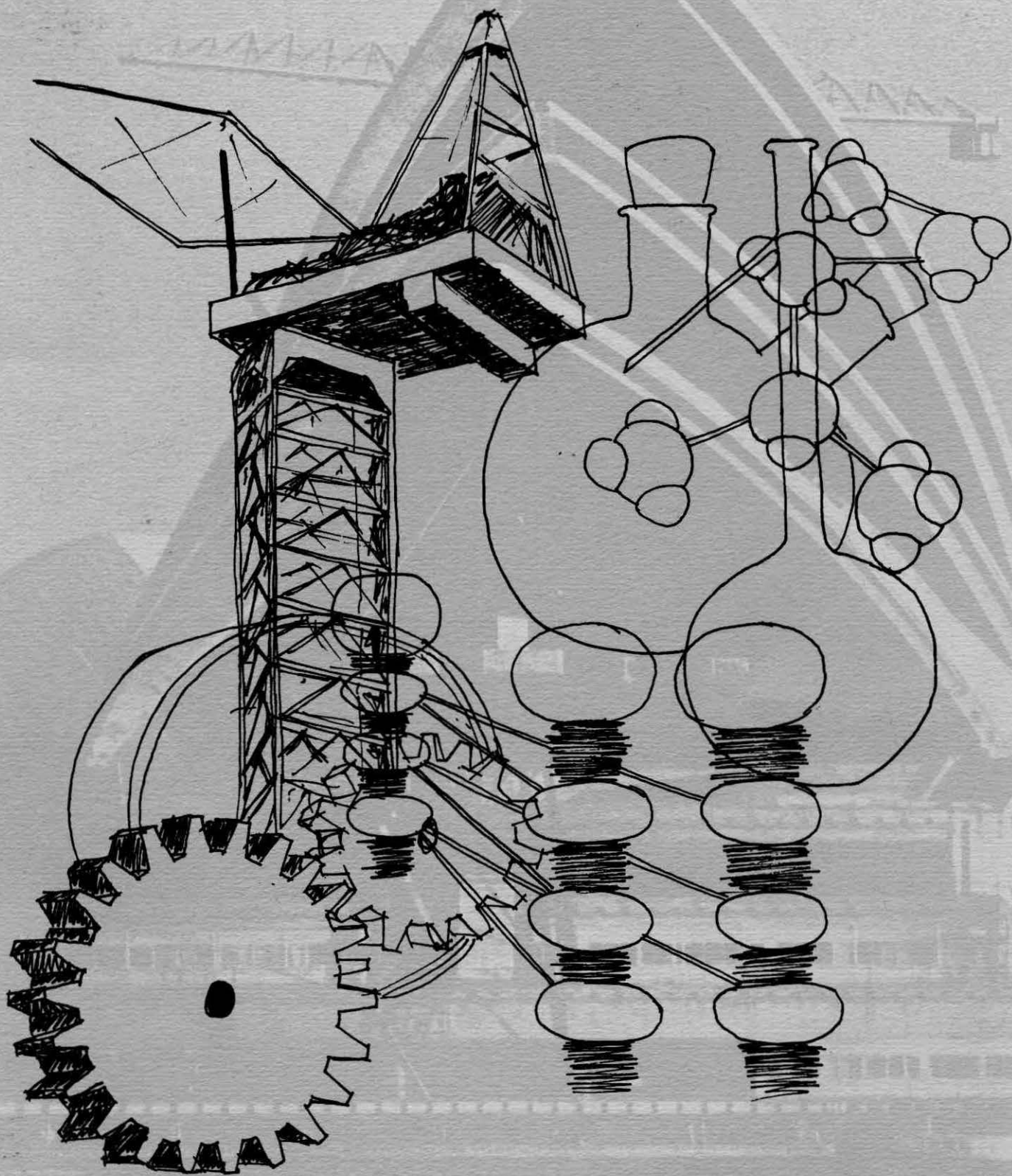


HYSTERESIS



HERSTERESIS





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(Phone: 87 6207)



Lelde Vitols (Civil), Tom Grose (Civil), Tony Thomson (Mechanical), Viv Lawrie (Chemical), Claus Schonfeldt (Civil), David Payne (Civil).
Not present John Fox (Electrical) and Paul Smith (Civil).

HYSTERESIS 1973

The Editors saw this magazine not only as a chronicle of AUES activities but also a venue for students and staff to air their ideas and display their wit. The result would have been a compilation of original thought provoking and witty material. The degree to which this was successful is a reflection on the imagination and creativity of Engineering students.

The second point of policy was the intention to integrate all of the departments into the magazine. Representatives were chosen from each department to collect material from their colleagues. Response was limited. Hysteresis remains primarily a Civil Engineering Department publication.

Lelde Vitols and Dave Payne

We wish to thank Mark Gilbert for technical assistance and advice, Mrs. Stock, Kay, Maxine and Jan for typing the manuscripts; also Sally Lee for help with the paste-up

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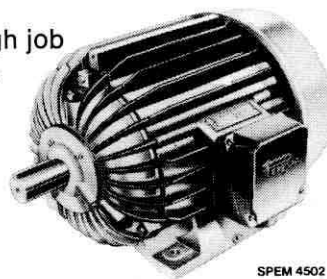
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SPEM 4502

the dean's page

During 1972, some members of Faculty and students expressed the belief that First Year Engineering students were

During 1972, some members of Faculty and students expressed the belief that First Year Engineering students were not being given any clear idea as to the true nature of the profession they were entering. After much discussion the First Year Courses Committee decided that this complaint was probably justified and that an attempt should be made to increase student involvement in Engineering 1 through a series of lectures and discussion group meetings.

The Dean at that time (Professor D.R. Miller) and Dr. G.L. Brown (Mechanical Engineering) agreed to undertake the rather difficult task of preparing a General Engineering course of the type envisaged above. To this end, they first formulated their objectives as follows:

1. To provide incoming students with the opportunity to identify themselves with the role of the professional engineer. Towards this end it is intended to expose students to the power of

ed to expose students to the power of modern technology, to its consequences on society, to the control and application of this power and associated professional responsibilities of the engineer.

2. To help students in the transition from school to the University environment by providing close contact with the staff of the Faculty and a small group of fellow students, thereby combating the very evident anonymity which 1st year students face in Engineering 1.

3. To assist the students to identify the relevance of their courses in the basic engineering sciences to their future practice as professional engineers.

4. To provide an opportunity for a wide range of staff members to interact with the first year students so that not only will there be an impact on the morale of the students, but an opportunity will be created for staff members to learn something of the problems of the incoming students at first hand.

Having formulated these objectives, they then decided, with the wholehearted approval of Faculty, to invite six eminent speakers to address students on matters of relevance to all engineers.

The speakers were:

Mr. John Lawrie, Civil Engineer
Mr. Don Bennier, Electrical Engineer
Dr. Derek Scrafton, Transport
Mr. Lincoln Rowe, Mechanical Engineer.
Sir Philip Baxter, Chemical Engineer
Mr. Commissioner Portus, Commonwealth Conciliation and Arbitration Commission.

Each lecture was to be followed by either one or two discussion sessions at which a student would present an essay on the topic and there would then be general discussion for thirty to forty minutes. Each discussion group would consist of ten students with a staff member to act as group leader. It was proposed that there be ten such meetings so that each student would have an opportunity to present one essay.

On completion of the course, the tutors in General Engineering met to discuss the extent to which the objectives had been met. There was general agreement that, although the course had, on the whole, been successful, it had not achieved certain of the objectives.

The criticism of particular points most commonly made were as follows.

- 1 Two discussion sessions based on one lecture had not proved satisfactory. There should be only one discussion session per lecture.

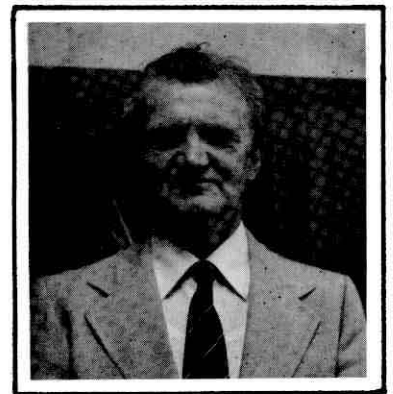
- 2 There was too much repetition of very similar material by the various lecturers.

- 3 The speakers were agreed to be eminent men in their fields, but it was felt that they were too far removed from the day-to-day work of young engineers. Talks by graduates of two to five years' standing on the work they were actually doing should also be included.

Other criticisms were made, e.g. some tutors felt that students would benefit far more from a course of the above type if it were given in Final Year, rather than First. Others believed

that students should be given much more specific directions about the choice of topic for the essay, and so on.

It is intended to run a similar course in 1974, taking particular note of the three points detailed above. The Dean (Professor R.W.F. Tait) would welcome from any student other specific suggestions as to how General Engineering may be improved for 1974 - but no ribald comments, please.





A.U.E.S. COMMITTEE

A.U.E.S. COMMITTEE: Tom Grose, Dave Wilson, Graham Stanley, Claus Schonfeldt, Chris Brideson, Mike Green, Rob Richards, Craig Nicholls, Dave Payne, Paul Smith, Lelde Vitols, Ian Slape.

THE MORNING AFTER

This year I've woken up the morning after an A.U.E.S. event and immediately thought "What a great show! I feel sorry for those who didn't come along." — and my opinion hasn't changed.

The Ball and the Dinner are the two biggest events held by the Society and this year the people attending became involved in the theme of each. Three hundred people at the "God-father Ball" wouldn't break past attendance records but two hundred or so of those people came dressed in double breasted pin stripe suits, hats, cigars and machine guns while their girl friends wore low cut slinky roaring 20's dresses. These people had spent some time in getting their outfits together and had come along prepared to join in the spirit of the night and they really made it a success.

The same applies to the Dinner, 176 people (a 'new attendance record) came to watch "Spew Faces Talent Show" and nobody went away disappointed with the 8 acts. The Guest Speaker, Mr. Keith Conlon was extremely entertaining and the rest of the night's entertainment was provided by "talented" Engineering students without degenerating into a series of grubby jokes.

The Football Carnival was another success this year, the teams ran around the Algate Oval in the wind and rain to declare the final year Civil Team the winners (again!). Despite the weather, participation ran high with 1 Electrical, 1 Chemical, 1 Mechanical and 3 Civil teams competing.

Attendance at the Brewery Tour, Cricket match and Engineering-Science football match was poor but my greatest surprise came at the number attending the Institution of Engineers and Association of Professional Engineers lunch time talk: I looked into the hall a few minutes before one o'clock and there were approximately 15 people sitting in the rear seats so I expressed my misgivings to the speakers when I met them. Ten minutes later when we walked into the room I was almost lost for words as nearly every seat was taken and people were standing

up at the back of the room. The talks and questions took nearly an hour then there was a stampede for the literature, which reflects the interest of students in both of the organisations.

I would like to thank the staff for their help in informing the students of the importance of the meeting, and also for their help in answering questions at the Fresher's Welcome, another successful event this year.

The more I think about this year the more "participation" comes to mind. It was not all total participation as with the Ball, Dinner and Football Carnival but often a total lack of participation as when the Committee tried to attract members of Departments, other than Civil, along to the Committee meetings.

Perhaps Cyclops (our occasional newsheet) reflects this participation or lack of it best. Most issues contained material the Editor Claus Schonfeldt had written or conned out of Committee members, but occasionally a contraveral subject managed to stir one or two people to writing in with praise or criticism.

One contraveral subject was raised towards the end of 2nd term — should the A.U.E.S. stay in its present form with the Civils dominating the Committee, or break into separate departmental committees. The Committee finally decided to propose an amendment to the constitution to have 2 representatives from each Department elected to the Committee. This amendment was passed at the A.G.M. but the issue had raised enough interest to stir people other than Civils to stand for election on the executive.

The 1974 Committee will consist of 8 Civils, 7 Mechanicals, 2 Electrical and 2 Chemicals, perhaps the start of a more even representation, and the end of the old cry, "A.U.E.S. functions are Civil run for Civils only."

Thanks go to Kay and Maxine for typing Cyclops and our correspondence and to Dave Payne and Paul Smith, both non-committee men, who attended meetings and helped generally. Most importantly, hearty thanks go to the 1973 Committee who made it a most successful year.

Tom Grose



footy carnival

The 1973 AUES footy carnival must go down as one of the best for quite a long while. This was due in part to the fact that each department fielded a very formidable team and there was a good fight to see which department would win.

The day was quite dismal, (most Sundays are). After going to Bobby Mac's 21st the night before I hardly felt like playing footy. Consequently I missed the 4th year Civils versus Chems. match but found out that the Civils had won.

The next match was the 3rd year Civils vs Elects., I played in this one. The oval had about a 1 in 5 slope across it and to run from wing to wing was slightly akin to climbing Mt. Everest.

The game was tough and both teams were determined. The Elects. won convincingly but some say that this was due to the 22 excellent players they had on the field. No comment Wally, the game announcer, criticised each decision made by the oldest umpire in S.A. Bomber Brideson.

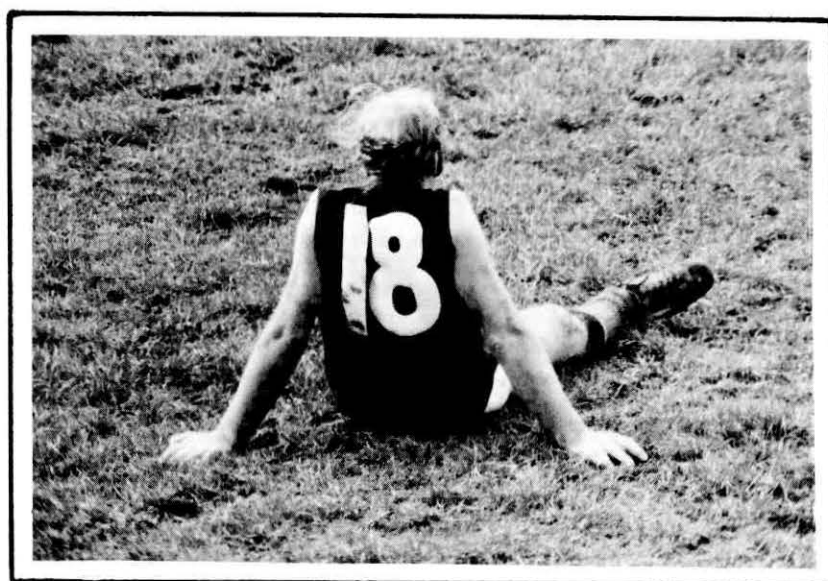
The Mechs. vs 2nd year Civils was the next battle. The civils were once again defeated. The Mechs 'TRIBUTE' to the South mound obviously upset the Civils greatly and contributed to their victory.

In the play off for the final the 4th year Civils defeated the Elects. I fear that this was due to the fact they were playing 18 men. (The Elects)

In the Final the preliminaries were characterised by the Mechs who once again 'GRACED' the South mound and the Civils who proceeded to demonstrate SUMO wrestling exercises which must have been fairly terrifying for soon after more Mechs visited the South Mound.

