

## AUSTRALASIAN ASSOCIATION FOR ENGINEERING EDUCATION

### NEWSLETTER

Vol.2, No.1

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*Opening Ceremony of the 1st Annual Convention and Conference of the AAEE, pictured are (l-r): Emer. Prof. P.T. Fink, Keynote Speaker; Dr P. Miller, Keynote Speaker; Dr J.G. Rathmell, Conference Secretary; Dr Z.J. Pudlowski, Conference Organising Committee Chairman; Prof. T.W. Cole, Conference General Chairman; Assoc. Prof. J.R. Glastonbury, Dean of Engineering at Sydney University, and Dr B.E. Lloyd, Vice-President of IEAust. (Education).*

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## BRIEF SUMMARY OF THE CONVENTION AND CONFERENCE

The main objective of this 1st Convention and Conference was to bring together engineering educators and industry leaders and confront them with the problems and challenges of engineering training in general, and academia/industry co-operation in particular. Particular emphasis was placed on industry involvement in engineering education and on the need for continuing education of engineers. Another objective of the Conference was to focus on education in engineering at tertiary level, including the need for systematic and comprehensive research on methodology and curriculum development. It seems that all these objectives were largely achieved.

Over 80 senior academics and industry experts, including some from overseas, registered and participated in the lectures and discussion sessions. 45 papers were presented during the conference and included in the Conference Proceedings. The Conference Programme included a variety of problems related to engineering education and industry training which needed to be identified and addressed. Fifteen major topics were suggested for conference papers and subsequently covered in comprehensive discussions during the Conference.

The Australasian and Pacific region is one in rapid development but, at the same time, one which experiences a lot of difficulties. Although all developed countries experience a shortage of qualified engineers, overall Australia is the worst off. Figures for 1987 show that Australia produces 193 engineers for every million of population, compared with 286 in Great Britain, 298 in the United States and 562 in Japan. The situation in the Pacific region is even worse. The Conference organisers hoped that, by bringing such a forum together, the entire region would benefit from it.

The Convention and Conference has been already very well covered by the Australian press, which realised the importance of the outcome of this gathering for future developments in Australia and the region.

A few important initiatives, which should have a strong impact on the status and quality of engineering education and training in Australia and the region, were undertaken during the Convention and Conference. The most important one was the formal establishment of the Australasian Association for Engineering Education (AAEE) under the sponsorship of The Institution of Engineers, Australia and The Institution of Professional Engineers New Zealand. An Executive Committee was elected, consisting of a mixture of individuals, who are particularly concerned about the quality and status of engineering education. It is hoped that this Committee will stimulate a number of important initiatives and will lead the Association to the next annual meeting. The Executive Committee structure is as follows:

**President:** Prof. Trevor W. Cole



Trevor W. Cole is currently the Peter Nicol Russell Professor of Electrical Engineering at Sydney University, a post he has held since 1980. He graduated BE(Hons) in electrical engineering from the University of Western Australia in 1966. After nine months with CSIRO in Sydney he proceeded to Paris where he intended to take out a French Doctorate. After a year, that plan was abandoned and he moved to the Cavendish Laboratory, Cambridge. He gained the Cambridge PhD in 1970 with a thesis on the radioastronomical objects called pulsars, the discovery of which he had the good fortune to be associated with.

Over a year as an engineer working with the Dutch radioastronomy group preceded a return to Australia, and CSIRO Division of Radiophysics, in 1972. The eight years to the university appointment were spent researching in the general areas of signal processing, image processing, instrumentation and optical computing.

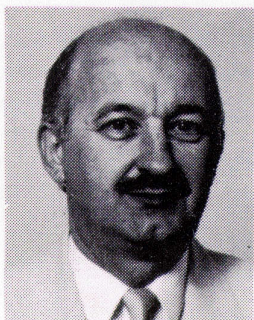
Since joining the university, interests have included integrated circuit design and, more recently, speech technology and the innovation process by which concepts and ideas are transformed to products in the market place. He has had appointments as Executive Director of the Warren Centre for Advanced Engineering, Deputy Chairman of the Academic Board, and is



Chairman of OTC's Research and Development Board, Chairman of the Australian Telecommunications and Electronics Research Board, and is a Trustee of the Museum of Applied Arts and Science (the Powerhouse).

