End Hotel, to scull, drink or sip a butcher of beer. From there it was onwards to the Kingsford Hotel by that intrinsic and complicated form of machinery - the wheelbarrow. One person rode in the wheelbarrow while the other pushed the wheelbarrow to the next watering hole. Upon reaching the front bar the passenger would go into the bar and scull a butcher then stagger out, interfering with as many competitors as possible. In the subsequent leg of the journey the previous passenger now became the driver and the roles were reversed at each hotel. And so on until all hotels (seven) were accounted for - the South End, Kingsford Hotel, Gawler Arms, Old Bushman Hotel, Exchange Hotel, Prince Albert Hotel and the Old Spot Hotel.

The highlights of the event would have been the almost dissection of the Gawler Brass Band by a run-away wheelbarrow - ours. Also the consistent accuracy to which the pit crew pinpointed pedestrians for the wheelbarrow to hit, in this way scoring many bonus points.

The engineering team won the event by approximately 20 secs; needless to the say the result was never in doubt, much to the embarrassment of the organisers who had hoped a home team would win.

After the event we celebrated by a pub crawl of the hotels visited during the race, reliving the race. Note should be made of the exquisite toasted cheese sandwiches at the Exchange Hotel, the free round bought by the owner of the Kingsford Hotel and the entertainment provided by Phil Dunn and Andrew Wood in showing their sculling skills.

Finally, it is hoped that this event will maintain a high priority in the Engineering Students' calendar and moves are being made to include the event as a necessary and compulsory part of the Engineering course.

Eddie Sandrini

Before.....

After.....

CIVIL DE'TENTE

CIVIL DETENTE

The 1980 final year Civil class finished their last exam and after a day of alcoholic and gastronomic poisoning left for the sunny riverland for more of the same.

The boys struggled in on Sunday afternoon to the rendezvous point in front of the Berri hotel. Several had arrived via the Monash playground, and were slightly worse for wear after an encounter with a wild horse.

The two house boats arrived and everyone boarded. Surprisingly the vessel with the cook was filled before the one with the kegs! This ensured a week of intense rivalry between the cook boat (christened "Wimpy's", after the cook Paul MacDonald), and the moving floating bar containing all the final year alcoholics and top flatulators. A huge battle or aromae occurred on the first day. Wimpy's was characterised by a distinct MacDonald's scent, while a disease named Maltese flatulence quickly spread amongst the crew of the other vessel. The most severely stricken included Woody, whose scent could be cut with a knife (and no smoking please), and the local dog catcher who holed several pairs of jocks.

The first night's debauchery saw some get as much as two hours sleep. The next day the boats moved upstream, battling for supremacy with two other Swan houseboats filled with pharmacists. While ogling a stunning blonde nymph camped on the bank the lead houseboat ran aground. It was therefore decided to tie up at this location. Wimpy's crew being less "on this planet" than those on the keg boat, were entrusted with the position as emissaries to bestow the virtues of engineers on the riverbank siren. Mark Gobbie and "Slow" reported that she wasn't much close up. This was immediately given the raspberry by "no-muff-to-tuff" Rundell.

Not to be depressed by any dog catcher type rebuke, Mark Gobbie proceeded to impress the boys by defying gravity in the aluminium dinghy (see The Great Dinghy Report).

Meanwhile, back on the houseboats, the keg boat continued to cook reasonable meals, Wimpy's managed to take the fast out of fast-foods. That night the pharmacists visited to sample the keg and later the demon dinghy assaulted the pharmacists to sample theirs! The return trip was safe despite attempts to drown the thirteen aboard by throwing a cup of water into the dinghy. After a night of frivolity in which the dog catcher's backside was soaked with Radian B, Vicki was an unwilling audience for the strip show, and Phil and Wimpy foamed at the mouth, Serenity again returned at about 4 a.m.

The next resting place was just upstream of Renmark. This proved to be an idea spot for skiing, tractor tubing and surf matting behind the ski boat and dinghy for the next three days. Of the main forms of communication during this period was the pyramid brown eye. Several trips were made back to Renmark for fuel and ice, not to mention petrol. The water sports provided many thrills and spills, with Woodie, J.R., and Super taking the demon dinghy for the biggest thrill and nearly best spill of the trip.

They went to visit the Roseworthy College Houseboat and were immediately assaulted by kanikaze buckets of water. The ensuing collision had women screaming and men laughing as well as a Royal Commission being called. This Commission produced a conclusive report, in which the most substantial statement was the "Baringa Houseboats are painted blue underneath".

Other highlights of the trip included:

- the "gunning" of everyone, especially Phil
- Greg managing to stay dry inside and outside
- Andy M. managing to take 92 slides, and complaining about missing 700
- Bill (and others) floating on windsurfers
- the skills of the cardsharps
- Phil sleeping on the roof (?).

On the whole, a great week to unwind after November Nausea. Many thanks to organisers Phil and Andy M. and Geoff and Angela for the ski boat and driving.

*Beer farts

THE DINGHY REPORT

THE GREAT DINGHY REPORT

Geoff Croker

Yes, it's the report every Fishing Club member has been awaiting with abated breath. It concerns that aluminium arm and head chopper the Fishing Club dinghy; that over-powered missile, crewed by the lowest form of mi-mariner, the civil engineering graduate. This report can be divided into two parts, that portion of the dinghy which was partially destroyed, that portion of the motor which was totally destroyed.

The partial destruction of the vessel was readily achieved by an ongoing case of metal fatigue. Since the motor had only two throttle settings, stop or flat out, it was not long before cracks began appearing in the structural welds of the vessel. Not long at all - about ten minutes after launching. However, whether the dinghy was or is now ready to fall apart at the seams, cannot in any way relate to the first major accident. In fact the vessel can truly be said to be blameless, the failure of the manufacturers to provide adequate landing gear was not deemed a proper excuse. The entire incident smacked of pilot error. This brings us to an appraisal of the driver in question, Mad Mark Gobbie. Anyone who says boats cannot fly has never seen MM drive across another vessel's wake. He can even operate the motor from outside the dinghy.

This first incident began like most other alluminium boating disasters; the driver overestimating the weight of the vessel and flying too high over a wake. As long as one remains balanced and manages to keep the motor straight, the landing is controlled. But for the uninitiated the tendency is to pull the steering throttle in whichever direction the body is hurled when crossing the wake. This results in the boat either flipping over or turning very sharply when landing.

Fortunately for MM the second alternative occurred resulting in Mad Mark's swift ejection from the rear of the dinghy. This was indeed lucky as a flipping of any boat is usually totally disastrous for an outboard motor as the pump intakes are usually blocked with blood and torn flesh.

