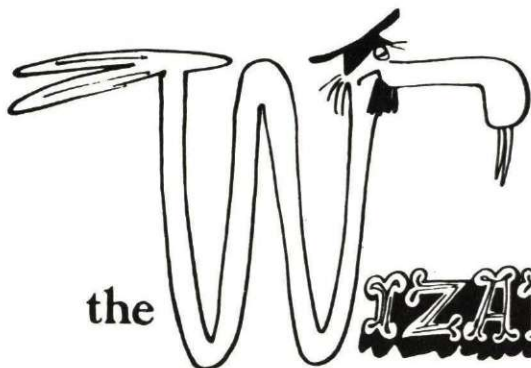




**HYSTERESIS**  
**1978**



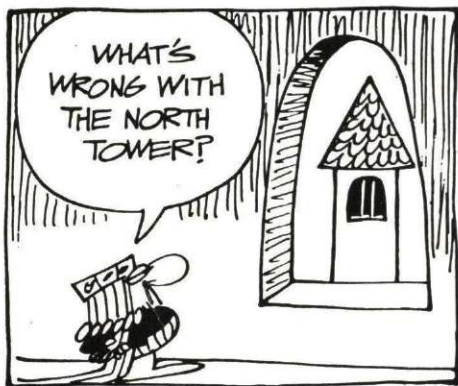


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# WIZARD of ID

by Brant parker and Johnny hart

WHAT WE  
NEED IS AN  
INSTITUTE OF  
HIGHER  
LEARNING



# HYSTERESIS 1978

The official publication of the  
Adelaide University Engineering Society

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# Editorial

If a survey were conducted across a cross-section of any community in Australia, or the world for that matter, asking what is likely to be the most serious problem facing us between now and the turn of the century, the vast majority would answer 'Energy Crisis!' Until several years ago, the ordinary man in the street, as well as many industrial concerns, was oblivious to the fact that almost all energy being consumed was from non-replenishable sources - that coal, oil and natural gas supplies, though vast, are finite. Only since the OPEC countries in the Middle East have begun dramatically increasing petroleum prices, and user/producer countries like the U.S.A. and Australia have realized that their own domestic supplies are running out, has there been an increasing awareness of the energy problem.

What then does the future hold in the way of energy resources?

Firstly, oil and natural gas have severely limited reserves and will run out within the next few decades, if the present rate (indeed rate of increase) is not curtailed. Since petrol and diesel fuel are not the only products of crude oil, with lubricating oils and an endless list of petro-chemical products also made, it is essential for crude oil to remain available for these types of products. Thus phasing out of petroleum as a fuel needs to begin now.

However, what can replace petrol as a fuel? Coal, though having many times more in reserve than oil, is still a limited resource. It also presents problems with combustion, particularly on a small scale.

Uranium is an alternative. At present a political 'football', even if it does overcome these objections, problems of safety and waste disposal are never likely to be completely solved. As well, uranium too is a finite resource, and though present at the moment in largely untapped deposits, will not last if nuclear power generation expands as rapidly as it has over the last decade.

Consequently, unless a new, as yet unknown, energy source is discovered, only one supply remains which could be described, at least in terms of human years, as limitless. That is the sun. Though solar power has been around for many years, both indirectly in wind, hydroelectric and tidal power generation and directly in solar powered satellites and lately in water heater systems, only a fraction of its full potential has been realized. It has been said that if the whole of the Australian desert region were covered with solar panels, and solar energy was efficiently converted to electricity, most of the industrial world could be powered from it.

Here is where our future lies. Houses have already been built which are completely powered from solar energy, and once electric cars are perfected, their energy requirements could also be supplemented by solar power. The development of solar energy power stations, while still some time off, will eventually become a necessary replacement for coal, natural gas, and even nuclear power stations.

All this talk about the energy problem is fine. But, what can we, as present or future engineers, do to relieve the potential crisis. At the moment, decisions on use of energy resources are being left in the hands of politicians, trade union leaders, multi-national business leaders and environmental lobby groups, all of whom have no real qualifications in the field, and who are generally only looking after their own particular interests. Engineers today have buried their heads in the sand, so to speak, and are ignoring the problem.

This must change! It is the professional engineer who has the knowledge and experience to more fully understand the energy problem as a whole. It is the professional engineer who, through design and construction management in both private industry and public service, has direct access to energy consuming areas and a key role in how those areas operate. And it is the professional engineer, at all levels of authority and experience, who should be making the decisions on the optimal use of energy.

The way ahead is clear. Engineers in all disciplines, at all levels, must begin to implement energy conserving measures now. The generation of power from solar energy should become less a research scientist's program, and more the responsibility of engineers to design, and construct, a practical and economically viable working solar power system. Finally, engineers must come out of the woodwork, and stand up against the sectional interests of the present powers that-be, to develop a national, indeed international, energy policy which is beneficial to all.

JOHN OLSON  
Editor  
LUCKY MORIAS  
Co-Editor



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# The Changing Position of the Professions

E.D. STORR, F.I.E. Aust.

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Mr. Storr is Secretary and Chief Executive Officer, The Institution of Engineers, Australia. In his complete paper, published in the Institution's General Engineering Transactions 1978, he discusses the need for professional associations, and the importance of a professional code of ethics. He then explains the significance of being a member of a profession, and the problems faced, particularly by new graduates, in maintaining professional integrity. This section of his paper is reprinted here:

'For most professional people, their basic education and training may come into conflict with other forces during their occupational socialisation. The term 'occupational socialisation' is used to mean the process of inculcation or indoctrination whereby an individual internalises the principal values and attitudes within which he works. The young practitioner has most likely internalised many of the habits, methods and outlook that were introduced to him by his lecturers and professors, and these attitudes and values may be reinforced during his early years of practice under the influence of older practitioners and in the environment of long-established institutions. In the extreme he could even reach the stage where he is incapable of a broad awareness of issues that are related to his work but are outside the straight and narrow path of his professional practice proper; this would be an extreme case.

Let us assume that the typical practitioner is one who has recently qualified and is working in a bureaucratic organisation such as a government department or a large private enterprise. He will be subjected over the following years to a number of forces in his occupational and professional socialisation, the most relevant to this discussion being his indoctrination into the ways of an organisation. If this is completely effective, again an extreme situation, his internal psychology will disallow any non-conforming action in respect of both statutory and informal power structures. He will identify and evaluate himself in terms of values and attitudes of his organisation, and he may think and act exclusively as part of that organisation. Without knowing it, he may become progressively less able and less prepared to express uninhibited professional opinion and he may also become less likely to display a sensitivity and an awareness of the real world around him.

If this is the case, the practitioner is not a completely independent professional person of the kind that has

traditionally been expected. The problem is that while performing his duties as a professional person, he becomes 'institutionalised' or 'departmentalised' by limitations placed on him such as his conditions of employment (the regulations of the Commonwealth Public Service Act for example) and by the necessity to conform to the establishment in order to ensure promotion in steady steps throughout his career. His whole conduct may be patterned by the compelling nature of the institutional imperatives which he is unlikely to question because he probably sees them as the only possible way. Such a person may be forced by the inertia of established practice not to take decisions without utmost caution, not to exceed delegated authority, not to depart from standardised methods and procedures, and so on, for should he make one 'mistake' (such as saying something out of place or taking some non-conforming action) his progress in the organisation may be deflected.

To sum up: a professional person could well be in the centre of a complexity of interactions involving (1) his training as an engineer, applied scientist, lawyer, or whatever he is, (2) his conditions of employment and his special kind of professional socialisation, (3) the pressures placed on him as an employee by his industrial association or union if he has one, (4) the code of professional practice set by his professional association, (5) the socialising agency of his peer group, and (6) his integrity as an individual member of society. Each of these would take the form of a social control over the professional person who internalises, in varying degrees, the associated norms and values, some of which may at times be in conflict.

The institutional influences placed on the professional person are considerable, and the present conflict in the status of professionalism can be illustrated in the question: 'If a professional person's job is placed in jeopardy by the recommendation which his professional judgment demands, how can he be professionally independent?'. This point is so important that we should consider other modes of practice beside the professional person who is employed by a bureaucratic or corporate organisation. Using engineering once more, even consulting engineers who have the greatest degree of independence in the profession of engineering are frequently tested by having to choose between going along with a client's wish or withdrawing their services; and the engineer in industry who holds out for a heavier emphasis on safety over style,



for example in automobile design, may have to resign in order to maintain his integrity.

The sociological explanation for what I have been saying is that generally each practitioner is placed in the objective structure of his institutional world within which he develops and finds satisfaction, although he is under the coercive power of a set of norms, values and attitudes that may have been formed many years before his time. (Fontenelle's aphorism: the dead are more powerful than the living). It seems that the practitioner may experience an external reality or a social order which is conveyed to him by what social psychologists call 'significant others', who may consist of (say) the Managing Director of his company or the head of his department as the case may be, the Auditor-General who sits in another department, his senior technician, even his mother-in-law and so on, all of whom were similarly indoctrinated into institutionalised views about what was 'right' and what was 'wrong' when they were younger but who tend to transfer their everyday reality to him. For example, construction contractors in the nineteenth century had a reputation for being rogues and today a hundred years later after transmission from generation to generation I suspect that many people working in some government departments find it difficult to trust any contractor.

At the risk of over-generalising, the typical practitioner tends to become conservative, passive and compliant, and often lacking in opportunities for individuality and self-expressiveness. While this is seen simply as a social fact, and not necessarily as a bad thing, anyone concerned to think about the changing position of the professions should be prepared to consider such possibilities. I have been implying that there is a shift from the traditional requirements of what belonging to a profession means, the traditional view being that a professional person's practice and attitudes should embody 'two cardinal features: an essential relationship of trust, and an indispensable atmosphere of freedom'. The problem is that unless a professional person is in a position to exercise professional independence, he may not be able to fulfil the prescribed professional role, and ideally a professional person should be free to accept or decline a particular task and thus be free from any influence which could coerce him, however subtly, to make recommendations which do not really represent his best professional judgment.

The question is therefore asked: 'Is professionalism dying?', in the context that a profession consists fundamentally, in the traditional sense, of a community of interest and knowledge, a community which has no

geographic boundaries but which prescribes for its constituents some vital requirements of attitude and performance. There are a number of ideals for a profession that require a professional person to have a special kind and range and depth of knowledge and ability, and to have been indoctrinated into a certain role in society. But, most especially, in order to fulfil his professional role completely, a professional person should work under his own authority and exercise his own judgement and accordingly he should take responsibility personally for the decisions he makes.

In leaving these questions for pondering, I suggest that, at least for the profession of engineering, professionalism should continue to involve a way of thinking and any concept of professionalism should be based on an ideal of altruism and obligation. In engineering the traditional 'one-to-one' client-practitioner characteristic of the 'free' professions can reasonably be replaced by a characteristic of management responsibility

A final point is that while professionals frequently raise concern about whether the public recognises them as professionals, that is they worry about their status, rarely is there concern about whether professionals are in fact professional. If they want to be recognised as professionals, they need the status that goes with such recognition, they must be prepared to earn it by what they do and by the way they do it. But as implied above, this may be difficult because the trend is for more and more professionals to practise as salaried employees in bureaucratic organisations where the independent professional relationship with a client-employer is hard to achieve. The independent professional and the salaried employee are something of opposites, however highly skilled the latter is.

In conclusion: like many other institutions today, the professions have become the object of widespread scepticism following some decades of fast growth, affluence and unquestioned status. but no longer are the professions and individual professionals assured of indisputable public regard and patronage. The causes of this disenchantment are varied and complex, and range throughout our social and political life. This paper has examined this changing position of the professions and has raised a number of questions that individual professionals and their associations should be considering carefully if they wish to enjoy a continuing control over their own future. In particular, professionals should decide whether or not the traditional concepts of professionalism are redundant today, and, if not, whether they are prepared and able to restore the ground lost during recent decades.



# THE DEAN'S PAGE

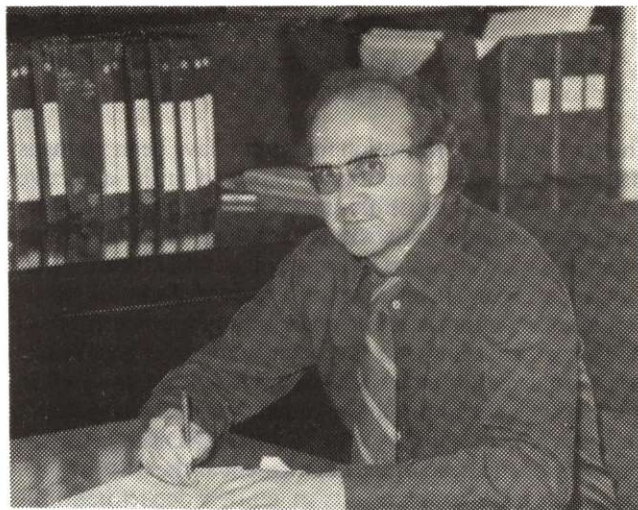
PROF. R.E. LUXTON

Nineteen seventy eight, that was the year that was! Where has it gone? What have we achieved? I expect that these are questions which are asked by many people on many occasions. Many years ago, it would have been possible for me to produce a simple list of papers published, research aims achieved, teaching developments and students' results to justify the existence of a Faculty of Engineering in the University of Adelaide. But times have changed! No longer is it possible to consider the Faculty of Engineering, or indeed the University of Adelaide itself, as being an isolated independent entity within the total society. We are now very definitely part of a society, and have been though perhaps some have not realised it, ever since the Faculty came into existence.

The 'in' theme for 1979 and later years, is 'technology transfer'. At last the society at large, that is, governments, industries, and the general work force, all realise that the transfer of ideas, innovations based on those ideas, and developments of those innovations into the general commercial market place, is a vital process in the establishment of a credible industrial base in this country.

This Faculty has been making some major contributions to the realisation that participation within the community is a major role of a university. A submission prepared by the Faculty for the Senate Standing Committee on National Resources, which was enquiring specifically into industrial research and development, was greeted with very considerable interest by that Committee. Your Dean and Mr. Culver of the Department of Civil Engineering were invited before that Committee to expand on the information contained within the written submission, which had been prepared largely by Professor R.E. Bogner and Dr. M.K. Bull, the two previous Deans. The comments of the Committee clearly indicated that this Faculty was well ahead of any similar faculty in the country, in terms of interaction with the industrial base it serves.

Does it seem odd that I say that this Faculty 'serves' an industrial base? Do you believe that this means that we are 'slaves' to some industrial monster? If the answer to the first two questions was 'yes', then I must really ask whether you believe that all the members of this Faculty are so spineless as to be mere ciphers of an industrial machine? If there is anyone who has still answered 'yes' to that last question, then I would state that it would be impossible for this Faculty to have made such a substantial impact on the development of this State if it had sought to merely play a servile role. A very large number of the major advances in industry and in the social infrastructure in this State have been derived from this Faculty, and if you, as students and graduates, are prepared to maintain the name of Adelaide University in the high regard to



which it has been carried by your predecessors, they will continue to do so.

After the splendid rhetoric of the preceding paragraphs, it would be inappropriate to begin listing the specific achievements of the various Departments and the various staff members in the Faculty during 1978. Suffice to say that there has been a series of notable achievements on the research front, and a remarkably good performance on the academic and teaching front. It should not pass unnoticed that these achievements have been made in the face of an ever increasing constraint on the University in general and on the Faculty in particular, due to the present economic policies in force in this country. That this has been possible is a result of the **intellectual** fat in the Faculty and certainly not the material fat. Our Government seems to believe that it is possible to stimulate marvellous breakthroughs to solve our major national problems, such as the supply of petroleum fuels, or alternatives to petroleum fuels, while a programme of international erosion of the general infrastructure of research is carried out. Unless as a nation we take a positive view that we must maintain a fertile infrastructure on which directed research may be based, we will fail miserably in the challenge of international economic competition. It is a sad reflection that our much smaller next-door-neighbour, New Zealand, is at least three years ahead of us in the formulation of objectives for the energy programme deemed to be necessary to maintain the viability of the country. We must close this gap and close it very rapidly, and this will only be possible if the assault on University staffing numbers ceases. Already the most junior members of staff are working at least 60 hours per week and the senior members of staff very much more, simply to maintain the very high standard we have set for ourselves

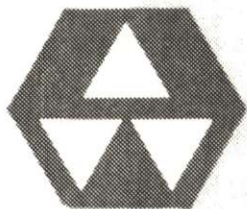


and for our graduates. You, our students and graduates, are suffering as a result. You, our students and graduates, can do very much more than we can in terms of influencing people about you who can in turn influence elected representatives to stop the absurdity of this assault on university excellence.