He had a year as a Fellow of St. John's College, Cambridge in 1986/87 and more recently spent several months as an Investment Director with Hambro-Grantham Ltd, a manager of venture capital funds.

### Ist Vice-President & Executive Director: Dr Zenon J. Pudlowski



Zenon Jan Pudlowski graduated Master of Electrical Engineering from the Academy of Mining and Metallurgy (Cracow, Poland), and Doctor of Philosophy (Educ.) from Jagiellonian University (Cracow), in 1968 and 1979, respectively.

From 1968 to 1976 he was a lecturer in the Institute of Technology within The University of Pedagogy (Cracow). Between 1976 and 1979 he was a researcher at the Institute of Vocational Education (Warsaw) and from 1979 to 1981 was an adjunct (senior lecturer) at the Institute of Pedagogy within Jagiellonian University. He has been with the School of Electrical Engineering at The University of Sydney since July 1981, where he is presently a lecturer.

Dr Pudlowski is a member of the Institution of Engineers, Australia. He is a member of the Editorial Advisory Board of *The International Journal of Applied Engineering Education* and Editor-in-Chief of the *Australasian Journal of Engineering Education*. Pudlowski is Secretary of the International Liaison Group on Engineering Education. He was Academic Convener and organiser of the 2nd World Conference on Engineering Education for Advancing Technology, held in Sydney, 1989.

### IInd Vice-President: Mr Harry Wragge



Harry Wragge was born in Melbourne in 1929. He holds the degrees of Bachelor of Engineering (Exhibition) and Master of Engineering Science (Honours) from Melbourne University.

He joined the Postmaster-General's Research Laboratories in 1955. His major interests were in switching and signalling and he led those activities from 1966 to 1979, becoming Branch Head in 1972. In 1979 he formed the Customer Systems and Facilities Branch of Telecom Research Laboratories.

From 1981 to 1983, he was part of the Telecom team involved with the Davidson Inquiry into Telecommunications Research and Development in Australia. He became Assistant Director, Business Development in 1983, before taking up his present position of Executive General Manager in 1985.

Wragge is a Member of the Order of Australia and a Fellow of the Australian Academy of Technological Sciences, The Institution of Engineers, Australia and the Institution of Radio and Electronic Engineers. He is also a member of the Committee of Convocation and the Faculty of Engineering at Melbourne University, the Council of Swinburne CAE and the Prime Minister's Science Council Coordination Committee.

### IIInd Vice-President: Prof. Richard L. Earle

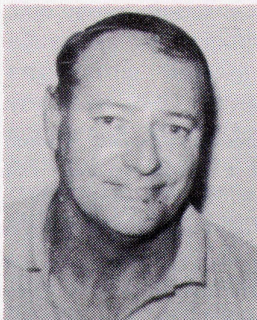


Richard L. Earle trained originally in chemical engineering at Canterbury University College and graduated BE (Chemical), B.Sc. in 1953. Postgraduate training was at the University of Glasgow (Ph.D 1956). Joined the New Zealand Meat Industry Research Institute as research engineer, involved with heat transfer (freezing of meat blocks) refrigeration design, operation, and control, cold store operation, energy usage, general engineering operations and processing, operational research, and liquid waste treatment.

In 1965 became foundation Professor of Biotechnology at Massey University focussing on the processing of raw materials of biological origin, building up activities in undergraduate courses in biotechnology, on research especially in heat transfer and freezing, and in industrial consultation. Member of numerous local, national, and international committees, organising and advisory groups, and editorial boards. Many publications in the technical literature and a book on food engineering widely used internationally. Later Dean of Faculty of Technology (1978-89) and President Institution of Professional Engineers New Zealand (1988), and concerned with engineering technology and education.



**Secretary:** Mr Douglas J. Magin



Doug Magin is a lecturer in the Professional Development Centre at the University of New South Wales. Doug came to the Centre (previously the Tertiary Education Research Centre) from the University of New England after completing degree study in mathematics and a research degree in higher education. His major responsibilities within the Centre include providing advice and assistance in procedures for evaluating teaching, subject provisions and curriculum innovations.

His interest in engineering education commenced in 1973 through committee work and collaboration with teaching staff at UNSW over a wide range of educational issues and developments within the Faculty of Engineering. Since then, he has developed research interests in the organisation of laboratory teaching in engineering; in the use of computers as adjuncts in laboratory work; and in the impact of student evaluation surveys in promoting change. He has published extensively in these areas, often in collaboration with

engineering colleagues.