Meanwhill about 300m away a Carribean ski boat powered by an 80HP Merc. was about to take off with a skier in tow. At the same time as MM was thrown from the dinghy the ski boat took off to assist. This piece of luck undoubtedly saved the dinghy's motor from damage. MM was now in the water with the dinghy circling ever closer with a throttle stuck wide open. A cost/benefit analysis at this stage would have revealed that Gobbie's head was not worth getting your boat scratched for; at least this was the conclusion reached by the crew of a rubber dinghy which happened to be giving MM a drag at the time.

As the crew of the Carribean sped towards the oncoming disaster not much thought was given to their personal safety. Not much thought was given to anything. On the last circle the deadly dinghy's donk had missed Gobbie's head by about 25.4mm. It would have certainly chomped him on the next circle. The Carribean was therefore driven directly into the path of the dinghy, and, upon slowing down, was mounted in the rear. This may have been acceptable if the dinghy's throttle had not been jammed full on. The observer in the Carribean realising that he was now a candidate for the big chomp (as the dinghy tried to come on board, very messy), exhibited enormous adrenalin power and literally threw the dinghy off and over the side. It was in this way that the first incident ended and the virginity of the Carribean as well as Gobbie's head were preserved.

The total destruction of a portion of the dinghy's new 25HP Mercury motor was achieved in a bizarre incident with a Houseboat. The motor upon arrival at Berri had a bent tilt pin. This pin holds the motor in position. As three engineers tore around the Swan Houseboat having a water fight with some Roseworthy College students, this pin must have failed. Unfortunately this failure occurred just as the dinghy was turning towards the front of the houseboat (the dinghy was flat out at this time).

As the dinghy turned the corner the motor shot up in the air snapping off the motor's steering throttle. So there the dinghy's driver was, a broken throttle in his arm and heading flat out towards the houseboat which happened to be moving at top speed towards him. What to do? Of couse save one peice of the motor by throwing the throttle overboard.

The throttle sank, the dinghy shot along the side of one pontoon under the side decking scraping the top of the motor all the way. It could be said that the top of the motor really saved the dinghy's crew, as it slowed the dinghy allowcrew to regain control. What happened to the three engineers? They lay cowering as flat as possible on the bottom of the dinghy.

CONCRETE CANOE'S CONQUESTS

ENTRY IN - The Fourth Annual Victorian Concrete Canoe Race

LOCATION: Melbourne Sewers - Main Channel the "Yarra"

Champtionship Events		Postion
300m	sprint	3rd
300m	slalom	1st
300m	staff	1st
300m	ladies	1st
600m	marathon	3rd
2 x 300m	relay	2nd

ADELAIDE UNI. FINAL YEAR CIVIL TEAM:

Steve Paul	Manager- Cheat
James Brown	Brains
Michael Berriman	Wrong way
Phil Dunn	Take the Skeg off
Andrew Wood	Top Secret
Eddie Sandrini	Mr Money
Geoff Croker	What about a park
Les McGrath	Muscles
Joe & Robin	Felt all over

Our arrival at beautiful downtown Melbourne was not without misgivings. Especially after that eye opening drive through those glorious Western Suburbs. What a hole! Unfortunately, "Wrong way" was giving directions to a local Armadale TV set and the VFL grand final, when out of the smog the city centre loomed. There was no turning back, we had to go through, two tonne trailer and all. Now I've often thought of the Glenelg tram with some nostalgia, but the Melbourne tram could at best be described as crabs in a gigantic patch of VD. If you happen to be driving down Swanston St. with a two tonne (very wide) trailer behind, and the crab drivers are trying to destroy your vehicle, watch out! Melbourne traffic is very much like a game of Ludo. You can send the man in front back home by running over the top of him. Concrete safety zones are located every 100m. (We later found out these were used by people waiting for crabs.) It truly is every man for himself. If you want to turn right in Melbourne, remember to move into the left hand turning lane. This will result in far less traffic congestion as the chances of getting your vehicle back into the line of traffic are now nil. This move may also bring to your attention the "NO RIGHT TURN" sign which is located on the left hand side of the road for greater convenience and clarity.

Anyway we finally got out of the city unscathed, which just goes to show the awe Victorian drivers have for the SA number plate (and two-tonne trailer). Unfortunately worse things were approaching - St Kilda Rd.! What to do? Of course, change drivers, blame the coming murder on someone else. Pass the buck, send for Mummy. St Kilda Rd., the joining of tramlines, traffic lights, plantations, mad Greeks, a little bit of road (with no lines) in one gigantic conglomerate. Everyone here seemed to know where they wanted to go. But Christ, don't get in their way, especially if you don't happen to be driving a tank. A green light flashes, our options evaporate. Back to relying on the SA plates and two-tonne trailer.

What a start, a cross between Rowley Park and the Hardie-Ferrodo. There we are dodging trams, cars, people and concrete safety zones, but now how the hell do we get off? Every now and then a DO NOT TURN LEFT sign appears. These are our only chance. Like lightning we turn. Even the Greek behind couldn't react in time to cut us in half. But while moving along a narrow one lane street with double tram tracks and four lines of traffic (no lanes are marked so what the heck), everyone wonders where the hell we are! Obvious - stop and ask someone. No we can't ask him, he's busy mugging someone in the gutter. Back to "Wrong way's" directions (he's the person who suggested going through town). Desperation sets in. But wait, here we are, by compass and two-tonne trailer. Towerhunting or something St., Armadale. It looks just like any typical Adelaide Street except it has NO U-TURN signs along each side. We wonder just what constitutes a U-Turn in Melbourne anyway.

After several hours watching the VFS grand final which at best could only be described as a real scrubbers' match, we

set off back to town to our plush hotel suite. Did I say plush? Well the only thing good about our stay at that hotel was no one died that night. My advice to anyone sleeping near the Spencer Street Railway Station is, never go to the toilet by yourself, take a friend, sleep with a very large knife, canon or club under your pillow. Don't sleep in the bed, but under it. This will certainly confuse would-be muggers and will stop the spread of bed bugs and other non-crunchables. By sleeping all night with one eye open, our team manager has no trouble whatever in doing this, we made it through the night with only the usual muggings and rapes proceeding all around.

This brings us to Sunday morning and the main event - free beer. We arose early, full of fight, and proceeded to the TAA terminal to pick up the secret weapon. This was our first set back. The secret weapon was demoralised, inebriated, stuffed, having spent the night before gorging Southwark sandwiches. Concern was expressed by our team manager, who left to hire a stomach pump. On arrival at the Main Sewer all team members (seven) filed out to lift Hagar down to the bank. This was our second set back. Across the road Swinburne College was busy lifting their fibreglass-like replica off a roof rack of some old bomb with only two people. The immediate reaction from the team manager was (a) stop drinking, (b) cheat (ram the bastards). The first race was now viewed as a foregone conclusion by the Vic. crews, ours being the heaviest canoe by far. "What? Are you going to use that for an anchor?" they said. "At least it floats," we retorted, "even on sewerage water."

Wood and Sandarini lined up for the first race. What a crew, typical of the muscle brained students produced at Adelaide in recent years. It was a pity more of those muscles weren't located in different areas. We got shat on, losing by at least 100m.