The rain started to drizzle and anybody who was watching would have seen a fierce struggle. The civils however won outright and once again proved their supremacy.....

JOHN MURPHY



spew faces

On the 24th of July, 1973 a record 180 engineers, their wives and others turned up for the annual engineering dinner at the Glynde Hotel. That this was a record number to attend such a dinner was no doubt due to the addition of the 'Spew Faces' talent quest (it couldn't have been the food that brought them!)

Craig Nicholls started the evening off well by elbowing some cheese and greens down the dress of the rather formidable lady organizing the catering. (It was this lady, who incidentally was built like a fugitive from the roller game, who amused everyone by throwing the cash register from one side of the bar to the other.)

About this time, along came something that looked like food - the second year Mechs. led by Lines and Nickels had their doubts and said so. (I think they were inebriated). The Chems. on the other hand took it away, analysed it, and came up with the decision that it WAS food (but they didn't say how many times it had been re-cycled). In any case it didn't take long for those who were used to refec. food to eat it - helped down no doubt by the great amount of beer, wines, spirits and liqueurs consumed at each table.

After dinner, the guest speaker, Keith Conlon from University Radio VL5UV was going to speak on 'The Constitutional Implications of the Latest Decision of the High Court at the Hague'. This topic was applauded by the second years - they were, however, howled down by all other years present who were sober - and Keith (much against his will) talked about the functions of the university radio (or something like that) for five minutes.

Then the talent quest started. The adjudicators were introduced - Alistair McTug (had a funny accent and wore a dress), John Eggmund alias Gayle Liberation, Schlair Blwartz (he's put on a bit of weight) and Keith Kondom - guest adjudicator.

Act One was the famed third year Civil Kazoo Band ably led by autistic director Jim Ferguson. The adjudicators were unanimous in deciding that there was at least one note which was definitely right during their three numbers.

Act Two was the Civil Engineering poetry society - I learnt one thing about poetry that night - if it is recited by a civil engineer it isn't pretty. The judges gave the following marks: 33½, 6½, Zzzzzz and thumbs down.

In an attempt to restore some semblance of culture to the scene, Ludwig Von Itch generously consented to give the World Premiere of his latest composition 'Classics from the classified ads of the Advertiser' played with drumsticks and piano - Alistair McTug reckoned he was the most unusual drunk he'd seen.

A new low was degenerated to, when the fourth year Elecs., cunningly disguised as the Moron Tabernacle Choir gave their rendition of Liszt's Hungarian Rhapsody in C Sharp minor (and Ian Homann has missed his vocation in life; he should have been a chook, since his interpretation of the clucking movement was a wonder to behold). The judges summed up the general feeling by saying unanimously 'You've got to be kidding!'

The second year Civils gave a rousing rendition of 'The Freakers' Ball' from Dr. Hook and the Medicine Show. They should try to improve their diction because all I could hear was '... necrophiliacs looking for dead ones..'. They received a well deserved score of

At this stage intermission was announced, while the second year Mechs pulled themselves together (THAT'S nothing new).

'Impressions of Culture' was the next act - it was certainly out of place at an engineering dinner, as it WAS cultured, and good, and wonderful - gee gollygosh whillickers. Mind you, as Schlair Blwartz pointed out, his low registers were a bit low and if he had tried to get much higher he would have been in trouble with his high registers.

The climax of the evening was no doubt the charming, talented, well endowed Miss Zelda Von Itch, who thrilled her audience with her delightful version of 'Chopsticks' played on the piano with those ponderous breasts. Such muscle control, such

verve to be capable of swinging those massive mammary glands in opposite directions at the same time with no apparent body movement! - 'a titillating performance' as Alistair McTug was quick to point out. She left everyone with two large impressions.

The final act of the night (here's where the Spew Faces set in) was the Elec. II choral society with a rousing rendition of 'God Help Australia'. I noticed that nobody was patriotic enough to stand up during the performance, except those rushing for the toilet - the audience was awarded 80 points for putting up with it.

The prizes, consisting of a free flight over the Wingfield Dump, 6 cans of the best ale and a free trip to next years grand final was won by the adjudicating panel (it figures).

The whole affair broke up about 11.45 p.m. when your correspondent left for greener pastures (green being a nice heaving colour). As a final word I would like to extend thanks to the Glynde Hotel, without whose food Spew Faces would not have been possible.

See you all there next year.

The new cinematic emporium
Is not just a super sensorium
But a highly effectual
Heterosexual
Mutual masturbatorium

L. Vitols



A.U.E.S.- SCIENCE FOOTY CARNIVAL WE LOST

cricket match

Attendance was predominantly from the Civil department which was a bit disappointing but the sun was really shining and no-one seemed too upset. The playing field was real cow-patch stuff and the pitch a tribute to the dutiful care of A1 Concrete Enterprises.

The 4th years opened batting. The 3rd year captain McLennan in Q.E.H. orderly uniform placed his field with 3 slips and gully which, although they may not have been too effective certainly looked impressive. That is, except for the position held by

T. Dunn at an extravagant extra deep fine leg position a few paces from his esky.

The opening batsmen Wilson and Lambert looked top class as they approached the pitch but the standard in batsmen was to decline in proportion to the square root of the beer consumed. Some of the highlights of the game were dismissal of T. Daniells caught and bowled Barrett; Bob Burnell's 2 wickets and involvement in a runout; 2 wickets to McLennan and Payne (younger) with fine cat-

ches. I think Brideson and Daniells were the best batsmen for the 4th years, who were dismissed for 125 runs.

Best batsmen for the 3rd years were Nettle, Barrett, & Johnke. There was brilliant wicket keeping by Trev. Daniells. With this great host of excellent players I found it hard to select the best but my vote goes to the 'Len Hutton' Tru-Form Original, whose presence was very reassuring.

Incidentally the 3rd years won

John Murphy


CAR TRIAL

On Sunday, April 29th, about 60 people entered the Engineering Car Trial. Clutches were dropped at 10.30 near the Victoria Park Race Course, with squealing of tyres and sundry groanings. The weather was fine with fluffy virgin clouds hanging invitingly in the sky blue sky and the track was good.

So perfect was the track, that all contestants finished, with the winner driving a perfect rally, scoring the maximum number of points and being altogether perfect (even though he was about an hour late and forgot to leave his name).


Yes, the trial proved successful, with a picnic style lunch held at Mr. and Mrs. Grose's farm at Willunga (many thanks) amidst the mooing of cows and the buzzing of bees. The boys amused themselves by playing football and the men entertained themselves by drinking and so a very pleasant day was passed.

C.NICHOLLS.



**ANY SHORT CUT YOU TAKE
NOW MIGHT CUT SOMEONE
SHORT LATER**

Proper power planning means double-checking to insure that facilities have been made for adequate wiring in each new building. Besides present requirements, contingencies for possible future needs must also be considered. In short, power planning means planning ahead, well ahead.



THE ELECTRICITY TRUST OF SOUTH AUSTRALIA

faculty reps' report

Something which may surprise many students is that, in general, the Engineering Faculty DOES CARE. However, as in any amorous relationship, this affection should flow two ways and I think that the feedback of student feeling to the Faculty is the most important role of the Student Representative. The greatest difficulty, however, has shown itself to be in the feedback from the Student Body to the Student Representative and at time this year, I wished that I had strong I.S.P.

had strong E.S.P. Nevertheless, an opportunity has been created for student feeling (and here I mean feeling particularly related to ACADEMIC matters) to be heard and discussed by the academic staff through the Faculty, and at this, the end of my term, I must urge that this avenue should be developed to an optimum level.

It is to be hoped that the third year of Student Representation on the Faculty will see a further breaching of that soul-destroying gap which not so much separates the students from their lecturers, but devours any feeling which can exist between the teacher and the taught. After all, one must realize that, whether they'll admit to it or not, lecturers ARE HUMAN (5%).

Finally, although the year 1973 has not been a strong one for student reaction, I am confident that every suggestion which came my way was presented to Faculty and was considered most fairly and kindly by the Faculty members. For the encouragement which they gave me throughout the year, I am truly grateful.

D. PAYNE.

The job of the Engineering Faculty is to determine the policy, syllabi, and day to day running decisions of the four Departments. The Faculty is also responsible for determining intake quotas, appointing examiners, reviewing individual student academic progress, awarding degrees and preparing submissions for buildings and new equipment to the Australian Universities Commission.

The Faculty consists of the Dean, Heads of Departments, elected staff members and, as from 1972 two elected undergraduate student members and one elected post graduate member, and various other representatives from other Faculties and administration.

Having been a member of the Faculty for one and a half years, I have found the staff members particularly helpful, cooperative and willing to listen to the views of the student members. We have shown that a well prepared proposal submitted by student members stands a good chance of being adopted. The staff also show a real interest in the welfare of individual students.

R. A. Riggs.

ANALYSIS OF 1971 EXAM. RESULTS ON THE BASIS OF INDIVIDUAL PERFORMANCE

(The analysis includes the results of Supplementary Examinations)

"Pass" means that the student took a normal full year's work and that he could proceed without extending his course.

YEAR	DEPARTMENT												TOTALS		
	CIVIL			ELECT.			MECH.			CHEM.					
	N°	PASS	%	N°	PASS	%	N°	PASS	%	N°	PASS	%	N°	PASS	%
FIRST	69	44	64	77	56	73	49	36	73	19	11	58	214	147	69
SECOND	48	32	67	39	33	85	15	11	74	36	24	67	138	100	72
THIRD	24	23	96	32	30	94	30	27	90	13	8	62	99	88	89
FOURTH	26	26	100	27	26	96	17	17	100	13	10	77	83	79	95
TOTALS	167	125	74	175	145	83	111	91	82	81	53	66	534	444	78

**NUMBER OF YEARS TAKEN TO COMPLETE THE B.E. COURSE
1967-1972**


COMMEMORATION	DEPT.	TOTAL N° OF GRADUATES	YEARS TO COMPLETE COURSE						
			4	5	6	7	8	9	10
APRIL 1967	CIVIL ELEC. MECH. CHEM	19	8	6	4	-	1	-	-
		15	5	5	2	2	1	-	-
		16	3	4	1	3	1	1	2
		10	3	3	1	3	-	-	-
		60	19	18	9	8	3	1	2
MAY 1968	CIVIL ELEC. MECH CHEM	22	9	4	6	1	1	1	-
		14	4	6	2	1	1	1	-
		9	3	2	1	3	-	-	-
		9	4	3	-	1	1	-	-
		54	20	15	9	6	3	1	
MAY 1969	CIVIL ELEC. MECH. CHEM.	22	7	12	1	1	-	-	1
		40	9	18	10	3	-	-	-
		15	7	2	3	-	2	1	-
		18	10	6	2	-	-	-	-
		95	33	38	16	4	2	1	1
MAY 1970	CIVIL ELEC. MECH. CHEM	26	11	8	5	2	-	-	-
		22	5	10	5	2	-	-	-
		10	4	2	2	-	1	1	-
		67	27	21	13	4	1	1	-
MAY 1971	CIVIL ELEC. MECH. CHEM	40	16	17	6	1	-	-	-
		36	21	10	4	-	1	-	-
		9	5	3	1	-	-	-	-
		9	5	3	1	-	-	-	-
		106	49	40	13	3	1		
MAY 1972	CIVIL ELEC. MECH CHEM.	27	11	10	6	-	-	-	-
		29	4	15	9	1	-	-	-
		15	9	4	1	1	-	-	-
		11	4	1	4	1	-	-	1
		82	28	30	20	3	-	-	1
TOTALS FOR 1967-72	CIVIL ELEC. MECH. CHEM.	156	62	57	28	5	2	1	1
		156	48	64	22	9	3	-	-
		86	33	24	11	9	4	3	2
		66	33	17	9	5	1	-	1
		464	176	162	80	28	10	4	4



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June 14, 8 till 1 Italian Hall 4 Clark St. Wayville

Tickets from Students' Activities office, Civil Engineering Secretary





STUDENT ATTITUDES IN ENGINEERING

When I arrived in Adelaide in January 1972 to take up what was to be my first lecturing appointment, I was not entirely sure of the nature of the beast (the student body) with which I had elected to become entangled. Just as students entering this University have their preconceived ideas of what lies before them, so I had mine. In some areas my expectations (in common no doubt with first year engineers) have been found wanting; in others, they have been completely fulfilled. As far as the formal teaching component of my position is concerned, I had expected a job offering both challenge and reward; and have indeed found both, but with a little more of the former than anticipated. A major challenge, that of generating student interest in the material being presented to them, has turned out to be more formidable than had been anticipated. Thus, when approached by the editors of 'Hysteresis' to contribute an article, preferably concerning students, I decided to record some of my initial impressions concerning student attitudes in the hope of provoking in the student body useful debate on this important topic.

The following comments are generalizations based upon contact with only a proportion of the engineering school. As such they may not be truly representative and nothing would give me greater pleasure than for this article to bring forth protests from every quarter of the student body denying that my more pessimistic impressions are representative. As generalizations, some of the observations will not apply to a great many students. However, rather than repeating such phrases as 'a significant proportion of the engineering student body', I have each time simply referred to 'students'.

Perhaps the most important preconceived notion that I have had to reconsider is that students attend University primarily to assimilate knowledge. Rather it seems, at least at first sight, that many students are not particularly interested in the lectures, tutorials and laboratory classes that constitute the bulk of their course. The reason for their presence at all, one surmises, is because lack of such

attendance may severely hamper, if not remove, the possibility of them obtaining their DEGREE - the real purpose behind their presence at University. The awarding of a degree is a means of informing the community at large that, in the judgement of the University, the recipient of such degree has attained a certain level of knowledge in a particular field. The most important commodity distributed by the University is not degrees, but the knowledge that the degree symbolizes. No doubt very few would disagree with such words, but how many actively practise the ideas contained therein? One wonders how many courses would have been attended in the final term if the examination questions had been available at the end of the second term. It is undeniable that a degree is a useful credential in the world after University even in the hands of those who have made the minimum effort necessary to graduate. However, surely no one seriously believes that such individuals are serving their best long, or even short, term interests. During lectures one often has the impression that if the material presented conflicted entirely with all that had preceded it, few eyebrows would be raised and even fewer would be willing to defend their previously held views. A spirit of independent inquiry, an essential attribute for success in virtually every field, does not appear eager to reveal itself. This lack of involvement may also explain the small proportion of students who choose to discuss their work outside of class time and the significant proportion who understand everything until examination time!

The preceding comments leave the impression that many students have an extremely low level of interest in their engineering course. Such a picture, however, is not a complete one. For example, many students who display the above mentioned attitude to the formal portion of their University course show a high level of interest when involved with project work of their own choice. It is then not uncommon to have to remind the participants not to devote too much of their time to such work. Thus, one cannot simply dismiss all those who do not appear adequately inter-

ested as poor students. Rather, the reasons for such attitudes must be sought.