## ***Conference Proceedings***

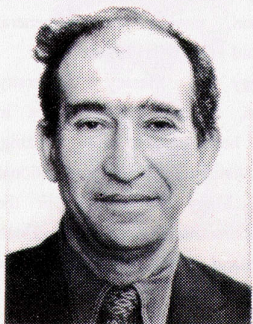
The AAEE first annual conference and convention was a great success, with participants from seven countries attending. A favourable response was received from both academics and industry representatives alike.

The papers presented at the conference covered a multitude of topics ranging from training technical staff to engineering education in universities. Many of the papers dealt with the problems being faced by engineers in the current political and economic climate.

For those who could not attend the conference, reading the proceedings is one of the best ways to stay in touch with issues in engineering education in the Australasian region.

***A limited number of extra proceedings were printed for those members and interested parties who were unable to attend the conference. Copies of the proceedings may be purchased for \$A50 per copy, plus \$A5 postage (postage-free within Australia), from the Editor.***

**Treasurer:** Assoc. Prof. John Reizes



John Arthur Reizes was born in Poland and emigrated to Australia at an early age. He commenced undergraduate engineering studies at the University of New South Wales in 1956, obtaining an Honours degree in 1960, followed by a Master's degree in the area of waterhammer in 1965, and a Ph.D. in 1975 on the suspension of solids in horizontally flowing fluids.

His industry experience includes that of Junior Professional Officer, during his undergraduate years, with the Electricity Commission of NSW and several years as an Engineer with the same organisation.

In 1966 he was appointed to the position of Lecturer with the Broken Hill University College, University of New South Wales and in 1967 transferred to the Kensington campus where he has held the positions of Lecturer, Senior Lecturer and Associate Professor. He has held temporary research appointments at the University of



Nottingham and the Australian Atomic Energy Commission, Lucas Heights.

His professional activities are extensive, having held many positions with the Institution of Engineers, Australia. He has also been active on many Standards Association of Australia committees and is widely involved with consulting for industry. He is well known for his research in slurry flows, turbomachines and computational fluid dynamics.

#### Member: Dr Robert W. Clinch



Robert W. Clinch graduated from Chisholm Institute of Technology, Victoria, Australia, in 1959 with a Diploma in Electrical Engineering. He completed a Trained Technical Teacher's Certificate course in 1960 and taught in several Victorian Technical Schools from 1961 to 1964. From 1965 to 1969 he taught at the United Nations International School in New York.

Dr Clinch then studied at Syracuse University, New York, graduating in 1973 with a Ph.D. in Instructional Design, Development and Evaluation. From 1973 to 1975 he worked as an educational consultant in Mississippi and New York, and from 1975 to 1978 as an Instructional Developer at the New York State University College at Oneonta.

He has been at the University College of Central Queensland (UCCQ), Rockhampton, Australia, since 1978, initially as an Instructional Developer, and is currently a Lecturer in the Department of Civil Engineering and Building. He completed a

Graduate Diploma in Structural Timber Technology in 1986 and a Graduate Diploma in Management in 1989. Aside from lecturing, he is involved in timber research with the Timber and Wood Products Research Centre at UCCQ.

Clinch is a Member of the Institution of Engineers, Australia, a Member of the Institute of Wood Science, a Member of the Institution of Electrical and Electronics Engineers and a member of the Australia College of Education.

#### Member: Prof. Mat Darveniza



Mat Darveniza, born in 1932 at Innisfail, Australia, is a graduate of the Universities of Queensland (BE 1953, D.Eng. 1980) and of London (Ph.D. 1959). He has worked in the electricity supply and manufacturing industries, and has been visiting professor at various overseas universities, including Florida (USA), Munich (Germany), La Plata (Argentina), Imperial College (England), and Chalmers (Sweden).

Since joining the University of Queensland in 1959, his research interests have included lightning protection, high voltage and insulation engineering, and solar power plants. He has published widely, including a book *The Electrical Properties of Wood and Line Design* (University of Queensland Press, 1980), and is currently working on a second book.

Professor Darveniza is a Fellow of IEEE (citation - *for contributions to the engineering analysis of lightning effects on electric power transmission systems*), and in 1982 was elected a Fellow of the Australian Academy of Technological Sciences and Engineering.