Before closing, I must record our enormous gratitude to Mr. Don Tyler who retired during 1978. Through his role as Assistant to the Dean he took an intense personal interest in students in the Faculty over about one quarter of a century. Those with problems could always depend on him for wise counsel. Those with none could be secure in the knowledge that they were more than names and photographs on a card. We all wish Don the very best of health and happiness in his retirement.

Other staff departures have been Dr. Garry Brown, to a Chair of Experimental Fluid Mechanics at the California Institute of Technology; Dr. Stan Hutton, who has seen the light and has joined the staff of the **Mechanical** Engineering Department in the University of British Columbia; and Dr. Chuck Evans who is returning to his native land. We wish each of them success in their new endeavours.

May I wish you all a very successful New Year and hope that those of you who are graduating will retain your ties with your Alma Mater, and those of you who are continuing your courses will seek to further the standards which have made Adelaide University graduates in Engineering actively sought by employers all over the world.



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# CIVIL

DR. D.S. BROOKS (Lecturer in Civil Engineering)

The fact that Civil Engineering is the most broadly based of the various engineering professions is reflected by the scope of the research activities which are supported by the Department. The main areas of Departmental research interest include structures, hydraulics, geotechnical engineering and transportation, and all of the projects are directly relevant to current professional practice in Civil Engineering.

One project in the field of structures that has continued over several years concerns the behaviour of load bearing brickwork. Although construction in brickwork has been a common form of building for over 6000 years, it is only in the past 30 years that scientific research has been applied to devise more economical and satisfactory structures. The research in the Department is aimed at finding out the strength of a wall which is partially cracked under eccentric loads and which eventually may fail by buckling or crushing, and extensive use is made of computer modelling of the phenomena and full scale testing.

A project aimed at studying the fatigue properties of concrete structures has arisen from the increasing awareness of engineers that dynamic loading of structures is often a critical design parameter. The experimental investigation has been carried out on the Departmental Instron 1282 servo controlled hydraulic loop machine which has built-in programmable facilities for dynamic loading. The work has highlighted the importance of the joints in reinforced concrete structures and the need for adequate ductility in both members and joints.

Two aspects of hydraulics research have both involved computer simulation of fluid transients. The first project is concerned with open channel transients. Surface disturbances which accompany flow changes in open channels must frequently be held within prescribed limits of rate, magnitude and duration. Computer simulation enables the motions of control gates to be designed such that surface disturbances do not exceed these prescribed limits.

The second investigation involves closed conduit transients, control of which is a very difficult design problem in pipeline practice. The complexity and tedium of analysis by currently employed computer and other methods frequently result in designs which are adequate but far from optimal. A study is being conducted of the efficiency of a 'hands-on' interaction between the designer and a computer model of the system with immediate visual display of selected results in yielding more optimal solutions.

In the geotechnical field, work is proceeding on the development of insitu methods of determining soil parameters. A Cambridge self boring pressuremeter is now being assembled and tested for field studies later in



the year. A down hole plate load test has been developed and will be applied to the measurement of compressibility and strength parameters in Adelaide clay. In addition a calibration chamber system for a static cone penetrometer is being produced. On the more theoretical side, investigations are being made of the elasto-plastic properties of soils using the triaxial apparatus which allows independent control of the three principal stresses.

Two further projects are of direct practical significance. The first is directed towards the improvement of design methods for circular, elliptical arch sections of corrugated metal-earth systems. The second has been undertaken on behalf of the Salt Damp Research Committee to investigate the causes of salt damp which damages the brick and stone masonry of many Adelaide buildings. Currently the permeability and electro-kinetic properties of local building materials are being evaluated.

The recent installation of a PDP-11/34 computer system with its associated data acquisition facilities has considerably enhanced the Departmental research capabilities. Data can be collected from strain gauges, wave recorders and other laboratory equipment, processed by the computer and then output either as numbers or in graphical form. Already the computer has been linked to the Instron testing machine and to wave recorders off Port Adelaide producing stress/strain graphs and wave spectra respectively. In addition to its primary data acquisition application, the computer can also be used for developing and running conventional and engineering programs.



# CHEMICAL

DR. T.N. SMITH (Acting head of Department)

Current interests of staff of the Department are spread across the broad field of Chemical Engineering from processes and plant for the production of chemicals and materials to the properties and design of materials for particular applications.

**PROFESSOR R.W.F. TAIT**'s special interests are in fuels, combustion and energy resources and conversion. He was a member of the State Energy Research Advisory Committee and has recently spent time at Cornell University, U.S.A. and Leeds University, U.K. looking at work on solar energy and fuel technology. He has been responsible, with his usual foresight, for the introduction several years ago of a substantial segment of Fuels into the Chemical Engineering course.

**DR. J.R. ROACH** is working, with the support of a grant from the State Government, on the utilisation of low-grade heat for refrigeration. Sources such as solar panels or the exhaust from gas-fired equipment are envisaged and a particular application is to the cooling of buildings, 'air-conditioning'. The novel feature of the project is an absorption system which needs a relatively small temperature difference for separation of the components of the refrigerant. The process for this separation is a familiar one to chemical engineers - distillation.

**PROFESSOR D.R. MILLER** leads the Materials Engineering section of the department. Much of his recent work has been concerned with the relationship between the properties and the microstructure of alloy steels. Ductility and strain-dependent properties are influenced by the nature and distribution of the precipitates in the grain boundaries of the steel. Control of this structure is of clear importance in the formulation and treatment of the alloy. Professor Miller presented the results of some of the work at a recent international conference at Cracow, Poland.

**DR. G.J. COCKS** is collaborating with Professor Miller in the work on alloy steels and also in a project to define the properties of that extraordinarily successful material, dental amalgam. The mechanism of the setting reaction and also the creep characteristics of this material are being investigated. The latter property has important clinical implications. The projects are supported by two postgraduate scholarships from the national Health and Medical Research Council.

**DR. K.D. KING** specialises in kinetics and thermodynamics and has developed with the support of the Australian Research Grants Committee, facilities for a programme of work in Very Low-Pressure Pyrolysis. This is a technique for the determination of individual rates of reaction of molecules with particular levels of internal



energy. Such information is very difficult to infer from experiments at normal pressures where molecules interact with neighbours having a wide spectrum of energies. At very small densities, however, collisions of molecules with others are less frequent than with the wall of the containing vessel and the analysis of decomposition reactions is simplified.

**DR. C.P. JEFFERSON** is working currently on simulation and optimisation of systems of thermal regenerators. A major application is to the 'stoves' which are used as heat reservoirs in the operation of blast furnaces. Dr. Jeffreson has been in the United Kingdom recently, developing, with colleagues at York University, appropriate techniques for computation and visiting blast furnace installations in order to gather necessary operating data.

**DR. D.R.G. WILLIAMS** is interested in the properties of polymeric materials. These depend generally upon formulation, structure and distribution of chain length of the polymers and are subject to change with treatment of the material. Particular matters under scrutiny are the factors involved in adhesion to surfaces and rheology with respect both to forming and performance of a finished article.

**DR. B.K. O'NEILL** is studying the process of mass transfer in the Fluidised Packing contactor. This is a device which has, in place of the fixed packing of conventional cooling towers and absorbers, a mobile packing consisting of pieces of low mass density which disengage under the influence of the upward flow of gas through the contactor. The advantages of this arrangement are that the packing expands to accommodate increases in flow and maintains high rates of transfer under conditions which would exceed the capacity of a conventional design.



My own research is chiefly in the field of fluid and particle mechanics in relationship to the handling of solid materials in processing equipment. Special interests are in

the quality and stability of fluidisation of solid particles by fluids and in the design of pneumatic transport systems for solid materials.

# MECHANICAL

DR. J. PICKLES (Lecturer in Mechanical Engineering)

## Personalities

You lose some, you win some; 1978 has been no exception. Gary Brown (Reader) finally left in September for his beloved U.S.A., to take up a post at California Institute of Technology. Chris Abell's three year appointment as a Teaching Fellow ended in December. Sadly, neither post will be refilled, the loss of the permanent staff position being consequence of the Federal Government's cuts in funding for Universities. Both research and teaching in the Department (i.e. students at all levels) will suffer.

A number of postgraduate students have already, or soon will be, moving on. Chris Fuller (Ph. D) has left for a one year appointment at Southampton University's Institution of Sound and Vibration Research in England. Renzo Tonin (Ph. D) is on the road in Sydney with his rock group 'the Hijacks'. Bernard Delcourt (Ph. D) has returned to his native Belgium.

However, you do win some. Happily Chris Abell will still be with us in 1979, not as staff member but in charge of a research investigation into the improvement of combustion by fluid mechanic means, funded by the S.A. Government Department of Mines and Energy.

There will be a new influx of research students in 1979, seven at last count; mostly from other institutions, but one, Clive Blanchard, is home grown.

## Research Funding

Funding by State Government or Industry is characteristic of the new approach to financing research being forced on Universities. Traditionally, funds for University research have largely come from the Australian Research Grants Committee (A.R.G.C.), an agency of the Federal Government, but 1976 and 1977 saw large cuts in the money available to the A.R.G.C. and the level of funding has since remained low. Even so, Adelaide did relatively well in the distribution of A.R.G.C. funds for 1979. The 150 grants awarded to Adelaide totalled \$1,396,191 - 11.85% of the total awarded to all Universities. Only Sydney and New South Wales



Universities received more in grants. The Mechanical Engineering Department at Adelaide obtained \$59,952 for five projects - 75% of the money granted to the four engineering departments.

However, A.R.G.C. funding is no longer adequate to support the amount, or type, of research required by an increasingly sophisticated and regulation beleaguered industry. Even so, many industrial firms, being production orientated, seem reluctant to risk the financing of research into their particular problems. Fortunately the South Australian Government is sympathetic to this situation. Three years ago David Bics (Reader), Director of the Department's Acoustic Laboratory, approached the S.A. Government Department of Labour and Industry with a general proposal for funding, for a three year period, research into noise control problems of interest to S.A. industry. As a result some \$15,000 was made available with the hope that once the group's reputation became established, industry itself would provide further funds. With one year of the three year grant still to run, it remains to be seen if industry will pick up the tab.

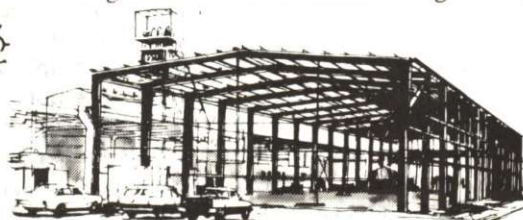
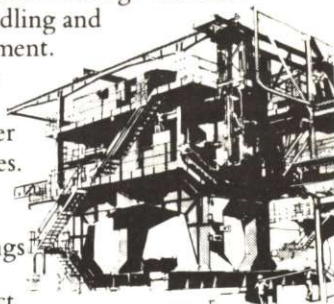


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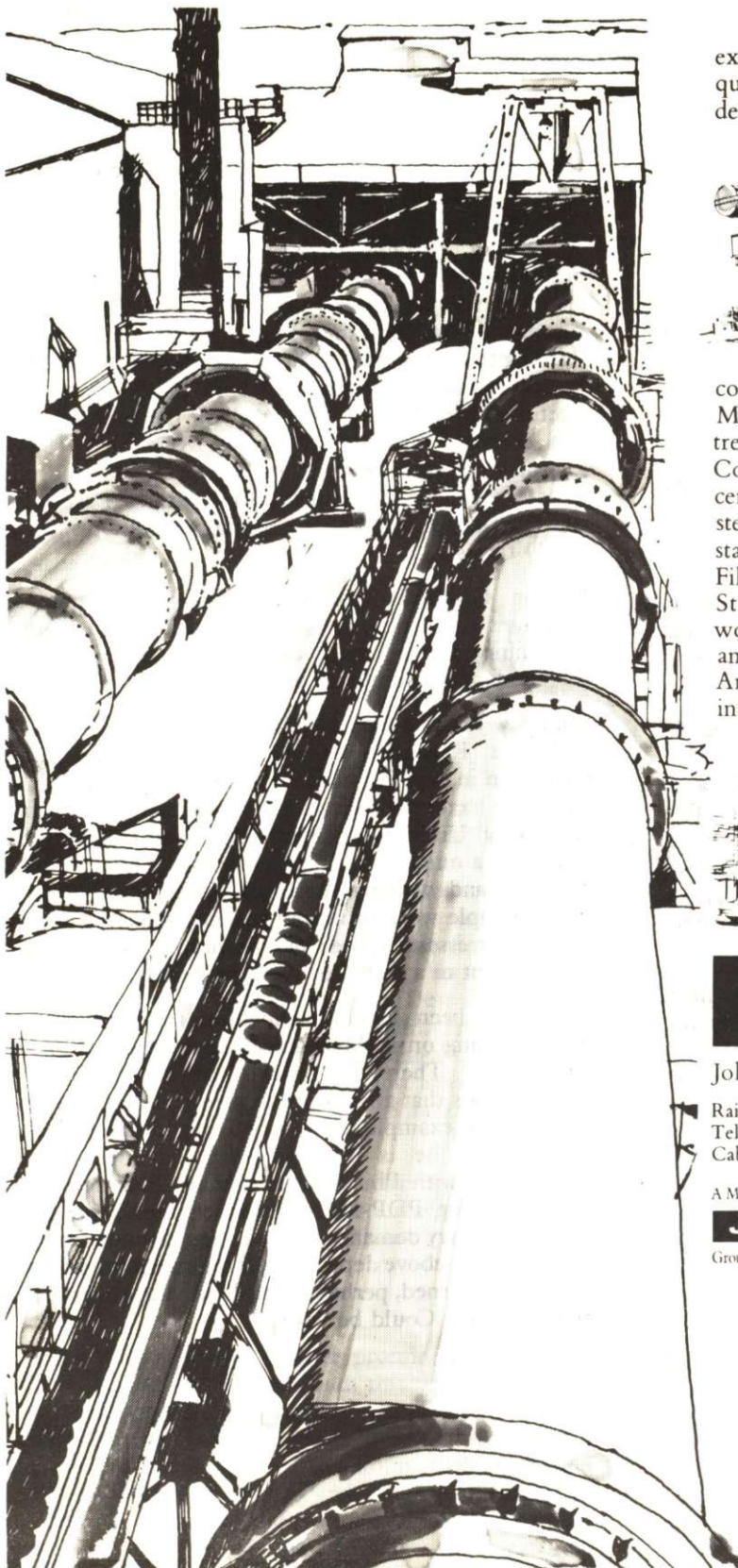
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## Research Projects

The Department's research interests fall into five main areas: noise and vibration control; fluid mechanics; heat and mass transfer; control systems; and aids for the handicapped.

**Noise and Vibration Control** is the largest group in the Department. A major part of its activity is directed towards helping S.A. Industry comply with the requirements of the State's industrial noise exposure and hearing damage legislation. The Government grant has permitted the employment of two Professional Officers, Colin Hansen and Stewart Page, both past students. Together with staff members David Bics, Ewan Semple and Fred Zockel, they are engaged in a number of investigations of immediate importance to industry. They have made a number of useful advances in the silencing of punch presses (extensively used in the S.A. metal working industries). Two new types of silencer to prevent the transmission of noise down air conditioning ducts have also been devised.

A number of other longer term fundamental research studies are funded by the A.R.G.C.: measuring the vibration patterns of machines using laser holography and relating this to the resulting acoustic radiation; the investigation of noise radiation from pipes carrying a flowing fluid (of great interest to the Chemical Process industries); a method of predicting the time-varying pressure in a two-stroke engine exhaust system and the noise radiated by gas jets.

In the **Fluid Mechanics** area, work is going on in a number of related fields: into the mechanism of mixing between two adjacent jets, with the ultimate aim of improving the combustion efficiency of the burners in power station boilers; into the fundamental characteristics of the flow in a turbulent boundary-layer; into the stability of turbulent flows in the atmosphere. The recent commissioning of a low speed wind tunnel, designed by Chris Abell, will allow the Department to embark on a programme of separate-flow and boundary-layer investigations. The first project to use this tunnel will be an investigation of the performance of a new design of compact, wide-angle diffuser.

**Heat and Mass Transfer** studies are closely related to fluid mechanics. For some time Ross Dyer (Senior Lecturer) has been looking at natural convection, heating or cooling, systems having various geometries. The present work is significant in the design of the collector panels in a domestic solar hot water system. Fluidized bed combustion has been suggested as a method of efficiently burning the vast deposits of low grade coal found recently in the north of the State. Robin Sanderson (Senior Lecturer) is embarking on a study of the behaviour of a new compact form of this device. Alan Shaw (Senior Lecturer) recently commissioned a large heat and mass transfer tunnel in which he is testing various types of heat transfer surface used in air-conditioning systems (for his Ph. D thesis).

In the **Control Systems** area George Thompson continues his computer studies of driver behaviour to determine how we sometimes manage to get our car round the bends, but sometimes don't.