The problem is, of course, one that has to be faced by all educational institutions. The reasons are many and varied, and this article does not attempt to cover them all. In the engineering school there undoubtedly exists a small percentage who, quite simply, do not find the engineering course to be an interesting one. Such students may, for example, have been undecided as to which course to take at University, and having plumbed for Engineering, found to their dismay it was not as they had expected. Many such students would undoubtedly benefit from a year's work in industry between leaving school and entering University. Similarly, some students do not find it possible to maintain a sufficiently high level of interest in their courses. This is often because of an inability to appreciate the relevance or direction of their studies. Many of these students are forced by poor examination results into accepting what is possibly the best solution for them - taking a year off and working in an area relevant to their studies. Such cases, however, constitute only a small proportion of the total student body. More generally, course relevance (particularly service courses), poor presentation, and heavy loadings (which do not allow sufficient time for absorption of lecture material) are mentioned as areas of student concern. However, even in these areas positive student interest is difficult to find. One must, of course, face the fact that very few of us find the actual business of engaging in mental work very attractive, especially when compared with the many other possibilities offered by a fine day in South Australia; but one assumes sufficient maturity to realize that the benefits of knowledge are not available without such work. Furthermore, it is not realistic to expect wide eyed attention in every course as there are bound to be areas in everyone's course that are less interesting than others. The real question that begs an answer is whether the present situation can be improved, and if so, how.

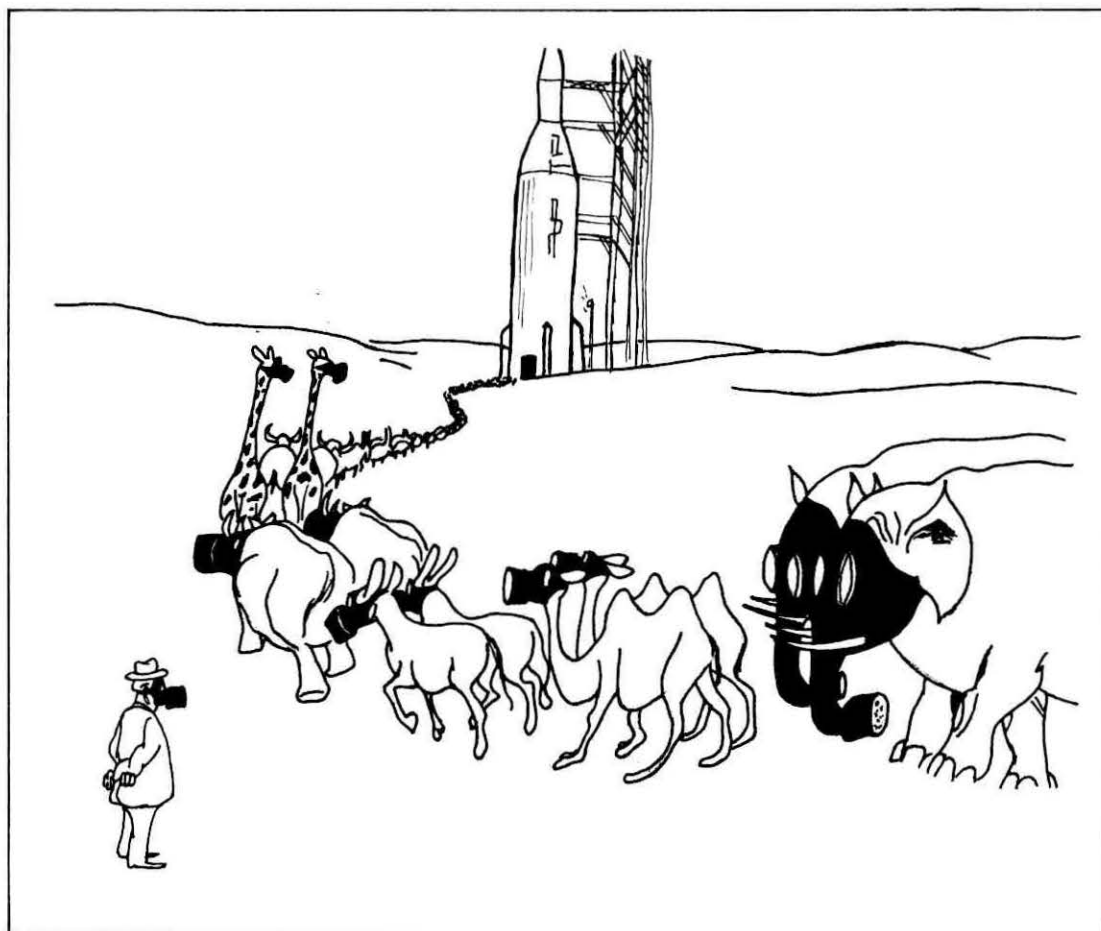
One does not have to be unduly optimistic to believe that the situation does leave room for improvement. As to the means of effecting such an improvement, I suggest that a more positive involvement by the student body in their University career would be a major contribution. Those whose University career consists of blindly accepting everything that is presented to them without question have wasted an important opportunity and, further, they have likely dampened the enthusiasm of those employed to teach them. Lectures, for example, are presented in the belief that they are relevant and of a suitable standard, but if responsible students cannot see that they satisfy these criteria, then such opinion should be communicated to the staff concerned in as constructive a manner as possible. The resulting discussion can only be to the benefit of all and the lecturer will at least have the satisfaction of knowing that he is involved with a group of inter-

ested students. Student involvement, I hasten to add, should not be seen merely in terms of criticism of the existing system. As has been previously mentioned, first year engineering is sometimes found not to coincide with expectations.* Informed student comment on this topic could help incoming students obtain a more realistic view of what to expect. There are many such possibilities, in fact it is difficult to conceive of areas in which responsible student opinion would not be of value. Of course many issues are complex and useful comment in these cases can only be obtained after lengthy discussion and collation of different points of view. Such activities would naturally absorb more time than any one individual student can afford. Thus student representatives on the Faculty of Engineering would appear to have an almost impossible task in attempting to create and reflect student discussion in such areas. However, such an organizat-

ional problem should not be beyond an undergraduate body convinced of its desirability.

In summary, the basic purpose of this article has been two fold. On the one hand a number of what I believe to be undesirable attitudes, which are not in the best interests of any member of the University community, have been discussed. On the other hand, it has been suggested that a student body more willing to seriously analyse its own expectations and subsequent response to its engineering courses would be less likely to display such attitudes and that the resulting increased feed back to staff members would be a major step in attempting to minimize such attitudes. It is very difficult to present an enthusiastic lecture to an indifferent audience, whereas an involved class leads to a more interesting lecture, a healthier academic climate, and a better staff student relationship

S. G. HUTTON



a day in the life

Find the mice are running a little faster this year? Perhaps you should get some exercise; and what better way to reach peak form than by dawnbusting? The world's greatest poet advocated it (well, almost!) when He wrote the following poem in 1788.

Up in the morning is for me,
Up in the morning early;
When a' the hills are cover'd wi'
 snaw,
I'm sure it's winter fairly.

Cauld blaws the wind frae east
 to west,
The drift is driving sairly;
Sae loud and shrill I hear the blast
I'm sure it's winter fairly.
The birds sit shivering in the thorn
A' day they fare but sparely;

I'm glad I'm inside (?) where it's
nice and warm,
I'm sure it's short and curly.

---wi' apologies to Robbie Burns

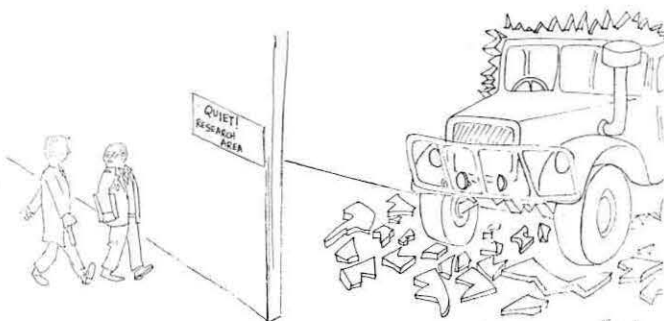
Aye laddies, take the advice of an
old hand and get up before you get
out of bed (instead of the usual
reverse case), but remember

If you start the day the Scottish
way,
Naw dinna be a dill;
The only way t' make it pay,
is t' see she's on the P---

So take up this splendid pastime
and a new life will be yours (if
you're not careful!)

Adelaide's leading male chauvinist
pig,

ALISTAIR MACTUGG.



THEY WERE SCREAMING SOMETHING ABOUT A TERRIFIC BREAKTHROUGH!

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Dig, drill, blast a trench— 650 miles long.

Hardie's are making history on the Taillem Bend to Keith pipeline.



1,500 million gallons of water each year. That's how much water will be pumped from the Murray River to supply farmland and townships in the upper south eastern area of South Australia. The scheme, which was completed in January, 1973, by the Engineering and Water Supply Department of South Australia, cost over \$12.88 million and must rate as one of the largest of its kind ever attempted in Australia. 650 miles of pipeline were laid to complete the scheme—comprising 86 miles of large diameter high head steel trunk main and 560 miles of Hardie's Fibrolite pipe for the branch mains. The scheme was a formidable challenge for both man and machine and many obstacles had to be overcome. The full story of how it was conceived, enlarged and developed into its final form—and the unusual amount of drilling and blasting that was required—is told in the engineering report beginning on the next page.



Sydney, Melbourne,
Hobart, Brisbane,
Townsville, Rockhampton,
Adelaide, Darwin,
Perth, Auckland.

Hardie's: pipelines for the really big jobs.

D. A. Conning

Water 2 million acres of farmland-how it was accomplished.

The Taillem Bend-Keith water supply scheme, which was designed and carried out by the Engineering and Water Supply Department of South Australia, has a long history: it was first considered in 1946 when the residents of Keith, a small town in the upper south-eastern area of South Australia, gathered a petition proposing a town water supply based on a bore on the Showgrounds Reserve. This bore had previously been sunk by the Mines Department.

Although a scheme was prepared, nothing came of it. This also applied to similar small schemes which were taken out over the subsequent years.

Negotiations were re-opened in 1952 and although at this time there was reasonable agreement among the townspeople for a scheme, the bore previously suggested as a source of supply had failed so far as the quality was concerned. A geological examination was then made of the area surrounding Keith and although it was known that good quality water existed at considerable depth, it was subject to contamination from poorer quality water in the higher aquifers.

Attention was then shifted to a lobe of the Poocher Underground Basin.

A scheme was developed for a supply to the Keith township from this lobe of the Poocher Basin which is about 20 miles south of the township. This scheme, which was estimated to cost \$302,000 proved to be uneconomical and impractical due to the long length of trunk main and the doubt that the underground basin could provide sufficient water over a long period.

It was then decided to have a look at a scheme with a reliable source of supply and its known reliability suggested the River Murray. The use of this source also had the advantage that a trunk main from the River Murray passed through country capable of development.

Many alternative schemes were prepared for cost comparison purposes and finally Taillem Bend was selected as a suitable place from which to take water from the river. An examination was made of a good portion of the country between Taillem Bend and Keith to determine its capabilities of development with a reticulated water supply and these investigations led to the proposal for a trunk main from the Murray at Taillem Bend to Keith township.

Original approval by the South Australian Government in May, 1962,

saw the scheme as supplying water in the future to 16,000 people and 1,000 holdings over an area of more than 1.7 million acres, at an estimated cost of \$8 million. At the time it was envisaged that extension of the branch mains would be considered and undertaken on a piecemeal basis after the pipeline had been completed. It was expected that the full development of the scheme would take at least 20 years.

Construction of the steel pipeline began in 1964 and was initially programmed to be completed in four years. By the end of June, 1966, thirty-one miles had been laid, but at this stage the necessity to allocate large sums for Chowilla Dam and other urgent works stopped the programme for a year except for the completion of two storage tanks and other minor works.

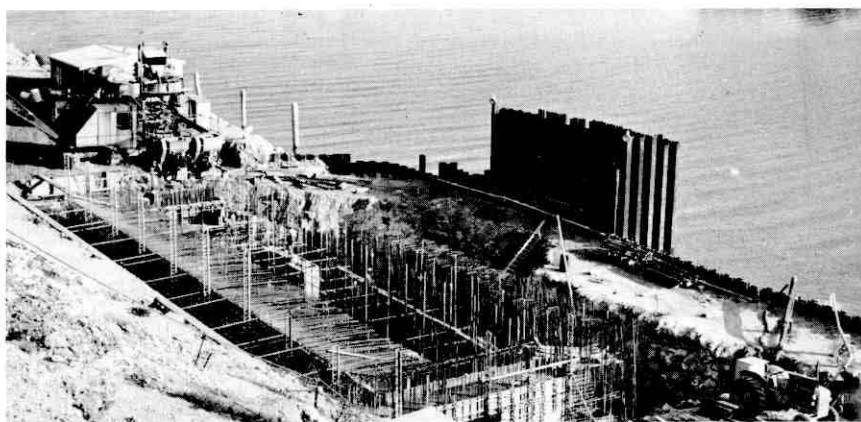
During this time, there was agitation by residents in the area for the scheme to be resumed. Most of the towns were experiencing difficulties and problems with private bores.

Much of the water supply was inadequate or poor and in some cases, there were health and hygiene risks.

Keith had its own spearpoint water supply and septic tank disposal system. In 1967 it was found that detergent-charged effluent had entered the aquifer and was being recycled back into the water supply.

The town of Meningie, near Lake Albert, was also in trouble due to wave action in the shallow lake stirring up the organic matter. Effluent from the town's septic tank system was being discharged into the lake. This was creating a health hazard. Salinity in the bores at Coonalpyn was also high.

Pipelaying on the trunk main started again in 1967 and was completed by the end of September 1969.