Professor Darveniza was appointed to a Personal Chair in 1980, and between 1983 and 1987, was Head of Department of Electrical Engineering at the University of Queensland. In 1988, he joined the Board of Directors of UniQuest Pty. Ltd, and in 1989 became a Director of NATA (National Association of Testing Authorities, Australia).

#### Member: Mr Scott Grenquist



Scott A. Grenquist received the B.A. degree in Japanese Language and Cultural Studies from the University of Notre Dame, Notre Dame, Indiana in 1982. In 1984, he received the B.Sc. degree in Mechanical Engineering, and in 1986 the M.Sc. in Electrical Engineering with a Graduate Minor in Computer Science, both from the University of Notre Dame.

From 1983 to 1985, he was a Research Engineer with the High Energy Physics Group at the University of Notre Dame. Between 1985 and 1988, he was an Assistant Professor in the Department of Mechanical Engineering Technology at Purdue University, West Lafayette, Indiana. While at Purdue University, he was a member of the Curriculum Committee for both the MET degree, and the CIMT degree. Since 1988, he has been a lecturer in the Department of Industrial Technology at the University of Newcastle.

Primary research interests centre around video image processing, pattern analysis and



ultra close-range photogrammetry. Other research interests have included CAL implementation in Engineering Science courses and project directed teaching methodologies.

**Member: Dr William N. Roebuck**



Bill Roebuck specialises in education and training issues. He was an aircraft apprentice and tradesman with Qantas, before qualifying as a professional engineer in electrical and electronic engineering. After several years in private and public sectors, he became an Inspector of Technical Schools in Victoria with responsibilities for secondary, trade, technician and para-professional courses in electrical, electronic and aircraft areas. For 11 years he was Deputy President of the Industrial Training Commission of Victoria. His experience also includes 20 years in the RAAF active reserve, 12 as Squadron Leader Senior Engineering Officer (Aeronautical).

His qualifications include A.S.T.C., B.E., M.E. (UNSW) and M.Ed., Ph.D. (Monash), and the Electrical Higher Trades Certificate from the NSW Department of Technical Education as well as Victorian and N.S.W. "A" Grade Electricians Licenses. He also holds the Reserve Forces Decoration (RFD) and the National Medal. He is currently a director

of the EPM Consulting Group.

**Member: Mr Cyril G.J. Streatfield**



Cyril Streatfield, who is currently Director, Education for the Institution of Engineers, Australia, was formerly a member of the staff of the Australian Defence Force Academy and the Royal Military College, Duntroon where he held various positions including, at different times, Assistant Dean and Head of the Department of Electrical and Electronic Engineering.

In his earlier career he worked with Westinghouse Brake and Signal Company and with British Electricity and was a lecturer at Royal Air Force Technical College, Henlow. He is FIEAust and FIEE and has recently been awarded the title European Engineer. His wife is a Deacon in the Anglican Church and they have five children and eleven grandchildren.

The process of engineering education and training cannot be improved without a centre combining specialists and experts in the area of engineering education. The newly established National Centre for the Advancement of Engineering Education and Training (NCAEET) at The University of Sydney, should be able to influence engineering education in a direction more suited for, and adjusted to, the requirements of a modern society. It is hoped that, in the near future, the Centre will commence the training of technology and engineering teachers required for primary and secondary schools to teach technology subjects. This action is a response to the Warren Centre's project on *Future Directions in Engineering*. In addition, a number of research projects are envisaged to be carried out in the Centre.

The Conference addressed the issue of recognition of professional qualifications. More problems occur when one considers the graduates from a variety of backgrounds, who hold qualifications from different tertiary engineering institutions, and who wish to be accredited and admitted to professional associations. The process of recognition of engineering qualifications has serious implications, not only for the individual concerned, but also for the benefit of the country in which the particular person wishes to practise his or her profession. It is encouraging to see that The Institution of Engineers, Australia, addresses this problem seriously. Comprehensive research concerning the nature and effectiveness of the existing curricula is needed to gather information and learn more about the differences between the teaching systems, and this work must be undertaken immediately.

The Conference clearly showed the need for more interaction and collaboration between academia and industry. It is encouraging to see how many people have realised the



importance of this co-operation, not only for continuing engineering education, but also for undergraduate studies. Educational systems must be adapted to the local conditions and differ as to the relative industrial status of a country. This point emerged clearly from the papers presented.