For a few years now the Department has been cooperating with the Regency Park Centre for **Handicapped Children** in devising ways of teaching children with, for example, cerebral palsy to move and work more effectively. Under the guidance of Devon Doble (Senior Lecturer) a number of final year students have designed crawling and walking machines, investigated ways of easing simple work tasks and recently have studied the physical stresses imposed on the human body by long confinement to a seated or lying position.

It has only been possible to mention the main research projects going on in Mechanical Engineering, and then but briefly. There are a host of other subsidiary investigations that arise from, or are related to, the major projects. For example, Chris Abell, in addition to the 101 other things he is involved with, has been largely responsible, with Phil Walker (Senior Technician), for setting up the PDP-11 computer in the Department. Given the heavy demands that teaching, administration of work outlined above depend to a large extent on graduates who have returned, perhaps after a few years, to read for a higher degree. Could be you?



# ELECTRICAL

MR. D.C. PAWSEY (Acting Head of Department)

## Staff Matters

The staff of the Electrical Engineering Department have had a particularly busy year; two members (one of whom was the Chairman, Professor R.E. Bogner) have been on study leave and a third, Dr. C.R. Evans, resigned in September.

During his 5 years with us, 'Chuck' Evans proved to be a talented and dedicated lecturer in key areas of our undergraduate course and he introduced a number of fresh and valuable concepts. We are sorry to lose him and we wish him every success in the future.

This year we are fortunate in obtaining the services of two very capable tutors, Doraismay Nandagopal and David Fensom to carry on the high standard of work established by earlier tutors.

We take this opportunity of thanking our excellent secretarial and technical staff for their cheerful efficiency and loyalty. Although it may not always be apparent to our students, these members of the Department's staff play a major and indispensable role in its operations.

## Extension Courses on Microprocessors

In addition to the usual program of lecture (and practical) courses given in all undergraduate years and in the M. Eng. Sc. program, a special intensive course on microprocessors was prepared and put on for the first time early in 1977. This course was intended primarily to allow professionals in various fields to become familiar with these new devices which are being applied to an astonishing number, of new situations. Despite the heavy demands imposed on the staff concerned, this course has since been repeated no less than nine times in response to continuing requests. In addition, a more advanced course has now been introduced and will be mounted again in 1979.

The conspicuous success of these courses has led to the inclusion of similar material in our undergraduate final-year, as well as an introductory treatment in third year and the electronics course, E202.

## Research

Research work has maintained its prominent place in the activities of the Department and, this year, supporting grants were received from the Australian Research Grants Committee, the Radio Research Board, the Electrical Research Board and Telecom, in addition to the allocation from the University's own research funds. Approximately ten academic staff, twenty full-time M.Eng.Sc. or Ph.D. candidates and a similar number of part-time postgraduates are directly involved.



Work carried out can be classified under the headings set out below and a few of the numerous projects are mentioned by way of example. A much more comprehensive account, giving the names of the personnel involved, is given in the brochure entitled 'Research and Postgraduate Study in Electrical Engineering', copies of which are held in the Departmental Secretary's Office.

### (a) Microwave Engineering

The term 'microwave' is usually applied to electrical waves having a frequency of  $10^9$  hertz and upward. Such frequencies are commonly employed in our inter-city telephone and television links.

In our Department, solid-state transferred-electron devices are being constructed and mounted in the small 'clean-room' maintained for such operations. The resulting units are of much interest as compact sources of microwave power.

Other applications of microwave engineering under study include (i) the medical uses of reflectometry whereby, for example, the heartbeat of a patient under intensive care might be monitored non-invasively, and (ii) the use of a microwave instrument to detect the presence of salt damp in walls. A microwave anechoic chamber and calculator-controlled network analyser have also recently been installed in the Department.

### (b) Digital Systems

Digital techniques have grown at an explosive rate in recent years and this fact is reflected in the many projects undertaken in this area. Some of these are aimed at



increasing the speed or reducing the cost of digital computers, while others seek to facilitate the inter-relationship between man and machine. One example in the last category is ULOS (universal layout system), a high resolution colour display unit for use as an interactive computer terminal. Theoretical studies have been undertaken, in conjunction with the Universities of N.S.W. and Edinburgh, on the efficient application of this display unit for the development of large-scale integrated circuits.

Considerable interest exists in employing digital circuits which are sufficiently fast to carry out complex computations in 'real time'. One such project involves the computation of fast Fourier Transforms by a microprocessor and is intended for use in the instrumentation of large power generating systems. In a second project of this type, a special high-speed unit, GASP (general arithmetic signal processor) was evolved. GASP forms an important tool in the research work of several postgraduate students and staff.

Many other projects related to digital systems are in progress including one, in collaboration with the Department of Chemical Engineering, which involves the use of microprocessors in a control system for blast furnaces.

### **(c) Communication and Signal Processing**

As mentioned in the note on GASP in the previous section, considerable interest exists within the Department in the processing of speech signals.

In one such study a dynamic model of the human vocal tract is created by suitable processing of speech waveforms. Such a model is of interest, for example, as a means of helping the deaf to learn to speak.

Other projects in this category include the investigation of special aspects of mobile radio and satellite communication systems, as well as a method of tracking and monitoring physiological conditions in sheep which are free to move in an area of about 10kms square. Considerable success has been achieved also in creating a system for the remote identification of passive coded labels (e.g. for sorting baggage automatically) and another for sensing the presence and velocity of road vehicles by using coils embedded in the road surface.

### **(d) Control and Power**

The Department maintains a very active research interest in these areas. A number of projects are concerned with

improvements in the operation of complex power-generating systems. Extensive use is made of the University's computing facilities, including a hybrid computer which comprises a digital as well as an analogue computer. These can be used in joint operation or independently.

Other studies include solid-state controlled variable-speed drives for electric vehicles and a novel oscillating linear motor applicable, for example, to a refrigerator compressor. One device, designed as an aid for the handicapped, is a transistorised controller for an electrically driven wheelchair, allowing smooth control of both speed and direction.

### **(e) Mind-Matter Interactions**

These investigations are concerned with the variations in physical and physiological parameters which accompany alterations in the states of consciousness. One project aims to evaluate the bioluminograph as an aid in medical diagnosis. This instrument determines the variation of intensity with wavelength of the light emitted from the extremities of the human body when subjected to an intense electric field.

It must be emphasised again that only a few of the many research programmes in progress have been mentioned above, and those interested are welcome to consult the Departmental booklet referred to at the beginning of this section.

### **Employment**

Despite the present state of the economy, it is gratifying to observe that the demand for our graduates has remained reasonably steady. The high standard of the Adelaide engineering degrees is recognised, not only within Australia, but also overseas and, for the second year in succession, representatives of British firms have visited Adelaide and recruited a number of our final-year students. Similarly, our post-graduates have almost invariably found suitable employment very soon after completing their higher degrees. Two of our recent doctorates now hold research positions in the Bell Laboratories, U.S.A.

It seems reasonable to assume that favourable opportunities will continue to appear for electrical engineers, particularly if they maintain the spirit of enterprise and adaptability shown by our recent graduates.



# Salaries 1978

(Reprinted with permission from the Association of Professional Engineers).

Special Note - these figures are correct at July, 1978. They do not include subsequent C.P.I. adjustments or newly negotiated industry awards.

## Private Industry: minimum award salaries plus 'market rates' agreements

The salaries of professional engineers employed by Ansett Transport Industries Ltd. and the Commonwealth Aircraft Corporation Pty. Ltd. are prescribed by awards and paid as actual salaries, that is the engineer receives the award salary for his classification, no more and no less.

In May 1974, The Association negotiated a consent award with General Motors-Holden's Pty. Ltd. which started off as a paid rates award. However, GMH now pays a flat amount of \$10.20 per week on top of the award salaries, following a decision of the Conciliation and Arbitration Commission that the award salaries could not be increased because of the principles of wage fixation which make up part of the Commission's wage indexation 'package'.

The two awards which prescribe minimum salary rates for the great majority of private industry engineers are the Professional Engineers (General Industries) Award 1975 and the Metal Industry Award Part III - Professional Engineers.

Because these are 'minimum rates', not 'paid rates' awards, they are accompanied in each instance by a 'memorandum of understanding' in which the employers' organisations concerned agree that in the fixation of the actual salaries to be paid to professional engineers, employers will have regard to 'market rates'.

It is agreed between the parties that in arriving from time to time at the total remuneration for professional engineers in their employ, employers will pay regard to the general level of total remuneration for professional engineering services of the type and level concerned and applicable in both private and public employment along with other factors as they consider relevant.

The minimum award salary rates prescribed by these two awards and the awards which prescribe minimum salaries for professional engineers in space-tracking and vehicle manufacturing (other than GMH) are shown below. These rates also include the National Wage Increase for the March quarter.

### P.E.'s (General Industries) Award

Qualified Engineer (non-graduate)	\$9034
(graduate)	\$9657
Experienced Engineer	\$12910

The award does not prescribe salary rates above the Experienced Engineer point, but the memorandum of understanding between APEA and the employers' organisations defines four levels of engineering responsibility and recognises the existence of a responsibility level or levels beyond level 4.

### Metal Industry Award Part III Professional Engineers

Professional Engineers		
Group 'A'		
Qualified Engineer (non-graduate)		\$9197
(graduate)		\$9889
Experienced Engineer		\$13201
Group 'B'	\$14072	Group 'C'
		\$16079

The minimum salaries and definitions contained in the **Professional Engineers (Vehicle Industry) Award** are identical with those in the Metal Industry Award except that the minimum rates are lower by \$1.00 per annum.

### Space-tracking Industry (Professional Engineers) Award

Group 'A'		
Qualified Engineer (non-graduate)		\$10468
	(graduate)	\$10916
Experienced Engineer		\$14346
Group 'B'	\$15188	Group 'C'
		\$17410

The definitions of responsibility levels (groups) in the Space-tracking Award are identical with those in the Metal Industry Award.

### Consulting Engineers, Construction Industry

As the result of understandings reached by APEA with the Association of Consulting Engineers, Australia and the Australian Federation of Construction Contractors, the salaries of professional engineers employed by members of those two employers' organisations are not regulated by awards of the Conciliation and Arbitration Commission.

Instead, the Association has entered into industrial agreements under Part X of the Conciliation and Arbitration Act which set up procedures for the prevention and settlement of industrial disputes between the parties. In addition, the parties have agreed on '—guaranteed minimum salary rates' and on recommended conditions of employment.



The guaranteed minimum salary rates under the **Consulting Engineers** agreement are:

Group 'A'			
Qualified Engineer (non-graduate)			\$9158
	(graduate)		\$9927
Experienced Engineer			\$13138
Group 'B'	\$13971	Group 'C'	\$16030

The guaranteed minimum salary rates under the **Construction Industry** agreement are:

Group 'A'			
Qualified Engineer (non-graduate)			\$10200
	(graduate)		\$11100
Experienced Engineer			\$15100

Both agreements contain 'market rates' provisions similar

to those applying to employers bound by the minimum rates awards mentioned above.

The Consulting Engineers and Construction Industry Part X Agreements are both specific as applying only to members of APEA. Non-members of the Association have no rights under either of these industrial agreements.

The definitions of engineering responsibility levels 1 to 4 in the Construction Industry and Groups A, B and C in the Consulting Engineers Agreement are available from Branch offices of APEA, but note that the Association has now reached agreement with the ACEA that the Group B and C definitions are to be replaced by the General Industries definitions.

## Public Sector: actual or 'paid' salary rates

Following is a list of salary rates payable to Engineers Class 1 to Class 5 in the Australian Public Service and Instrumentalities (including Telecom) and comparable levels in a cross-section of other public employment.

The salaries listed below include the National Wage Indexation increase of 1.3% awarded on June 7, 1978 for the March quarter.

### Australian Public Service and Instrumentalities

(1)	\$10469	10917	11624	12426	13337	14247
(2)	15104	15615	16127	16638		
(3)	17521	18123	18721	19320		
(4)	20219	20827	21431	(5)	22353	23010 23668

### New South Wales Public Service

(1)	\$10532	10981	11684	12487	133390	14301
(ii)	15163	15672	16185	16696		
(iii)	17586	18187	18787	19386		
(iv)	20278	20889	21495			
(v)	22413	22850	(vi)	23288	23729	

### Electricity Commission of New South Wales

(1)	\$11301	11959	12732	13650	14564	
(2)	15409	15931	16443	16949		
(3)	17837	18432	19027	19638		
(4)	20541	21131	21747			
(5)	22665	23104	(6)	23547	23981	
(7)	24524	25056	(8)	25829		
(Includes Allowance \$260)						

### Sydney County Council

(1)	\$11906	13138	14422	15713	16974	
(2)	18097	19224	(3)	20355	21751	
(4)	22418	(5)	23032	(6)	23723	
(7)	24321	(8)	25062			

### Victorian Public Service

(E1)	\$10485	11044	11594	12331	13344	14260
(E2)	15036	15602	16096	16589		
(E3A)	17549	18099	(E3)	17549	18099	18709 19278
(E3B)	18709	19278	(E4A)	20441		
(E4)	20313	20829	21474	(E4B)	21474	
(E5A)	22529	(E5)	22388	22945	23640	(E5B) 23640

### Melbourne and Metropolitan Board of Works

(11P/9S)	\$10469	10917	11624	12426	13337	14247
(9P/8P)	15175	15662	16635			
(7E/6P)	17499	17993	18725	19219		
(5E/4E)	20112	20616	21351			
(4P/3P)	22017	23019	23522			

### Melbourne City Council

(1)	\$10469	10917	11624	12426	13337	14247
(2)	15086	15815	16581	(3)	17183	17536 17891
(4)	18363	18833	19306	(5)	19932	20526 21123
(6)	21599	21837	22076	(7)	23451	



# APEA

Association of Professional Engineers, Australia

## To Engineering Students.....

The Association of Professional Engineers, Australia is the only organisation concerned exclusively with the industrial needs of professional engineers.

Its aim is to maintain and improve salaries, conditions of service and the status of the professional engineers in the community.

APEA has the support of The Institution of Engineers, Australia which, being the profession's learned body and having employer members as well as employee members, cannot act for the industrial interests of the employee.

Here then are some of the advantages of being an affiliate of the Association:

### **(a) Knowledge of working conditions**

Each affiliate receives the publication 'PE News'. Knowledge gained from this publication about salaries and conditions in various industries

prepares the affiliate for his future employment.

### **(b) Report on employers**

If you want to know more about a potential employer, the Association can in many instances offer information on request about those who employ professional engineers.

### **(c) Legal advice**

Advice on contracts of employment, other legal matters and taxation are available on request.

### **(d) Appointments Advisory Service**

This service is available to assist affiliates to choose a suitable employment area.

### **(e) Credit Co-operative**

Affiliates are eligible to join the APEA Credit Co-operative, from which loans of up to \$10,000 are available at a reasonable rate of interest.

### **(f) Access to fellow engineers**

There is no better person than a fellow professional engineer to advise you what to expect after

qualifying. We have well over 15,000 members, ranging from the youngest and most junior to the oldest and more senior.

### **OTHER AIMS**

Apart from its primary industrial functions to look after the salaries and conditions of service, the Association aims to help engineers gain satisfaction with their careers, work efficiently and promote improvements in the standards of engineering services to the community.

We are a non-political organisation affiliated only with the Council of Professional Associations.

Should you wish to contribute something to the profession which could be your livelihood for 50 years or more, one way is to participate in the work of the Association. Each engineer contributes through his work on committees and groups or simply through his subscription.

Many engineering students have registered as Affiliates of APEA.

Affiliates are entitled to receive advisory and information services from the Association.

Forms for registration as an Affiliate are available from the APEA Branch office or from the secretary of the Engineering Students' Society of the university.

Affiliates are not liable for a formal subscription but are invited to donate \$2 a year to Association funds to defray expenses involved in the publication and supply of PE News and other services available.

Any donations received during the period of affiliation are credited towards the first membership subscription due on application for membership.

The Rules of the Association provide that an Affiliate:

- must be engaged full time or part time in Australia in a course of tertiary study terminating in qualification as a Professional Engineer.
- may not vote on any matter or nominate for nor hold office in the Association.
- shall have privileges and receive services from organisation as may be determined from time to time by Federal Council or Committee of Management.
- shall no longer be an Affiliate if he has ceased to be engaged in a course of study for a continuous period of six months.