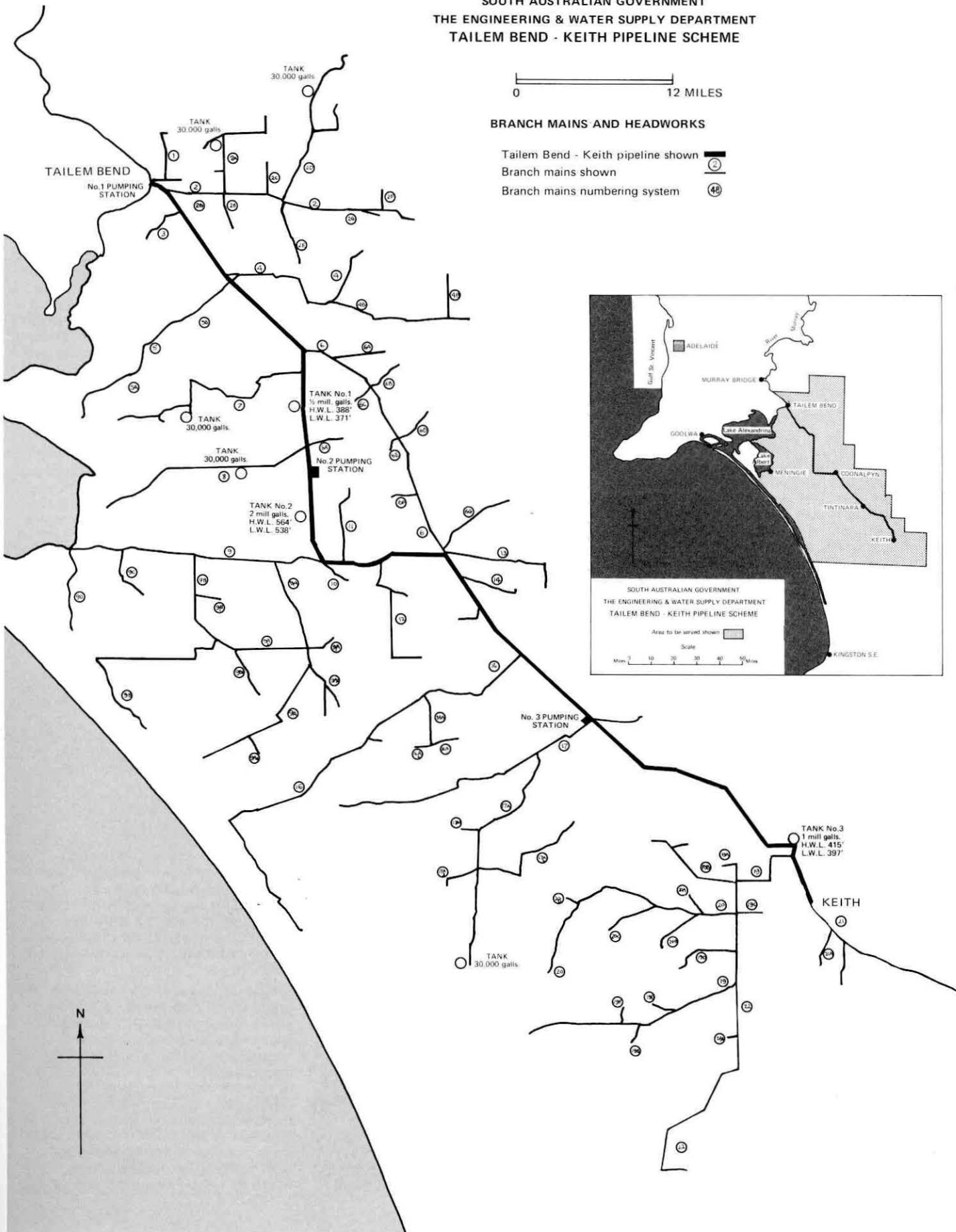
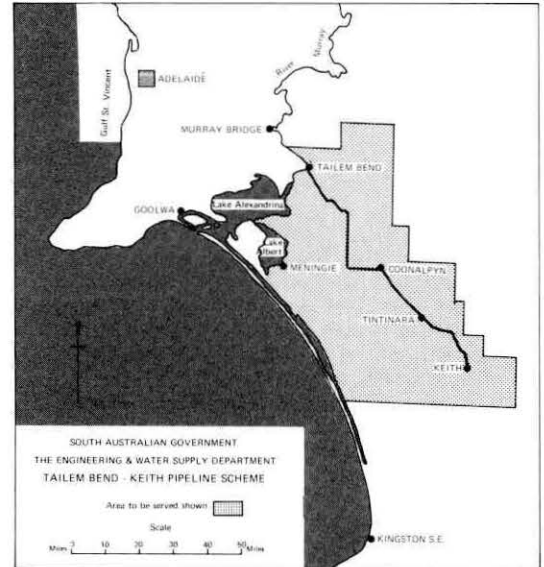
Taillem Bend Pump Station under construction.

SOUTH AUSTRALIAN GOVERNMENT
THE ENGINEERING & WATER SUPPLY DEPARTMENT
TAILEM BEND - KEITH PIPELINE SCHEME

0 12 MILES

BRANCH MAINS AND HEADWORKS

Tailem Bend - Keith pipeline shown 
Branch mains shown 
Branch mains numbering system 



In August 1967, the South Australian Government made a submission to the Commonwealth Government under the National Water Resources Development Programme for financial aid to complete the scheme. A grant of \$6 million was approved by the Commonwealth Government early in 1969 and the laying of branch mains began in July.

The original scheme provided for 450 miles of branch mains of asbestos cement pipe with another 40 miles to cover land development during the construction period. The total figure of 490 miles was allowed for in the estimated cost submitted to the Commonwealth Government but variations in the layout of the mains increased the amount to almost 560 miles. The increase was mainly due to demands by residents of towns in the area for a fresh water supply. People in the towns, which used bore water, were experiencing difficulties with septic run-offs and the Engineering and Water Supply Department brought them into the scheme.

Final plans involved the laying of 86 miles of M.S.C.L. trunk main and almost 560 miles of asbestos cement branch mains, the construction of two pumping stations and several reinforced concrete surface tanks for water storage.

Of the two pumping stations, No. 1 is at Tailem Bend (three 500 horsepower pumps each pumping 2,750 gallons a minute) and No. 2 is near Coomandook (three 250 horsepower pumps each pumping 2,000 gallons a minute).

Provision has been made for a third pumping station. This will be designed and commissioned when demand warrants it.

A breakdown of the asbestos cement requirements for the branch mains shows 10.5 miles of 15 in. asbestos cement pipe, 24 miles of 12 in., 31 miles of 10 in., 105 miles of 8 in., 118 miles of 6 in., 270 miles of 4 in., and 1.5 miles of 3 in. pipe.

By Christmas 1970, the laying of the M.S.C.L. trunk main had been completed, together with 177 miles

of asbestos cement branch mains. Three concrete water tanks had been built and the construction of No. 1 pumping station at Tailem Bend was almost finished.

The scheme, which was completed in January, 1973, cost over \$12.88 million, \$1.12 million less than the anticipated cost despite the increase in length and must rate as one of the largest of its kind ever attempted in Australia.

At present, the area serviced by the Tailem Bend to Keith pipeline has a population of about 4,000 people but increased farmland production and associated commercial activities are expected to increase population to 16,000.

With the assured water supply, the Department of Agriculture estimates the additional potential production of farmlands as: 127,000 acres of



D8 bulldozer with an attached hydraulic ripper.

crops; 5,050 milking cattle; 14,500 beef cattle; 1,010,000 sheep; and 521,000 reared lambs. This represents an increased gross value of \$10.2 million a year.

The scheme was a formidable challenge for both man and machine and many obstacles had to be overcome.

Much of the ground into which the pipe was laid is tough and hard and digging provided many difficulties.

Ground conditions varied from sandy soil containing semi-hard rippable rock to a very hard unrippable sheet limestone. For example, of the 177 miles of branch

mains completed at Christmas 1970, 91 miles were laid in an area where a continuous sheet of very strong and tough rock underlay a thin layer of top soil. The area lies within the basin of the province geologically known as The Murray Basin, and extends from Karoonda in the north to Coomandook in the south, and from Sherlock in the east to Tailem Bend in the west.

Over much of the plains, and underlying a thin layer of recent surface soil, there is a 1 ft. to 6 ft. thick horizon of Pleistocene Age formed material ranging from a continuous sheet of very strong rock ("sheet" calcrete) to nodules of up to 9 in. in diameter. The nodules consist of cores of sandy limestone surrounded by shells of concentric layers of laminar limestone.

When broken, each layer is distinguished by different shades of brown representing different generations of formation and the stone is hard enough to polish. Quite often the "sheet" calcrete is formed by cementation of the balls and frequently formations of two or more layers of thin "sheet" calcrete separated by thin layers of sand, rubble or clay were encountered. Usually, but not always, the top layer was the hardest and the toughest.

To assist in the planning of excavation operations the Department of Mines inspected the proposed routes of the branch mains to provide information for determining which type of excavating machinery would be the most suitable for the ground conditions likely to be encountered in the particular main or section of main.

A trial ripping along a route of a main which had previously been surveyed by a seismic refraction team was used to determine correlation between seismic velocity and rippability of the particular type of rock. It was found that in the particular area the ground which transmitted seismic shock waves at a speed of up to 4,000 ft./sec. was rippable with difficulty and ground with seismic velocities above 6,000 ft./sec. was unrippable.

A senior geologist then carried out a visual inspection of most of the routes of the branch mains and prepared a report on the ground conditions together with suggestions as to what type of excavating machinery could be used. Where rock was likely to be encountered, a seismic survey was carried out. From the seismic velocities obtained, the Department of Mines prepared and forwarded graphs showing which of these sections of a particular route were rippable, rippable with difficulty, or unrippable.

The Engineering and Water Supply Department has found this procedure so successful that it is now common practice to use this method of investigation for trench excavation.

Of the 560 miles of trench opened

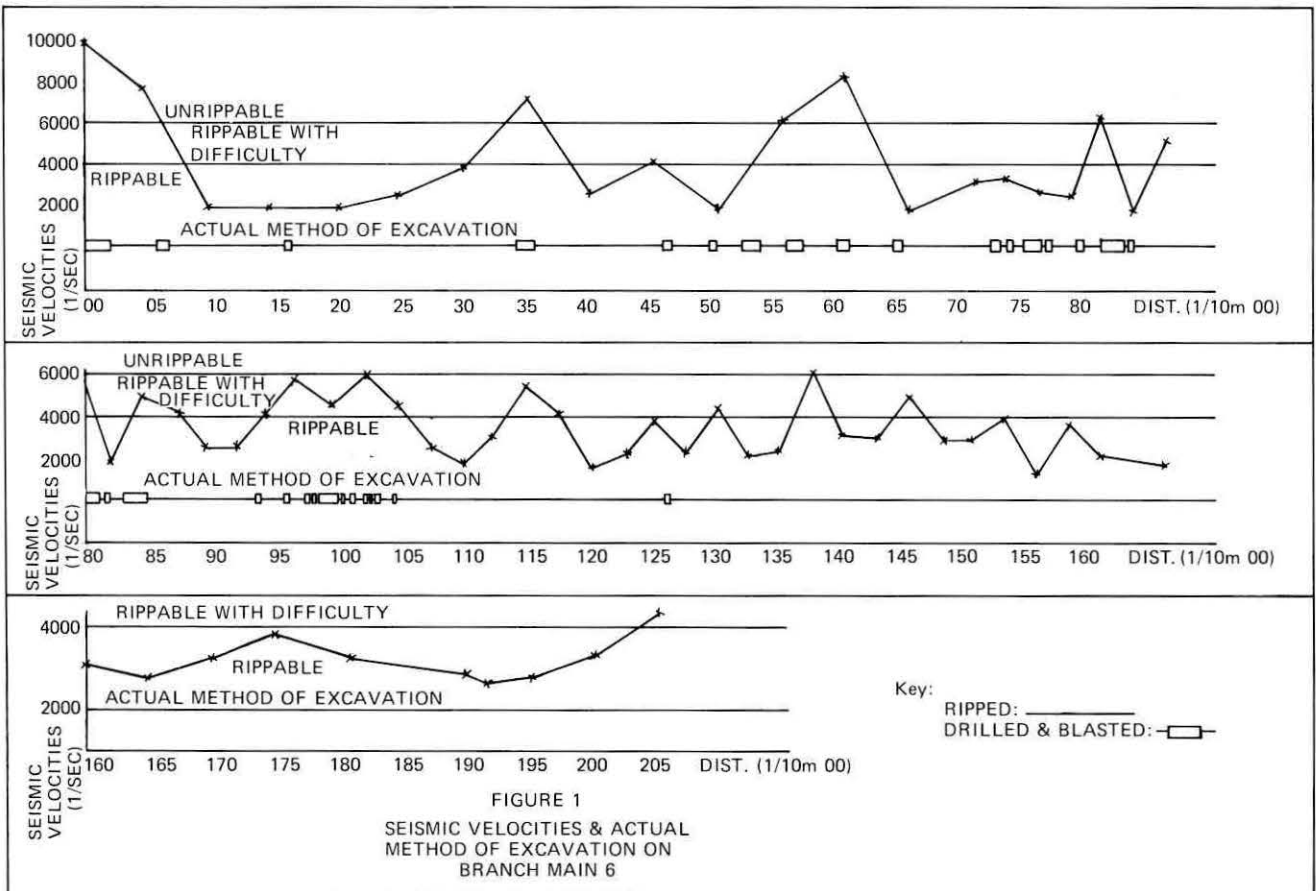
during the scheme, 47 miles or 8.4 per cent was in hard unrippable rock, which had to be drilled and blasted prior to digging. 67 miles or 12.0 per cent was in softer rock, which was rippable with difficulty, and some drilling and blasting was required to remove humps left by the digger. About 160 miles or 28.6 per cent of pipe was laid in trenches excavated in semi-hard or weathered rock, which was dug by an excavator without prior ripping or after light ripping (one run). The remaining 285 miles or 51.0 per cent was in soil which provided good digging.

The Engineering and Water Supply Department bought special equipment and excavators to dig the trenches.

Two "Barber Greene" wheel

trenchers and two "Kato" fully hydraulic backhoe excavators were purchased. Other equipment used included: two "Hopto," two 22RB's, a 19RB and two C16 backhoe excavators. As excavation conditions improved, one of the 22RB's and the 19RB were released for duty on other projects. In a number of cases, narrow buckets were used on the backhoes to reduce excavation and so speed up progress. Narrow trenches were possible because of the generally small diameter of mains.

No problems were experienced in excavating trenches in sandy soil or in semi-hard rippable rock. Wheel trenchers and backhoes were used depending on the nature of the soil, with the backhoe being used in the harder and stonier ground. Soil containing embedded nodules of



calcrete was comparatively rare and it provided no problems in excavation except when large nodules were encountered when digging with a wheel trencher. In such cases they tended to jam the wheel of the trencher and had to be removed by hand. Many difficulties, however, were encountered when digging trenches in "sheet" calcrete ground and the task was made harder by the high excavation target of 2½ miles of trench per week.



Excavating blasted rock.

At the beginning of the scheme ripping was tried in areas where excavators could not penetrate or break up the rock. This was done with the object of avoiding drilling and blasting.

The first try at ripping in the sheet limestone area was with a D8 dozer with rear mounted ripper. When the rock proved too tough for this unit, a D8 dozer working in tandem with the ripper unit was tried. Even with both machines it was found that generally sheet calcrete layers more than 9 in. thick could not be broken.

Eventually, the sequence adopted was to run a ripper along the route of the main, followed by removal of any ripped soil from the trench by a backhoe, drilling, blasting, back-filling and retrenching. As the ground conditions along the route of the main usually varied, the purpose of primary ripping was to find sections of softer rock, break it up and allow the trencher to dig the

trench in these sections to the required depth in the first instance. The length of these sections varied from a few feet to several hundreds of feet and this primary ripping saved a lot of drilling and blasting. Care was taken to keep the ripping unit on line to ensure a straight line and minimise trimming requirements during laying operations.

Of the 177 miles of trench excavated to December, 1970, about 51 miles had to be drilled and blasted. Of this, 20 miles of trench was under or close to telephone and power lines and blasting mats had to be used. This considerably increased excavation costs and slowed down progress. Apart from ripping, two other methods of rock-busting were tried but neither proved successful. The first was a heavy rock-buster dropped from a crane boom and the second was an impulse breaker which although capable of breaking the rock was too slow for trenching purposes.