It is believed that the status and quality of engineering training needs a permanent screening and assessment, and the Association should tackle this problem. Lack of space does not allow us to state more issues addressed during the Conference. It seems, however, that the conference has proved to be a most effective way of setting up an important forum for discussion, information exchange and sharing of problems of mutual concern. More new ideas and important issues may be found in the Conference Proceedings, which may be purchased from the Editor.

### SHORTAGE OF ENGINEERING TEACHERS

**Engineers Australia**  
(January 26 1990)



At the AAEE conference were (l-r) Z. Pudlowski, H. Wragge and B. Lloyd, IEAust Vice-President.

At the inaugural conference of the Australasian Association for Engineering Education, held in Sydney last month, it emerged that Australia is looking at a shortage of engineering teachers and students in the near future.

In his opening address, organising committee chairman Dr Zenon Pudlowski said: *At present, it is impossible to attract top-quality engineers to teach in the nation's engineering schools because of low salaries, and this needs urgent action.*

*Australia is probably the only developed country which does not have an organisation to coordinate research into engineering education and industrial training. A national centre for the advancement of engineering education and training seems to be the right answer to this problem.*

Harry Wragge, executive general manager of Telecom Research Laboratories, said there are three driving issues that need to be considered, the changing nature of engineering, the shortage of engineers and productivity restructuring. *Education has to cover a wider field in greater depth, he said suggesting that there should be a core of endurables that will last an engineer throughout his or her career. Then let them choose their specialties and recognise that in 7-10 years time they are going to have to come back anyway and refresh their specialist knowledge.*

During a discussion session it emerged that several engineering schools have experienced a drop in the number of school leavers placing engineering as their first preference after finishing high school.

Nobody could offer any real reasons for this. The phenomenon doesn't appear to be restricted to Australia. A report in a recent issue of the *New Scientist* noted that there has been a similar significant drop in the number of school-leavers applying to study



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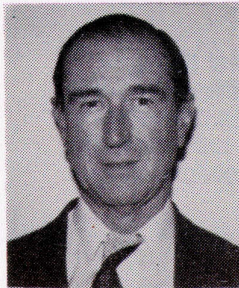
engineering at British universities and polytechnics. At the same time there has been a marked increase in applications for courses in law, economics, business and management.

During the conference, the AAEE elected Prof. Trevor Cole from the Sydney University School of Electrical Engineering as its first president.

*Christopher Connolly*

# **AN INDUSTRIALIST IN ACADEMIA - IMPRESSIONS OF THE FIRST CONVENTION AND CONFERENCE OF THE AAEE**

## **The Impossible Problem:**



*Mr David Foster*

For three days in December, I enjoyed the luxury of listening to an assembly of leading engineering academics and some representatives from industry and the profession philosophising about where engineering education is going (or should be going) in Australasia.

In a wide ranging series of papers and presentations, we were in (almost) unanimous agreement that there is a need for more engineers if we are to avoid progressive erosion of our standard of living. Either we advance with the developed world or slip progressively to third world status!

However, technology has fallen in public esteem - at least in Australia. It is seen as the cause of many of our social and environmental problems, rather than the means of their solution. Our industries cannot hope to compete without the engineering resources to run research and development programmes. Government, ever mindful of the scarce dollar, expects the education machines to turn out more graduates with a minimal increase in resources. Could we not achieve a higher percentage of passes by better training techniques?

Then there is the rapid expansion of the mountain of technical knowledge. Such is the rate of growth of technology, we were told, that the *half life* of an engineer's knowledge in practice is about seven years. (My level of competence, I calculate, is now about three per cent!). How can we ever fit so much knowledge into a four-year course? Make it five? Run postgraduate Masters' courses?

Then we should know more about finance, the environment, politics and history. We should be better able to express ourselves in public. We should gain a knowledge of management science and perhaps a little law! These are all incontrovertible attributes of the *complete engineer*. But then we need to retrain every seven years to keep up with technology. We need to understand new materials, fibre optics, computers and a myriad of other invaluable things! (I was somewhat relieved that technology was still outstripping knowledge. Tony Stokes has a fibre optic down which we could funnel the entire galaxy of human knowledge in just a few pico-seconds!)