### **For further information, contact:**

**APEA SOUTH AUSTRALIAN BRANCH**  
11 Bagot St., North Adelaide, 5006.  
Tel. 267 2236.



### Queensland Public Service

(S-5)	\$10968	11626	12282	13092	14207	15204
(S-7)	15690	16586	17343	18093		
(S-10)	18603	19194	19618	20038	20456	
(1-12)	21080	21292	(1-13)	22361		
(1-15)	24129	(1-16)	24582	(1-17)	25001	

### South Australian Public Service

(1)	\$10483	10921	11618	12425	13331	14240
(2)	15121	15619	16136	16655		
(3)	17935	18620	19299	(4)	20233	20913 21646
(5)	22512	23054	23677			

### Western Australian Public Service

(1)	\$10974	11256	12136	12810	13965	14669
(2)	15596	15965	16619	17044		
(3)	17928	18552	19222	20138		
(4)	21131	22313	(5)	23591	(6)	25369

### Tasmanian Public Service

(i)	\$10461	10904	11611	12414	13325	14238
(ii-1)	15101	15610	(ii-2)	16118	16627	
(iii)	17500	18102	18702	19306		
(iv-1)	20210	20615	(iv-2)	21016	21416	
(v-1)	22351	22753	(v-2)	23257	23659	

# Flexible Buried Conduits

ROGER FLINT

A new concept in bridge building which is attracting considerable interest at present is the use of a large diameter "flexible" steel membrane to serve as a "former" for compacted soil backfill. The principle has been used for some time for small culverts, but has only recently been extended to large span applications, with spans up to 17m.

The steel membrane is fabricated from curved panels of corrugated section ranging from 3 to 7 mm thickness depending on the application. These panels are bolted together on site. With the steel in place, soil fill is placed and compacted around it. This compacted fill, once in place, provides the major contribution to the overall strength and stability of the system.

Various conduit profiles are employed depending on the particular application. The profile may be a full circle, pear shape, ellipse, or a section of one of these profiles supported on concrete footings or retaining walls on either side. A horizontal ellipse configuration is the one commonly used in large span applications.

Such a structural system potentially offers considerable savings in cost. Little or no skilled labour is required for construction and often the major construction material, suitable soil fill, may be found on or near the construction site.

Several of these structures have been constructed in South Australia to date. They are at Hallett Cove (as a road

overpass over the railway), at Willunga (as a road underpass under the new Willunga Hill Road) and at Leigh Creek (as a roadway overpass for one of the Electricity Trust of S.A. heavy duty coal haul roads). Of these, the Leigh Creek installation, completed in late 1978, is the largest with a span of 11 m.

Current design methods are based on essentially empirical forms of analysis with modifications based on experience, and in extending the applications of this type of structural system to ever larger spans, several failures have occurred (all in North America). The need for a rational design method is clear.

Research aimed at providing a rationally based analysis/design method for such structures is currently in progress in the Civil Engineering Department. The method is based on sophisticated linear finite element analyses, the results of which will be presented in such a way as to allow non-linear analysis of any general case (within certain limits!). The principal design criteria

are -

- (a) the overall stability of the top arch section of the steel membrane, which is related to the vertical deflection of the crown of the conduit, (this parameter is sensitive to the soil stiffness); and
- (b) the axial thrust in the conduit wall.



An important phase of the project has been the instrumentation of the Leigh Creek overpass. Results obtained from this study will provide a start to the extensive field verification required before any new design method, such as this, can be fully accepted.

Instrumentation installed at Leigh Creek to monitor the relevant parameters consisted of -

- (i) Electrical Resistance Strain Gauges bonded to the steel plates at a number of locations around the arch. These gauges are all wired to a central control box where strain (and hence stress and total thrust) is monitored.
- (ii) Survey points around the arch which are surveyed by conventional means in order to monitor deflection.
- (iii) Settlement tubes embedded in the fill adjacent to the conduit at various stages during placement of the fill to be monitored as successive layers of fill were placed and compacted above. Soil stiffness may be back-calculated from these results.

- (iv) Various instrumentation to monitor parameters associated with the structural elements of the retaining walls supporting the arch on either side. Results from the data obtained from this phase of the project are currently being interpreted.

The Leigh Creek installation provides an overpass to the Hawker-Marree Road for traffic using one of E.T.S.A.'s coal haul roads. Fully loaded 50 ton capacity Wabco dump trucks (about 80 tons overall) use this road regularly. Figure 1 shows the nett effect in terms of axial stress distribution around the steel arch when one of these 80 ton trucks is positioned directly over the crown.

80 ton trucks passing over a structure which has a span of 11 m, clear cover above the crown of only 2 m, and is constructed of only 7 mm steel plate surrounded by compacted soil, provide quite an impressive demonstration of the effectiveness of such a structural system.

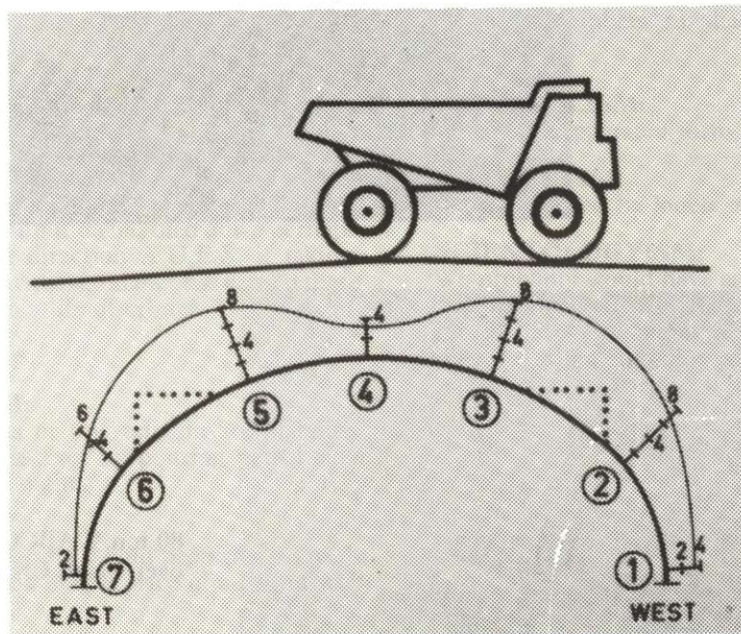
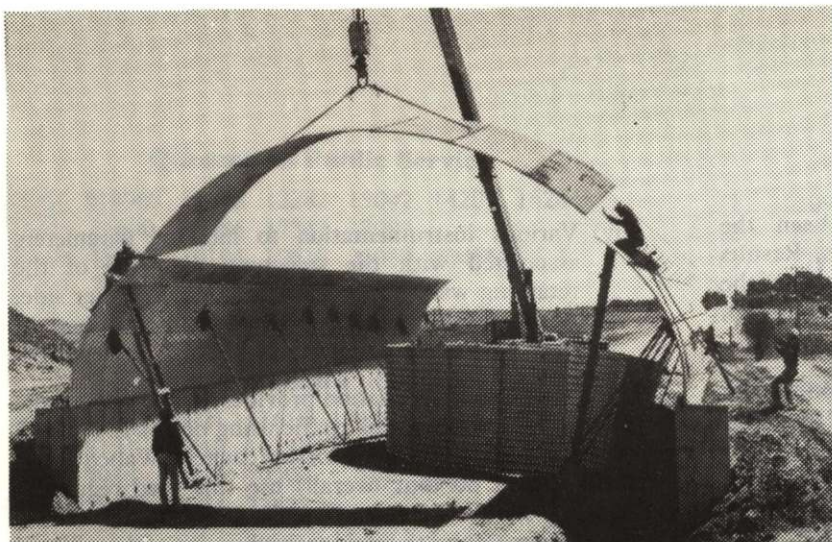


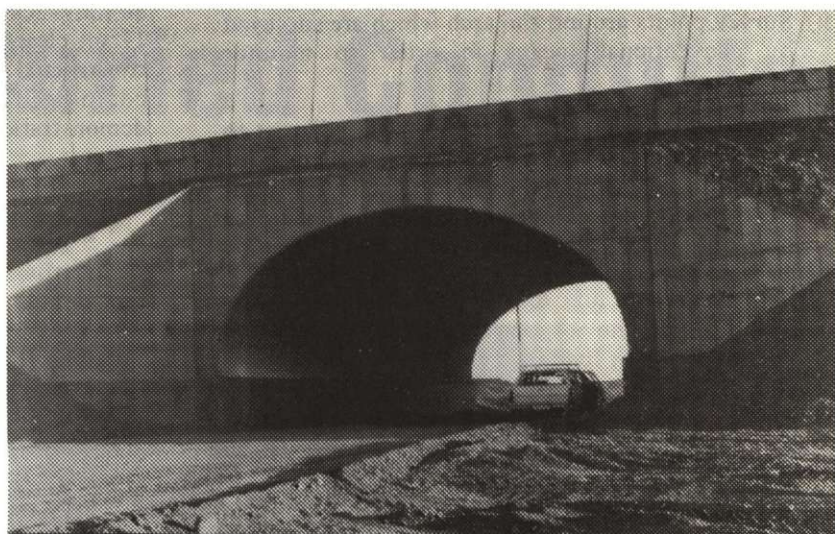
Figure 1 - Nett axial compression in the steel membrane with an 80 ton truck positioned over the structure (scale is in MPa).





Corrugated Steel plates (7mm thick) being bolted together on site to form the 'flexible' membrane or 'liner'.

View of completed structure at Leigh Creek, S.A.



80 ton WABCO dump truck passing over Leigh Creek installation.



# Extracts from 'Cyclops'

(The one-eyed engineering monthly newsheet)

## GETTING TO THE BOTTOM OF THE CYCLOPS CONTROVERSY

The Engineering Department has been in turmoil during the past few weeks following the surprise arrest of A.U.E.S. Executive Bohdan 'Toad-Face' Jarema who was 'just making a few home movies' with fifteen other Croatia terrorists and a couple of bullet ridden Yugoslavs.

This not only dashes Bohdan's hopes of becoming the first Ukranian Pope, but seizure of the film also puts the coveted Golden Fosters Award out of reach for which the film was hot favourite.

Critics have variously described the film as 'Brilliant', 'Stunning' and 'Shithouse'. One critic said of the film 'The death scenes are particularly realistic especially the one where they blow up the two undercover commonwealth policemen. Mention should also be made of the wonderfully vivid scene where they chop off my right leg with a rusty machete when they find me hiding in the bushes. A wonderful piece of acting, brilliant photography.....superb surgery'.

Following Bohdan's arrest, commonwealth policemen cleverly disguised as overweight Italian cleaning ladies swooped on the Engineering building arresting Bohdan's sidekick (cum facekick, arsekick, etc.) Xenon-Phou, uncovering his carefully laid plans to rule the world from the Dom Polski Centre and use our cherished Cyclops to spread Croatia terrorist propoganda. It seems that the A.U.E.S. hierarchy was rife with crazed militant Ukanians using the proceeds of OUR coke machine to finance the Third World War.

However, now that the commotion has died down perhaps we should reflect on the direction A.U.E.S. is taking. Could it be that lack of spiritual guidance has caused these ethnic pooftas to revert to a life of crime?

Here then are our findings:

### **ANANDA MARGAISM:**

Unecological. Participants of this religion are blatantly wasting the world's oil reserves by pouring petrol over themselves and setting it alight.

### **HARE KRISHNAISM:**

Too expensive. The upkeep on a bald head these days is quite astounding. Just look at the price of a can of Mr. Sheen.

### **CHRISTIANITYISM:**

Won't last, it's an overnight fad.

### **TRANSCENDENTAL MASTURBATIONISM:**

Too messy. Also ridiculous - requires devotees to believe that the earth is run by a super race of masturbating guru vegetarian insects called Praying Mantrases.

### **MAOISM:**

Too sickening. Requires members to be fanatically devoted to eating in the Mayo Refec. (Also known as HARE KAREISM).

### **TROTSKYISM:**

Also known as Diahoerraism - a direct result of MAOISM.

### **LENINISM:**

Requires members to be fanatically devoted to John Lennon.

### **RACISM:**

Requires members to be fanatically devoted to fast cars.

### **COMMUNISM:**

Requires members to share all they have with their neighbours.

### **CANNIBALISM:**

A rather exaggerated form of communism.

### **MASOCHISM:**

Often practised by lonely cannibals.

### **SCIENTOLOGYISM:**

We probably would have accepted this one if it had been called ENGINEEROLOGYISM, especially since we've got loads of galvanometers in the Elec. Department. (Further comments deleted by court injuncture).



# A.U.E.S.



1978 A.U.E.S. Committee : Alan Wilson, Bill Lorenzin, John Olson, Lucky Morias, Keith Downard, Roger Ebsary, John Taeger, Dom Legoe.

Absent : Peter Dawson, Mike Bell, Bohdan Jarema.



# Ravings of the Pres.

PETER 'SMOKEY' DAWSON

In the past it has been the practice to deliver this report in a theme that most concerns the writer.

I have been closely associated with the last two Engineering committees and so with the functions they have organised. In the short space of the two years there has been a noticeable decrease in attendance to those functions held. In fact this decline has continued over the last 5 or 6 years. If this trend is not stopped and reversed then the A.U.E.S. must be forced to dissolve. This may appear pessimistic but there is absolutely no use in continuing. This perhaps can be illustrated with the Soccer Carnival held in third term, where 5 teams were promised to the organisers and only 12 students turned up!

Why has it reached its present state? There are two reasons.

Primarily it comes from the students' apathy towards university social life. They now seem to believe that it is an institution of learning and only that. This in a sense is not a bad attitude, but it is one of ignorance. The society provides an avenue to meet students of other Engineering concerns and indeed their lecturers. Hence they can get to know each other and develop a comradeship that will extend into not only post-University social life, but into their business lives as well. In fact, their business can be greatly enhanced by the contacts first formed from University.

Why do they have this attitude? The main reason stems

from the advent of T.E.A.S. in 1974. This scheme allowed a lot of students who could not ordinarily undertake a tertiary course to do so. They entered with a more serious nature. Thus they did not use the more social aspects present. This has led (as these students moved through the years) to the apathetic situation found today.

The second reason found for this present state can be found from the committees themselves. They are set up not only to organise but to stimulate interest in the functions they provide. They are, however, comprised of students that have used the T.E.A.S. system. So their enthusiasm and drive is not what it should be. Hence the vigour that enticed students to attend previously is not present now.

It should also be said that the majority of committee members are Civils, so communications to other factions can only be hindered. Perhaps this can be remedied in future.

Also, as an offshoot of non attendance, I have found that the four branches of engineering concern have become isolated from each other. How many students do you know outside your own concern that you have met at University? Because of this isolation, chemicals have formed their own society and there is talk of Electricals forming theirs.

The future of the Society appears very gloomy unless a more energetic effort is put into running the committee and into ATTENDANCE OF FUNCTIONS. Come along - you won't be sorry.





# Treasurer's Report

BILL LORENZIN

## 1978 FINANCIAL REPORT FOR ADELAIDE UNIVERSITY ENGINEERING SOCIETY

### INCOME AND EXPENDITURE STATEMENT

#### RECEIPTS

#### PAYMENTS

Opening Balance	\$ 372.13	Membership	\$ 35.00
Membership	42.00	Coca Cola	1233.64
Coke Machine	1771.60	Ball	51.30
Car Trial	117.45	Dinner	848.00
Dinner	804.00	Other Functions	7.00
Other Functions	61.35	Liquor	229.40
CSC Grants and Loans	566.30	Sundries (Refunds)	516.00
	<u>3734.83</u>		<u>2920.34</u>
less Understated		Total as per Ledger	\$ 2920.34
Opening Balance	-28.00		
Total as per Ledger	<u>\$3706.83</u>		

### GENERAL A/C BANK RECONCILIATION

Income (Including Opening Balance)	\$ 3706.83
add - Discrepancy due to incorrect opening balance	28.00
	<u>3734.83</u>
less - Payments	-2920.34
Balance (Funds) as per Ledger	\$ 814.49
Balance as per Bank Statement (26/9/78)	\$ 770.89
less - Outstanding Cheque	- 38.00
	<u>732.89</u>
add - Outstanding Deposit	81.60
Balance as per Bank Statement (Funds)	<u>814.49</u>

## Car Trial

ALAN WILSON

A fine Sunday morning greeted the first social event of the year - the car trial. The weather, being magnificent, made it even harder for the organisers to explain away the traditional poor turn out. But it caused greatest disappointment to the course designer, who had chosen rough dirt tracks and creek crossings with the hope of a torrential downpour on the night before the event.

The convoy of technologically sophisticated, finely tuned

machinery departed from Victoria Drive opposite the footbridge and struck their first problems almost immediately. The first question required the number of parking meters on North Terrace to be calculated, which no competitor ascertained correctly. The judge was somewhat surprised that they all had obtained an identical incorrect answer (this was only the beginning of the judges problems).



The competitors headed up the Magill Road towards Lobethal. Zenon Kinal was, as in the previous four years, leading clearly and setting a breakneck pace through the hairpin turns of the Old Norton Summit Road. However he was forced to drop out of the trial near Lobethal due to loss of direction and his navigator's mechanical problems. It seemed Sandy Barona had overfilled his sump the previous evening, and as a result, a thick yellow liquid was gushing at regular intervals from his breather and air cleaner.