During a peak period which occurred when pipelaying was concentrated just east of Tailem Bend, 34 men were engaged on drilling and blasting.

A new air track drill was bought and used for a considerable time. Being heavier, faster and partly self-propelled, it had an advantage in being able to drill through most of the overburden without choking, although fine and dry sand or sandy soil in the overburden reduced the drilling rate by half.

Under normal conditions the machine could drill up to 200/2½ in. diameter holes in a nine hour working day. The machine was operated by a driller while his offside recorded ground conditions revealed by drilling.

These records were later used when loading the holes with explosives. Only a single row of holes along the centre line of the trench was drilled, and depending on the thickness of the rock and diameter of the pipeline, the depth of the holes varied from 3 ft. to 4 ft. The spacing varied from 2 ft. to 3 ft.

Much of the drilling was done with jackhammers. Usually the holes were drilled in two parallel rows, each 9 in. from the centre line of the trench, although a single row was considered enough where only a foot or less of rock had to be removed from the bottom of the trench. A lot of trouble was experienced in determining the required depth of the holes as it was imperative not to drill a hole too close to the bottom face of sheet rock otherwise the force of the explosion blew downwards into softer material without breaking up the rock. Test holes driven through the rock usually gave a fair indication as to the depth of the layer, but often the transition point between the sheet rock and the underlying softer material was hard to define.

A hole which was too shallow usually caused the charge to go



Line of a branch main after blasting.

upwards, producing a conical crater without effective shattering of the rock mass.

For the best results, the depth of the hole was kept between 1 ft. 6 in. and 2 ft. 3 in. while the spacing was set out at two-thirds the depth.

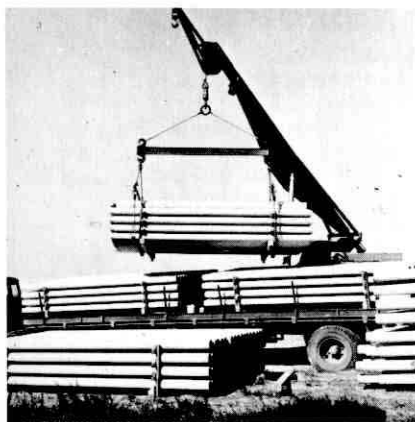
Because of the considerable variations in ground conditions, and to some extent to suit the locality, various types of explosives and different methods of loading were tried. The first blasting in connection with the laying of branch mains was carried out on Main No. 2, which

begins 1 mile south of Tailern Bend and runs for nine miles inside the road reserve of the Adelaide-Melbourne Highway.

Here the trench had to be excavated in hard sheet rock usually only a few inches below the surface and to add to the difficulty an overhead telephone line ran parallel to the trench and only 8 ft. away.

Initially, the 1½ in. diameter holes were loaded with a half cartridge of AN-60 gelignite and controlled to between 3 and 5 shots at a time by electric shot delay detonators. Mat protection against fly-rock was used. As this charge proved to be much too light the loading was increased gradually to 1½ cartridges per hole. Combined with secondary ripping prior to excavation this loading produced reasonable results in most cases and was used for about three months until ammonium nitrate-fuel oil mixture (ANFO) was substituted.

From then on most of the jackhammer holes were loaded with half a cartridge of AN-60 placed in the bottom as a primer with the remainder of the hole being filled with ANFO up to 4 in. from the top. Paper and damp sand were used for stemming. This loading, equivalent



Unloading Fibrolite AC pipes.

to 2½ lb. of AN-60 per cubic yard of moved rock, proved to be the most successful method when blasting the hard sheet rock.

The 2½ in. bore holes drilled by the air track drill were loaded

similarly, except that a quarter of a 20 in. long by 2 in. diameter yellow anzite cartridge was used as a primer instead of half a cartridge of AN-60. When in very tough rock another cartridge of anzite was placed halfway between top and bottom of the hole. Deck loading with red anzite (ANZ75) was also used and was successful in layered rock.

Despite the heavy charges used in the bore holes and even with the experience gained in loading, about 10 per cent of the trenches in tough rock had to be redrilled and reblasted in order to remove the lumps of hard patches left by the excavator. In some instances even tertiary drilling and blasting was necessary. This was caused by the force of the blast going downwards on account of a very tough layer of sheet rock.

Different types of blasting mats were tried and these included manilla rope, old wagons with timber decking and with welded steel mats and mats made of steel reinforcing mesh, stiffened with second hand railway rails and tied together with wire rope. Some of the steel mesh type lasted for up to three months while being used continuously. During the peak period four of them were in service. Two pipelayers and two Conquip Cranes moved them along the trenches. The mesh used was Arcweld F333.

Pipelaying gangs moved in after the trenches had been excavated. In sandy country, pipelaying was a straightforward job. Three men using a flat top truck placed the couplings on the pipes and laid the pipes out along the trench. One or two men were engaged on levelling the bottom of the trench ahead of the laying depending on the size of the pipe.

Three to five men did the actual laying of the pipe, two to three men in the trench and one to two men handing the pipe to the men in the trench. Pipes of 8 in. nominal diameter and over were laid with the help of a crane.

Care was taken to provide 2 in. deep

hollows in the bottom of the trench so that the barrel of the pipe, as well as the coupling, bedded on the sand. Two to four men followed the pipelayers and backfilled the trench up to the horizontal centreline of the pipe at the same time packing the soil under and around the bottom half of the pipe. If the soil contained any stones, the same men covered the pipe with selected soil to a depth of 6 in. A front end loader, a grader, or a small bulldozer completed the backfilling. Normally, a foreman assisted by a ganger was in charge of the pipelaying gang. Pipelaying in rock was considerably slower. Some humps were always left in the invert by the trencher and these had



Laying 10 in. Fibrolite AC pipes with a pipelayer.

to be removed by popping (firing small charges) or by use of pavement breakers. At least a 4 in. layer of sand had to be placed in the bottom of the trench before laying the pipes. This meant that sand was placed in the trench on three separate occasions. Front end loaders were normally used for this work. The remainder was backfilled with the excavated soil but care had to be taken not to include big rocks which could be forced down through the sand onto the pipes.

The pipes were tested as work progressed. After a section of a main had been laid and the trench backfilled and provided water was available, the pipe was charged immediately. The charged main was watched for at least a week and any leaks which occurred were repaired instantly. Most of the leaks were

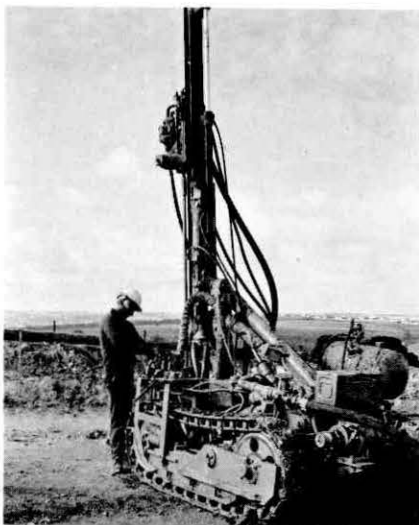
D. A. Cumming

caused by faulty installation of rubber rings and these were usually stopped by turning the coupling with chain tongs. To repair broken or burst pipes, two piece clamp repair pipes (DNR Split collars) or Gibault joints were used.

The main construction camp and headquarters for the scheme was located at Coonalpyn. An advance camp was established at Keith to reduce travelling time when laying in that area.

A spokesman for the Engineering and Water Supply Department said,

"The weather was a factor along



The air track drill in operation.

some sections of the route. Low lying areas near Keith had to be given priority during the summer when the ground was dry. In winter months these are swampy."

During the pipelaying, five semi-trailers carrying Fibrolite pipes each made between two and three trips a week.

A spokesman for the Department of Engineering and Water Supply said that difficulties with the asbestos cement pipes occurred at the rate of only one in every 1,000 laid.

A report released by the Department said that of the 560 miles of branch mains charged

during the scheme, difficulties were experienced with only 201 pipes. Most of these difficulties were due to faults in laying technique.

All fittings were manufactured by the Engineering and Water Supply Department at its foundry. Last year the Department built a new foundry in Adelaide employing 100 workers.

All pipes used on branch mains are class "D" asbestos cement of 800 ft. test head and are laid to a grade which follows the contours of the country. Pressure reducing valves are installed in all mains where the static head exceeds 350 ft. Stop valves were placed at about 2 to 2½ mile intervals, while fireplugs were fixed on all high spots, some low spots for use as scours and also placed at both sides of a stop valve. A minimum of four fireplugs each mile was necessary in country lands, but for long-range ordering purposes, five a mile were used. Except for valves above 8 in. all C.I. specials used were made for rubber ring jointing. Masonry chambers were built for pressure reducing valves, but stop valves and fireplugs were covered with normal pre-cast concrete top and chamber stones.

After pipes were laid, clean-up operations began.

After a pipe trench had been backfilled the surplus soil was taken away and dumped in old quarries or other places where dumping was allowed by the particular council or farmer.

One problem encountered during clean-up in areas where blasting had been necessary was the collection of fly-rock from adjoining properties. Experiments with a stone picking machine were unsuccessful. Where possible, a grader was used for heaping up, but otherwise the rocks had to be picked up by hand. Very little surplus soil was carried away in sandy country. Cleaning up was completed by a grader.

The Tailm Bend to Keith pipeline was a tremendous challenge by any standard—not only in the physical distance which the project had to cover, but also in the many obstacles which had to be overcome.

Obstacles which resulted in new methods of construction and techniques virtually being invented or improvised along the way.

For example: the use of a seismic survey to predict the structure of the rock likely to be encountered has now become standard practice.

New practices in excavation and the ability of equipment to cope or not cope with a certain job were also learnt.

The full benefits of the pipeline will not be felt for many years yet. But it is obvious that the potential of the area has been greatly increased. And it is only a matter of time before it attracts a much larger population which will be matched by a greater increase in productivity now that an assured supply of water is at last available.

TAILEM BEND/KEITH PIPELINE

Director and Engineer in Chief
H. L. Beaney

A.C. PIPELAYING

Resident Engineers

J. B. Miller
A. F. B. Gibbes
E. R. Fiebig

General Foreman

B. Kostez

Head Clerks

I. Matthews
C. Archer



mylor survey camp

Having heard many colourful anecdotes of previous survey camps, ours proved to be somewhat dull. Perhaps we had too many hard core stropers and not enough truly dedicated derelicts. As an illustration the following astounding revelation was made. There were no more than five bridge players in the whole class. Oh what gross moral torpitude!

At this point, would you please observe a minutes silence in respect for those who suffered and almost died. Because of the unduly cruel punishment inflicted upon their hitherto delicate digestive systems. The ubiquitous salad served at evening meals rapidly shot to the top of the 'least Wanted List'. I've heard of encores, but twelve reappearances in two weeks was ridiculous. The raw tomatoes found in its last 'appearance' were tentatively identified as those first seen two weeks earlier. (Definite identification was not made because no-one was willing to risk permanent damage to his taste buds). In all fairness, I should say that some of the food wasn't too bad. (If you like Corn Flakes).

Two notable displays of great driving skills were exhibited during the camp. The first was Chucker Smith's record breaking drive from the fire-break to the main camp area, along the narrow, winding bush track. Remarkably, Chucker's popularity as a chauffeur rapidly diminished after this event. The second was a demonstration of Greg Dunn's 'off the cushion' style of driving in which, instead of using the steering wheel to stay on course, he rebounded the car off the bank at the side of the road. (Greg is also known as 'God', perhaps a reference to the type of contacts you need to be able to pull this trick off). While on the subject, spare a thought for Rob McPharlin's car which was mistaken for a urinal by twenty or so weary travellers. (Mind you, if you've seen and heard his car, you can well understand the

confusion).

An early morning, guerrilla type raid by third year extremists caused a mild stir in the camp and reports from this fanatical terrorist group indicated that they had to wait till three o'clock for stropers to go to bed. Imagine the shame and indignity of being caught stropping at that hour. It's almost too horrible to bear thought.

The main sporting fixture of the camp was the traditional basketball match which eventually developed into an all-out brawl. However, much more dedicated thought went into deciding who would have the honour of taking a midnight swim in the dam, and on the designated night Ian Slope became the odds on favourite. Unfortunately, having received the joyous news, his former enthusiasm for sacrificing someone to the dam's murky depths rapidly diminished and he barricaded himself inside his hut for the rest of the night.

As a respite after an arduous day's work, many of our number were accustomed to go for a drive at night in order to take in some of the bracing country air. Bracing it may have been, but it caused an inexplicable thirst and in true engineering spirit a detailed experiment was undertaken. Over the two week period, it was proved conclusively that this thirst was maximized just outside the Aldgate Pump (an amazing coincidence, but rather convenient). Thanks must go to the numerous enthusiastic volunteers who took part in this experiment, which also showed that engineering students are not all lazy drunkards. (In fact, many are rather conscientious drunkards).

In conclusion, I'd like to say a few well chosen words about the surveying, but since we have to do the subject again in final year, 8

ject again in final year, I'd better refrain.

Dick Payne

ALTERNATIVE VIEW

The camp served its usual purpose: it persuaded those who were temperamentally or constitutionally incapable of being dedicated to the job on hand, and paying due care and attention to detail, that they should consider very carefully whether they were suitable candidates for admission to the profession of engineering.

On the other hand, those who found that they were capable of keeping cheerful and sane in the face of crises and catastrophes, who enjoyed meeting the challenge of a completion date and who possessed talents for organisation and critical assessment of problems, received a useful introduction to the real meaning of life as an engineer.

D. A. Cumming

maxwell's marauders

Scores M.M. 7.7 (49)

T.T. 5.19 (49)

Despite the apparent closeness of the match the Marauders truly handed out one of the most severe drubbings ever to the young but talented Third Year team.

Maxwell's Marauders were formed in honour of Professor Lee Maxwell who was on 'exchange' from Colorado State University for six months. Professor Maxwell very soon won the admiration of the Final Year E l e c t s with his nifty anecdotes, interesting lecture material, dirty jokes and last, but not least, easy exams. The Prof. had been Australianized very quickly and it wasn't long before he learned to 'shout'. ANYWAY ... the Prof. soon had our hardy band of super heroes training hard, sharpening elbows, sinking the boat etc. etc.

At 1.30 p.m. Tuesday 29th of May, the 18 men ran onto the field in battle dress as thousands of spectators cheered. Amongst the notable visitors was Sir Mark Oliphant, the Governor, who had been cordially invited to come and bring his own grog. The man in white, the man upon whose shoulders lay the responsibility of keeping the match from deteriorating into a blood bath, was umpire Paul Holloway, himself a veteran umpire of one match experience.

The match was of a phenomenally high standard, and every now and then someone would get a kick at the ball. After a rough bruising three quarters, the two sides fronted up for the fourth and final quarter. Scores at the change:

M.M. 4.6, T.T. 2.14.

The Prof. whipped his charges into a blind frenzy with a bottle of Port (1932 Vintage) and several tubes of beer.