The whole race was only 300m long. Our team manager was dismayed. If a stomach pump had been available, he would have used it on the secret weapon at once. It was indeed fortunate that Hagar achieved the 4th fastest time thus making it to the final of the sprint race. By a vast amount of cheating by Wood who threatened to throw up on the Monash crew if they attempted to pass, a third place was achieved.

The situation before the slalom race was grim The ever-thinking (of Vicky) Phil Dunn in a flash of utter stupidity decided to remove Hagar's skeg - that rudder which enables the crew to keep the canoe in some semblance of a straight line and also fills up the holes in the stern. However the intrepid opportunism of Steve Paul who, seeing the dire situation, immediately declared himself to be a race official (and by the fact that the fastest boat which was in front by a mile was also disqualified by that said official), Hagar came in first. The fact that no skeg was attached may have helped as the canoe weaved across the course so much that no one else could pass, except RMIT's "KILLER" which passed under "Hagar". Their canoe was really a submarine in disguise.

This brings us to the next two events, the 300m staff and 300m ladies' races. These were perhaps the only events which we could say were won fairly. Well almost anyway. Our staff members were Les McGrath from Ballarat and Geoff Croker from Adelaide. Both could at best be described as just passing through. Les should have been competing with the Ballarat vessels, "FAR COUGH" and "FAR CANAL", but due to a good deal of bribery and the fact that the race canoe "FAR COUGH" had a totally pissed crew and only two day strength grout, Les decided to stick with the winners (or anyone else who would have him). At least we had the best women, all that time spent feeling grils' muscles the night before had paid off.

It was at this point in the proceedings that the team manager with the assistance of James "calculator brain" Brown, the team tactition and portable HP operator, came to the conclusion that 2 + 2 made 4 and there was a chance to bring home the cup. If we could just get a 2nd and 3rd in the next two races we would win by one point. Unfortunately the next race was the marathon which required two very fit crew. Only our staff and ladies' crews could be described as possessing muscles. This left us with the choice of Phil "take the skeg off" Dunn, and Michael "straight ahead I don't need the skeg off" Berriman. The result was an amazing third place. The pressure was really on now. We needed to come second to win. The next event was the 2 x 300m relay. Two crews were available, Wood-Sandrini and Berriman-Dunn. As the second was still stuffed from the marathon race the team manager cum race official called a 20 min. rest period. Did this guy know how to cheat!

The last race - what tension, everyone who could still stand had stopped drinking. Things were getting serious. Sandrini and the secret weapon started the first leg. The start looked good, Paul waiting till Hagar nosed ahead before beginning the race (in his very new capacity as starter). By the end of the first 150m leg things looked grim. We were being thrashed. Around the buoy and back up to the start line we were in 4th place. Then 10 metres from the crew change point a multiple colision between

the three leading canoes occurred. Hagar closed the gap. At the crew change four vessels were now fighting for position. What chaos. Pushing and shoving everywhere. This gave Hagar the advantage we needed, a 20m head start with all the other canoes facing the wrong way. What a race. Hagar in the lead, Swinburne's "Mortafied" closing the gap rapidly. At the end Swinburne won the race by about 4 inches, but Adelaide won the competition by one point.

Geoff Croker

BEST OF CYCLOPS

The AUES spent one Dollar and three minutes researching why man has a knob on the end of his penis. They reached the conclusion that it was to give both the man and his woman pleasure.

The feminists spent 100,000 Dollars and three months research and said it was to give *man* pleasure.

Union Council spent 812,000 Dollars and twelve months and said it was to stop their hands slipping off.

A survey was recently carried out in the Engineering Faculty.

KEY:
C - CIVIL
M - MECH
E - ELEC
CH - CHEM

First we have the:

EXCITABLE TYPE (C) - pants twisted, cannot find fly, rips pants in temper

SOCIABLE TYPE (C) - joins friends in piss whether he wants one or not

TIMID TYPE (C) - He cannot piss if anyone is watching. Pretends he has pissed and walks away.

BRAGGER TYPE (M,E,CH) - Opens two fly buttons, when only one is necessary.

NOISY TYPE (C) - Whistles and sings loudly. Looks over partition to see if other block's is bigger than his.

CLEVERY TYPE (C) - Pisses without holding his tool. Shows off by adjusting his tie at the same time.

ERNOLOUS TYPE (C) - Plays stream up, down across wall. Also tries to piss on flys. This type never grows up.

ABSENT MINDED TYPE (M,E,CH) - Opens vest, pulls out tie and pisses in his pants.

WORRIED TYPE (M,E,CH) - Not too sure what he's been up to lately. Makes furtive inspection while pissing.

DISGRUNTLED TYPE (M.E.CH) - Stands for a while, grunts, farts then walks away.

PERSONALITY TYPE (C) - Laughs and jokes while pissing, shakes oversized tool with a flourish.

SNEAKY TYPE (C) - Drops a silent fart while pissing (shakes oversized tool with a flourish). Then sniffs, looks (at the fellow next to him) in disgust.

SLOPPY TYPE (M,E,CH) - Pisses down his trousers into his boots, then walks out with his fly undone and adjusts it 10 minutes later.

INDIFFERENT TYPE (M,E,CH!!!) - All urinals in use, pisses in hand basin.

SEX LIFE OF AN ELECTRON

Eddy Current

One night when his charge was pretty high, Micro Farad decided to seek out a little coil to let him discharge. He picked up Milli Amps and took her for a ride on his mega-cycle around the series circuit across the Wheatstone bridge down by the sine waves and stopped in a magnetic field by a flowing current.

Micro Farad was attracted to Milli Amp's characteristic curves and soon he had her fully charged on some electrolyte. He excited her resistance to a minimum, layed her on the ground potential, raised her frequency and lowered her reluctance. He pulled his high voltage tube and inserted it into her socket, connecting them in parallel, and began short circuiting her resistance shunt.

Fully excited, Milli Amps sighed "Ohm, Ohm". Micro Farad, his tube operating at maximum EMF, and her field vibrating with a current flowing caused her shunt field to overheat. Macro Farad's cells rapidly discharged and drained off every electron.

They fluxed all night, trying various sockets and connections until his magnet had a soft core, losing all its field strength.

Afterwards Milli Amps tried self induction and damaged her solenoids. When his bettery was fully discharged Micro Farad was unable to excite her field, so they spent the rest of the night reversing polarity and so ended blowing up each other's fuses.

Four members of unions wree (were) discussing how smart their dogs were. The first said unionists was a member of the Vehicle Builders' Union, who stated that his dog could do maths calculations. His dog was named "tee-square", and was told to go to the blackboard and draw a square, a circle and a triangle, which the dog did with consummate ease.

The Amalgamated Metal Workers' Union member said he thought his dog was better. He told his dog "Slide Rule" to fetch a dozen biscuits & to divide them into four piles, which Slide Rule did at once.