Well, there you have a rough impression of the problems being addressed by our fledgling Association. And how can we solve these problems?

## **Some Evident Conclusions:**

Well, our first conference is probably a success if we merely stated the issues. But some things seem clear to me:

\* If we give all the desirable training, there may not be any time left to do any real,



practical engineering.

- \* We can gear up the education machinery to turn out more graduates, but will the industrial development be there to match the supply? And how good will the graduates be?
- \* Can we simply increase the output of graduates and still maintain standards of competence in the face of a negative community perception of technology?
- \* Suggestions of more women in the profession are very laudable but do they want to come? Let us try, but I would not count on it.
- \* We must strike a practical balance between the desire to train our graduates in every thing that they may need to know and the reality that most engineers learn to do their real work in the course of their industrial practice.

### **And Where Do We Go From Here?**

Well, first of all, it is reassuring that the teachers of the profession have joined together to try to work it out. The Association clearly sees that it needs to stir industry to take a greater role in guiding the training of our future engineers. We need to generate a research and development minded community. The community needs to understand that engineering and technology are not the cause of our social and environmental problems. These stem from a burgeoning population which has overstressed the world's resources. Technology (or let us call it *creativity*) holds the key to conserving resources and the environment.

Second, let us realise that we cannot encompass all the ambitions to educate our engineers in all those things that we would like to. In fact, there is still a need for large numbers of engineers who design beams, who supervise projects, who maintain works and services and just do the ordinary things that engineers do.

A three-year course providing such training, as these folk need, could be as good training as was our four-year course of twenty years ago. Universities could then give four-year courses to train the engineering scientists and the future leaders of the profession. I do not think we should contemplate longer courses. Nor should we try to get the majority to do higher degrees. (These are for the top engineering scientists, the academics, and also serve to hone the mental skills of the future leaders of industry).

We should realise that somewhere within the universe of the computer and its fibre optic connections we can embed, not only all the known technology, but also ready made aids on how to use it. We should not attempt to retrain every seven years. We need more options to do special-purpose, short courses (part-time, full-time, residential, correspondence, etc.) to fulfil the special needs we encounter in our work.

Engineers are mostly team workers. As one progresses, it is quite reasonable to progress towards management. This is not deserting our profession, but rather ensures that we are the masters of our own future. We do not need to know how to apply all the latest techniques of design. We do not need to know the technology of the latest materials. We have bright young engineers who can do that. What the older engineer must keep up with is the knowledge of what can be done - not how to do it.

Universities, research and development laboratories and our younger engineers are our resource for such knowledge. But they must be guided on what objectives and in what way the knowledge can be used to serve our societal purpose. By all means, provide advanced engineering courses - by all means, provide update and refresher training. More and more, let us link industry and academic institutions to provide effective training in specialised areas as the demand warrants. But let us avoid overloading our undergraduates (and our graduates) with knowledge at the expense of wisdom.

I make these remarks in the firm belief that my friends at the Convention and Conference are the ones with the perception and the foresight to lead us safely along these paths.



My father learned his engineering long before the computer, when, by the seven-year rule, the quantum of engineering knowledge was perhaps a tenth of one per cent of today's spectrum. He told me of his friend, who set up the Engineering Faculty at Perth University. His friend said of educating engineers: *It does not matter what you teach engineering students - so long as you teach them to think.* His wisdom applies as well today as it did sixty years ago.

*David Foster  
Assistant General Manager  
Operations & Maintenance  
The Electricity Commission  
of New South Wales*

### **THE CONFERENCE - AN INDUSTRY VIEW**



*Mr Gary Lane*

For anyone with a keen interest in engineering education, the conference was a success. Unfortunately the dual streams for some sessions made it impossible for anyone to attend the presentations of all papers, but the main issues emerged fairly clearly.

The most important issue to emerge from the conference is that a sense of urgency in engineering education is needed. Much gloom and doom was expressed about the parlous state of funding, particularly when Australia is compared with other more industrialised countries. This urgency extends to industry to increase research, development, design and marketing skills in order to expand our manufacturing base. Engineers need to be more entrepreneurial and cost conscious and engineering schools need a more definite conception of their purpose. The role of industry, working closely with academia, both as part of the education process and as a lobby group, cannot be understated.

An important part of the Swedish experience is their acceptance of *Elitism* in education. Up to the present, this has been a difficult concept to introduce into Australian society but introduction of industry-sponsored, university-run, engineering undergraduate scholarship schemes may be a start.