The atmosphere was electrifying, as the Marauders stormed into attack and kicked a goal. Another strong thrust into the forward zone and another goal was banged on. Five minutes later it looked like it was all over when ace half forward Col Clack slammed in number three with a booming underground punt from 2 metres out. Then tragedy struck. Clack went down with cramp and the Tinkerbells threw everything they had in a last ditch attempt to pull the game from the fire.

Scores: M.M. 7.6, T.T. 2.14

The goals were peppered and only the loquacity of Niel Lutz saved the day time and again; tenacious attack followed equally tenacious defence.



Finally the breakthrough came and two quick goals were the result. Another spate of points followed and with one minute to go, scores were 7.6 to 4.19. A lucky snap and a push in the back that went unnoticed, resulted in a goal that pushed the third years to a one point lead.

Sir Mark and the Prof. were nearly both in a state of hysterics ... seconds remaining and the Final Years rushed through a frantic point to apparently level the scores... the siren sounded and a very ugly scene marred the finish as 36 players fought over 35 beers.

It did not take long to find a copy of the constitution for Third and Final Year matches and sure enough...

page 356, sub paragraph 4.2 Section 3.6 part C stated clearly 'in the unlikely case of a draw or of a defeat of the Final Year team; the match will be awarded to the Final Years. Victory celebrations followed the presentation of the Perpetual award by Sir Mark Oliphant to Mr. Niel Lutz (Final Year Captain) and later that afternoon in the Hackney the Final Years won the beer sculling only to be disqualified by the corollary of sub-paragraph 4.2 for Beer Scull races.

Winner of the 1973 Brown-Sand-Mag Medal ... Colin Clack (Stats. 3 kicks 0 handpasses, 0 hitouts, 1 cramp).



car trial

Twelve of us converged on Sydney by car, train and plane. The only casualty of trip was the car with five passengers which broke a speed limit. Everybody had arrived by Monday morning to stay in St. Paul's College at Sydney University.

Visits were planned for the following plants:-

Colgate-Palmolive
I.C.I. Australia (Botany)
Laporte Chemicals
C.S.R. Chemicals
Australian Oil Refinery (Kumell)
Phillips Chemicals
A.C.I.

(A notable exception was a brewery inspection but a tour of West End before the trip was arranged to make up for it)

The highlights of the plant tours themselves were Colgate's little bundles of goodies (soap and tooth-paste), afternoon tea at Laporte with over a dozen beer and plenty of eats, and lavish lunches at I.C.I. and A.O.R. Some companies will do anything to impress. A.O.R. provided a comprehensive tourist's jaunt to Botany Bay and Captain Cook's Landing and a rather quicker bus trip around the refinery. I.C.I. and Phillips arranged strikes as a bonus in industrial relations.

Surprisingly, most of us most of the time showed considerable interest in the plants and many of the engineers were frustrated by the number and originality of questions:-

'Does she work here too?'
'Will you pass me that bottle of beer?'
'Where are the best places in Sydney for picking up women?'
'Are the workers always out on strike?'
'What do these dials really mean?'
'Is there any more beer?'
'What's the best way to drive back to Sydney? I'm sick of the back roads the 'navigator' always seems to select.'

To compliment our education many of us experienced the joys of trying to find somewhere to eat on a Saturday night, Sydney's various transport systems, glimpses of the Harbour Bridge and Opera House, the few surf beaches, dingy wine bars and of the latest developments in traffic chaos. Being a very eager lot we carried out engineering education into the night, undertaking projects which included an economic study of Sydney's stripping industry, a study of queuing theory in King's Cross, and a lengthy study into the probability of potting an eight ball after varying degrees of Sydney Beer consumption. One of the keenest

students carried out an individual study on the volume of brandy required before chuck-point. (an experiment with far-reaching results)

The little free time left after these educational pursuits had to allow for the delightful duties of finding a peace offering for the woman back home, locating Brian O'Neill who seemed to spend a large amount of time with his friends (?), eating and playing the pokies. Cultural activities included visits to the art galleries, entertaining local nurses and showing the locals how to drive and dance and how not to drink their beer. Other incidents included being pulled over by a policeman for overloading and cutting off a police car on a clearway. Other quotations and incidents are included in the final year class notes.

The trip home seemed uneventful after cramming all this into four and a half days and was spent sleeping (trying to avoid the driving duties, in contrast to the trip on the way over) and trying to remember bird's names. A medal for bravery must be awarded to Andrew Stock who successfully made the round trip in his Prefect.

Trevor Gorge.

POST GRADUATE

post grad.
how sad
nice lad
but mad.
poor lad
was had
too bad
post grad.

© Certified 10th April, 1973.

A.F. CLOSE

Y'know what I--- um---mean!

There is increasingly observable evidence around us of a steady retreat from the authority of language

There is an erosion of the accepted standards of verbal communication - possibly because the word 'authority' has now unpopular overtones connoting power or coercion.

The vocabulary of some authority-despising sections of the community is almost primitive in its deliberately limited word-usage and abuse.

There is a transvaluation of common word-values and their meanings.

The repetition of words such as 'like', 'man', 'feel', 'relevant', 'oldies', 'generation gap', and, above all, 'you know' do not express the meanings commonly taught, understood and used by the majority of literate citizens.

Conversations interlarded with 'umms' and 'you knows' when a limited vocabulary makes the going tough, preserve only communication within the chosen circle and alienate 'oldies' and outsiders.

My meaning does not come through clearly and precisely - so what!

George Orwell's '1984' provides the reason for the arrival of the terrifying society he delineates for us.

His prediction is the break-down of communication through the corruption of language.

'Newspeak' is the logical development of the new language being used by many sections of the community today.

A question now arises. Is it only certain sections of youth who are glibly giving entirely new meanings to everyday words regardless of the intelligibility to others?

Or, are some sciences tending also to form their own vocabularies, full of neologisms and highly technical expressions that convey little or no meaning outside their particular professional circle?

Who will interpret for the layman this new, esoteric scientific jargon so that he may understand clearly what the scientist really means and intends?

'I didn't understand that this is what he actually **MEANT** when he said' could be famous last words!

The Engineer must be able to translate the complex symbols and formulae of the lecture room into authoritative language in which words convey more or less commonly accepted meanings. How else will he convince prospective employers and clients of his capabilities and his ideas to 'do the job'.

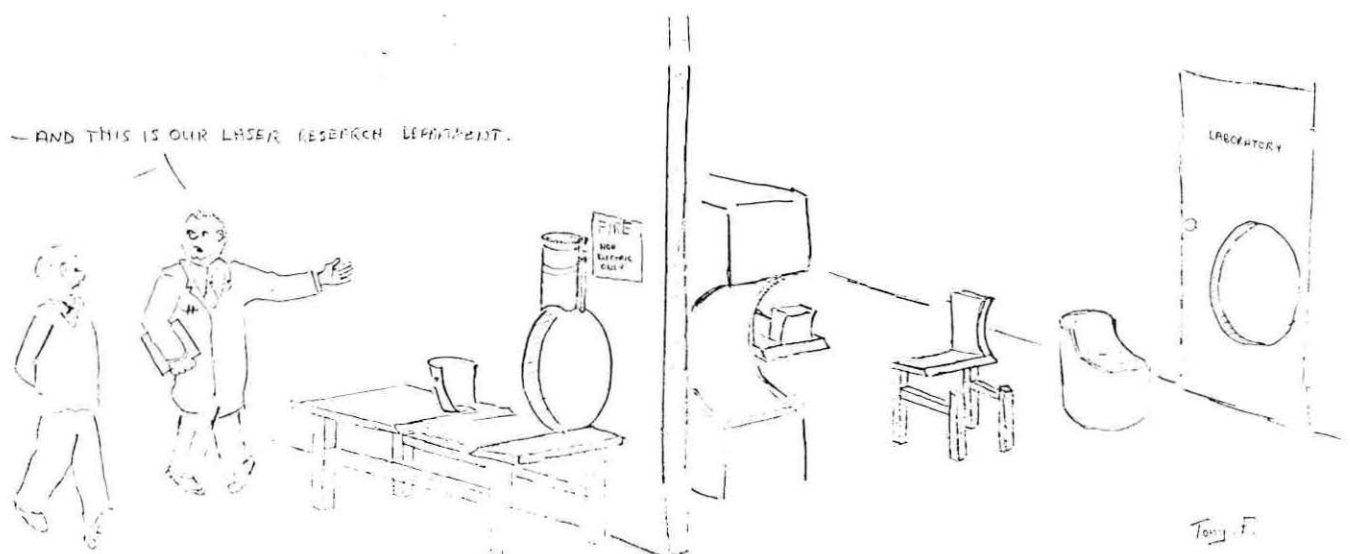
To tell an employer or client his sales-message in hesitant 'umms' and 'you-knows'; to enthuse about the 'great service, man!' he will give to make the listener 'relevant to progress', instantly imposes a serious communication gap.

He does not get through to his listener - the in-words are meaningless, and have no reference to everyday experience.

What's the sense of orating about a 'swinging' bridge design if you cannot bridge a communication gap!

Or well, err - um, do you know what I mean?

TONY LOAN



leigh creek survey camp

Unfortunately, fond memories from the camp this year were apparently few compared with previous years, but several aspects of the camp are worth recording.

The trip to Leigh Creek on the bus was most memorable for all those who went. Niall Milton eventually caught the bus about 15 miles the other side of Gawler because he had forgotten to set his alarm (or so he claimed). Trev Lambert, after ten miles of sitting on the edge of his seat with his legs crossed searching the horizon for a town, could not be held back when the bus made an unscheduled stop at Melrose (he was first off the bus and last one back on). The boys composed 64 new verses of that well-known song 'Survey Australia', and Stanley and Bomber Brideson felt a sudden urge to inspect one of the outstanding native trees seen so rarely on that last 130 miles between Hawker and Leigh Creek. From the small fleet of private cars which made the trip, Lindsay Pitcher & Co. must have set something of a record when they recorded an average speed of only 28 m.p.h. for the trip because of necessary refuelling stops (for themselves, not the car).

During the two week stay, the only contact made with the locals was through the visits to the wet canteen (boy, that beer was good!), where Glyn Edwards and Paul Smith were challenged to a dart game by two of the colourful regulars and managed to beat them, a feat never before equalled. A source of great amusement to everyone was the bloke wearing a T-shirt with 'Mack Trucks' emblazoned across it, who was heard to repeat at least 1,001 times 'Me and Jezza're like that, mate' holding up crossed fingers. A special mention must be made of the visits of Dave Baldock and his maggotty mates to the Copley pub, D.C. Payne's doubtful privilege of jamming with the local dance band in the small hours of Friday morning, and of Mark Skinner, who in the canteen on the Saturday night, was made an offer he HAD to refuse.

The Mission Impossible effort for the camp came from a couple of the lads who tried to chat a couple of the local 'virgins' to go to the monthly dance at Beltana. Further entertainment was provided by the basketball and football matches which we won, the latter being played in pitch darkness.

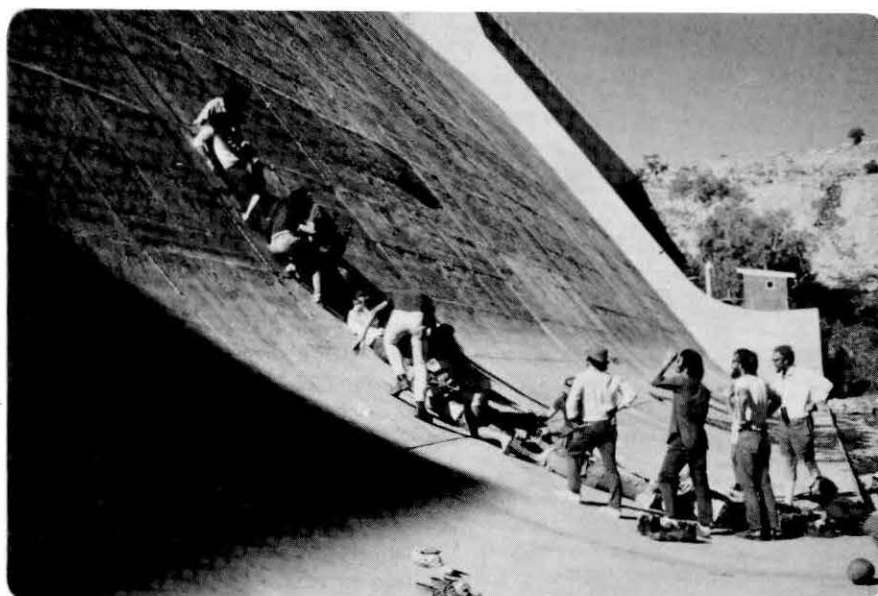
On the educational side, we visited the Aroona Dam on the Sunday. (Native Graham Stanley's dad built it you know), and since the infamous

gang-hang at Leigh Creek was impossible due to bad wash-aways, we established a new tradition of body-stacking up the spillway and a record of 6½ bodies head-to-feet up the wall. The climb to Mt. Aroona followed (but for a few pikers), where various juveniles proceeded to fill the dam with boulders rolled from the summit in an attempt to lower the RL of the trig point there. Returning to Leigh Creek, a stop at Copley pub was proclaimed compulsory. Have you ever seen 30 bona fide travellers on the back of an ETSA open truck, who all solemnly put their signatures to sworn statements that they are well-travelled, thirsty engineers!, surveyors?, travelling underwear salesmen!! etc. etc.? Dick Muncey was lucky to arrive in one piece on his Honda after being pelted with ice cubes, cans and survey pegs all the way. from Mt. Aroona to Copley from the back of the ETSA truck.

and pigeon-type walk while others sunbaked, echoes of 'Don't kick the tripod!' could be heard by groups two miles apart coming from the direction of the base-line measurement. Fierce wars broke out along the creek bed when the paddy-melons were discovered, ending in a raging, running battle waged from the back of the ETSA battle-wagon on the last day.

During the long evenings, astronomical observations were punctuated by visits to the canteen while D.A.C. kept turning off the cassette player thoughtfully provided by Rob Richards. Nevertheless the stars kept coming across the heavens and culminating for us (no wonder they call it the Milky Way!)

With respect to the practical aspects of the camp, the problem which confronted all of us was that it seemed that the actual surveying exercise was of little value from technical as



Last and not least, on the surveying side, Trev 'The Lung' Govett began the camp well by dropping and breaking a prismatic compass within a minute of starting work, and Tony Loan caused many a guffaw with his reply 'I've got my eye, mate!' to D.B.C.'s query about him having a theodolite. While B.

While D.B.C. was caught snapping incriminating photos of lookouts posted to watch for that yellow parka

well as educational points of view, and we wondered why the University should impose such an expensive internment at Leigh Creek. (Twenty dollars is not cheap, especially when Scholarships do not cover this compulsory expense).

This year one responsible member of the class was heard to comment quite soberly 'This has been the worst two weeks of my life'. An exaggeration no doubt, but this was definitely the sentiment shared by some at Leigh Creek 1973.