The Liquor Trades' Member admitted they were both good, but he felt his dog, named "measure", could out-perform them. He told his dog to get a stubby of beer & pour seven ounces into a ten ounce glass, which was done without a flaw.

They turned to the Waterside Workers' Union member &

said, "What can your dog do?"

The worker called his dog, "tea break", & said to him, "Show these bastards what you can do, mate." "Tea Break" went over & ate the biscuits, drank the beer, pissed on the blackboard, screwed the other three dogs, claimed he injured his back & filled in a workers' compensation form & shot through on sick leave.

SITUATION ADAPTABILITY EVALUATION FOR MANAGEMENT PERSONNEL

This test has been designed to evaluate reactions of management personnel to various situations. The situations are based on actual case studies from a well known educational institution and represent a cross-section of test data correlated to evaluate both reaction time to difficult situations as well as the soundness of each decision selected.

There are eight (8) multiple choice questions. Read each question thoroughly. Place an "X" by the answer you feel is most correctly justified by the circumstances given, and be prepared to justify your decision.

You have exactly four (4) minutes.

1. You have prepared a proposal for the regional director of purchases for your largest customer. The success of this presentation will mean increasing your sales to his company by 200%. In the middle of your proposal, the customer leans over to look at your report and dribbles in your coffee: You:

(a) tell him you prefer your coffee black
(b) ask to have him checked for any communicable diseases
(c) take a leak in his "out" basket.

2. You are having lunch with a prospective customer, talking about what could be the biggest sale of the year. During the conversation a blonde walks into the restaurant and is so stunning you indicate her to him and give a vivid and detailed description of what you would do if you had her alone in your motel. She walks over to him and introduces herself as his daughter. Your next move is to:

(a) immediately ask for her hand in marriage
(b) pretend you've just forgotten how to speak English
(c) repeat the conversation to her and hope for the best.

3. You are making a sales presentation to a group of corporate executives in the plushest office you've ever seen. The hot enchillada caserole and the egg salad sandwich you have had for lunch react violently, creating a severe pressure. Your sphincter muscle loses its control and you break wind in a most convincing manner, causing three water tumblers to scatter and a secretary to pass out. What you should do next is to:

(a) offer to come back next week when the smell has gone
(b) point to their chief executive and accuse him of the offence
(c) challenge anyone in the room to do better.

4. You are at a business lunch when you are overcome with an uncontrollable desire to pick your nose. Remembering that this is a no-no, you:

(a) pretend to recognise someone across the room and with one fluid motion, wave to him and bury your fore-finger up your nose to the fourth joint.
(b) get everyone drunk and organise a nose-picking contest, with a prize for the one who makes his nose bleed first
(c) drop your napkin on the floor and when you bend over to pick it up, blow your nose on your sock.

5. You've just spent the evening with a supplier who invited you to an all-night drinking party. You get home just in time to get to work. You arrive at work and stagger into the men's room and vomit for half an hour. As you're washing your face at the sink, the Sales Training Director walks up, blows cigar smoke in your face, and ask you to join him for drinks after work. You:

(a) look him straight in the eye and launch one last convulsive chunder at the front of his Anthony Squire suit.
(b) kick him right in the crotch, banking on the fact that he'll never recognize your green and insalubrious face
(c) grasp his hand and pump it 'till he pees his pants.

6. You are at dinner with a customer and his wife, who looks like the regional runner-up of the Mitzi Gaynor lookalike contest. Halfway through dinner, you feel a hand on your lap. If you are resourceful you will:

(a) accidentally spill hot coffee in your lap
(b) slip a note to the waiter to have your customer paged and see if the hand goes away when he does
(c) excuse yourself and go to the toilet; if he follows, don't come out until you have signed an order.

7. You're on your way to see your best account when your zipper breaks and you discover that you forgot to put your jocks on that morning. You decide to:

(a) call on the customer's secretary instead
(b) explain you were just trolling for queens
(c) buy a baggy raincoat and head for the school playground.

8. You've just returned from a tip to St Kilda, Victoria, and you tell your boss that no one but whores and foot-ballers live there. He mentions that his wife comes from St Kilda. You:

(a) ask what position she played
(b) ask if she's still walking the streets
(c) pretend you're suffering from amnesia and don't remember your name.

THE RULES OF QUOITS

RULE 1. The object of the game is to get your quoit over the peg as many times as possible in the given time interval or over as many pegs as possible.

RULE 2. Conditions (i) Lighting is optional

(ii) The peg must be at least 6 inches in length and not more than 1½ inches in diameter as larger diameters tend to distend the quoit.

(iii) For protection of both quoit and peg, a rubber coating is recommended for the peg (in professional quoits this is mandatory).

(iv) Clothing is optional but less clothing leads to smoother action.

RULE 3. The game is commenced by selecting a peg. If this cannot be done by agreement, players must draw straws and selection is made on the size of the straws.

RULE 4. All impediments such as loose string must be removed for the inside of the quoit to facilitate ease of slipping over the peg.

RULE 5. Where this is not practicable, players must not play for a few days or until such time as the quoit is again serviceable.

RULE 6. Artificial lubricants may be used on either the quoits or the peg.

RULE 7. The closer the size of the quoit to the size of the peg the greater the sense of satisfaction or sense of achievement.

RULE 8. The umpire's decision is final; however coaxing is encouraged and may prove rewarding.

RULE 9. Players may attempt quoits from any position or article of furniture; however no pouffe's may be used or the game may finish in an anti-climax.

RULE 10. Should two players both attempt the same peg, the umpire or owner of the peg must decide which player should go first, as two quoits will not fit on the same peg.

RULE 11. If Rule 10 applies, the owner of the peg may award repeated throws to the first player in the event of a well played quoit.

RULE 12. No co-respondents will be entered into.

RULE 13. Any player found to be playing with a diseased quoit may be banned from playing for a period to be determined by an appointed medical practitioner.

RULE 14. Players score one point for every time they quoit a peg and an additional point if the peg is one which they have not previously quoited.

RULE 15. Whilst not illegal, it is highly unethical to quoit another player's regular peg and is frowned deeply upon in some schools.

RULE 16. Battery operated practice pegs are for practice only and do not score points but may be used for a few practice throws before attempting a peg.

RULE 17. Players' quoits must be broken in on the home ground before being used in open competition.

RULE 18. Players under the age of 16 must be careful to ensure that the owner of the peg is aware of this fact, otherwise legal complications may arise.

HAPPY QUOITING

A TREATISE OF MURPHY'S LAWS

Murphy's First Law states: If anything can possibly go wrong, it will. Murphy's lesser known laws include: Nothing is ever as simple as it seems; Everything takes longer than you expect; If there is a possibility that several things can go wrong, the one that will go wrong first will be the one that will do the most damage; Left to themselves all things go from bad to worse; If everything seems to be going well, you have obviously overlooked something; It is impossible to make anything foolproof, because fools are so ingenious.