The rally continued on through Chain of Ponds (where the bridge piers caused problems) to Kersbrook and Williamstown. After Williamstown a tough dirt section was undertaken to the final rendezvous with the keg at Para Wirra National Park. (The course designer expressed extreme disappointment at Z Kinal missing this dirt section. A special hairpin bend through a creekbed had been included as a service to humanity in the hope of Zenon writing himself off).

The barbecue and associated footy was enjoyed at the rally's completion by the tired and thirsty competitors. As a break with tradition, the committee hired a dry dam bed instead of the normal boring flat, rockless and decadently soft oval. This rugged terrain was indicative of the quality of the beer (which had been tapped by the Treasurer).

As in the majority of social events this year, the car rally was a social success and a financial flop, despite its lack of overheads (one 'soapy' keg (thanks to W. Lorenzin) at \$60). The success of the rally can be summed up by the first question of the rally - 'How many parking meters on North Terrace?' - which no competitor (or was it the judge?) could answer correctly.

Results:

**Winner: Who cares?**

**Awards: Sandy Barona (for chucking four times in as many miles)**

**G. Bartodziej ( for calculating the length of the course was 4,683 km).**

## WINNER OF 6 ENGEE GLOBE AWARDS

- BEST LECTURE
- BEST MALE LECTURER - D.S.B.
- BEST ORIGINAL MATERIAL
- BEST USE OF PROJECTOR
- BEST PRINTING
- BEST SUPPORTING MEMBER - 690 UB = 125 kg



DAVID  
BROOKS'

*Stress Analysis*



COLUMBIA PICTURES Presents A CASABLANCA FILMWORKS Production of An ALAN PARKER Film 'MIDNIGHT EXPRESS'  
Executive Producer PETER GUBER Screenplay by OLIVER STONE Produced by ALAN MARSHALL and DAVID PUTTHAM  
Directed by ALAN PARKER Music created by GIORGIO MORODER Based on the true story of Billy Hayes from the book Midnight Express  
by BILLY HAYES and WILLIAM HOFFER Original sound track album available from CASABLANCA RECORD AND FILMWORKS



**STARTS TOMORROW**

Daily 11 a.m., 2, 5 & 8 p.m.  
Sunday 2 p.m., 5 & 7.45 p.m.

**REGENT CINEMA**  
**Hoyts 2**  
101 RUNDLE MALL 223 6100



# Annual Dinner

ROGER EBSARY

This year the annual A.U.E.S. dinner, the one night of the year when the suits and ties were given a rest from the mothball treatment, was held at the Hotel Enfield on Thursday 21st July, amongst ye olde time decore of the Baron of Beef feasting tavern. The attendance of just over 100, although not as disappointing as the turn up at the other functions, was still well below expectations. Non-attendance was particularly prevalent amongst non civil departments and lecturers. Despite the somewhat meagre attendance, an enjoyable evening was had by all, and everyone went home in eager anticipation of the 1979 dinner.

The evening commenced with pre-dinner drinks in the bar and was followed by post pre-dinner drinks at the meticulously laid tables. The three course meal, which consisted of minestrone soup, steak or roast chicken and apple pie was most palatable and was accompanied by present-dinner drinks.

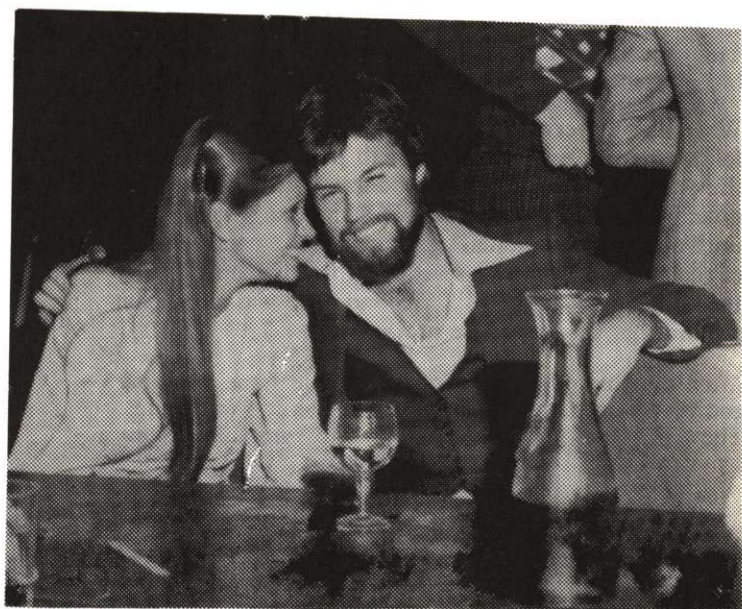
Special guests for the evening were the after dinner speakers, Albert Gillisen and Bob Culver. Mr. Gillisen, who is a senior lecturer and former dean of the Architecture Faculty, spoke briefly on the history of architecture and then proceed to extol the virtues of architecture as a profession. This pro architecture address was accompanied by cries of condemnation from the surprisingly sober audience, although the post dinner drinks were beginning to have an effect on some mechanical students. In reply to Mr. Gillisen's somewhat provocative statements, Mr. Culver spoke on behalf of the engineers. Throughout the duration of the reply there was complete silence because the speaker's continual use of multi-syllabic words, combined with the intoxicating effect of the post post dinner beverages had rendered the speech quite incomprehensible.

Despite not understanding a word of Mr. Culver's address, everyone applauded with generous gusto and eagerly awaited the evening's highlight. The highlight was Engage Talent Time, where the cream of talent from throughout the Engineering Faculty was on display. The organisers of ETT were literally swamped with acts from hopefuls in all four engineering departments, but a series of demanding elimination heats ensured that only the very best had the privilege of performing on the night. As fate would have it, only five acts survived the pre-dinner eliminations but despite the high quality, the audience was far from satisfied and did not hesitate to voice their disapproval.

The first act saw John C. Olson read from the Code of Ethics while accompanied by Ian Stephan Stratevarious Grappelli Maxwell Doddy on violin. This act was not at all well received, despite the deep meaningful lyrics. The second act was a group of civil desperates from third year called the Deros, who performed an original number, If I Had A Degree. While not in the same class as the Rolling Stones, Deep Purple or Abba, the Deros still managed to pound out a rythmical tune although the lyrics and hand gestures left a lot to be desired. To add culture to the evening, Australia's latest punk rock group, Black Bart and the Engettes, chose the Enfield as an appropriate venue to launch their first ever single, Its' A Long Way To The Top (If You Are An Engineer). The seven man group were booed from the stage and were visibly upset by the audience reaction. The fourth act of the night saw Zenon Kinal, one of the Engineering Faculty's most popular (and longest serving) students honoured with a special edition of This Is Your Life. Roger Climpson had a prior engagement, and had to miss the presentation, but did sent his best wishes via national link up with Sydney. The winner of ETT was Mark Biebrick, who recited parts of section 11 of AS1250 - Steel Structures Code. Mark's style, enunciation and illustrative facial expressions were the major contributing factors in his popular win.

After consumption of post entertainment drinks, the president thanked everyone for their attendance, wished them a Merry Christmas and a Happy Easter and then quickly vacated the Hotel Enfield.







# Soccer Carnival

'ROGERA PELE EPSAROLOUS'

Over the past couple of years, support for the annual A.U.E.S. football carnival had deteriorated to such an alarming low that the 1978 committee decided to implement some radical policy changes. It was suggested that the decline in numbers at this once highly successful sporting function was in part due to the large numbers of players required to satiate a football team.

As an alternative to football, soccer was suggested as the principal amusement and appeared to meet with favourable reaction from the majority of students from the lower years and consequently the historical A.U.E.S. Annual Football Carnival became the First Ever A.U.E.S. Annual Soccer Carnival. The idea of a soccer carnival was obviously appealing because of the game's increased popularity due to the recent World Cup, and also because of the ever enlarging percentage of ethnics undertaking the four arduous years at the hallowed institution on North Terrace.

Sunday, October 1st duly arrived, barbies were deposited in boots and all roads led to the vast expanse of the Adelaide University sports field at West Beach. The weather was perfect for soccer, although a slight westerly tended to keep temperatures down and the mercury never rose above 42°C. Official starting time for the big event was 10:00 a.m., but some confusion as to whether this was Central Standard Time or Outer Mongolian Summer Time meant that there was no need to indulge in the burdensome task of arranging qualifying matches.

When the players finally began arriving, the attendance followed some exponential growth pattern and by noon the attendance had crept into double figures, and it was unanimously agreed to postpone commencement of play until after the ceremonial tapping of the keg and lighting of the barbies. With the onset of the flowing amber fluid, the hot plates were soon sizzling and there was more meat around than at a Japanese brothel.

After munching the marvellous meaty meal, the galloping gourmets were divided according to age into two teams. The Geriatric's V included the notable Tony

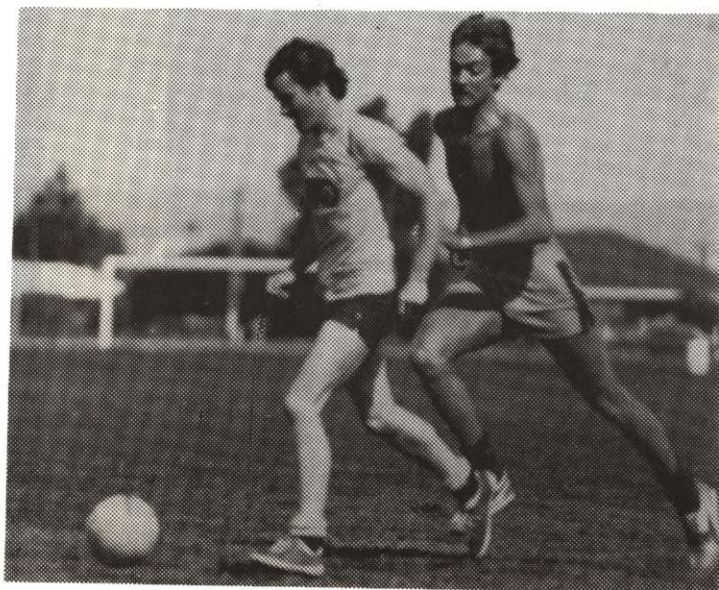
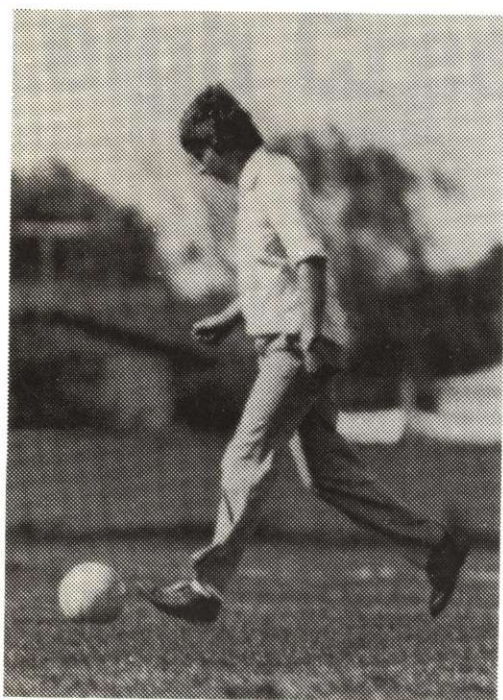
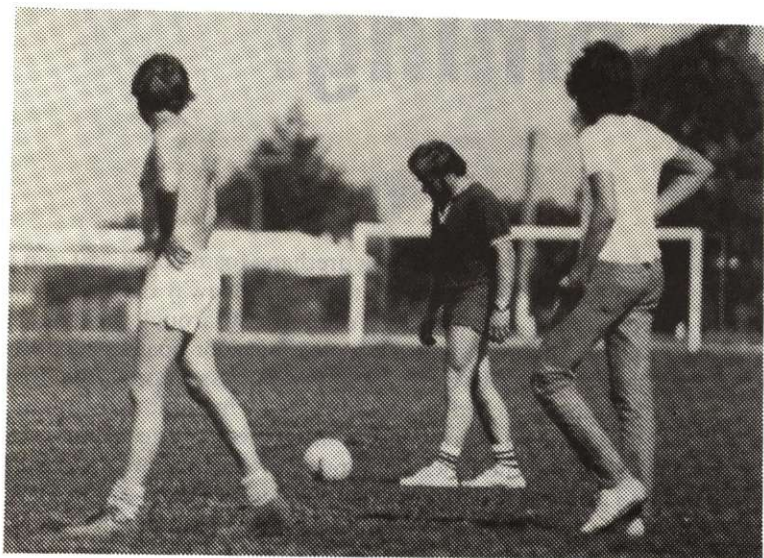
"Supermac" McIntyre and were skippered by the evergreen ethnic, John "Old Father Time" Princi. Opposed to the Geriatrics was a young inexperienced side led by former Greek Underage Super Striker, Lucky Morias.

The match got underway at approximately 1:30 and the action was immediately fast and furious and had the crowd cheering her head off. The first half ended without much incident and the halftime scoreline of 0 - 0 was mainly due to the tight defensive tactics and brilliant goalkeeping (not to mention the small goals). After the first half all players attacked and surged forward with little or no regard for personal safety; they had but one goal and were prepared to sacrifice anything to reach the keg first.

Revitalized by the refreshments consumed during the interval, the players were eager to return to the field. What the first half lacked in action, the second half made up for with intrigue and mystery, because when the ball finally ended up in the net it was not known who had delivered the final blow (both sides attacked the same goal). With the score at 1 - 0 the historic game came to an abrupt halt and the weary sportsmen headed toward the aluminium barrel and the shade of the pines.

As the sundial registered 6 O'Clock the day drew to it's inevitable end and the small but very contented crowd journeyed homeward to watch the Muppets or work on their design projects.







# The Second Coming!

RICHARD 'JESUS' GILES

Yes folks, it is still possible to have fun on Prosh Day without resorting to the Bar!

Braving the miserable weather, I set out to become the second person to walk on water, as part of the 'Jesus Competition'!

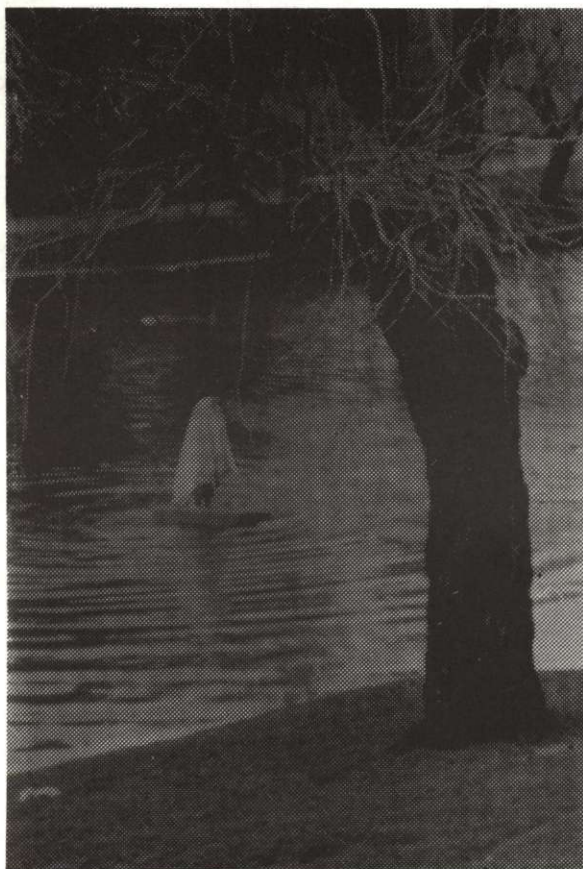
Unfortunately for the success of the event, the other entrants who were to change water into wine, heal leprosy and feed the multitudes, did not appear. So I was left on my own to entertain a crowd of less than 50, who watched glazed-eyed from the footbridge. Thankfully, apart from a lone watermelon which caused some problem with stability, I was left unattacked to take my 10 minute walk across the Torrens.

So, for all you budding Nautical Engineers, or should I say 'Jesus Freaks', here are a few design details for the Jesus Boots.

Each boot is made of polyurethane foam about 350 mm x 450 mm x 1300 mm with the front cut away diagonally for maximum streamlining. A hole is cut through the foam to allow a foot to stand on a piece of bloor board which fits underneath. Two one inch dowels pass through the boot and are attached to the board and masonite on the top. Underneath there are two sheet-metal hinge flaps which fold back when the boot moves forward and are restrained to provide a grip on the water when the boot is pulled back. The boots are held together with rope 1 m long.

For that effort, I won the (first) prize of 3 bottles of champagne.