D. C. Payne

FINITE ELEMENT TECHNIQUES

A little finite element was sitting
in a wall,
He was very well developed and
was neither thin nor tall,
His family was respected and were
not hard-up for nodes,
He was very well connected and
renown for handling loads.
He was clearly isotropic, isopara-
metric too,
All his nodes were quite consist-
ent and his body forces true.
Yet he sat round sadly sulking, and
he didn't quite converge,
It was not true that he couldn't
but you see he'd lost the urge.

He had met a female element while
working in a joint,
And he'd loved her from the moment
they had shared a common joint.
They had both been drawn together
in a fast converging net,
Till at last they lay together, their
conforming sides had met.
By some subtle node pulsating he
had sensitized her nerves,
He in turn had been excited by her
sweet numeric curves,
He tried new degrees of freedom as
they both together lay,
He was quickly in his element and
stayed in her all day.

But rapidly her fiery love diminish-
ed to an ember,
She met up with a truss which had
a large prismatic member.
For hours he held on to her, in
battle fierce and drastic,
But it became too much for him he
went elasto-plastic.

He hung there bitter, battered,
broken, suffering from creep
He was strained in three dimensions
and was trying not to weep
He degraded from a rectangle into
a sorry lump
He got himself into a bridge and
from there he tried to jump
But while upon the Stress-path
with his nodes upon the rail
His foot caught in a grillage. All
that he could do was wail,
'Mighty being who has shaped me!
Peerless king who makes my
loads!
Let me leave these rules and num-
bers, stresses, integrals and
codes'

In time when he was rescued, his
distortions settled down,
He took up a position in an old
wall out of town
He opted for the simple life, ex-
clusively plane stress
But always bore the mark of this
his terrible distress.

A.F. CLOSE

NOTES ON THE AUTHOR

Mr. Close is a fine example of the
new breed of metaquizzical poets.
He sprang onto the literary scene for
the first time with his prophetic 'Oh
to be a blowfly now that summer's
here' in which he introduced to an
astonished world the self-servicing
couplet and the fully-retracting verse-
form. Mr. Close blames the pungency
and power of his work on his rural
upbringing and claims that it was on
the farm that he first developed his
taste for bullshit; a taste which
still lingers today.

By : THE AUTHOR.

making an ape of yourself

Members of the Association of Professional Engineers, Australia (APEA) are sometimes referred to by the uncouth as 'APES'.

Have you thought of joining APEA as an affiliate and then transferring to full membership after graduation? Probably not, so let's have a look at what you stand to gain (or lose) if you join.

Many new graduates say 'Why should I join, after all, I am going to get the pay increases that you chaps fight for whether I am a member or not, aren't I?' The answer is yes in most cases but some employer groups are starting to conclude agreements with APEA so that the benefits of new awards are confined to members only, i.e., the employer is not bound to pay you the award rate unless you are a member of

APEA. This appears to be a coming trend in award negotiation throughout Australia so the days of the 'free loader' are probably numbered. However, there are things other than money to a working like. Let's look at some examples.

Case No. 1

A member employed as a Professional Engineer Class 1 in a N.S.W. Railways country district was summarily dismissed following a dispute over weekend leave. The Department required the member to be available on call within the district for three weekends out of four and his attempts to obtain some relief from this failed. After absenting himself one weekend for what he considered pressing reasons the matter came to a head and resulted in his dismissal. The Department at the same time sought a substantial lump sum payment from him in respect of an unexpired bond period.

Action:

On the Association's advice the member lodged an appeal against the penalty and this was heard before the Railways Appeal Board chaired by a magistrate. An APEA Industrial Officer appeared for the member and argued that the penalty should be waived, in view of the circumstances, while the Railways advocate argued that it should stand.

The decision of the Appeal Board was that the Engineer be reinstated in his former position.

This incident has highlighted what appears to be a most unsatisfactory situation whereby Railway Engineers are required to be on continuous call for excessive periods without any form of compensation or recognition. The matter will shortly receive attention in an effort to obtain more equitable conditions.

Case No. 2.

A New Guinea member was being pressed to sign a tenancy document which contained certain statements which were contrary to fact.

Action:

At a conference attended by a member of the Association's staff, the employer's housing officer, the member concerned and a senior engineer, agreement was reached that certain clauses would be deleted or amended.

Case No. 3

A member employed in the S.E.C. of W.A. tendered his resignation, the date of effect being after an increment in salary was due to him. The S.E.C. of W.A. refused to pay the increment and paid him for pro-rata leave, etc., at the old rate.

Action:

Representations to the employer resulted in payment of the increment to the member and payment for pro-rata leave, etc., at the proper rate.

Well, how do you think you will get on when you graduate and possibly have employment situations like those stated to contend with?

I think you stand to gain much more from being in APEA than from staying out and saving the annual subscription which is tax deductible anyhow.

If you would like to join as an affiliate, (costs \$2.00 p.a. if you've got it, otherwise free - contact the S.A. Branch Office, telephone 23 2608 or at 202, East Terrace, Adelaide.

D.G.Quick.

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mechs



Adams: Gary's exhaust system;
Purple people-kicker: Favourite
sayings: 'Big ugly tart,' 'Buckets
and Buckets of pelican piss.'
Pet hates: Booze and football.
Mr. V Knees. (with flairs yet)

Blesing: Rapierist - tries to prick
everyone. King of the Musqueteers
and conqueror of Supps.
Pet hate: Razors
Favourite sayings: 'I'm a virgin.'
Definition of a virgin: Anything less
than 100.
GRUB of the YEAR AWARD.

Dunstan: When fishing with his
floppy lure he never misses.
Excessive use of rubbers (and pen-
cils)
Favourite sayings: 'Six no trumps.'
Lives up in the hills to keep it cool.
Mr. Stamina. Reputed to have the
longest extension in the library.

Fuller: Art student, long hair. One
of the original Blow Town Comers.
Nominated Father of the Year Award:
For his consistent efforts.

James: Mr. America's star recruit.
Has growing addiction to banging
Queens.

Kenyon: Wool makes the best green
jumpers.
Taps a good whitworth thread.

Lee C.K.: 'TIMES; they are a
changing.' Mr. Pesticide.

Lee K. S.: Practical Idealist, Con-
servative Radical; why not? Don't let
the lecturers put one over you.

Macdermott: The Phantom Highjump-
er. Lectures are for sleeping off the
night before.

McDonough: 'A car, a car; my lect-
ure time for a car.' '500 miles and
not a goat to be seen anywhere; but
hell my arse is sore.'
The one who looks like Ned Kelly.

McDougall: Top of the
Metricated himself January 1960.
Bridge beginner.
Mid lecture quote: 'AH-TISSUE, not a
SCOTTIES.'

Roberts: Apprentice bikiie. Sadly
mourning the loss of his Jag.
Busy designing a foul homopdar
tachometer.
Favourite songs: 'Alice's Restaur-
ant' (with variations)
'I've got the Talc Mine Blues'
The library is the sky.
Winner of the 'WHITE STICK AWARD
for the year.

Scholar: Tips for the healthy engin-
eering sex life. (Datsun 1600
Style)
Right up the army.
Has his own private car park in the
parade ground.
The main thing in life is to get
plenty of break-throughs.

Thomson: Sydney jetsetter.
Favourite song: 'Kathy come home'
Favourite saying: 'What would any
full blooded Australian male do in
that situation.'
Anyone for a haircut?
Was abducted from the final year
room by a female - TWI CE.
THUMB OF THE WEEK AWARDEE
(twice)

Walker: R. U (ever) here?
Much too spritely.

Williams: 1 cigar plus 1 pint-a-milk-
a-day. Greg's ugly.
Repeated sayings: 'I'm going to
shuffle the tits off this Queen'
'I pass (wind)' 'Better out than in'
'Hole in one'
Theme song: 'Posy, Posy.'
At the moment forming engineers
underground movement.

Wong: Favourite saying: 'Life's
too short', 'It's Beautiful' or 'It's
Bad'

Swift: Studied Dr. Dyer's chimney,
then hammered an oversize peg into a
small hole.
Often heard wail: 'Who's pinched my
sandwiches?'
Pet hate: Haircuts.

Lawrence: SEX MANIAC
Department's lowest stud fee
(negative)

Klemm: What a voice. Favourite
hobbies: Cold fans, drill bits, being
late, discussing aesthetics of spect-
acle frames with Fowler.
'Have a cigar mate.'

Kang: 'This next dance is a Parisian
Tango: Would yoy care?'

Grommet: Ron Obvious's twin.
Sacrificed a promising cricket career
to become an Engee. Holds patent on
self swinging cricket ball. Address:
c/- Comey Point Lighthouse.

R. Shonky: runs 'RON SHONKY
MOTORS' His wife serves the
petrol while he does the lubes out
the back.

elecs vs civils

1973 - Final Year Electrical Engineers (FYE). You may have read about the Civils, Chems and the Mechs, but you haven't met anyone until you've met the Final Year Elects. Forty one of the most talented scholars, gentlemen, athletes and Australians you would ever be likely to meet anywhere in the world.

Don't get us wrong, it's not that we're boastful about it, it is just a fact.

Maxwell's Marauders is a fine example of what we mean. Our annual football match (Third versus Final Year Elec's) was of such a high standard that Sir Mark Oliphant, accepted our invitation and presented the Trophy to the winning team (The FYE). While we are on the topic of football Pawsey's Pulverisers, the combined Elec. Eng. team, won the AUES Football Carnival for the first time ever. This may well be a point of debate by the Civils, however, with TWELVE men (and we mean MEN) who were by no means experienced footballers, we were pipped by a meagre 4 points, against a mob of 18 experienced diehard cut-throats and henchmen, the Civils, who eventually won the Carnival a very hollow victory and indeed a big moral victory to the Elects.

Next in our line of conquests as the Premier Engineering Department is the Iron Man Competition which was won on the post by a chunder, bringing honour and glory to all Engineers and showing the Elecs as the prime, a cut above the rest.

Yet another moral victory was ours in ANOTHER Civil gerry mander. SPEW FACES was conducted, as you know, at the A.U.E.S. dinner and, thanks to the Final Year Elects, was a resounding success. Our act was the ONLY original act and it was the ONLY classical piece of music played all night; we were the ONLY act to have a full philharmonic choir with conductor AND a lead didgeridoo.



Our first recital was Franz Liszt's Hungarish Rhapsody, Number 2, in C sharp minor, which was pristine; the second piece was from Georges Bizet's 'Carmen', suite number 1, adagio, and was inspiring, however, 'Hot Popcorn' was not as tasty as was expected. All our music was done in first class 'chicken' and one of the heavy brooders in the bass section laid an egg to show even more of our versatility and talent. (There were rumours circulating that the Chicken Soup and Chicken Main Course was another Vicil plot to upset our beautiful Chicken Voices ... it didn't work).

When it came to sundry pranks let it not be said that any of us were caught. We, being gentlemen, would never do such underhand, uncouth things, but who will ever know who hung a technician in a noose from the third floor, or who chained a urinal to the first floor lift well. ALSO... you just might read about a piece of indiscreet parking in this book of wisdom and we don't need to tell you who did that, do we ...

Well, at the time that this was written even more hair raising embellishments are on their way. Mr. Paul Hogan, famed Australian ambassador is to speak at the Final Year Elec. Dinner.

In all our haste to expose the evil doings of those foul underhanded civilians, we almost forgot to mention how our class holds the record for building a sand buggy. In one and a half days only, a 'car', once called the 'Hot Racing Renault' was cut down and rebuilt into the 'Hot Racing Sand Buggy'. Cost \$5.00 (how do you feel mechs!!!)

Oh! Then, of course, we won the Inter Departmental race for Captain Jolly Boats. Sure we were the only department to know about it, but that's not the point.

We've also got the best Prof., the best lecturers AND the best Secretaries anywhere in the world.

Forty one Australians, ace guys and gentlemen; the best mob of blokes you could ever want to meet Goodbye 1973.

FYE

P.S. We would like to thank everyone concerned with the organisation of every function this year, especially the Civils, for, without your organisation there would have been no Spew Faces or Football Carnival (which we couldn't have won) Thank you.

FYE.

elecs



Rogers, K.J.: His head is covered with piles of short and curls.

Russell: Has the taste for the big things in life rumoured to be engaged to Big Pretzel.

Schenk: Big Bob ... father Bob ... has long legs ... the girls love him.

Sih: Drives a spittfire - should only be allowed to drive a billy cart.

Allan: Navy man; recently torpedoed his fiancée.

An: Class Cassanova; All time grub, muscleman, extremely outspoken when drunk.

Bell: War monger of W.R.E. - will fight anybody.

Burrow: Speaks with an infected Anglo Oodnagoolabian accent.

Chong: Head down, Ass up ... on his bicycle that is

Clack: The guy who played football hard enough to get cramp.

Crouch: Fiddles with his 'Quine-McLuskey' in bed.

Darwin: For two wheels. Vroom, Vroom, Vroom ... Screeeeeeeech.

Davis: Only person who could go five years at Uni and still have morals.

Deer: Definitely Different ... wears pink underwear under his football skirt.

Delinici las: You wonder how he can restrain himself until evening.

Dudaniec: His wife complains that he watches too much T.V.

Dung: Keeping fit, by shovelling ...

Tai: Nobody that size has a right to drink that much. A dinkum Auzzie.

Taylor: Likes a beer now and again ... and again ... and again ...

Thuan : Class bumblefoot ... but very likeable

Warda: Class bumblefoot ... but very likeable.

Weste: Real ladies man ... been scoring well lately.

Wyatt: Only bloke to smuggle a carton of cans, up his jumper, into a lecture.

Zappia: Class mafia representative and star bridge bidder.

Eckert: Winner of 1973 Bazza McKenzie Grub Award.

Fox: Class gentleman, smootho, and all round great guy ... also author of these comments.

Harris: Slowest bidder in Southern Hemisphere.

Heath: Drives a goggomobile. Talks as though it was a lamborghini.

Ho: Spy. Rumoured that he is being buggrd by A.S.I.O., C.I.A., F.B.I., D.L.P.

Homann: Sucked in by air force; aim in life is to write off an F111.

Jeffer: Grave fears were held for his sex life when he was found not to know what mutual flux was.

Lee: Winner of three dimensional slide rule troph??

Lutz: What do you think of women Neil? 'Women, ... em I say.'

Macdonald: Farmer, owner of 1935 Willy's and most radically looking conservative.

Mattner: The typical pie eating, beer sculling, footy crazed, mixed up Auzzie Bloke.