The concept and reality of specialised postgraduate, courses with lecturers from academia and industry, is valuable. Some areas of technology, particularly in the communications and computing areas, move too quickly for a limited number of academics to keep across all fronts. Latest technology input from industry solves this problem.

It is clear that the undergraduate curriculum is becoming too crowded. Subjects like occupational health and safety, incorporating the ergonomics of design and economics for engineers would be valuable, but there is no time available. The informed debate about specialised and generalised degrees and curriculum will, no doubt, continue, but a balance must be found.

The conference provided a valuable forum for informal discussion. I personally spent many free hours in a broad range of discussions with many participants. These ranged from industry liaison at other institutions to engineering education in other countries.

To me, the most important role for AAEE is to improve the quality of engineering education to allow Australia to escape from being a commodity culture to a stronger technology base. This will be more effective as the AAEE develops a strong voice as it grows. The elected Committee has many forceful individuals among its members and gives



me confidence that these objectives can eventually be met.

*Gary Lane  
Regional Chief Engineer  
Telecom Network Engineering  
METRO-Sydney*

## **EAST-WEST CONGRESS ON ENGINEERING EDUCATION**

In addition to the planned sequence of world conferences, the Australian and Polish representatives have agreed to hold jointly an East-West Congress on Engineering Education in Cracow, Poland, between 16-20 September 1991, with the AAEE as the sponsor and organiser. The aim of this congress is to bring together engineering educators from the East and West to discuss common problems in engineering education, in the context of a rapidly changing political climate in the Eastern bloc. It is envisaged that the financial structure of this congress would make it easier for colleagues from Eastern bloc countries to attend a meeting organised within a country in the bloc.

The possibility of a large international event being held in Poland has received strong support from academics at the major Polish technical universities. The congress receives support from the International Liaison Group on Engineering Education (ILG-EE), which has decided to promote this event on the international scene.

It is anticipated that members of the AAEE will propose a large number of excellent quality papers. It seems that this congress will become an important international event, and a golden opportunity to present our problems and achievements in engineering education. By attending this gathering, engineering educators and industrialists may find an excellent opportunity to establish new contacts and friendships, which should stimulate future co-operation not only between academics, but also between industrialists and business representatives.

### **The Congress**

The congress is jointly organised by engineers and educators representing Australia and Poland, and is sponsored by the Australasian Association for Engineering Education. Co-sponsors of the congress include:

- \* Jagiellonian University, Cracow, Poland,
- \* The University of Sydney, Sydney, Australia,
- \* The Academy of Mining and Metallurgy, Cracow, Poland,
- \* The Institution of Engineers, Australia,
- \* Other institutions and organisations.

### **Aims and Objectives**

The aim of this congress is to provide an international forum for discussion, and to enhance the opportunity of exchange information on engineering education and training at tertiary level, including the need for systematic and comprehensive research on methodology and curriculum development.

The congress places particular emphasis on the need for special methods and useful approaches to engineering training, including further and continuing education of engineers in an era of rapidly advancing technology.

There are varieties of problems which need to be identified and addressed, and topics to be discussed. There will, however, also be room for less formal gatherings and discussions



which will help to renew international contacts and establish new friendships.

### Topics

The theme *Improving Training Methodologies* has been chosen to emphasise the importance of new approaches by which modern engineering education and training may be carried out effectively in a continuously changing and advancing technological and social environment. Suggested topics for congress papers include, but not be limited to, the following areas:

- \* Social and philosophical aspects of engineering education and its impact on modern societies;
- \* The nature of cognitive processes, heuristics, and creative thought;
- \* Curriculum design and evaluation and the relevance of liberal education;
- \* New programs and teaching systems for engineering education;
- \* Community attitudes towards engineering education.
- \* Participation and equity in engineering education.
- \* Effective methods for training engineers and technologists;
- \* The role, nature and importance of research in engineering education;
- \* Information transfer for research and teaching achievements;
- \* Design methodologies of computer-aided instructions and artificial intelligence;
- \* Case studies;
- \* The impact of new technology on the effective training of engineers and technologists;
- \* Further and continuing education needs of engineers and technologists.

