

# AUSTRALASIAN ASSOCIATION FOR ENGINEERING EDUCATION

## NEWSLETTER

---

Vol.3, No.1

Sydney, March 1991

3,8,0120

---



*South Australia's University of Adelaide is located in the city which is regarded as one of the most beautiful places in Australia - Adelaide. The University will host the 3rd AAEE Annual Convention and Conference, between 15 and 17 December, 1991. Members of the Executive Committee of the AAEE, Conference Chairman Professor John B. Agnew, and Members of the Conference Organising Committee cordially invite you to submit proposals for papers and to attend the Conference. Picture above shows a bird's-eye view of Adelaide.*

---

*This issue is sponsored by*



The Institution  
of  
Engineers, Australia



AUSTRALIAN ASSOCIATION FOR ENGINEERING EDUCATION

3RD ANNUAL CONVENTION AND CONFERENCE

*BROADENING HORIZONS*  
*OF*  
*ENGINEERING EDUCATION*

AN INVITATION TO SUBMIT A PAPER AND TO ATTEND

Venue: The University of Adelaide, South Australia

Dates: Sunday 15 to Tuesday 17 December 1991

Conference Chairman: Professor John B. Agnew  
Conference Secretary: Dr Caryl Cresswell

Traditional views of engineering education must change if we are to respond satisfactorily to social, industrial and professional needs. Important contemporary issues that must be dealt with include: articulation and credit transfer, bridging, distance education, continuing education, overseas marketing of educational services, competency-based learning, the growing secondary/tertiary gap and specialisation. These and related topics are encompassed by the conference theme.

The Call for Papers will be issued early in May. Papers accepted will be published in full in the Conference Proceedings. Presentation time will be limited to ensure adequate time for discussion.

Suggestions for demonstrations of new teaching materials and techniques or novel experimental demonstrations are sought in order to add greater variety and interest to the programme. Suggestions for open forum topics are also requested.

It is planned to hold the Conference Dinner at a nearby Winery, with free transport provided.

The Association's Third Annual Convention will be held in conjunction with the Conference on Sunday, 15 December.

*Further information may be obtained from Prof. John B. Agnew, Department of Chemical Engineering, The University of Adelaide, GPO Box 498, ADELAIDE, SA 5001, Australia.  
Tel: +61 8 228 5445 and fax: +61 8 232 4195*



## PRESIDENT'S REPORT - AAEE 1990

It is with a real sense of pleasure and, indeed, even honour that I report as inaugural President to the second Annual General Meeting of the Australasian Association for Engineering Education. The report covers the first twelve months of activity of the Association - a level and range of activity of which we can all be proud.

The Association is structured as a Technical Society of The Institution of Engineers, Australia for which we receive valuable subsidies, promotion and the potential to attract even more members. We also believe we also receive the security of incorporated association status through being associated in this way with the Institution.

As will be reported in more detail later, the Association has grown to include 125 individual members and 9 institutions covering over 120 academics. I suggest this is very impressive in a first year of operation.

As will also be reported later, the finances are sound and the future looks secure.

Through the year the Association has been assisted by the willing help of its Committee Members, a group of eleven from a wide range of geographical and technical backgrounds. The Association has been well served by this diversity.

I would now like to report on activity through the year.

During the year, three Council Meetings were held - in March, May and September. The Council also met briefly just before this meeting. I would like to put on record our thanks to Harry Wragge and Telecom for setting up multi-site audioconferences to enable the more distant members to join in.

One of the more visible signs of activity has been the regular newsletter due in major part to the efforts of your 1st Vice-President and Executive Director, Zenon Pudlowski. We are thankful for his efforts and also for the sponsors which have come forward to support individual issues.

In one of those newsletters you will have received details of the first research project - a survey of activity in engineering education throughout Australasia. This is planned as the first stage of much more research activity.

Also in the newsletter but not yet suitably supported is the AAEE computer bulletin board. This electronic mailbox is available to all members to share messages about seminars, courses, articles etc. All that is needed is to send one's e-mail address to register.

A similar electronic access is available to perhaps the most significant development in the Association for the year, its own journal.

Also during the year, progress was made in organising the East-West Congress to be held in Cracow, Poland in September 1991. As President, I was able to join the Executive Director in Poland in June to meet the local committees and to agree on the proposed program. This meeting will be a significant international event at which AAEE will receive a high international profile.

The *Australasian Journal of Engineering Education* is now printing its second issue. Once again the efforts of Zenon Pudlowski as Editor-in-Chief are most warmly recognised. I have every expectation that this journal will continue to thrive and will establish itself as important on the world scene in engineering education. It is very worthy of your support through both subscription and submission of papers.



We are now at the second annual conference meeting of the Association and, as President, I want to thank Peter Darvall and the members of his organising committees. The success of meetings like this make the Association a vibrant and vital force within the Australian higher education and engineering landscape.

So I look back with satisfaction and look forward with confidence for the Association. This is said against a very difficult background in engineering education in Australia. I believe all of us are convinced of the opportunities open to have an engineering-led recovery for Australia. All of us are aware of the battles to receive recognition of this fact at all levels of society, government and higher education. We need to be confident in our views of what is needed and be prepared to repeat those views as often as is necessary. We need, at the same time, to be pragmatic, and put in place actions and structures able to achieve the desired results in spite of the existing structures. Innovation and courage will be needed. Through the Association, I am sure you will all find the support and ideas to help us achieve that desired result - of appropriate levels of skilled graduates committed to the development of Australasia.