Law of Selective Gravity: An object will fall wherever it can do the most damage. Jenning's Corollary: The chance of the bread falling buttered side down is directly proportional to the cost of the carpet. (An attempt was made at empirical observation by a professor who had 30 students throw slices of peanut-buttered bread in the air, to see if half would fall on the buttered side and half on the floor. It turned out that 29 landed peanut-butter side on the floor. The 30th stuck to the ceiling.)

Hartman's Automative Law: Nothing minor ever happens to a car on the weekend. Nothing minor every happens to a car on a trip. Nothing minor ever happens to a car. Fishbein's Conclusion: The tyre is only flat on the bottom. Epstein's Law: If you think the problem is bad now, just wait until we have solved it.

And, last but probably most applicable to Engees, Dean Martin's Law of Drunkenness: You are not drunk if you can lie on the floor without holding on.

BEYOND PARKINSON'S LAW

JONES' LAW: The man who can smile when things go wrong has thought of someone he can blame it on.

BUNK CARTER'S LAW: At any given time there are more important people in the world than important jobs to contain them.

A COMMITTEE: A collection of the unfit chosen from the unwilling by the incompetent to do the unnecessary.

FANDEL'S RULES FOR ADMINISTRATORS:

1. Hide
2. If they find you, lie.

A TOUCH OF (SECOND) CLASS

We note this report which recently appeared in the journal, *European Chemical News:*

"Imperial Chemical Industries has announced the discovery of a new fire-fighting agent known as WATER (Wonderful And Total Extinguishing Resource).

"It is particularly suitable for dealing with fires in buildings, timber yards and warehouses, and is fairly cheap to produce.

"It is intended that quantities of about five million litres should be stored in open ponds or reservoirs near urban areas and installations of high risk.

"WATER is already encountering strong opposition from safety and environmental groups. One group member has pointed out that if anyone immersed his head in a bucket of WATER, it would prove fatal in as little as three minutes.

"Each of ICI's proposed reservoirs will contain enough WATER to fill half a million 10-litre buckets. Each bucketful would be used a hundred or more times, so there is enough WATER in one reservoir to kill the entire population of the United Kingdom.

"Did we know, asked a fire-brigade spokesman, what would happen to this new medium when it was exposed to intense heat? It had been reported that WATER was a constitutient of beer. Did this mean that firemen would be intoxicated by the fumes?

"The Friends of the World said that they had obtained a sample of WATER and found it made clothes shrink. If it did this to cotton, what would it do to men?

"In the House of Commons, the Home Secretary was asked if he would prohibit the manufacture and storage of this lethal new material.

"A full investigation is needed," he replied, "and the Major Hazards Group would be asked to report."

Extract from *Penews*, Vol. 34, No. 2.

JOIN

A.U.E.S.

All members of the AUES will receive -

(a) Each copy of *Cyclops* on parchment, handwritten by a ninety year old tap dancing Tibetan monk (these must be personally collected from Tibet).

(b) Free use of the Engineering Society's Rolls (either vegemite or fritz and cheese).

(c) Unlimited use of the Society's common room with air conditioning, full sized snooker table, heated olympic size pool, complete bar facilities and bunny girls (situated on the 4th floor of the Engineering Building).

(d) Use of the AUES Library where you may find such rare and informative volumes as:

Everything you wanted to know about brussel sprout farming but were afraid to ask.

The sex life of an engineer and other short stories.

These short stories include:
The complete list of interesting engineering lectures.
The book of engineering lecturers' jokes, and
The autobiography of a poof in the Engineering Department.

Other books on loan are:
Alcoholism and engineering - volume 1.
The complete European/English Dictionary - a must for all engineering students - translate your own lectures.
The engineer's book of sexual positions, or
Kuma Sutra and the cantilever beam (fully illustrated edition)
Poofter bashing for fun and profit
Alcoholism and engineering - volume 53.

THE WHYALLA TRIP
by Nobody in Particular

This article is aimed at disuading any future gullible prospective final year Elecs. from the mistake of assuming "The Whyalla Trip" is commensurate with fun. Any similarities in this story between anyone living or dead is purely intentional and incoincidental.

At the crack of dawn on Thursday the 23rd of October a motley group of individuals slowly gathered around the Cloisters in preparation for a journey. A journey which, for some, they will never forget. What strange force had united this group? What powers that be could possibly get me, and others up at this ridiculous hour of the morning?

As it came to pass this power was later revealed to us — a power greater than that ever inhabiting number 10 Downing.

With the total group assembled, we embarked the awaiting bus, little knowing what knowledge was to be gained and what effect this trip would have on our lives! The more intellectually advanced of us rushed to the back of the bus (the lecturers were at the front) and the scene was set for 39 hours of agony and agony.

First stop was Pt. Wakefield where we could have a piss, buy a junk food breakfast and buy enough Coke to mix with the spirits which were smuggled on board like greeced lightling by a Kallous member of the class, who shall remain nameless.

At this point our leader decided that his enthusiastic (and slightly merry) party would care to partake in an excursion around a large arsehole in the ground at Bowman's Flat (where the world's worst coal is mined by ETSA). Unfortunately the road was impossible. Needless to say, we were all extremely disappointed, but one consolation was that we would see another of ETSA's holes at the next stop — the Northern Power Station.

By the time the Ouzo had been servously depleted we arrived at Pt. Agutta. (Needless to say, one of the more shrewd and Canny members of the class (whom also will remain nameless), felt right at home). After a quick couple of games of pool and some substances masquerading as lunch (any regular Refectory goer, also felt at home at this point), we arrived at the site of the new Northern Power Station. Here, we were packed in a little room and shown some slides on an automatically defocussing projector while some Civil toad raved on about the megatons of concrete needed for the foundations. The dirt, gravel and concrete would have been enough to make any Civil orgasm. We were then all issued with a hygenic paper hat and protective helmet (how anything could fall on our heads when all we were looking at were holes in the ground — buggered if I know!). With the 100 mph gale force winds whipping up the gulf all these helmets seemed to automatically loosen themselves. At the risk of taking the helmet off to re-adjust it and looking like an escapee from Glenside in the paper hat, most people wandered around as if playing Simon says "Put your hands on your head" (i.e. looking like an escapee from Glenside anyway). One poor soul, who had broken both his elbows, had the misfortune of having his head blown off (no pun intended) as he couldn't keep his Hutt-on.

We then proceeded to be bored at another hole, the Thomas Playford Power Station and were excited at the prospect of leaving, apart from cretinous questionnaires (thank God boon didn't come ...no pun intended).