I urge all you Engees, especially First Years, to get off your asses and do something on Prosh Day which requires a little more intelligence than throwing things at each other and the Union Buildings.







# Leigh Creek Revisited

KEITH AND ROGER 'LEYLAND'

The survey camp, which only the civil engineers have the privilege to endure, is a gruelling exercise held in some hot or wet far flung corner of the continent. The aim is to simulate real field conditions and is held directly after the November exams. Its timing explains the fact that you never hear a 3rd year civil engineer say "God I'll be pleased when the exams are over".

The above remarks are applicable before and during a camp. However, afterwards when the memory starts to fade, only the good times are remembered. In retrospect, the **1977 Survey Camp** produced some memorable events (none of which are even remotely related to surveying).

The camp was held at Leigh Creek, and with the exception of the few who travelled by private car, everyone crowded into a mini-bus with luggage stuffed into some minute trailer arrangement which was towed behind the bus. The bus ride was notable in that a number of technical innovations were developed. The first of these was a technique for topping up bottles of Jim Beam with coke and mixing with a few anti-clockwise rotations of an arm off a pair of spectacles, while travelling 100kph across

dried up creeks. The second innovation was the evolution of the "jumbo joint". Mr. X (not his real name) provided the necessary ingredients and when lit, the jumbo produced 36.97 cubic m/sec of intoxicating smoke.

In addition to the 30 or so students, Mr. Cumming, Dr. Yeo and Peter Dillon made the 600km trek to act as supervisors.

In keeping with tradition, the surveying exercise was to design a road between two designated end points. Each group had a free reign on what the road should consist of, and some of the combinations of spirals, circular curves and straights would have done any modern artist proud. Most groups managed to lay out their centreline, and closing errors ranged from 5mm to 50m, despite the aid of calculators (and erasers).

One highlight of the camp was when one group was inadvertently left in the field. Because the group's total dedication to surveying and their intense concentration, they failed to realize the lateness of the hour and consequently were not at the landrover departure area at the scheduled time. The temperature was about 45°C in the water bag, and the water supply was low, but the four



brave surveyors were cool in the crisis. Recalling all the tricks of bush survival learnt from Harry Butler and the Leyland Brothers, the gallant group constructed an eight foot high white tower from surveying pegs, to attract any aircraft or aborigine that happened to be passing by. After being stranded for an eternalistic fifteen minutes, a small cloud of dust appeared on the horizon. It stood out like an electrical engineer at a structures lecture and brought hope back to the famished four. The dust cloud got closer and closer, the landrover became visible and then like an echo in a dunny, the distinctive Welsh tones of Dr. Yeo drifted across the parched Australian outback - "What the hell do you bastards think you're doing?" Well at least the bold band of bestial bushies were saved.

An interesting aspect of the camp was the political power struggle which developed between two extremely dedicated men with views at completely opposite ends of the culinary spectrum. Both were of ethnic extraction. The golden Greek, Lucky Morias, was the first person to really offer a serious challenge to the philosophy of the Tits Tisato fish and chip doctrine. Lucky Morias did this by forming the now infamous Pizza Party. Tits was in constant contact with his head office (Tony's on Port Road) and it was from here that the first signs of the success that the Pizza Party was having on Tits' fish and chips was noticed. The continual propaganda campaign

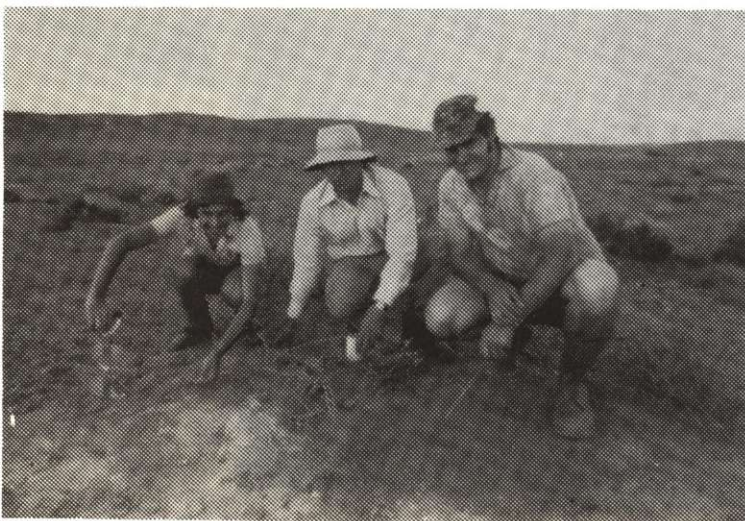
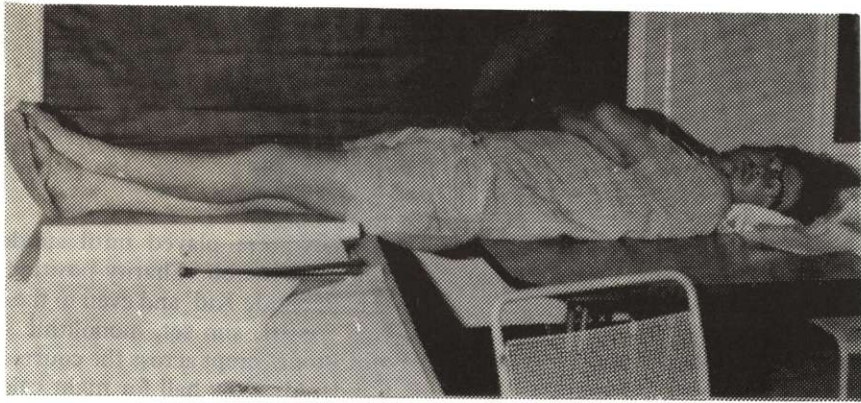
and smear tactics emanating from the Pizza Party head office caused, in the short space of two weeks, Tits to reduce all his prices and give away a free pickled onion and gherkin with every piece of whiting. Everyone on the camp became completely entangled in the campaign, and often chaos broke out when warring factions took to the streets of Leigh Creek armed with ranging poles and tripods. Toward the end of the camp, rationality returned, sales of fish and chips picked up, Tits conceded defeat, Lucky achieved his goal and was crowned the Port Road Pizza King.

Other notable events that took place during the arduous fortnight included the Ethnic v. Australians cricket matches, the trip to Morrow Gorge, the success achieved with beer tickets, the C.B. conversations, the trip around the coal fields and the confiscation of the booze on the final night.

Everyone was happy to see the dawning of the last day of the camp. After packing and cleaning up, everyone was subjected to the D.A.C. inspection ordeal and by 10 o'clock, Leigh Creek had seen the end of yet another survey camp. Most students returned in private vehicles, but a priveleged seven risked life and limb and journeyed home in the air-conditioned comfort of the Ghan; happy to be leaving but even happier to be heading for the land of the white man and his attractions (chicks and television).









# SURVEY '78

GEOFF KNEEBONE

Forget about your R-rated films on prison camps, bondage, slavery and human atrocities, just make sure you attend the next annual 3rd year Civil Survey Camp.

Originally meant to be an academic affair, the 2 weeks in the bush have developed into a real test of mental, physical and emotional endurance. One soon attains a ruthless integrity to overcome the most perplexing problems, such as driving wooden stakes into solid rock, or clearing huge tracts of bushland to obtain a simple line of sight. Yes, the successful surveyor has a right to pride.

A farmer's paddock is selected for the site, and the camp is deemed finished when either the cows have gone home, or until every square inch is covered in pegs. Square inches not covered in pegs were covered in flies.

The flies in attendance at the camp caused no little trauma. Apart from having a preference for faded light blue jumpers, they multiplied with the heat. If you laid all the flies on that farmer's paddock end to end and then killed them, the camp would have been much more pleasant.

Discipline, survey tasks, discipline and regimental authority were kindly donated by our paternal camp guardians. They were Mr. Denis Cumming and Dr. Maurice Arnold, and the class is in debt to them for a well-run, if not laborious, two weeks.

Amusements included graveyard volleyball. The camp recreation area was supplied with a graveyard: a constant reminder of the day in the field to come. The volleyball

matches were played until sundown, and usually the uphill team won. Charity positions were afforded to the 'Thalidomide Kid' and even to the ball busting fist of 'Big Jim'. As the sun set, monolithic shadows of the nearby tombstones crept across the court, and like zombies, we all wandered to the hall for night calculations.

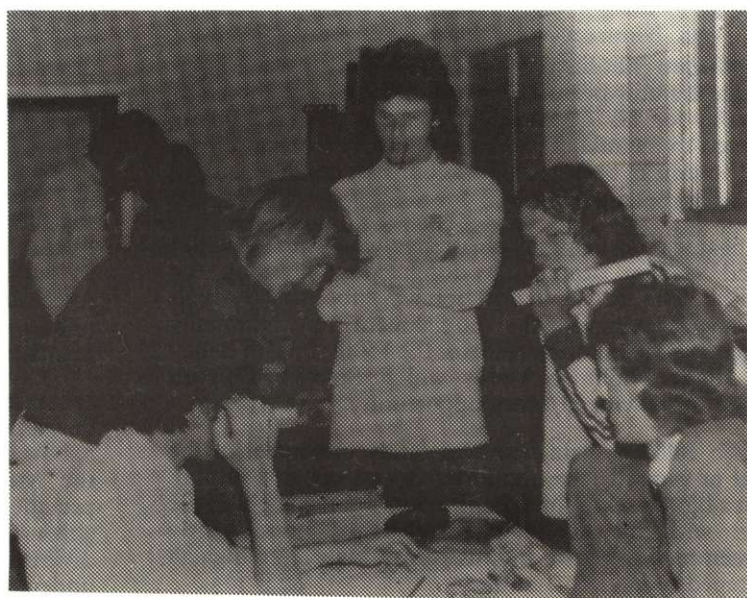
One night, however, a mass exodus took place to the nearest pub, A.W.O.D.A.C. (Away without Draught and Courage). A round of free metwurst and pickled onions from the obliging bartender soon had third and fourth rounds flowing. However innocent this may sound, it was deemed immoral by the camp guardians. On return, after parking the cars, we noticed a rustling from behind the trees, and out charged Dr. Arnold. We were caught red-handed. Humiliated, we marched back to the hall for night-work. You can understand why an H.R. HOLDEN was seen leaving at 9 p.m. one night to return at 8 a.m. the next morning. Other night-time amusements included latrine duty.

Certain hazards existed in the field. Holding one end of a steel tape may seem like an easy job, but when some deviate tosses the other end on to an electric fence, you had better take that reading fast. It was that same fence which gave some hint as to what lies under the kilt. Scotty managed to straddle himself across it, one leg on one side, the other on the opposite side. The next day, he used some excuse about a swollen eye to see the doctor.

Apart from a few incidents, the camp was a good way to finish the year.









# Death on the Murray in 39 Steps

by FOUL PLAY

Any characters portrayed in this article resembling persons living or dead or close to it, is entirely intentional. This is a true story; however, names of people and places have been altered to incriminate the innocent.

During the early afternoon of the 4th December, 1978, a dubious looking group of persons gathered at that infamous watering hole known as the Berri Hotel. Lurking beneath the seemingly calm and innocent exterior of this gathering, lay the seething pent up emotions of three months anticipation of the forthcoming week of gruelling activities.

Those privileged? final year engineers selected for their extreme intestinal capacity and internal fortitude, embarked upon the houseboat Swan I at approximately 3.00 p.m. It was widely rumoured that another group of persons remotely affiliated with the Engineering Faculty were also undertaking a similar voyage aboard Swan II. This rumour was substantiated though, later in our 5 day ordeal, but those persons involved were rarely sighted (possibly due to the presence of 3 females who shall remain nameless).

The first and singularly most important task once aboard was to load refreshments and to allow this to be done, the houseboat was immediately piloted back across the River to the Berri Pub. A human chain was established for the express purpose of diverting \$250 worth of beer from the Drive In Bottle Department to the hu-u-u-uge esky on the foredeck of Swan I - leaving only enough room for three icecubes.

Craig Venuti (not his real name - we think he was joking) was considerably perturbed when informed that there was no room for his truckload of fresh vegies. He finally managed to include them in the esky after consuming an equal volume of beer - Craig was our first casualty and we hadn't left Berri yet.

The boat was accidentally christened when some unable-bodied seaman dropped a dozen West End on the foredeck. The seaman in question was subsequently keel-hauled. He survived this punishment but eventually expired after being subjected, for the 150th time, to Boney M's Night Flight to Venus which Smokey Dawson insisted on playing at every opportunity.

Captain Bill Lorenzin who was rarely in control of the vessel or himself gave the order to cast off at 4.30 p.m. What a bloody awful pose he struck as he stood behind the wheel with his licorice pipe clenched nonchalantly between his furry jaws and his Auntie Ida's stuffed galah sellotaped to his left shoulder.

We journeyed up stream a short way before selecting a sheltered haven for the precursory evening of the week's expedition. Those members of the crew who had not already mutinied, set the pace for the rest of the trip by getting absolutely paralytic. It was on this first night that the realization first came to us of the absolute loneliness and desolation of the River 300 metres upstream of Berri. The night was filled with eerie sounds - the raging torrent of the merciless brown Murray; the endless creaking of the ship's timbers and the sound of the wind whistling through Zenon's mattress.

Tuesday morning the crew were awoken at 6.00 a.m. by the Theme from Rocky being played at 40 Watts R.M.S. per channel courtesy of Zenon Kinal while he performed his morning exercises on Dominic Legoe. The remainder of the day passed with limited injuries, it being spent engaged in aquatic activities - swimming, skiing, drinking and drowning.

When Wednesday dawned about 3 hours earlier than it should have, the pained expression on people's faces showed that the arduous expedition was beginning to take its toll. A number of the crew members' internal bodily components were beginning to enter their first mode of instability. This was further evidenced by the lack of enthusiasm for breakfast and by the fact that, the second derivative of 'volume of beer remaining unconsumed' with respect to time was negative. (For those of you who are 1st year students, uninitiated in simple engineering language, this means that the crew members rate of consumption decreased. For those final year students who still don't understand, this means the crew members drank less beer.)

Wednesday was particularly notable in the fact that due to this decreased consumption, some persons managed for the first time to water ski. Wednesday afternoon, Swan I rendezvoused with Swan II at Renmark to replenish supplies of the amber fluid. From here we journeyed further upstream until it became dark when Bede Rodeghiero finally cracked under the pressure and started screaming (in the best tradition of Lucky Morias) and had to be subdued with a dummy and a rattle borrowed from Lou Kelemen.

We selected a serene wave-cut platform, with a well developed and stable dune system within 20 kms of an oxbow lake formed during the late Cretaceous period of the Mesozoic era, as a mooring for the night. This provided an ideal location to pursue studies of local palaeobiology, but everyone got pissed instead after diverting their intellectual talent towards a better understanding of the transient nature of the turbulent flow from a beer bottle.



After cooking? the evening meal we were treated to an allnight burlesque show provided by the inimitable Daryl Day. The entertainment began when Daryl decided to climb a tree and the others, drawing on all their engineering expertise gained during the previous four, five, six, seven or eight years (as the case may be), shifted the bonfire to the base of Daryl's eucalyptus globulus (i.e. blue gum). Daryl tried in vain to extinguish the inferno using what methods were immediately available to him. When it became obvious that he didn't have the capacity to extinguish the fire, he turned his attention towards the conspirators. The conspirators retaliated by hurling buckets of water up the tree eventually quenching the fire as well as dampening Daryl. Because his clothes were now wet he took them off to dry and began the dance of the seven veils without the veils. After persuing Dom Legoe around the fire a number of times he finally ended up sprawled in the mangled wreckage of a Lazy Boy with Dom.

Even these sordid acts were not the climax of the evening. For his 'piece de résistance', Daryl stored his extinguisher on ice for 10 minutes, winning a \$5 bet and rendering it semi-permanently inoperable (as testified to by Lee some days later at the Final Year Dinner). Senselessness gradually overtook those crew members still on their feet (well, awake anyway) and everyone had either retired or expired by about 4.00 a.m.

The following day Craig Venuti recapitulated the story of his lost thong for the umpteenth time. His graphic narration was so heartbreaking that the crew initially took pity on him and purchased a second dummy from Lou Kelemen but this soon changed to thoughts on the possibility of concrete thongs for Craig permanently affixed.

After his initial mourning, Craig suffered withdrawal symptoms and remained subdued for the remainder of the trip, drowning his sorrows over his bereaved thong. Craig's remaining thong, suffering from prolonged separation finally committed suicide by throwing itself into the murky Murray (with the aid of a few crew members). It was last seen going over Lock 4 with Craig in

pursuit. It is probably somewhere off the coast of Italy by now due to the world pattern of longshore drift, semi-diurnal components of the tides, temperature differential density currents and global distribution of turnips as calculated by Will Hamilton.