*Professor Trevor W. Cole  
School of Electrical Engineering  
The University of Sydney  
President of AAEE*

#### **POLICY ON CONTINUING ENGINEERING EDUCATION**

The Institution of Engineers, Australia, sponsors this issue of the AAEE Newsletter to inform many faculty and research staff at engineering schools or departments in Australia and New Zealand of the IEAust policy on Continuing Engineering Education.

High quality continuing education in engineering, delivered at competitive prices, contributes to the capability of engineers, increasing their earning power and the productivity of industry. The standard of continuing education in engineering needs to be at an internationally competitive level for it to be cost effective. The engineer and employer need to see an advantage for the time and money spent.

The capability of Australian engineering faculty and departments for continuing education has been well demonstrated for some time. There already exists a great range of delivery formats and organisations within departments for the delivery of continuing education programs. There is a large variability in participation levels on a departmental and individual staff basis, a few staff appear to concentrate their efforts on continuing education programs.

As industry seeks change to become more competitive there is a need for the existing workforce to adopt new skills. Collectively, Australian engineering schools would appear to have a demonstrated capability to support changes in industry, and to have the potential to lift their capability and participation rate considerably.

IEAust, through Engineering Education Australia, is seeking cost effective ways to increase the capability and participation rate for continuing education in the engineering profession.

*Mr Ted Whitehead  
Director, Education  
The Institution of Engineers, Australia*



## BRIEF SUMMARY OF ACTIVITIES CARRIED OUT BY THE EXECUTIVE IN 1990

Last year was, in fact, the first full year of operation of our Association. The Executive Committee held five meetings over its last term and was mostly preoccupied with actions that would strengthen the foundation upon which to build our Association. Increasing membership of the AAEE and developing effective links with our umbrella organisations, such as The Institution of Engineers, Australia (IEAust.) and The Institution of Professional Engineers, New Zealand (IPENZ) were the most important tasks undertaken by the Committee. With much satisfaction we can report that the AAEE has become really and truly Australasian by the decision of the Education Committee of IPENZ to support the AAEE.

Further development of links with industry, so well established in 1989, also was an important objective of the Executive Committee. Several activities carried out by the Association were sponsored morally and financially by such industrial organisations as Telecom Australia, BHP Engineering and Connell Wagner. In the existing economic situation it is extremely difficult for the corporate sector to find additional resources required to sponsor other organisations. Therefore, these companies deserve our sincere gratitude.

Membership grew steadily throughout the year, with an increased number of individuals representing different sectors of Australian industry joining the Association as individual members. Overseas involvement also was increased significantly by attracting members from eight countries throughout the world. Existing contacts with other societies were strengthened (ILG-EE, ASEE, IGIP) and many interesting international contacts were established.

The AAEE Newsletter provided an efficient forum through which members could air the issues and problems of significance for engineering education in general and the Association, in particular. Members were encouraged to write short and long articles for the Newsletter and sometimes controversial issues were raised and different opinions were expressed. The format of the Newsletter seems to be appreciated by the vast majority of members and it will continue in its present form.

An *Australasian Journal of Engineering Education* was launched in September, and it has published two issues. Volume 1 (1990) includes 23 papers, of which six are by overseas authors. The papers present a variety of ideas and issues which are relevant to Australasia.

An *East-West Congress on Engineering Education*, to be held at Jagiellonian University in Cracow, Poland, between 16-21 September this year, is the first international activity undertaken by our Association. Over 30 paper proposals were received from Australasia and it is hoped that Australasian participation at the Congress will be visible and will have an important impact on engineering education in this part of the world.

Another important initiative undertaken by the Executive Committee was to collect information on R&D engineering education activities carried out in tertiary institutions in Australasia. A survey questionnaire on R&D engineering education activities and engineering education publications was devised and distributed among Heads of Departments. Work is presently under way to analyse the information gathered through this questionnaire. It is anticipated that results will be available in the middle of 1991.

The 2nd Annual Conference of the AAEE attracted over 130 individuals and over 90 papers were presented at the Conference. It should be emphasised that apart from a wide representation by academics, the Conference provided a much broader spectrum of opinions by having representatives from private and public enterprises, the Department of Employment, Education and Training, the Armed Services and professional bodies such as The IEAust and APEA. The Conference generated a considerable profit so needed for the effective operation of the Association.



At the 2nd Annual Convention held on Sunday, December 9, annual reports concerning the status of the AAEE were presented by the President, Professor Trevor W. Cole and the Executive Director, Dr Zenon J. Pudlowski (see Annual Report). Much of the discussion centred around the issues raised in the report. Also, other general topics were considered, such as the participation of women in engineering education, academic salaries, status of laboratory equipment, etc. Finally, the general meeting elected its new Executive Committee consisting of twelve individual members of the AAEE.

At its first meeting, carried out after the Annual Convention, members of the Executive Committee elected the Executive Officers. In January, Dr Robert W. Clinch resigned from the Executive and at the second meeting of the Executive (see details below), held on Wednesday, February 20, 1991, Professor John B. Agnew was co-opted to the Executive so that 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.

**1st 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 Senior Lecturer.

Dr Pudlowski is a Fellow 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 the 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.



## 2nd 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.

## 3rd Vice-President: Prof. David G. Elms



David Elms started life as a structural engineer with the De Havilland Aircraft Company, after graduating from Cambridge. A few years later he switched to civil engineering, academia and the University of Canterbury, via a PhD at Princeton. For the last twenty years he has specialised in systems engineering and risk analysis among other things. He became interested in engineering education when it became clear no-one could answer the question "What is engineering about?", which he thought he should be able to answer as he was being paid to teach engineering.

His efforts to answer it himself led to various papers and to his being Vice-President of the Association for Engineering Education in South East Asia. He was Dean of Engineering at the University of Canterbury for some years. He is also an active consultant.