We arrived in Whyalla four schooners too late, to invade the Alexander Motor Inn. After discovering no beer in any of the fridges in anyones room we all migrated to the Eyre Hotel. Having been beaten, by the staff (no pun intended), to the pub, we soon learned they were half human and almost drank as much beer as us. After the meal (for all but one Deviant) the lecturing staff commenced to use extortionate measures (accademic blackmail) to convince us all that we hadn't seen the BHP film before. Those whose brains had been nulled by lecturing throughout the year continued to exhibit their skills of endurance and attended the film (brownringers!) The rest deviated from the proposed itinerary and crammed into taxis to investigate the nightlife of Whyalla.

Ten pubs, ten gins (n.p.i.) and ten dollars later and completely frustrated (even the slickest member (n.p.i.) wasn't satisfied in his attempts) we returned to manufacture our own entertainment. Upon return of the brownringers a party was soon raging in the author's motel room. As the evening (morning) progressed the entertainment abilities of certain members (n.p.i.) became apparent.

First to demonstrate his prowess (n.p.i.) was the class's own personal George Karolyi impersonator reading directly from one of Deviant's Penthouse magazines. (Mechanicals can start masturbating at this point — Chemicals cannot remove the stains). Next on the programme, our Chippy came out of the woodwork (pun intended) to reach an anticliMAX with his rendition of "Eskimo Nell". This prompt-80ed a Non-maskable Interrupt which resulted in an infinite loop of Eskimo Nell. After a dry argument and flatulation by the Pom most members reasoned it was time to leave except for the unCanny quartet of a boong, a Latvian (Transylvanian) refugee and two pizza lovers; one in the Lou, the transylvanian giving tuition to the inverted boong in the cupboard and the remaining pizza lover could not be unstuck from a Penthouse. After ransacking the room this quartet was forcibly evicted where they contued to rape, pillage and plunder throughout the while motel complex, until sunrise drome the Transylvanian and his followers inside.

Next morning saw the aftermath of the night before and the formal tour of the BHP plant. This tour consisted of

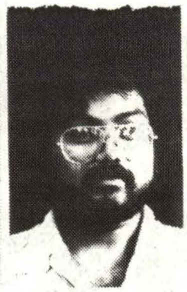
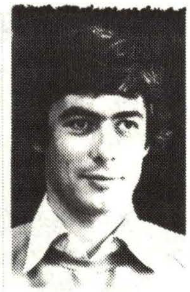
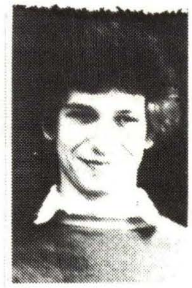
endless miles of steel I-beams (civils stop ejaculating), Ward-Leonard sets and conveyor belts (Mechanicals stop masturbating) and a partridge in a pear tree. The free lunch was the highlight of the day, apart from leaving.

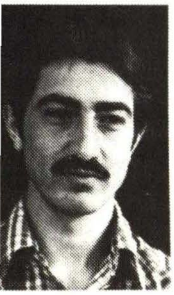
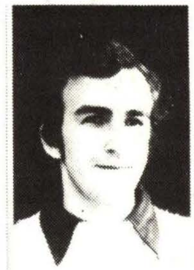
Without the opportunity to restock grog supplies on the trip home, time was spent on endless card games and photographing letcherers drooling over porno magazines.

This tour could have been a good piss up if it wasn't for the intervention of the academic itinerary (no fun intended).

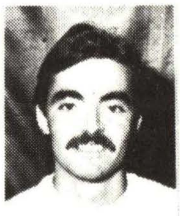
Dr. Cole Elec. Eng. Dept. c 1980
n.p.i. — no pun intended.

Mechs '80

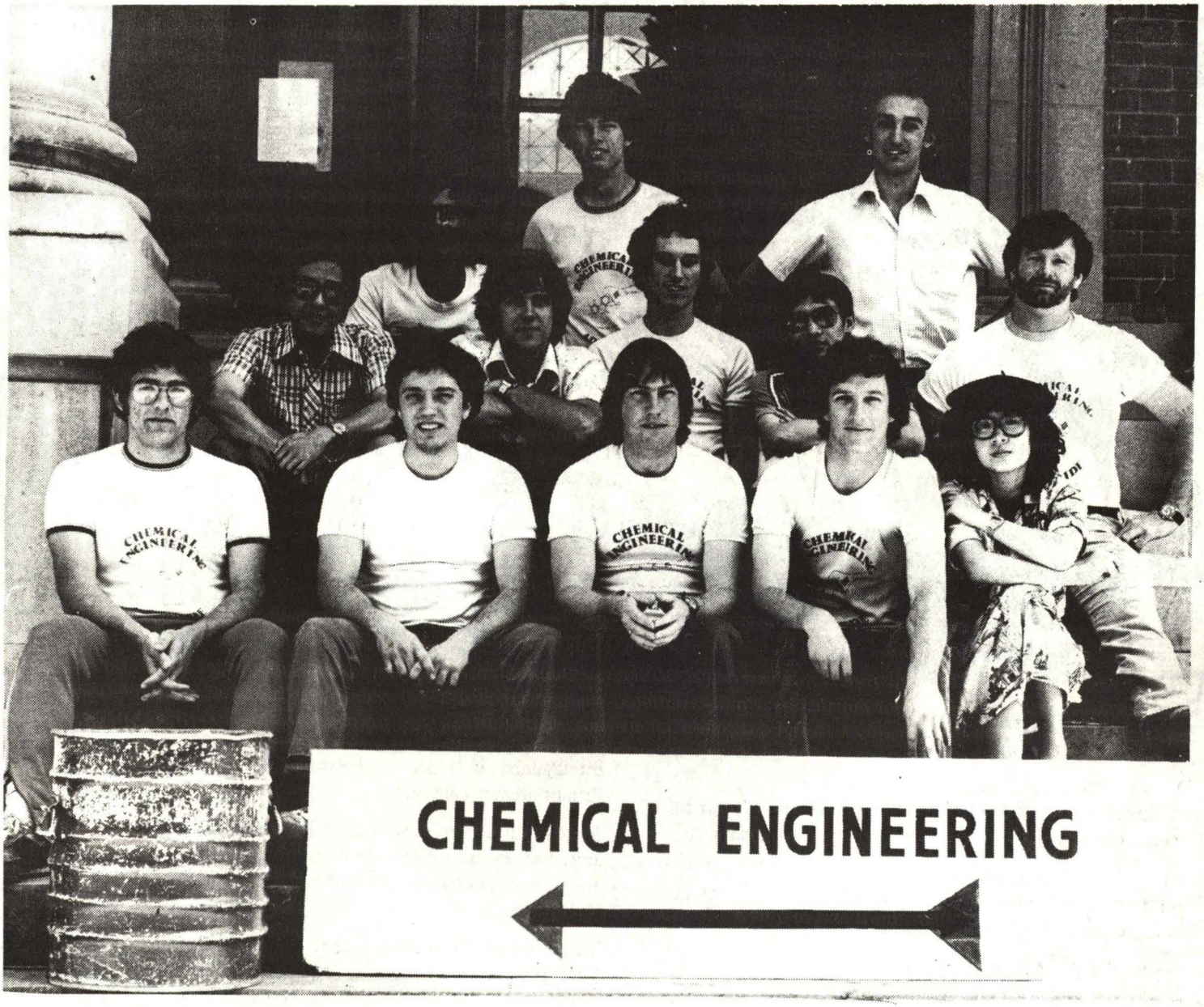
      



Mechs '79

Chems '80



Elects '80

Tom "Dopey Derrr..." Angelakis
Tom, being uniformly spaced is not funny!