Also on this morning, Tony McIntyre who was the odd man out (inequality in the number of male and female persons) on Swan II went for a walk to Lyrup and returned in the company of numerous dogs of various sizes and breeds. He subsequently made a film for the AUES AGM. Tony now wishes to expand his filming, directing and acting knowledge and expertise and would like to know of anyone with a couple of horses available for an afternoon.

Another highlight of that afternoon was the temporary monument ceremoniously erected in deference of Geotechnical Engineering Lectures. This magnificent structure constructed in record time up on the roof of Swan I held in awe all those who viewed it. For those of you who have not yet seen a photograph of the colossal Brown Eye Pyramid - ask one of the girls aboard Swan II for a look at their 3 volume collection of 150 photos.

Friday morning on the way back to Berri the last beer was consumed but the stalwart crew showing great courage and superhuman endurance managed to stave off their thirst for five minutes until Berri was reached. The next quarter of an hour was spent unloading empty bottles and dead crew.

After finalising payment for the boats, we adjourned to the Berri Pub for a few drinks - the coup de grace of the week. From here everyone reluctantly assumed their true identities and gradually drifted off home and back to reality and the thoughts of the approaching Christmas and New Year's Eve Shows which would be considerably dulled by the past week of End of Exam celebrations.

We, the authors disclaim any responsibility for the truth of the facts presented above because this article was written after recovery and we too suffered from discontinuities in the space-time continuum of our memories.

Mucous Beesdick-Doyle  
Agatha Downard



# Life at the Enfield

'MOLLY HUMDRUM'

For too long engineers have been regarded by others as uncultured, unsophisticated and non-artistic. Well at the Hotel Enfield something happened that changed all that.

Performing live on the night of the Engee's dinner was a group of musos that I am sure will be a force to be reckoned with in the future. The name of the group, **Black Bart and the Engettes**, a group with the violence of the Sex Pistols, the sensitivity and eloquence of Simon and Garfunkel and the social significance of Dylan.

For those of you who are not completely familiar with the band here is a brief rundown of the groups members.

**Black Bart** was the founding member of the group. His music and lyrics were born in the dirty alleys and smoked filled pizza bars of St. Peters. Black Bart plays percussion in the band and never have I seen someone do so much with a broom handle and an orange crate. With this meagre instrument his range covers everything from the mighty thunder of vengeance hurled down from the heavens to the soft twang of the bed spring.

The second musician in the group, **Gypsy Snag**, hails from the ghettos of Semaphore. He is the epitome of the backlash now so prevalent in so many of Adelaide's coastal suburbs. Here is a man with something to say. He uses as his medium the mouth organ.

The intrinsic violence of Gypsy when on stage can only be compared with such rock and roll animals as Patsy Biscoe and Roger Whittaker.

The third musician is **Rosary Bede**. A guitarist of some note, some would even say a child prodigy. Some have dared to compare Rosary Bede with such contemporary guitar giants as Dean Davis. For me the performance by Rosary Bede said it all, I found his guitar playing to be the final and ultimate expression. With only a few bars, this

man was able to induce a near hysteria in the audience which I have not witnessed since Mantovani played at the United Nations.

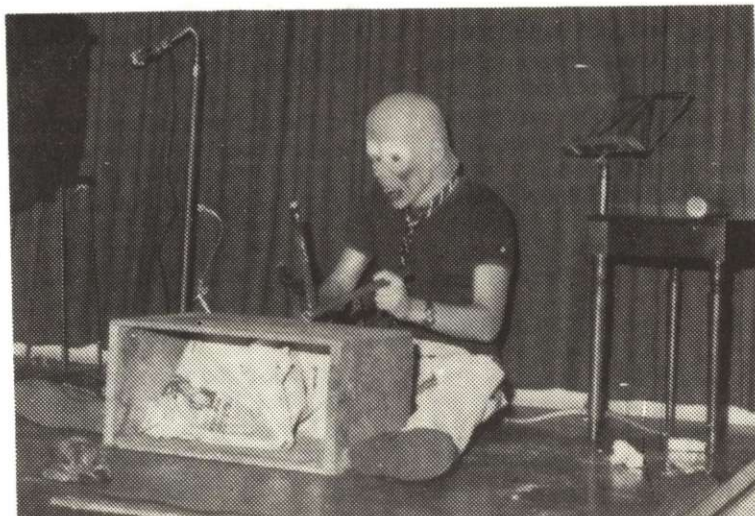
One of the more unusual and refreshing aspects of Black Bart and the Engettes is their vocal lineup. There are four male vocalists who told the story not only with their gutsy punching lyrics but also with their continuous bodily gyrations throughout the songs and their final prostration at the climax.

The smallest vocalist is little **Willy Noballs**, the soprano of the group. He applied for a position in the Vienna Boys Choir but was turned down because his voice was pitched too high. He has found a temporary position in the group but apparently he is eagerly awaiting a reply from the Bee-Gees.

The second vocalist is **Art Pogam**, a one time bkie turned professional entertainer. The Journal of the Popular Music Division of the American Society of Civil Engineers once said about Art'....this boy is like a pearl in a sea of mud, he's going to sink.'

The third vocalist is **Odour Legoe**. This singer has a background of contrasts. The son of a prominent lawyer, educated at Geelong Grammer, Odour was forced to drop out of high society after the nasty affair with the caretaker's daughter. His one aim in life is to vomit on the Governor General.

Vocalist number four is **Cockney Rebel** whose musical background stretches back to the rubble fields of war torn London where he performed with other members of the 2nd Brighton East Boy Scout Troop. To further his career Cockney migrated to Australia and is now on permanent loan to Black Bart and the Engettes from the Central Districts Cheer Squad.







Unfortunately as with many groups there seems to be the potential for a split looming in the future. It appears that there are two factions developing within the group. Willy Noballs believes that the band should be aiming for the commercial market and more material objectives while others do not wish to prostitute their musical integrity.

Gypsy Snag and Odour Legoe, when asked to comment on the rift said most of the recent conjecture was rubbish and the real reason for any future breakup is more likely to be the fact that Black Bart's mum will not let him '....go and play with those rough boys'.

Well that's it, an astonishing group, Black Bart and the Engettes, don't forget their name because you won't remember their music.

★ ★ ★ ★ ★

Below are the lyrics to Black Bart and the Engettes' latest single from S.H.I.T. records.

Music is very similar to 'It's a long way to the Top' by AC-DC.

Architects are deadshits  
Lawyers are a pain,  
Meds are useless arseholes  
And Arts are just the same.

Getting pissed  
Getting stoned  
Getting beat up,  
Under paid  
Over stressed  
We're engineers.

I tell you folks it's harder than it looks,  
It's a long way to the top if you are an engineer.

*Mouth organ solo*

Walking past the Barr Smith  
Perving at the chicks,  
Stopping at the refec.  
To buy a bag of chips.

Kenny Mox  
Dallas Brooks  
D.B.C.,  
What a pain  
We've got D.A.C.  
He's insane.

I tell you folks it's harder than it looks,  
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# The Letcherers

A.N. ONYMOUS

For many years, the fame and glory heaped upon those students graduating as civil engineers has left those men who are truly responsible for their success in the limelight. This is a dedication to those men who have silently and humbly pushed, shoved and beaten students through their four or more years of tertiary education. To help future students acquaint themselves with these engineering intellectuals, here is a brief but incomplete summary.

## Bob 'Bubbles' Culver

His various hobbies include reading the Greater Oxford Dictionary, trying to find new and unheard of words to include in his exams in order to fool unsuspecting students (i.e. bulk bullshit). He also collects spurious colours of striped shirts and bow ties, and has been known to cut his head while shaving.

## 'Hydraulic' Jack Ewers

Jack is possibly one of the greatest bridge spectators to walk the hallowed corridors of the Civil Engineering department. His ambitions include breeding ducks in his sump, 100% failure in hydraulics and growing a moustache.

## Maurice 'Morry' Arnold

Morry is one of the more colourful members of the faculty. He has been found going to sleep in his office, in exams, during seminars and even in his own lectures. His hobbies include writing reams of notes for illiterate students, and watching all night movie festivals.

## Neil 'Danny' Kay

Danny is rumoured to be leaving next year to model the new range of Cuggi Bermuda shorts. He has also applied for a body building course at Pat Davies'. Hot news on the grapevine says that he is having an expansive relationship with Peter Mitchell, on a semi-infinite, non-homogenous, non-isotropic, unsaturated, highly reactive, non-permeable, inelastic, non-linear, dilational and compressive half-space.

## Allan 'Baby Face' Hirst

Baby Face was born trying to straighten his warped laterally buckled, cable stayed, 2 pin, free torsion beam. His ambition is to shave, and grow hair under his armpits. He is the only lecturer known not to bruise the chalk.

## Stan 'The Man' Hutton

No comment - we have to wait until after graduation.

## D.S. 'Dallas' Brooks

Dallas is rumoured to be giving original lectures next year. On a recent inter-faculty survey, it was found that he was ranked second to the department's photo-copying machine.

## Michael 'Yo-Yo' Yeo

See Stan Hutton

## David 'Creepy' Crawley

Creepy is loved by all, but not students. The vatican in an unprecedented move has made him an honorary 13th disciple.

## Dennis 'Dac' Cumming

Dennis's main ambition in life is to become a school traffic monitor. His favourite sayings include:

'What any fool could do for \$1000, an engineer could do for \$10'.

'A doctor buries his mistakes, a lawyer gets paid for his, but an engineer has to live his down'.

'There's still time to drop out'.

## Bill 'Bo Diddely' Bodley

Bill is definitely anti Z.P.G. He is the only lecturer to get 3 gold stars for writing in grade 4, and is also the only lecturer gullible enough to sincerely answer all student questions.

# AGC Presents An Evening with Bob Culver

Direct from a  
wildly successful  
hydraulics lecture  
and soon to be seen  
in C130

The old master  
of lecturing  
in his very own  
one man show



Enges Theatre  
Sunday Jobuary 25 and  
Monday Jobuary 36  
at 8a.m. Tickets 12<sup>c</sup>  
On sale now at  
Enges Theatre  
Looking Office and  
all Bagg agencies

He has  
a masterly  
way of impersonating  
the Greater  
Oxford Dictionary



# '78 Engees Literacy Award

## 'THE THEORY OF NEGLIGIBLE FORCES AND HOW TO DESIGN FOR THEM'

by Regor Markos Ebsarovich - Assistant Janitor to the Professor, Faculty of Ag. Science, Moscow University, Leningrad. (Translated from original Russian manuscript).

'It is indeed curious to note that despite the multitudinous quantity of design aids and literature available to the would be designer, the most frequently encountered forces today are completely overlooked and as a consequence, they are costing the world vast sums of money each year. I refer of course to the genus of forces known as **forceus quite smallus**, or in other words, negligible forces.

Throughout universities the world over, students are told with monotonous regularity to disregard these forces. No longer can we turn our backs on the negligible force. What are negligible forces I can hear you saying - well basically, negligible forces fall into two categories -

- (a) natural
- (b) unnatural

The natural negligible forces constitute the smaller category, but history has shown them to be the forces with greater potential to destroy. Almost all natural negligible force failures are a result of flies and other insects. The unnatural negligible forces result from man made objects, such as posters, wallpaper, second hands on wall clocks, cigarette smoke and fluorescent lights.

In the past, many failures have been attributable to negligible forces; the most recent and perhaps most notable has been the collapse of the East Lithuania Bowling Club Ladies Auxiliary trading table. This catastrophic collapse resulted from the presence of not

one, but two negligible forces. Indeed, failure due to negligible forces that occur singularly, are quite rare, and the last recorded failure due to a singularly occurring negligible force was in 1932 when the Cunnamulla Spinners & Weavers Multi-storey toilet block collapsed.

It is the occurrence of negligible forces in conjugate pairs that cause most of the world's truly calamitous structural failures. No satisfactory explanation has been proposed that explains why this is so, but I believe the answer lies in symmetry. A conjugate pair of negligible forces is by definition, two forces that destroy the symmetry of a structure. The arrangement of these forces is such that a moment is induced in such a direction so as to counteract the Corridos force due to the spinning of the earth about its axis. This moment, thus reduces the speed of rotation of the earth and consequently the gravitational and inertial accelerations are also reduced. As force is directly proportional to gravitational acceleration, this reduction in  $g$  results in the negligible force becoming more negligible and the induced moment is increased. The increased moment causes further reduction in axial rotation and  $g$  and thus it becomes clear that the negligible force rapidly becomes so negligible that  $g$  is reduced by such an amount that the basic static equilibrium equation becomes erroneous and failure occurs.

It has been shown, that the reduced value of  $g$  is given by the following equation:

$$g_{red} = \frac{\left[ \left( f_3 \cdot g \sqrt{f_1^2 + \alpha f_2^2} + \nu \rho d^6 (F_1 + F_2) \right)^{\frac{3}{2}} + 0.5 (F_1 - F_2) \right]^{\beta E \gamma}}{\log_7 \left[ \left( 1 + 3 \cdot \sqrt{\frac{F_1 F_2}{m}} \right) + 0.6 \right] + 7 \times 10^{-6} K e^{-\ell t}}$$

where  $g$  = gravitational acceleration at equator

$\nu$  = Poisson's Ratio of underlying soil

$\rho$  = density of igneous rock on the moon

$d$  = perpendicular distance between line of actions of  $F_1$  and  $F_2$

$E$  = Young's modulus for stainless steel kitchen fork

$\gamma$  = radioactivity of buried uranium waste

$m$  = mass of average sized turd in C130

$\ell$  = length Uni. footbridge



$t$  = current world record time for 100 m

$\alpha$  = angle of inclination of sun's rays at site of structure

$K$  = Kay's semi-infinite, non homogeneous half space factor

$\beta$  = temperature correction factor

$F_1$  and  $F_2$  = values of negligible force conjugate pair

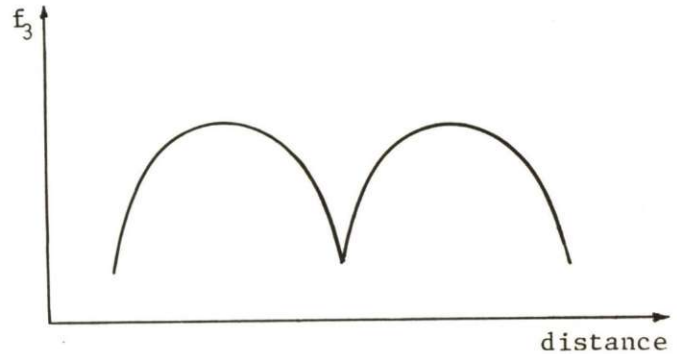
$f_1$  = hemisphoidal factor = 1.1 for Northern hemisphere

= 1.1 for Southern hemisphere

$f_2$  = political factor

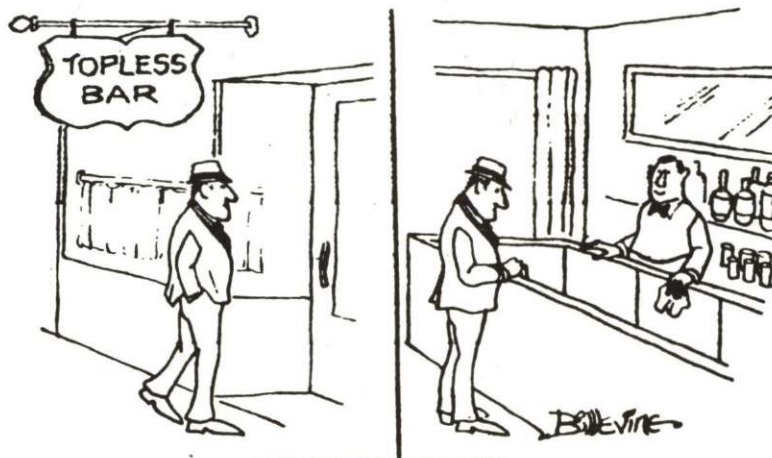
$f_3$  = geographical factor

The geographical factor is dependent on the perpendicular distance of the line of action of the negligible force from the South Pole and is obtained from the Abigail Distribution shown below.



To design against negligible forces, it is necessary for the structure under consideration to have a  $g(\text{red})$  which is greater than the critical  $g$ .  $g(\text{crit})$  is usually 12.6% lower than the value of  $g$  existing under normal circumstances.

For his outstanding effort, Mr. Ebsarovich wins an all-expenses-paid trip to the Civil Engineering Department dunny, to further research his other major project - stress concentration in toilet bowls under dynamic loading.





# CHEMICALS



1978 Final Year Chemical Engineering Students:

Back: Bruce Pretty, Claude Clemente, Chris French, Bob Buratto, Alan Patel, Richard Purcell.