## Secretary: 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 BSc degree in Mechanical Engineering, and in 1986 the MSc 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.



**Treasurer: Mr Douglas J. Magin**

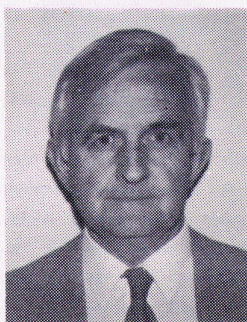


Doug Magin is a lecturer in the Professional Development Centre at the University of New South Wales. Doug came to the Centre (previously the Tertiary Education Research Centre) from the University of New England after completing degree study in mathematics and a research degree in higher education. 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.

**Member: Prof. John B. Agnew**



John Agnew is Professor of Chemical Engineering at The University of Adelaide, where he recently completed a three-year term as Dean of Engineering. He graduated BE in Chemical Engineering from The University of Sydney in 1955 and PhD from Monash University in 1967. He worked for seven years in the oil industry in the Middle East and UK and held academic appointments at Melbourne and Monash Universities before moving to Adelaide in 1983. He was Visiting Fellow, University of Cambridge in 1975 and Visiting Professor, University of Connecticut in 1986-87. His main research interests are in chemical reaction engineering, coal and oil processing and engineering education.

He is a Fellow of IEAust and is immediate past chairman of the College of Chemical Engineers. He is currently Vice-Chairman of SA Division, Chairman of the IEAust Working Group on MFP - Adelaide and a member of the Board of Education and Training. He is Chairman of the Organising Committee for the 1991 AAEE Conference to

be held in Adelaide in December and was recently elected to the AAEE Executive Committee.

**Member: Prof. Peter LeP Darvall**



Peter Darvall has been Professor and Dean of Engineering at Monash University since 1988. He graduated in Engineering at The University of Melbourne in 1963 and gained higher degrees at Ohio State University and Princeton University and a DipEd at Monash. He joined Monash as a Lecturer in Civil Engineering in 1970, after experience with Maunsell and Partners, with Freeman, Fox and Partners, as Surveyor for a glaciological expedition in Alaska and as Site Engineer for an archeological expedition in Egypt.

He has held visiting appointments at UNAM in Mexico, the University of California at Berkeley and the University of Wisconsin. He is the author or co-author of books on Mechanics and Structures, and Reinforced and Prestressed Concrete. His research papers have covered a variety of areas, but in recent years he has concentrated on softening in concrete structures, and high strength concrete. He has for many years been a

member of the Monash University Council and was National President of FAUSA, 1979-81. He has acted as a consultant to a number of engineering organisations.

**Member: Prof. Mat Darveniza**

Mat Darveniza, born in 1932 at Innisfail, Australia, is a graduate of the Universities of Queensland (BE 1953, DEng 1980) and of London (PhD 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: Prof. L. Murray Gillin



Prof. Murray Gillin was born in Melbourne in 1935. He graduated with a Diploma from The School of Mines Ballarat, with a Bachelor of Metallurgical Engineering, Master of Engineering Science and Master of Education from The University of Melbourne, and a PhD from the University of Cambridge, UK. He is a Fellow of The Institution of Engineers, Australia, Fellow of the Australian Institute of Management, Fellow of the Australian College of Education, and a Fellow of the World Association for Cooperative Education.

Since 1979, Prof. Gillin has been Dean of the Faculty of Engineering at Swinburne Institute of Technology and has held the personal Chair of Innovation and Entrepreneurship there since January 1991.

He began his professional career in 1958 as an engineer with the Defence Industry and after study at the University of Cambridge, UK, returned to Australia as a Research Scientist with the Defence Science & Technology Organisation. After appointment as a Defence Research Attache at the Australian Embassy in Washington, USA, then a Senior Principal Research Scientist in Defence Science Canberra, Prof. Gillin accepted the appointment of Dean of Engineering at Swinburne. He is currently the Senior Vice-President of The Institution of Engineers, Australia.

### 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., BE, ME (UNSW) and MEd, PhD (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 Ted Whitehead

Mr Edward J. Whitehead received his BE(Aero) from The University of Sydney and a MSc from Cranfield Institute of Technology, UK. He is currently Director, Education, within The Institution of Engineers, Australia. He is a Fellow of The Institution of Engineers, Australia.

A career of engineering in the Royal Australian Air Force spanned aircraft engineering specifications and standards, maintenance and production, evaluation of aircraft, and research requirements, and culminated as the Director General of



Aircraft Engineering, Air Force Office Department of Defence.



More recently he has been consultant on the Executive for the Review of the Discipline of Engineering for the Commonwealth Government. This task included participating in the on-site review of engineering schools and the appraisal of selected aspects of the national structure and curriculum for engineering schools, and of surveys of undergraduate, graduate and employers. He also examined the objectives of engineering schools and their continuing education activities.

Prior to his current appointment he was a manager with an international consulting firm engaged in defence, aviation and engineering management tasks.

In his current appointment Mr Whitehead is responsible for the administration of IEAust national policies for professional engineering education including accreditation of Australian courses, assessment of overseas qualifications and continuing education.

### PROFESSOR H.K. MESSERLE RETIRES AFTER 38 YEARS IN ACADEMIA



Prof. H. Messerle

Professor Hugo Karl Messerle graduated from The University of Melbourne with a BEE in 1951 and a MEngSc in 1952. He was awarded a PhD from The University of Sydney in 1958, and a DSc in Plasma Physics from The University of Melbourne in 1968. He won the Electrical Engineering Premium in 1953 and the Electrical Engineering Prize in 1962 and 1971 of The Institution of Engineers, Australia.