Michael "Shirley" Arens
A refuge from Skyhooks, Mike has never been seen to wear anything but a cheescloth shirt, thongs and shorts.

John "Von" Asenstorfer
John has often been seen in the BSL reading "Mein Kampf" and travel brouchures for Auschwitz.

Boon, alias Con Boonopolous
Boon has never been understood by any member of the class or academic staff. He has however, been seen by "spiros" at Jules dancing to "The Nips are Getting Bigger" and "I'm turning Japanese".

Ian Bowyer alias Gnome, Elf, Pixie, Leprichaun...
Ian, standing at 2' 2" has managed to reach the power point on his lab bench to blow up enough power transistors to bankrupt the Elec. Eng. Dept.

Rod "I've got a question you cannot answer" Bryant
Rod, renowned for unanswerable questions in other students' seminars was last seen in the intensive care ward at RAH. (I can't understand his attitude).

Simon "I'll get you" Butler
Bent; likes antennas and microwaves.

John "Abbo" Canny
John, born in Pt. Agutta with his "Rhode scholar" intelligence is chief spokesman for the "Save the Pitjantjatjara" campaign.

Angelo "don't cry over spilt milk" Capozza
ange has uncanny habits of spilling milkshakes, splitting apples with his bare hands and exploding load capacitors, all at once,

Tony "Can I Help You" Carey
Very popular class member due to consistent absence. Photocopies everything available come swatvac.

Tim "Cool Cat" Coombs, alias "The Joker"
Tim entertained all present by such witticisms as MOS=more oral sex. Tim also is renowned for percussion and other Parafinalia.

Wayne "Mary" Croft
A girl at heart, $20 Friday and Saturday. Wayne has suicidal tendancies; he's just got married.

Dick "Ducky" Drake
See Simon Butler (he often did).

Robert "The Mouth" Esser
Only known to arrange squash tournaments and shout obscenities from the back row of the class.

David "Harley" Gapp, alias 1H Space
An intellectual giant amongst sheep. It took David three years and two terms to discover the Bar; David will be furthering his studies next year.

Eddy "ferroresonance" Giacomel
Eddy goes to "The Head" alot — thats about it.

Argiri "Gerry" Grigorakis
The only way to shut Gerry up is to talk about his mark for Power System Stability or lock him in the anechoic chamber.

Mark Hayes "an Oates"
An evanescent character who can successfully negotiate his Antenna tutes. Must sleep in a waveguide.

Tim "Yul Brynner" Hutton
Deliberately broke his elbows on the Kokoda Trail to gain sympathy in final term exams.

Terry "Spiros Orion" Kullis
The Golden Greek who has been known to be
(a) hit at parties
(b) boogying at Jules and Sinatras
(c)mistaken for his uncanny resemblence to patrons of the Overway.
(d) conspicuous in his absence at parties.

Daryl's Keen (on religion)
He's a christian fellow who is Keen on breeding fish to feed the masses. Right? Right!

Bob "Galloping Gourmet" Korbel
A cosmic character who attends lectures between smokes, Bob organises vomit sessions at the Hindmarsh and has already had his body rejected by the Cancer Research Foundation but was gratfully accepted by the Hindmarsh Restaurant.

Rainer "Reindeer" Korte
Alledged to have spoken to harley. Ambition is to join a silent order of monks.

Andrew "Pommy" Lane
A typical whinging Pom whose recreation includes mountain climbing, crawling up supervisors arses, flatulation at parties and continual humdrum in lectures.

Ricky "Father Harry" Langdon
A righteous schizophrenic with a bible in one hand and a beer in the other. Rick is a coxman in the front row in typical grot apparell.

Tony "Mould" — Smith
A one subject wonder who we entered in the Fred Astaire dance contest. Only been known to talk to Tony Carey.

Zul "Where am I" Mukri
Purchased his motorbike under the Colombo plan.

Paul "I'm not here" Nicol (DNS)
Basically, a disgusting absentee member who eats tea-bags and gets sufficiently highly strung about exams to drop out. Past-times include ironing, dobbing the footy around, pissing on with a "half-wit" and avoiding projects to watch "Matlock".

Lachlan "Microprocessor" Peter
Lachlan branches into subroutines of "Eskimo Nell" at the drop of an interrupt line.

Lou "—theran" Pivato
The Lou deserves more from the Bog and is another giant amongst sheep.

Andrea "Would she be offended" Rawson
As class rep., most of the class were satisfied with Andrea's performances. She put up with some of us; went down with most of us and took it all on the chin.

John "Rolf Harris" Rockliff
Always playing with his extra leg, John seemed to fall asleep in lectures; Trust British Paints... sure can.

Stephen "Fish-head" Salamon
Migrates upstream during lectures. Spontaneous emission of television lectures.

Peter "Guru Sadunic" Sarunic
Thought the only difference between a 280 and an 8080 was the buttons.

Mark "George Karolyi" Skrebels
Only person to successfully impersonate George Karolyi and live. Rival deviant his past-times include wrecking motel rooms and hanging upsidown in cupboards.

Naser "NASA" Tamby
Founder of the multinational Tamby Corporation and American Space Programme.

Steve "Tobrook" Torok
A rare specimen. he was the only other Pom that didn't whinge.

Eshan "Spok" Vossough (Stardate 2196.4)
A Vulcan who should have been an artist not an engineer as anyone who has copied his five colour kaleidoscopic lecture notes will testify.

Mark "Half-wit" Whittaker
Alias Pisspot, Deviant, Arse, Ace
The most deviant member of our class. When asked to write this himself he said, "I'm not doing myself". Pasttimes include pissing on, footy and deviant activities.

Ben "Herr" Wilkinson
A crawler who offers food to lecturers (esp. Dr. Gibbard) in lectures along with incessant corny jokes. Past-times include playing cards and playing cards.

Anthony "Inconspicuous" Williams
A pacifist who wears army shirts.

Peter "I'm married" Williams
A quiet member of our class who's wife must do all the talking.

Ian "Munster" Willoughby
Another member of the silent sect, Ian has a great Will-to be a human being, whilst past-times include Frankenstein impersonations.

Elects

Alex "Wishbone Ash" Wyschnja
A diet consisting exclusively of Nutchew bars, Alex has never been known to attend lectures when surf's up. Alex has a part-time job as a jack-in-the-box.

Max "1 Amp/Watt" Carpenter (Lab Technician)
Past-times include being a storeman in between being out to lunch.