Middle: Nick Booker, Ray Craddock, Brian Stanton, Steve Mitchell, James Chu.

Front: Kym Schluter, Elise Allen, Vi, Paul Rubenach, Kyle Moile, Maria Kluvanek.

Bottom Step: Martin Webb.



# CIVILIANS

PETER DAWSON

Key : A. Physical Characteristic  
B. Favourite Position  
C. Likely Destination

**Gerhard Bartodziel - alias 'Dirty Girty'**

- A. Milk Gut
- B. Doesn't care, a start is a start
- C. Groupy for a homosexual pop group

**Daryl Day - alias 'Daisy'**

- A. Grossly shrunk penis
- B. Holding his dick on a block of ice
- C. First onion farmer in the Congo

**Richard Ingerson - alias 'Invisible Man'**

- A. Lack of attendance at Uni.
- B. Anywhere, but at lectures
- C. W.A.C. in the army

**Peter Sossic - alias 'Sausage'**

- A. Hawaiian shirts
- B. Putting
- C. Hole in one

**Gary Carvel - alias 'G.G.G.G. Gazza'**

- A. Sporting foetal moustaches
- B. Sitting Down
- C. Up for adoption

**Domonic Legoe - alias 'Oh-Dom!'**

- A. Sweat stains from armpit to arsehole
- B. Next to Nigel, Bruce, Godfrey, Dallas, etc.
- C. Primeval sex object

**Dave Padgham - alias 'Arthur'**

- A. His body, or lack of
- B. Nil, too fragile
- C. Mr. Universe

**Mike Canny - alias 'Hawk'**

- A. Muscular right hand
- B. Nil - married
- C. Writing out an extended version of War and Peace before bedtime

**Tony Cannella - alias 'Eh-Toni'**

- A. Spaghetti whip marks on his back
- B. Watching Gonzo while lying on a bed of Lasagna
- C. Married to Mona Liza's Grand daughter

**Zenon Kinal - alias 'Z, Zencoo, Xerox'**

- A. Smashing set of tits
- B. Impersonating a female toilet seat
- C. Sexual geriatric

**Ahilefs Morias - alias 'Lucky'**

- A. Have you ever seen Groucho Marx?
- B. Disco Dancing
- C. Arthritis of the knees

**Keith Downard - alias 'Shnoz'**

- A. Toocan impersonations
- B. Doing the backstroke and impersonating Jaws
- C. Managing Director of Marlboro Aust.

**Will Hamilton - alias 'Ham-Bone'**

- A. Thongs
- B. Nomadic, Upper Lapland in winter
- C. Swapping positions with Colleen's punch card machine.

**Grant Sellek - alias 'G. Sele'**

- A. Cool, calm and crazy
- B. On his bike
- C. Marrying his bike

**Peter Dawson - alias 'Smokey'**

- A. Length
- B. Contemplation of what card to play
- C. See this magazine in 1979

**Roger Ebsary - alias 'Milk Money'**

- A. Too numerous to mention
- B. On his neighbour's front porch at 4 a.m.
- C. Pentridge

**Louis Kelemen - alias 'Baba-Louis'**

- A. Tight jeans
- B. Hiding behind stacks of money
- C. Pidgeon breeder

**John Moule - alias 'Amen'**

- A. Crown of thorns
- B. Meditation
- C. Crucified

**Jim Delaine - alias 'Rowdy'**

- A. Insignificant
- B. Watching 'James at 15' on T.V.
- C. Harpo Marx Impersonator

**Mike Fricker - alias 'Choo Choo'**

- A. Unable to string two single syllable words together
- B. Wandering aimlessly
- C. Lost

**Bede Rodeghiero - alias 'Bede'**

- A. Deep penetrating eye divided by a huge nose
- B. Playing 'Blood and Guts'
- C. Hustler

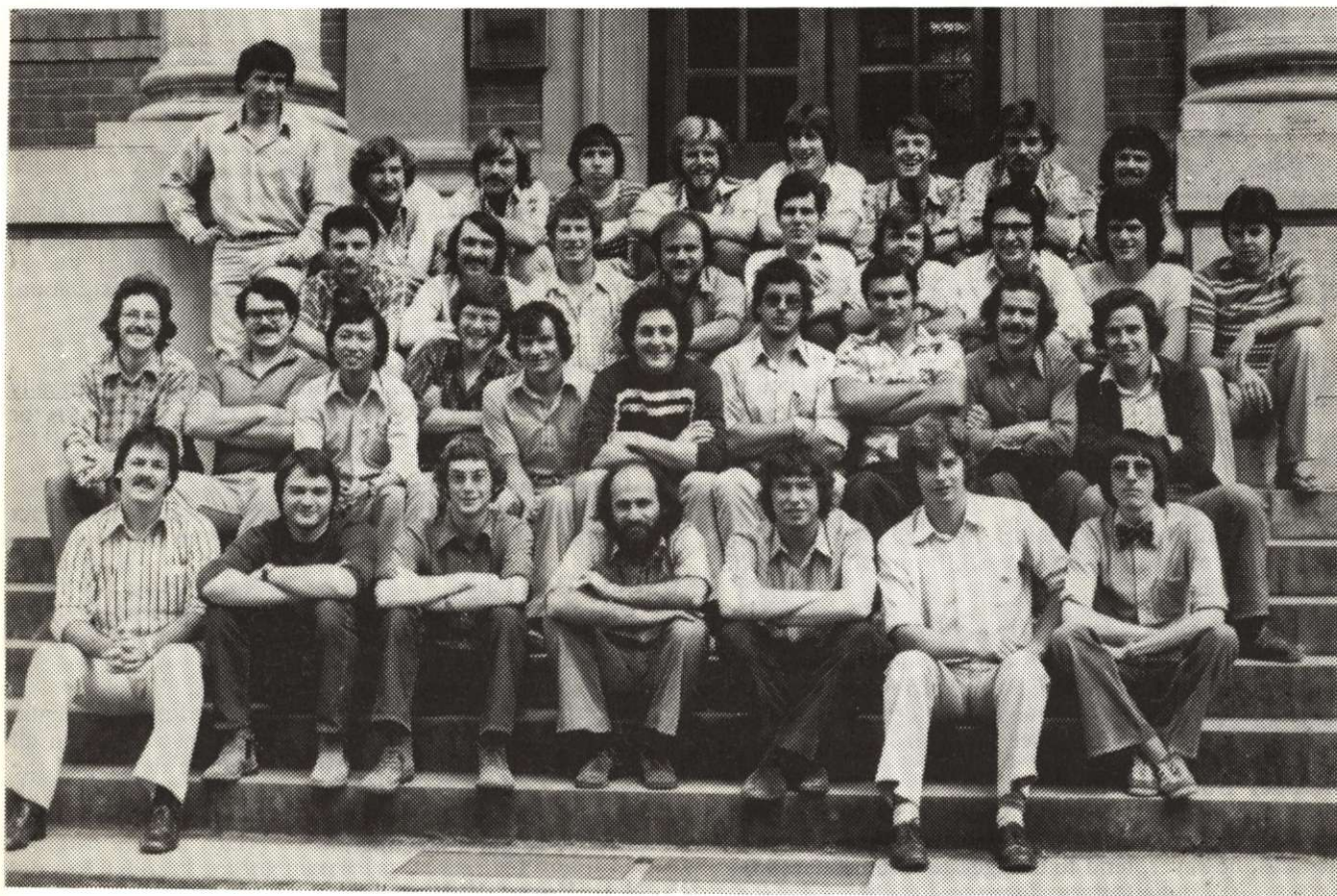
**Bob Aitken - alias 'Break a Leg'**

- A. Stiff up to the groin
- B. Stiff at the groin
- C. Broken down

**Grant Lewis - alias 'Dr. Who?'**

- A. Theodolite stadia hairs imprinted on retina
- B. In the queue for 'Star Wars'
- C. Rebel leader against the Zircons on Alpha Centauri





**John Princi - alias 'Old Man Time'**

- A. Walking stick
- B. Lying back and remembering
- C. A father

**Bill Lorenzin - alias 'Sleepy'**

- A. Tall, dark and bloodshot
- B. On high heels
- C. Telephonist at Lorenzin Earthmovers

**Ian Dodd - alias 'Doddy'**

- A. Cut off denim shorts
- B. One foot in the glovebox and one through the steering wheel of his Datsun 1600.
- C. Shares in a vaseline factory, or the campaign manager for Z.P.G.

**John Gransbury - alias 'Goosebury, Moosebury'**

- A. Permanent ingrown R.M. Williams shirt
- B. Standing or lying in bars
- C. City slicker

**Tony McIntyre - alias 'Mad Mac'**

- A. General appearance
- B. Sleeping while hanging upside down from rafters
- C. Editor of Mad Magazine

**Peter Tisato - alias 'Tits'**

- A. Not photogenic - refer 'News' photo
- B. All 743
- C. Doing the right thing - marriage.

**John Olson - alias 'Johnny-O'**

- A. Ears and Teeth
- B. Standing and Eating
- C. Successful

**Alan Wilson - alias 'Willy'**

- A. His height
- B. Not yet sighted
- C. Reaching puberty

**Craig Walton - alias 'Chumly'**

- A. Hat size
- B. Being present
- C. Leader of anti weight watchers

**Mark Biebrick - alias 'Mucus'**

- A. Ferus Trabilsi permanent wave
- B. 'Joy of Sex' - page 25
- C. Slipped Disc

**Keng Luck Chan - alias 'Charlie'**

- A. Sultan
- B. Studying
- C. Straight

**Craig Venuti - alias 'Cwaaig'**

- A. Smoking nervously waiting for Nat.
- B. Cowering in front of his Mom and Nat.
- C. Burning off more than 500 calories at a time



# ELECTRICIANS

MICHAEL BELL

## Nick 'Stop Me If You Can' Jones

Nick's love of turning off the air conditioner on hot days is surpassed only by his ability to ask ridiculously long questions at the end of each lecture. Nick remains the only student ever to have his seminar interrupted by Christmas.

## John 'Intel 8080' Pitman

John is one of that breed of people who believe microprocessors are God's gift to mankind. We believe he is one of the few people ever to have successfully mated with an Intel 8080 and lived.

## Mark Nugent

Another of this rare breed, Mark is, we believe, one of the few people ever to have successfully mated with John Pitman and lived.

## Peter 'How Do You Spell That?' Schemeczko

Pete disappeared mysteriously after the developing of this photo in which he can be seen gesturing wildly in the general vicinity of the hairline of the most reverend D.C. Pawsey. He has since been seen in Brazil.

## Michael 'Sunshine' Bell

All round good guy. Without doubt the most intelligent, hard working and highly respected member of the class. He does, however, tend to exaggerate just a lot.

## Geoff 'How's That For' Sizer

Geoff is one of the few people in the world blessed with a complete knowledge of everything. Will probably be the next God.

## Adrian 'Fats' De Brenni

Also called De Brenni The Magnificent (by his Mum).

An intrepid explorer, Adrian has headed many an expedition along ledges, through ceilings and backwards and forwards to the bar. A renowned clairvoyant, Adrian claims he can see flags, but only after the third jug.

## Bohdan 'Toad-Face' Jarema

Bohdan made the Guinness Book of Records when he became the only student ever to receive long service leave. A chronic alcoholic, Bo will drink anything that stands still for more than ten minutes.

## Carlo 'Carlo' Galeano

An unfortunate choice of last name by Carlo's parents almost resulted in his untimely demise when Bo tried to drink him.

## Graham 'Horse And' Carter

Always willing to learn from his predecessors, Graham intends to chuck in engineering and become a peanut farmer.

## Chris 'Sydney Harbour' Bridges

Narrowly defeated Adrian De Brenni to become Miss Electrical Engineering '78 but hasn't been game enough to collect her prize.

## Ian 'Who?' Shakes

Unconfirmed sightings of Ian have been reported during the year. However, there is no physical evidence to suggest that he actually exists. To everyone's amazement he was absent when the photo was taken. Probable destination: Ghost writer.

## Wayne 'He Went That Away' Pearce

Keeps the legend of Ian Shakes alive by continually reporting sightings. Will probably end up working for Eric Von Daniken.

## Bruno Castellucci

One half of the famous 'Singing Pepperonis' cabaret act and the only person ever to sell tickets to his seminar.

## Paul De Lisio

The other half of the famous 'Singing Pepperonis' and the only person ever to buy a ticket to Bruno's seminar.

## Andrew 'Galloping Guru' Frost

As class Swami, Andrew, a self confessed transcendental masturbator took it upon himself to instruct us in all things good and natural. To this end he developed the world's first wholemeal microprocessor complete with muesli keyboard. Favourite saying: 'I'll see you later....I've got a meeting'.

## Neil 'Horse' Ridings

Cowboy Neil has at least three sets of every western shirt ever made. Will probably end up as a disc jockey or a second hand shirt salesman.

## Steve 'Jerry' Levis

Steve is one of those people who will go to ridiculous lengths for a laugh. He's getting married.

## Tom 'Nescafe' Petek

Rumoured to be a close friend of Idi Amin, Tom had to be surgically removed from the cellar on the last day of term. His project, not surprisingly, was a microwave coffee percolator, complete with an intravenous drip.

## Daryl 'Go For A' Gibbs

One of the quieter members of the class, Daryl's ultimate ambition is to speak.

## Andrew 'Flash' Brewer

Andrew takes a keen interest in anything and everything that has absolutely nothing to do with what he is doing. He is perhaps most famous for his bionic bicycle 'The Silver Ratchet' which holds the land speed record for man powered rust. Favourite saying: 'I'll start it tomorrow'.

## Meredith 'Motor Mouth' Hue

Stopped talking only once during the year, when she thought she saw Ian Shakes. Has been talking about it ever since.

## Hai 'Djakarta' Paik

Rumoured to be an undercover agent for an oriental aftershave company.





#### **Cliff 'Let's Get' Merry**

Known as The Merry Dwarf, Cliff is renowned for his absurd habits of getting married and wearing Elton John's boots.

#### **Chris 'Marlboro' Hickman**

Chris, a chain smoker, is single handedly responsible for Adelaide's pollution problem and Marlboro's excessive profits. Favourite saying: 'Cough'.

#### **Tony 'Macho Man' Pfeiffer**

The original bionic man, Tony was built as a final year project using old Volkswagen parts. This probably explains his difficulty in getting started in the morning.

#### **Paul 'Lay Up' Arthur**

A limp wristed basketballer, Paul can often be seen 'dunking a few' in the bar on Friday afternoons.

#### **Tony 'My Car's Got a' Denton 'It'**

Wants to be a public servant, but he'll have to pull down his socks if he wants to get anywhere.

#### **Graeme 'Hello Sailor' England**

Graeme has been in intense training for the job of Rear Admiral, pinching bottoms, wearing fluorescent sou'westers and insisting on opening the portholes when there is a raging gale blowing outside.

#### **Richard 'Jet Set' Giles**

Richard dropped in from his world tour just in time to catch the first lecture. Wants a job test driving stewardesses for Qantas.

#### **Dave Street**

The son of unimaginative parents who live on David Street, Dave, a fanatical studier, has been one of the best contenders for the 'Top Strop' Award.

#### **Peter 'Rodney Radical' Juvan**

Unbeknown to the lecturers, under his mild mannered exterior, Peter is really the class stirrer and is responsible for such jovial student pranks as the painting of Andrews' bike and the toppling of the Shah of Iran.

#### **Peter Stoyel**

Pete's project remains the eighth wonder of the modern world. For ten weeks he experimented with every conceivable geometric orientation of four diodes and two pieces of wire and still no life.

#### **Michael 'Mousey' Liebelt**

Winner of the Top Strop Award, Mike nearly had a coronary when he only got a Credit for Microwaves.

#### **Chris 'Groucho' Johnston**

Famous for his Groucho Marx impersonations, Chris' ultimate ambition is to be Don Griffin.

#### **Kym 'Boom Boom' McCauley**

One of few people who have the knack of telling pitifully weak jokes in such a way that no one laughs.

#### **Richard 'Ha Ha' Opolski**

Remains the only person ever to laugh at Kym's chocolate frog joke. Maybe he doesn't understand the language.

#### **Gary 'Matches' Einicke**

A prominent Ananda Marga member, Gary threatened to self immolate unless he passed his exams. The Electrical Engineering Department responded by announcing a fire sale. Probable destination: ashes. Favourite song: 'Come on Baby, Light my Fire'.

#### **Robert 'Dunn' Cameron**

Could best be described as absent.



# Mr. Engee '78



Tim Polden, 3rd year Civil, is an avid lacrosse player and also pretends to be able to play soccer occasionally. He is prone to frequently flash his masculine? chest, and sometimes other parts as well. Tim won the award narrowly from self-confessed all round good-guy, Mike Bell, and former Mr. Ukraine, Zenon Kinal.