Prof. Messerle joined the staff of The University of Sydney in 1952 as a Lecturer and became Reader in 1960 and Professor in 1966. He was Head of the School of Electrical Engineering from 1970 to 1983 and from 1987 to 1990. He was appointed Director of the newly formed Electrical Engineering Foundation within the School in 1983. He is also Director on the Board of the Warren Centre for Advanced Engineering at The University of Sydney.

Prof. Messerle worked and published in computer engineering and control during the 1950s and 1960s and recently in energy conversion, energy systems and MHD. He was a Visiting Professor at Cornell University, USA in 1958-59 and 1964-65, and a Guest Professor at the University of Stuttgart, Germany in 1973. In 1984 he was awarded an IEEE Centenary Medal. Since 1965 he has been the Australian Delegate on the UNESCO International Liaison Group on MHD Electric Power Generation and was elected Chairman of this Group in 1984 and was re-elected for another four-year term in 1988.

Prof. Messerle is a Fellow of the Australian Academy of Technical Sciences, the IEEE, IEE, IREE, IEAust., and a Member of the Current Zero Club and Sigma Xi. He has been active in the IEAust. affairs on the Board of the College of Electrical Engineers and numerous committees. He has been instrumental in organising many conferences and meetings at national and international levels.

Prof. Messerle is strongly involved in the promotion of engineering education. He is Foundation Chairman of the International Liaison Group on Engineering Education. He was Chairman of the 2nd World Conference on Engineering Education for Advancing Technology, held at Sydney University in 1989, a Member of the Council of the International Association for Continuing Engineering Education, and a Foundation Member of the Australasian Association for Engineering Education. He has published two books and over 150 scientific papers.

He was recently awarded the title of Emeritus Professor within The University of Sydney. In wishing Prof. Messerle a long and pleasant retirement, we hope that he will continue his work in engineering education, and will be an active member and supporter of the AAEE.





The  
Institution of Engineers,  
Australia

## Policy on Continuing Education

### THE ROLE OF CONTINUING EDUCATION IN PROFESSIONAL DEVELOPMENT

Members of IEAust and others entered in the National Professional Engineers Register undertake to observe the Institution's Code of Ethics. Under this Code, the Institution requires that its members accept responsibility to undertake continuing professional development to ensure that they remain up-to-date during their careers.

The objective of professional development is the maintenance of competency to do a job. The career path of a person at some time will almost certainly require the learning of new skills; the direction of the professional development can be "vertical", i.e. still within the discipline of engineering, or "horizontal", i.e. into new fields such as management, finance or the law.

Professional development is made up of two components, continuing education and professional experience. It is not required that both be simultaneously satisfied, although in many cases that will be so. The Institution's continuing education policy recommends a minimum of 150 hours education in any three year period, so in some years an engineer may do some and in others not do any at all. Education can be continued by undertaking formal, structured courses or by "distance learning" techniques. But personal endeavour is also recognised

and may include such things as publication of papers, delivery of lectures or private reading of relevant material.

There are no hard and fast rules about professional development. At some points in a career, further education will be a necessity, at others it will be gaining experience that is paramount. The important thing to understand is that it is competency to do a job that counts; how an engineer goes about maintaining that competency is a personal choice dictated by circumstances at the time.

For the time being, the Institution will not keep records of how each engineer continues professional development. When renewing subscriptions, engineers are expected to be in a position to self certify that it has been continued.

Professional experience, the complementary component of professional development, is given recognition through the membership grades of the Institution.

### POLICY ON CONTINUING EDUCATION

#### The Need for an Involvement in Continuing Education

The Institution of Engineers, Australia is and seeks to remain the pre-eminent professional body setting acceptable standards of engineering performance of its members.



The Institution under its Royal Charter, has a responsibility to promote and facilitate the advancement and updating by its members of their professional knowledge in order to meet the continuing and changing needs of society.

The Institution accepts a responsibility for active involvement in the field of continuing education with the objectives of:

- (a) Maintaining high standards of professional performance by all of its members throughout their career.
- (b) Ensuring currency in engineering knowledge by its members.
- (c) Increasing individual engineering capability as a contribution to national development.
- (d) Providing a formal structure in support of personal continuing education activity for career development by its members.
- (e) Preserving and enhancing the professional standard of engineers.
- (f) Strengthening the role of the Institution as the regulator of engineering standards in Australia.

### **Definition of Continuing Education**

Continuing education is the study undertaken by engineers to extend or update their knowledge or to fit them to meet advances or changes of direction in their careers.

Recognised within this definition are the following forms of formal education:

- (a) Higher degree and graduate diploma studies.

- (b) Short courses conducted by:

- i) educational establishments
- ii) private firms
- iii) government and semi-government departments
- iv) professional institutions.

- (c) Individual undergraduate or postgraduate course units not taken for award purposes.

- (d) Workshops.

- (e) Seminars.

- (f) Symposia.

- (g) Conferences.

- (h) Technical meetings (e.g. Branch meetings).

- (i) Forums

Execution of the continuing education process may be by direct participation or by means of "Distance Learning" techniques.

Continuing education objectives may be achieved by formal activities or by equivalent personal endeavour.

Equivalent personal endeavour may be demonstrated by peer recognition through such activities as publication of research papers or reports, patents, preparation and delivery of lectures, professional interviews; or private activities such as reading, learning to use new relevant computer programs and watching work related videos, which meet the intention of the definition of continuing education.



Continuing education activities may encompass all existing and emerging areas of the science and practice of engineering which engage members during their professional careers. In particular, they embrace the skills required for the management of engineering activity. The following list, not necessarily comprehensive, sets out areas considered to be of relevance to the continuing education of engineers:

- \* arbitration and other forms of dispute resolution
- \* budgeting and control
- \* communication skills
- \* computer applications
- \* economics
- \* engineering science and technology
- \* environmental and social issues
- \* financial management
- \* health and safety
- \* labour relations
- \* law (contract, industrial, commercial)
- \* management principles
- \* marketing
- \* negotiation skills
- \* organisational development
- \* project management
- \* psychology/behavioural science
- \* quality assurance.