It is anticipated that proposed papers will present concepts and achievements of engineers and educators in improving engineering education, in general, and engineering curriculum, instruction and methods of training in particular. The needs of industry are also of interest, especially as they relate to matters concerning methods and effectiveness of training in further and continuing engineering education. The implementation of special methods and modern approaches to training are of particular relevance to the congress theme.

### The Venue

Cracow, Poland, has been chosen to allow potential participants from Eastern bloc countries to attend the congress. Those participants experience many difficulties in obtaining the hard currency necessary for travel to the West.

In addition, Cracow is one of the oldest and most beautiful cities in Poland, attracting over two million tourists every year. It is a national treasure of Poland, and is also recognised by international bodies and agencies for its value and contribution to the world's cultural heritage. There are many interesting objects to see and places to visit in Cracow, including the King's Palace, the Old Town with fragments of city-walls, and medieval, Renaissance and Baroque architecture, including numerous churches and synagogues. Also, the city is surrounded by a number of interesting places and tourist attractions.

Jagiellonian University, one of the oldest universities in Europe (established in 1364), has been chosen to host the congress because of its international reputation and fame. It is the *Alma Mater* for all Polish universities, some of which were founded from that University.

### Exhibition and Presentation

It is envisaged that an exhibition of teaching equipment, computer software, relevant teaching material and books, which facilitate effective training in engineering education, will coincide with the congress. There is also room for innovative formats permitting flexible arrangements for poster sessions, group discussion and interaction, demonstration, etc. Any institution or individual interested in conducting such an activity should contact the Program Committee Chairman.



### **Official Language**

English will be the official language of the congress.

### **Call for Papers and Contributions**

A call is made for papers, contributions and other congress activities related to the topics mentioned above, or any other topic or activity relevant to the congress theme.

Prospective authors should submit an abstract of 250-350 words in length, in English, outlining aims, content and conclusion of their papers, and other contributions. The abstract should include the title, author(s) name, affiliation, mailing address and phone number. Authors are kindly asked to indicate the category into which their papers fall. Papers will be printed directly from the author's typescript. Papers must be presented by the author(s) personally and will not be published in the proceedings unless presented. Sessions will be structured to encourage useful discussion, and it is intended that such discussion be summarised towards the end of the congress.

Authors will be asked to consider preparation of an expanded version of their congress papers to be considered for publication in international journals such as *The International Journal of Applied Engineering Education* and the *Australasian Journal of Engineering Education*. It is anticipated that a special issue, with selected papers, will appear prior to the congress. Such, expanded versions of congress papers, to be considered for publication in this special issue, should be submitted to the Program Committee Chairman.

### **Deadlines**

Intended authors should note the following deadline dates:

- \* Receipt of synopses: 30 September 1990
- \* Notification of acceptance of synopses: 31 October 1990
- \* Receipt of final manuscripts (camera-ready copy): 28 February 1991
- \* Acceptance of papers notified: 30 April 1991

### **Congress Program and Registration Forms**

The congress program will be announced in May 1991 and potential participants notified. Those who wish to obtain a copy of this program should contact the Program Committee Chairman. At the time of acceptance of their manuscripts, authors will be asked to pay a congress fee.

### **Enquiries**

All correspondence relating to the congress and proposals for papers should be addressed to the Editor, who is the Program Committee Chairman.

### **SECOND MEETING OF THE EXECUTIVE COMMITTEE OF AAEE**

A second meeting of the AAEE's Executive Committee will be held on Thursday, 1 March 1990 at 4.00 p.m. in the School of Electrical Engineering at The University of Sydney. The Agenda includes several important items. The Committee will discuss the venue for the 2nd Annual Convention and Conference in 1990. Two submissions, from Monash University and Swinburne Institute of Technology, have been received. Also on the agenda are Association's activities in 1990.

Members of the Executive Committee will discuss the possibility of conducting and/or



co-ordinating research projects. Discussion will include such project proposals as a survey of engineering education research & developmental activities within Australasia, a survey of engineering education publications, future research projects on engineering education which may be co-ordinated by the AAEE, and the establishment of a collection of statistics on engineering education, including engineering courses and curricula. It is anticipated that AAEE's representatives in member countries and states will be appointed at this meeting.



*The representative old aula at Jagiellonian University dating back to the 16th century Renaissance, where the professors hold their important meetings (Photo by Janusz Kozina).*

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For details of the Association and membership applications write to the Editor:

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