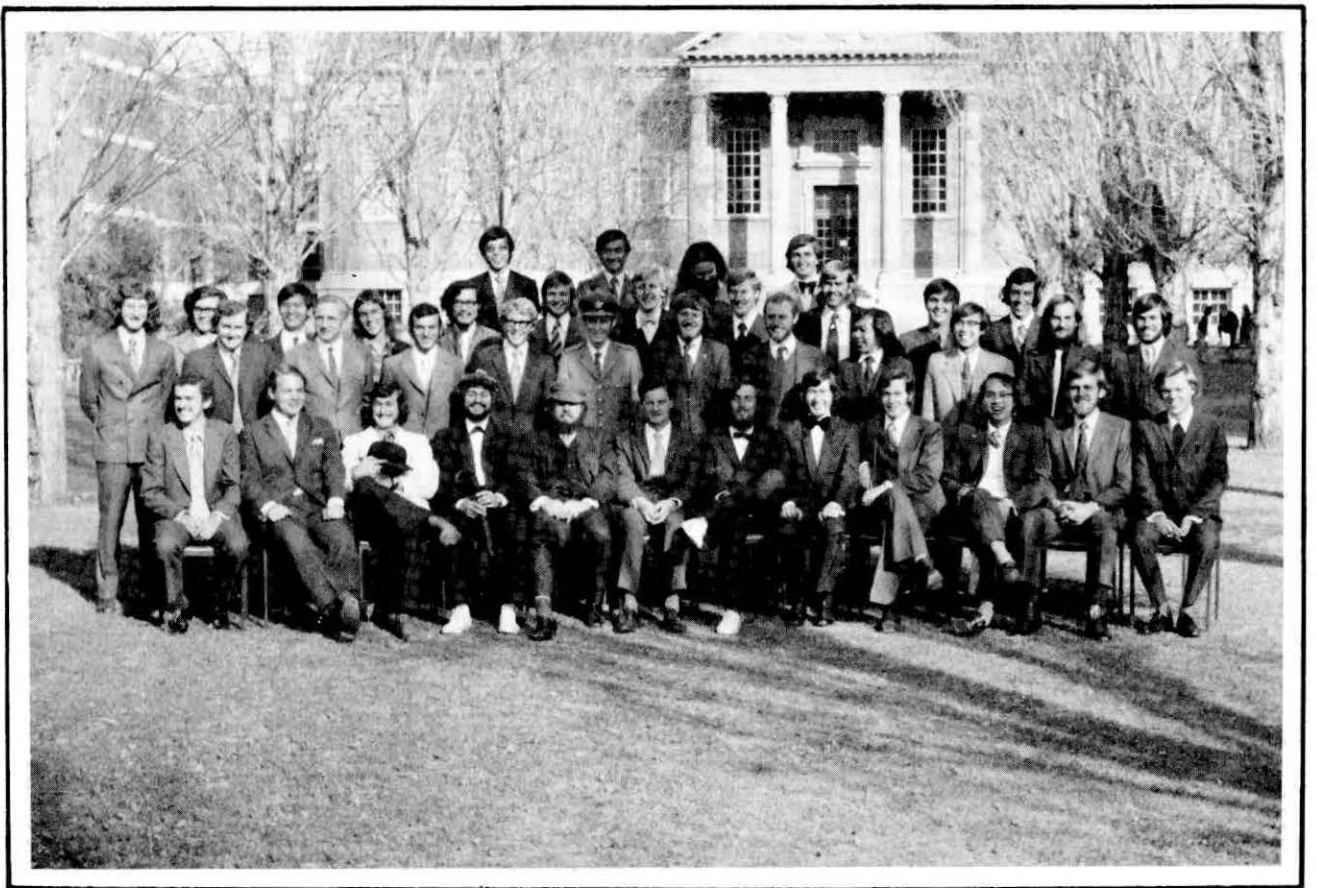
Muttik: A heavy in his own quiet way.

Page: 'I love riding my motot bike ... I love mounting things from behind.'

Southcott: Suffers from 'Stroppers Droop'

Sutherland: Regularly evicted at closing time from the lab.





CHEMS



Ian Crawford: quote, "Bloomin' well". Someone ought to tell him what real men (?) say.

Andrew Stock: A GAY life starting in December.

John Williamson: For Dirty John, between hockey, Playboy's Miss June, and his Cortina, comes Kathy. He's got his "supply"!

Trevor Gordge: Obviously an art lover. He disposed of the class's inspiration and guidance — Miss June.

Mike Sparrow: The only bloke with a list of questions to match the length (and breadth) of Prof. Tait's lecture notes.

Chris Davis: Heard to say at Kurnell, "Mech Engees aren't the only ones who can fix a screw!"

Barry Shaw: (alias Chucker) A spontaneous emitter at any pub.

Tom Whitworth: (alias WOM TITWORTH) is a dedicated athletic supporter.

Bill Keast: (alias a football fan). On Tardif being declared "Bull of the Ball", he reasoned that probably only one animal attended.

Viv Lawrie: The first to benefit from tariff cuts. He got his Toyota for 20c.

C.E.M.S.S.

No doubt many who read this will have heard at some time or other of the Chem. Engees (those ill-fated footballers) and no doubt, a lot fewer would have heard of the Chemical Engineering and Materials Science Society. (CEMSS). Most Civils, Electricals and Mechs will probably be asking 'What the hell's that?'

For the uninitiated, it is a Society formed of - you guessed it - Chemical Engineering and Materials Science students and staff. It's been around for quite a few years, and despite the efforts of many students in other departments, hasn't yet been forced to amalgamate with A.U. E.S. This year CEMSS has been reasonably active.

To start the year off, we held a Fresher's Welcome. In all, about 40 attended, including at least 3 freshers! After an introduction by Dr. Jeffeson suggesting what Chemical Engineering had to offer, a film on pollution was shown, relevant, considering many people think Chem. Engees cause the problem. Afterwards, copious amber fluid accompanied by cheese and biscuits was consumed. The magnetic attraction of the bottle faded eventually, and with some persuasion, the last left at 11.30 p.m.

The second event was barely three weeks later. In conjunction with the Institution of Chemical Engineers, CEMSS held an evening to discuss 'Career Objectives for Chemical Engineers'. Mr. Bruce Hundertmark,

once a practising Chemical Engineer come entrepreneur and now Managing Director of Harris Scarfe's, told us how to put Capital Investment Evaluation Lectures to good use. After his entertaining address, students were able to talk informally with practising Chemical Engineers invited along from local industry.

It was decided to hold a Brewery Tour early in the term. However, commitment to practicals (we're dedicated) delayed this till the last day of first term. A bold, and somewhat eager group of twelve assembled outside the doors of West End Brewery in Hindley Street at 2.00 p.m.

After some indecision on the part of management (perhaps they saw the glint in our eyes), two guides were supplied. Those wise enough to go with the rednosed one, had at least twenty minutes more drinking time at the end. The tour was interesting and eyes sparkled as it ended; for the barman it had only just begun.

Dr. Smith's Farewell Show took the form of a barbeque in Tom Whitworth's carport and garage. After sending smoke signals for about half an hour (did Drs. Roach and O'Neill ever do Fuels lectures?) the cooks got to work. The food proved as always with male cooks, to be delicious. Dr. Smith was presented with a tie - complete with eddies (he lectures Fluid Mechanics) and two bottles of red which I believe are now maturing under his house.

The prime event of the year was the Annual Dinner and A.G.M. in the surroundings of the Adelaide Country Club. The atmosphere for the evening was set as the first jugs of free pre-dinner drinks were supplied. After half an hour of mingling and drinking, the dinner got under way. The Treasurer's and Historian's reports were well received in between courses and election of officers for 1974 led to some spirited lobbying. Presentation to staff of awards of merit were made, and with more free amber liquid, the evening progressed with song and laughter, till 12.00 p.m. when the last 20 stayers left. Although somewhat of a financial disaster, a great evening washad by all. My thanks go to Viv Lawrie (Secretary) and Mike Sparrow (Treasurer) who's help made the year's events possible.

So that is CEMSS for 1973. As you have probably seen, apart from drinking beer, Chem. Engees are active and run an active Society. It perhaps leads to the best intra-Department ties within the whole Engineering faculty, and undoubtedly the best Departmental staff-student relations. As an alternative to AUES, four department societies like ours, grouping together for Faculty shows, could promote a lot more interest among engee students for extra curricular activities.

Andrew Stock
(President)

civils



Van Kennewell: What's the big attraction in the library?

Trev Lambert: Only guy to take out 120 chicks and still remain a virgin 'THIS TIME it's the real thing'.

Tony Loon: The only gnome with a theodolite eye - often seen writing down a few figures. LOAN FOR PROF!

Andy McIntyre: Thought he ought to graduate before his kid starts Uni. Hard boy to side track.

Dick Muncey: Last of the bikies. Proficient at 3-D cutaway drawings and pacing to within 2

Craig Nicholls: Dedicated to lost causes; football, engineering and nurses.

Alistair Paul: Dart-blower, terrifies the passer-by. Better disappearing act than Houdini.

Dave Payne: A.C. - D.C. Normal hours 9 p.m. - 3 a.m. Union trying to get at him.

Bill Lewis: Table talker - he doesn't play bridge he just speaks the moves.

Lindsay Pitcher: Slug, the original gangster.

Dave Baldock: Extravert extraordinaire - answers questionnaires in green texta-colour. 'Chortle-burgers'. 'Keep the boys honest'.

Dave Bartlett: Often seen standing too close to a tripod. One of the many walking the streets of London who didn't clear trumps. How thick is a brick?

Mike Bormann: Drawing Boardman.

Roger Stanley: 'Mickey Mouse'. Roger is such a quiet self-effacing lad - called Chris by the staff and Graham by his friends. As horny as a herd of rhinos.

Dave Swift: Designs a pretty good box. 'One heart, sorry, two diamonds'.

Mark Skinner: President of Stropers Inc. Man of few words but knows how to say them in a way which sounds good but doesn't really say very much at all really.

Rudy Tieman: Alias 'Tiffany Jones', 'Sungold'. Coming up for parole soon.

Lelde Vitols: 'Why are the jokes clean when I'm around?' Hersteresis.

Mal Simmons: Knows how to get the most out of massage parlour attendants.

Claus Schonfeldt: 'Wombat', 'Super-Snoopy', 'Baby-face'. The fuzz got all rotten underneath.

Rob Richards: 'WACKA'. The most improved golfer of the year. Sometimes gets a bit close to the edge. Yes man from way back.

Niall Milton: Punfully articulate. A nice guy. Director of film. 'They cut about 6 inches off - Heather won't recognize me'.

Chris Brideson: 'Bomber', 'Grandpa'. Pulls a mean beer and that's not all.

Jim Butterfield: 'What wife?...Jane's working tonight. 'Mr. Seminar'.

Glynn Edwards: The white line of the final year freeway.

Trevor Govett: 'Lung'. If it can go wrong it will. If it can't go wrong it will.

Mike Green: Alistair MacTugg. The original dawn-buster. Family man.

Rod Jackson: Regular chauffeur. Cricket and football. Secret Stropper.

Trev Jacobs: 'Rowdy'. Assistant dart-blower.

Snaxy: 'Bloody rooster bloody. No trumps bloody'

CIVIL PROJECTS

IMPACT LOADS ON BEAMS

A. Loan, R. Tieman

The project involves the investigation and measurement of strain induced in beams of various sections and support conditions subject to impact loading. The impact is provided by a free falling mass dropped from various heights to cause strain in elastic and plastic ranges.

R.R.L. METHOD (IMPROVEMENTS)

N. A. L. Milton, T. A. Jacobs

This project is directed at providing experimental support for a proposed new method of calculating the Time of Entry for use in the Road Research Laboratory (R.R.L.) Hydrograph Method for Urban Stormwater Drainage design.

DEFLATION PROCESSES

L. Vitols, W. R. Lewis

The investigation of sand movement by wind on a slope, by measuring the quantities of sand moved in a wind tunnel built specially for the study.

PLASTIC BEHAVIOUR OF MILD STEEL MEMBERS UNDER COMBINED LOADING

R. J. Richards, R. I. Jackson

The project looks into the effects of combined bending and torsion and combined tension and torsion of mild steel in the plastic range. It is an extension of Dr. D.S. Brooks' Ph.D. thesis, in that it involves the peculiarities of the upper and lower yield points, and strain hardening of mild steel.

THE STRENGTH OF LOAD BEARING BRICKWORK AND WALLS

D. N. Bartlett, D. R. Baldock

Despite thoughts to the contrary, our project is not concerned with the vital question, 'How thick is a brick?' We have analysed brick sections for use in a finite element program and we will investigate the behaviour of brickwork prisms using various mediums in the joints such as mortar, cardboard and polystyrene.

STRESSES IN CONCRETE CORBELS

C. Nicholls, C. Brideson

An investigation with regard to particular corbel and column head types, to determine the stresses developed, and cracking patterns produced by different axial loading systems.

TANGENT MODULUS PARAMETER: FOR ADELAIDE CLAY

M. J. Bormann, C. B. Schonfeldt

Prof. N. Janbu has proposed a new stress-strain theory that describes all soils (rock, sand, clay) in terms of a common equation for the deformation modulus. This modulus is the tangent to the stress-strain

tangent to the stress-strain curve and the project involves investigation into the theory as applied to Adelaide clay

THE VANE TEST IN FRICTIONAL SOILS

T. R. Govett, P. K. L. Smith

The test is an in-situ test developed in 1918 to determine the shear strength, and hence the bearing capacity, of soils by measuring the torque necessary to twist the vane in the soil. It has proved reliable in saturated clays, but not so in sandy (frictional) soils; the project involves tests on the latter soil type in an attempt to confirm some recent theories.

THE EFFECT OF CRACKING IN CONTINUOUS REINFORCED CONCRETE PAVEMENT

T. J. Lambert, M. A. McIntyre

In South Australia some interest is being shown in the use of continuous concrete slabs instead of conventional sleepers as a more economical means of support for railway permanent way. Work was done in 1972 on the properties of rectangular slab for this purpose. This year the properties of the same slab in the cracked slab (i.e. the service condition) are being investigated.

SOIL-STRUCTURE INTERACTION FOR UNDERGROUND OPENINGS

L. Pitcher, R. Muncey

A study of the design and construction concepts of deep transport tunnels in soft ground with special reference

to the underground railway line proposed for Adelaide. Particular emphasis is being placed on linings in non-uniform sediment beds and the effects of water on swelling clays.

SWELLING PRESSURE AND EXPANSION CHARACTERISTICS OF SOILS

M. J. Green, A. M. Paul

Zzzzzzzzzzz

SAND BAR FORMATION

M. A. Simmons, J. Butterfield

An investigation of the effect of sandbars at outlets on wave refraction, and the concomitant effect of this refraction on the bar shape.

STRESSES IN CYLINDRICAL SHELLS

D. C. Payne, R. G. Stanley

The project involves the investigation of the strains and stresses in concrete cylindrical shells and is an attempt to compare the effects of loading a non-elastic material (concrete) with those predicted by classical theory for an elastic material (steel).

BUCKLING OF SANDWICH PANELS

M. Skinner, D. B. Swift

An investigation into the buckling of sandwich panels with simply-supported edges is being undertaken. Apart from the experimental work it is also hoped to produce a computer program for analysing these particular panels.

LOAD DEFLECTION CHARACTERISTICS OF CABLE NET SYSTEMS

V. Kennewell, R. G. Edwards

Cable net systems used as roof structures, particularly for large span structures (e.g. sporting stadiums

span structures (e.g. sporting stadiums), are a recent development in structural engineering. This project investigated the effects on planar cable nets of various types, intensities of loading and size of net.

C-C-C

(Civil Chaunnists Club)