Other acceptable activities such as employer or company sponsored internal professional development courses must clearly meet the intention of the definition of continuing education.

### **The Institution's Policy**

The Institution's Policy on Continuing Education is to:

- (i) encourage its members to undertake an adequate level of continuing education

- (ii) formally recognise such activities
- (iii) promote the provision of continuing education opportunities
- (iv) provide for endorsement of formal continuing education activity if requested by the course providers
- (v) encourage employers of professional engineers to regard relevant continuing education as part of the employee's normal duties.

The Institution's Policy on Continuing Education sets the boundaries within which all elements must operate in defining the specific requirements for continuing education.

It should be noted that:

- \* Continuing education is only one aspect of ongoing professional development.
- \* Continuing education is an important contributor to the acquisition of new skills such as in management or new technology suited to changes in career responsibilities.
- \* The quality of professional experience is a separate issue within the spectrum of professional development and is not covered by the above policy.
- \* The recommended minimum commitment to continuing education is an average of 150 equivalent hours per 3 years on a rolling basis.
- \* In calculating equivalent continuing education hours, activities (a) - (c) in the Definition are to be given a weighting



factor of two times; (d) - (i) are to be given a weighting factor on one. Activities of personal endeavour are to be given the following weighting factors:-

(a) if demonstrated by peer recognition - factor = 1.0

(b) for private activities - factor = 0.5

- \* Reference should be made to the Definition for examples of private activities and demonstration by peer recognition.
- \* When calculating total equivalent continuing education time at any point, the proportion of equivalent personal endeavour included in the total should not normally exceed 50% of the total time.

- \* Members shall maintain their own records. If formal recognition is required by a third party, the Institution will audit a Member's record with a view to certifying compliance with this policy.
- \* The Institution provides continuing education opportunities through its learned society activities and by arrangements with other organisations.
- \* The Policy does not commit the Institution to providing narrowly specialised activities not available through other sources.
- \* The Policy does not expect employers to bear the cost of continuing education activities not of direct relevance to the career progression of an employee with the employer's organisation.



## INTERDISCIPLINARY SENIOR PROJECT GROUPS: DEVELOPING CREATIVE AND INNOVATIVE TALENT



### Summary

The integration of several students from various engineering disciplines for their senior project provides all of them with a unique opportunity to work and solve an engineering problem from a complete engineering perspective rather than from the view point of one singular discipline. In addition, this design approach exposes students to the experience of multidisciplinary team work, which is the engineering atmosphere most of them will encounter when they become professionals.

Dr G. Nunez

### Introduction

At the beginning of their college career, engineering students have an opportunity to interact with peers from other engineering disciplines as well as with freshmen of the diverse curriculum available on their campuses. In fact, many engineering programs offer a common set of courses to all engineers in their first year. However, as the student progresses, this healthy interaction is broken and with the passage of time, a student's group becomes *more specialised and reduced* in number. The individual, then, is prone to become a specialised problem solver developing a natural tendency to be an individual contributor.

In reality very few engineering graduates will have an opportunity to be an independent specialist once they start their professional careers. In all likelihood the individual's first assignment will involve the integration into a technical group where various disciplines are represented. This can prove to be a rather shocking experience. The young professionals, generally insecure with their recently acquired knowledge, not only have to cope with a new lifestyle and a new *business culture*, but now they must deal with other persons who do not seem to *speak the same language* and who, at times, do not seem to understand the newcomer's terminology. What is even worse, those great ideas which in the past could be presented as trivial, now must be *sold* through elaborate and detailed explanations that are not quite so obvious to *others*.

The one- or two-semester senior project provides a unique opportunity for the student to put into practice the theories earned in previous courses, while at the same time developing and improving their communication and writing skills.

A valuable dimension can be added to the senior project activities by integrating groups of students from various engineering disciplines; therefore allowing the participants to visualise and approach the often complex engineering problems from a broad perspective rather than from a narrow view.

Multidisciplinary integration also promotes group discussion where participants sell and/or negotiate their ideas with other students. Therefore, in order to be successful and make a significant contribution to the group, each student must not only have an adequate background in his/her field, but must also be able to communicate with others, be persuasive, and be able to defend their ideas. This unique experience also provides the students with the opportunity to learn from each other, to become more familiar with other engineering disciplines, and most of all, to give students a *sneak preview* of what awaits them in their future professional life.



## Structuring Multidisciplinary Groups

Structuring a multidisciplinary senior project group may prove to be a difficult task, especially during the first few years of the course implementation. In order to establish a successful and long lasting student design program, the integration of different department's faculty, and the collaboration and support of departmental chairperson and the college's Dean must be assured. The latter may be the easiest one to achieve, but integrating faculty is much more difficult. Ideally, all faculty advisors involved with the project must be interested, equally, in both the pedagogic exercises of guiding the group through the project and in the solution of the targeted problem as a professional challenge in itself. However, of no lesser importance is that each must receive *adequate credit* within their own departments, especially from the department head and by the promotion and tenure committee, which often tends to reward more generously research activities than oriented efforts.