LECTURERS

Mr. Andy Downing
An "undercover agent" for BHP whose past-times include blackmail to make people attend films and deliver short talks.

Dr. Pete Cole
Constantly attempting to astound students with his infinite vocabulary, however the susurous encountered during lectures was not commensurate with his elitist lecturing ability.

Prof. Bob Bogner
Sets "Mission Impossible" projects to students whom he beguiles with hieroglyphic, disjointed, self-orientated lectures.

Dr. Don Griffin
Rivals Dr. Cole in the microwave domain. His ambition is to join Split Enz — he don't go out.

Dr. Mike Gibbard
He loses control in any other subject. His apparell must indicate a keen interest in golf.

Mr. George Karolyi
George's image seemed to be transparent to the camera. has been known to hand out in the subterranean corridors of the Elec. Eng. Dept., where he carries out his haemological and physiological research.

Mr. Kammy Eshraghian
Kammy's essay-like lectures are predominated by strange a-structures such as parity chickens and other similar anomalies.

Mr. Dave Pawsey
Although quite forgetful, dave has been very helpful to most members of the class. He has won the "All Round Good Guy" Award 1980 and we hope that a worthy recipriant can be found by next years class.

Dr. Tony Parker
Rival for the "All Round Good Guy" Award. Tony tends to induce Exication-Motivation and Friendship (EMF) throughout the year.

Dr. Doug Pucknell
A giant amongst micro's, whose lecturing will leave a nonerasible programme in our "dynamic" memories.

Dr. Bruce Davis
A twisted character who remains our unrivalled letcherer. Favourite past-times include drooling over prono magazines and communicating his findings unmatched matched.

Civilians '79

FRONT ROW TO BACK ROW, LEFT TO RIGHT

Dr Neil (DANNY) Kay
Dr Malcolm (Baby Face) Hirst
Dr Graham (Randy) Dandy
Dr Mike (Yo) Yeo
Professor Bob Warner
Dr David ( ) Brooks
Mr Bob (Billy Bunter) Culver
Mr Lawrie (DC10) Schmidt
Mr (Hydraulic) Jack Ewers
Row 2
Tan Keng Jin
John (Eddy) Gasner
John McCormade
Tim Potter
Tim Polden
Simon Shelley
Phil (PJ's) Chadwick
Peter Marker
J.P. (Johnny) Taeger
Row 3
Peter Burchell
Nick (the dick) Travers
Mark Elford
S.J. Reid
George Morias
D.M.D. (Scotty) Shaw
Phil (the DILL) Doyle
Terry (migraine) Magrin
Mike Poynter
Mr I.B.M. Xerox
Row 4
Peter Todd
Drew Baker
David (Bible Basher) Lee
Stuart Rice
R. (Wally) Edwards
Andrew Clark (Kent)
Paul (Macca, Wimpy) MacDonald
Len Daniels
Back Row
Peter Jehne
Brian (Windsurfer) Riggal
Ian Henskle
Terry Martin (Muffy)
Geoff Kneebone
Mark (Susquatch) Hallam
Terry (TUK, Thalidomide) Kalken
Peter (marry his sister off) Bradbury
Timmy (the Tart) O'Connell
Jack Ward

Civilians '80

Favourite saying or nickname
Pastime
Destination

Lori
Growing whisker
Turning Japanese

GEOFF CROKER
Wifey I'll be in it
having accidents
Intensive care resident

ANDREW HILLIER
Jeepers
Brown eyeing
Virgin

ANDREW WOOD
Piece of piss
Farting
ESSO Natural gas resource

STEVEN PAUL
Warfies on toast
rolling cars
Stunt man

RUSS HALL
Breaking up with Belinda
I won't get married
coming back to Belinda

NEIL TOTHILL
Stuff that
Explaining things
Mastermind

GREG WISHART
Don't get your balls wet
windsurfing
Drying sale after windsurfing

CHUNG
Chungy
Playing footy pools
Winning footy pools

HUGH MIDDLEMIS
Don't print that
Following the Bodgies
Finishing Brook's project

JAMES BROWN
Yes Sir
Attending job Interviews
Franger Vendor

HELEN McCARTHY
Sorry I'm late
Coming late
Cowgirld in Texas

MR EWERS
Hydraulic Jack
growing a moustache

MARTIN MUNN
marty
into school girls
Carnval knowledge

STEVEN BUSHNELL
Bushy
Bobby Culver imitation
Centerfold

LEO
Leo
Performing lion dance
Alion

Mr Schmid
This is not new to you
wearing sunglasses
designing engin mounts on DCIO

-Mr. D. A. C
After I arrived the population halved
Being a lecturer
Reading Hieroglyphics

JIM CORNWELL
Gidday lads
Drilling bore holes
China

MICHAEL BERRIMAN
It's I.O.
Cursing Architects
Architects Assistant

BRYN STEVENS
Celica Boy
Writing to Coffees
Toyota Dealer

GEOFF WINTER
How bad's that
Shitting on his mates
Get there tomorrow

MARK GOBBIE
Let's go to the Penthouse
Avoiding out of control outboards
Test pilot for Mercury outboards.

VICKI ARCH
Arching Action
Losing contact lenses
Getting used to Catepillars moustache

BILL RANDFORD
Dive in
Diving in
dolphin

PHIL DUNN
Put the skeg on
looking for contact lenses
Growing a catepillar moustache

DAVID CHUA
OH! NO!
Getting the right answer
Taking over the world.

DR ARNOLD
Morri
Sleeping
Slumberland salesman

GARRET DIXON
Clare's shout
Playing golf
Golf Pro.

NICK WHITTLE
Wick
Hotting up Fords
Poll position at Bathurst.

EDDIE SANDRINI
Come on fellas/Shaddap your face
Opening bank accounts
Bookie

MARK JOHNSON
You're a Punk/Mongrel
Cutting lawns
Producing little Raymonds.

JOHN RUNDELL
No muff too tough
Dog catching
Dog catcher

ANDREW VOGAN
Your buy
Shouting beers
Tight ass

ANDREW MINNS
Cheap wine and three day growth
Running
Upstaging Crawley's Shirt.

ONG
Ongy
Looking into life's many
dichotomies
Confusius or confusion

WILLY LEE
Sex is statistically Significant
Testing his theory
Milkman

DR KAY
Danny Kay
Introducing Speakers
T.V. Compare

DR DANDY
No money in Academia
growing a moustache
Melbourne

DR BROOKS
Watching Cricket during SWATVAC
wearing Target Fahions

DR MOXHAM
Mox
Consultant Engineer

DR YEO
Are you with me, Yes or No
Impressing Helen
Book promoting.
If I had my time again I'd be a....

MR CULVER
Quaint, Ball Park order,
don't kid yourself and
make damn sure of the
bastards.

"OH DOCTOR YEO, WHAT A BIG RANGING POLE YOU HAVE".