In order to obtain the best result with an interdisciplinary group of students in their senior project, the following suggestions are offered:

- \* Select projects where contributions from different engineering disciplines are required, and clearly define the scope and boundaries of the problem(s) to be addressed. It is very important that a balance exists with regard to the degree of involvement of each of the participating engineering disciplines. For instance, in a project involving surgical instrument design, industrial engineers may look at the ergonomic aspect of the design; mechanical engineers may concentrate on the calculation of the forces and stresses, and mechanical design; and manufacturing engineers may look at the manufacturing process and the cost analysis involved in the production of the instrument.
- \* As much as possible, the project should result in a tangible final product, including a working prototype (when applicable), with reported results of the testing performance. When a process rather than a product is the expected final product, then a complete report including all facets of the experimentation, results, conclusions and recommendations should be required.
- \* Have at least two students from each of the disciplines represented, but keep the group size to a maximum of eight participants. If the group size is too large, the individual efforts will be diluted, and some participants may shy away from making their contributions. On the other hand, small groups may not generate the desired level of dynamic interaction between participants. It is of great importance when integrating the working groups, that the faculty clearly defines the responsibilities of each of the sub-groups (disciplines), and make sure that the scope and boundaries of the project are not only well defined, but thoroughly understood by all members of the group.
- \* Have a faculty advisor for each department represented in the project. If the project involves doing work in cooperation with an external institution (i.e. bank, hospital, manufacturing industry), then a representative from the institution should be included as part of the faculty advisory group. The role of faculty advisor throughout the project should be that of a mentor who orients his/her students, steering them in the right direction without solving the problems for them, but motivating them to make *group* decisions. The advisors should meet periodically with their individual students as well as with the group to monitor progress, provide support in logistics regarding use of equipment and materials procurement, and adjustment of objectives as necessary.

Once a project has been selected and the group(s) integrated, the first formal meeting should be directed toward formulating the problem and defining its scope and objectives. At this time, the student group should be advised to promptly submit a proposal including:



Definition of the problem, materials and methods, anticipated results, a program of proposed activities supplemented with GANTT chart, time estimates, and a budget of all expenses anticipated (supplies, equipment, computer software, computer time, etc.). The advisors should review the proposal promptly, and make sure that the students can realistically achieve their proposed goal(s) given the available resources within their departments and college.

- \* The advisors should plan to have a one-hour meeting with their students at least once a week, and with the group as a whole every other week. The purpose of these meetings is to monitor progress, make adjustments in the time table if necessary, and to provide the group with the necessary counselling they may need to continue progress in their project execution. Have students involved in the project anticipate in inter-departmental seminars, where results can be presented before a broad multidisciplinary audience. This final exercise accomplishes several goals. Students must not only organise their ideas, but they must also summarise these ideas in a formally written professional report. The presentation, in turn, exposes the student to the rigours of oral performance. This means standing before a mixed audience whom they must address in an organised, clear, and simple form. In addition, the group should be responsible for preparing the audio and visual aids they feel are necessary and pertinent to the occasion. Each person in the group should participate in the presentation, but as a whole, it should not result in a melange of unrelated concepts but rather, a uniform body of fluid and coherent ideas. The faculty advisors should encourage the students to practise and *mock up* the presentation at least twice before they go before the broad audience. The students also should be encouraged to anticipate the questions they are likely to be asked, and prepare their answers accordingly.

## Conclusions

It is a point beyond discussion that four or five years of engineering education are not enough to fully develop an individual who is about to undertake major professional responsibilities. They must be broken up and developed gradually. In fact, large corporations have *training* programs designed for that purpose where entry level engineers spend up to three years *getting accustomed* to the company.

In order to best prepare the student for an engineering career and a smooth transition from college to job, the one- or two-semester senior project provides a unique opportunity for engineering students to get hands-on experience and to put into practice the theory learned in prior years. When the senior project is integrated with a mix of seniors from various disciplines, then an extra valuable dimension is added for each one has an opportunity to address the problem from the plural view that real-life engineering problem-solving requires.

German Nunez, PhD  
Associate Professor of Industrial Engineering  
Florida International University  
Miami, FL 33199, USA

## COMPUTER-ASSISTED TRAINING PROGRAMS FOR ENGINEERING EDUCATION

An application was accepted recently under the **TEMPUS** scheme for a research grant which would allow us to set up a joint international project on computer-assisted training (more about Tempus in the *AAEE Newsletter*, Vol.2, No.3). The project's concept is to develop computer-assisted training programs for engineering education, incorporating problems across the entire engineering profession. The condition of the award is that only European institutions involved in this venture can be sponsored by the EEC.



The Electrical Engineering Education Research Group (EEERG) in the School of Electrical Engineering at The University of Sydney is the only non-European organisation from G24 countries accepted as an associated institution. The work and achievements of the EEERG in the area of computer-aided training, particularly in the development of computer-aided authoring systems and interfacing computers with electrical apparatus, have been recognised by the international engineering education community, and the EEERG has been asked to further develop authoring systems and computer-aided learning systems for electrical engineering. The TEMPUS scheme implies that the activities carried out by the EEERG can not be sponsored by EEC funding, and the Group can rely only on financial sponsorship by Australian organisations.

Apart from The University of Sydney, the TEMPUS project involves a number of renowned and reputable tertiary institutions, such as:

- \* HAP Hamburg, Federal Republic of Germany
- \* Portsmouth Polytechnic, United Kingdom
- \* Technical Hochschule, Ilmenau, Federal Republic of Germany
- \* Polytechnical University of Catalunya, Barcelona, Spain
- \* Technical University of Budapest, Budapest, Hungary
- \* AUEF Liege, Belgium
- \* EUROTEAM, Leicester, United Kingdom
- \* Technical University of Cracow, Cracow, Poland
- \* WEST 80, Bologna, Italy
- \* LASER Zentrum, Hanover, Federal Republic of Germany
- \* Slovak Technical University, Bratislava, Czecho-Slovakia
- \* Technical University of Wroclaw, Wroclaw, Poland
- \* IIEF Institut für Informatik in Entwurf und Fertigung, Federal Republic of Germany
- \* Czech Technical University, Prague, Czecho-Slovakia
- \* AKAP Ausbildungspartnerschaft Aachen-Köln RWTH, Federal Republic of Germany
- \* Ecole des Mines de Paris, France.

The complexity of this work requires that several institutions and individuals be involved in the project. Preliminary investigations must be carried out to determine the suitability of particular contents for conversion to computer-assisted instructions in all specialties of the engineering profession. Hence, there is a need for strong collaboration between many tertiary institutions worldwide, especially with those who have already acquired some experience and expertise in such work, and may provide substantial input information and expertise required for this task.

The EEERG will be involved in the development of authoring systems, computer-assisted instruction and a methodology for computer-based training in electrical engineering. Any Australasian institution or individuals willing to collaborate on this project should contact Z.J. Pudlowski.

## MEETING OF THE EXECUTIVE COMMITTEE

A telephone hook-up was kindly arranged by Mr Harry Wragge (Telecom) so that members of the Executive Committee from all over Australia and New Zealand (Prof. David Elms) could *get-together*, without travelling, on Wednesday, February 20, 1991. Several matters were on the agenda and were thoroughly discussed, namely:

- \* Election of one Member of the Executive Committee after Dr Robert Clinch's resignation.
- \* Statement of Accounts of the 2nd Annual Conference of AAEE.



- \* 3rd Annual Convention and Conference of AAEE.
- \* Association's activities in 1991.
  - a) Survey of engineering education.
  - b) Austral-American Liaison Group on Engineering Education.
  - c) Other activities.
- \* East-West Congress on Engineering Education (Cracow, Poland).
  - a) Present Status.
  - b) Meeting of the Program Committee (March).
- \* AAEE Australasian Medal for Distinguished Contributions to Engineering Education.
- \* Selection of the best paper at the 3rd AAEE Conference.
- \* *Australasian Journal of Engineering Education* Vol.1, No.2.
- \* Executive Director's meeting with IEAust. Director, Education, Mr Ted Whitehead.
- \* Affiliation of the Victorian Association of Electrical Engineering Education within the AAEE.
- \* Membership drive.
- \* Budget statement.
- \* Next meeting of the Executive Committee.

### NEW HEAD OF CIVIL ENGINEERING AT THE UNIVERSITY OF SOUTH AUSTRALIA



Prof. M. Taylor

Professor Michael Taylor has been appointed Head of the School of Civil Engineering at the University of South Australia. Before joining the University, Prof. Taylor was a Reader in the Department of Civil Engineering at Monash University, Melbourne.

He has conducted research in traffic and transport engineering, specifically in road traffic networks and travel demand modelling, and has developed a number of computer models for transportation systems and road networks, devised methods for the collection and analysis of traffic data, and has been strongly involved in the general application of interactive graphics and computer technology in civil engineering and the transport field.

Among previous appointments Prof. Taylor has worked as a research scientist in the Division of Building Research of CSIRO and as a consultant on the Road Transport Research Program of the Organisation for Economic Co-operation and Development (OECD) in Paris.

He has a Master of Engineering Science from Monash University, and in 1977 gained his PhD in Civil Engineering, specialising in the traffic engineering field. He is a member of the Australasian Association for Engineering Education, the Institution of Engineers, Australia, and the Institute of Transportation Engineers.

Prof. Taylor received an Engineering Excellence Award from the Institution of Engineers, Australia in 1989 for *MULATM*, a software package for local area traffic planning. He has published 10 books, 29 research reports, 120 journal articles and conference papers, as well as six software packages.

Prof. Taylor said he is *keen to increase academic interest in South Australia on research in the transport and traffic field, particularly in the engineering area.*

In 1990 Prof. Taylor was the Secretary of the Organising Committee for the 2nd Annual Conference and Convention of AAEE, held at Monash University last December. This conference was particularly successful, and helped cement the place and importance of the Association in engineering education. He has accepted an invitation to join the organising



committee for the 3rd conference, to be held in Adelaide at the end of 1991.

Born in England, Prof. Taylor was a child when he emigrated to Australia with his family. His hobbies include home improvements and furniture restoration, as well as sporting interests. He is married with two teenage children.

### **AAEE MEDAL FOR DISTINGUISHED CONTRIBUTION TO ENGINEERING EDUCATION**

An AAEE Australasian Medal for distinguished contribution to Engineering Education has been established. The successful candidate will be presented with the medal for the first time at the 3rd Annual Convention and Conference in December this year, which will be held at The University of Adelaide. The recipient of this sterling silver Medal will be invited to give a keynote address at this Conference on a topic of his or her interest and work in engineering education. Also, this address will be published in the *Australasian Journal of Engineering Education*.

The purpose of this Medal is to recognise outstanding contributions in the field of engineering education. Such contribution will be recognised by books, research papers, reports, journal and conference publications, etc.

To be eligible, a candidate must be a member of the Australasian Association for Engineering Education and his or her research and other activities must have been carried out in Australasia.

Nominations are hereby invited. They should include a comprehensive statement by a proposer(s), and should include a curriculum vitae, a list of publications, relevant samples of publications, and a thorough evaluation of the candidate's work and achievements carried out by the proposer(s). Nominations which are incomplete by the closing date will not be considered.

Nominations are confidential and should be addressed to:

Professor Trevor W. Cole  
AAEE President  
School of Electrical Engineering  
The University of Sydney, NSW 2006  
Australia

The deadline for nominations is July 30, 1991.



Picture above shows the AAEE Australasian Medal (actual size).



## NEW MEMBERS OF AAEE



Mrs Jane Varcoe completed her BE in Mechanical Engineering at the University of Newcastle in December 1987 after a five-year traineeship with Alcan Australia. She graduated with first class honours and the University Medal.

In December 1987 she took up her current engineering position with Alcan Australia at their smelter division. In this role, she works on the plant as technical advisor to a maintenance superintendent. The major areas of her experience have been in condition monitoring, vibration monitoring, lubrication, fume and dust collection, as well as general maintenance troubleshooting and failure analysis.

In her work, Mrs Varcoe has seen the potential cost savings which can be made when the engineering workforce is provided with information about materials and methods. With this objective in mind, she assisted with the production of a vibration monitoring training video and is to be involved in training engineers and tradesmen in the use of

vibration monitoring equipment.

In 1989 and 1990, she presented lectures on Condition Monitoring, Vibration Monitoring and Failure Analysis to final-year mechanical engineering students at the University of Newcastle. She believes that students need to be provided with up-to-date, *practical* engineering knowledge which is relevant to their future employment.



Professor Gilbert Frade is the Deputy Director and Dean of the Ecole Nationale Supérieure des Mines de Paris, France. He graduated from the Ecole des Mines in 1960 and subsequently obtained his doctorate in Physical Metallurgy. He was the Secretary-General of the French Conference of des Grandes Ecoles between 1976 and 1980.

As well as being a consultant in continuing education (CE) for many French and international companies, and Acting Chairman of the Gaz de France-EMP CE programs, Prof. Frade is involved as a specialist in a full-time gas engineering training scheme for executive engineers.

He is a European educational consultant for advanced training schemes, such as EDEN (design training), DELTA (distance learning), and COPERNIC (management studies for the Eastern bloc engineers and executives). In his international collaboration, Prof. Frade has piloted the work on building design, design of laboratories and equipment selection, entrance examination schemes, personnel recruitment and teaching programs for a 7-Nations West

African Engineering and Technician School, opened in 1990 at Niamey, Niger. He helped in setting up, and now advises on, the pluri-annual Technical Management Programs' two leading industrial consortia in Morocco. He participated in a series of engineering seminars in Africa, India, Mexico, People's Republic of China and Portugal. He has developed academic and placement exchange agreements with a number of universities throughout the world.

## A CALL FOR RENEWAL OF MEMBERSHIP

At the Annual General Meeting the Executive Committee did not seek the increase of membership fees, and it was decided that membership fees for 1991 remain the same as they were in 1990. Association members are kindly asked to renew membership, and to encourage their colleagues who are not members of the AAEE to join our Association. Although fees are payable by June 30 each year, we would appreciate it if members would pay their dues as soon as possible so that we may more effectively plan the 1991 budget. A call for renewal of membership is therefore made and a single-page reminder is included in this issue.

## 2ND WORLD CONGRESS ON EDUCATION AND TRAINING

Members of our Association have received an invitation to attend the 2nd World Congress on Education and Training (II Congreso Mundial de Educacion y Entrenamiento) to be held at the International Conference Centre, Havana, Cuba, between 10 and 13 September, 1991. The main topics include:



- \* Selection, training and upgrading of engineering professors.
- \* Teaching technology used by engineering professors.
- \* Role played by engineering professors in strengthening the industry-university relationship.
- \* Professors' involvement in engineering lifelong education programs.
- \* Ways of motivating engineering professors to remain teaching at universities.

The scientific program will consist of work sessions, round table discussions, professional visits and special courses.

English and Spanish are the official languages of the congress.

Further information from Palacio de las Convenciones, Apartado 16046, La Habana, Cuba. Tel: 22-5511 al 19. Telex: 511609 palco cu. Fax: 22-8382.

## **2ND INTERNATIONAL SYMPOSIUM FOR ENGINEERING DEANS AND INDUSTRY LEADERS**

A Second International Symposium for Engineering Deans and Industry Leaders will be held at UNESCO Headquarters in Paris, France, between July 16 and 20, 1991. This is a follow-up to the 1989 Symposium at Ohio State University and is sponsored by UNESCO, with appropriate engineering education groups invited to co-sponsor (eg ASEE, Engineering Dean's Council, SEFI, IGIP). The AAEE also has been invited to become a co-sponsor of this Symposium and the invitation was accepted.

The scientific program is to be developed by Donald Glower, Russel Jones, Curtis Tompkins and Dueb Lakhder. As outlined by the organisers, the program will cover projected action-oriented events, such as:

- \* Development of sister university programs, pairing appropriate engineering schools in developing and developed countries for interchange programs.
- \* Development of mechanisms for industry-university interaction, particularly in developing countries.
- \* Development and maintenance of a comprehensive and accurate database on engineering education internationally (eg worldwide list of engineering schools, current leaders, enrolments, etc.).
- \* Development and maintenance of information clearing house on teaching equipment, courseware, etc., used in engineering education.
- \* Development of programs to promote completion of educations (to doctorate) of faculty at engineering schools in developing countries.
- \* Promotion of educational equivalency agreements, accreditation mechanisms, curricular standards, etc.
- \* Development of an ongoing worldwide organisation of engineering deans.

Participants expected are leaders in engineering education, and industry leaders concerned about university interactions on technology in developing countries. Papers from potential participants are sought, on all of the program topics listed. Abstracts (100 words) to be sent by March 15, 1991 to Dr Russel C. Jones, 205 McDowell Hall, University of Delaware, Newark, DE 19716, USA. Tel: 302-451-6074 and fax: 302-451-6504.

## **2ND EUROPEAN FORUM FOR CONTINUING ENGINEERING EDUCATION**

An invitation to attend has been received from organisers of the 2nd European Forum for Continuing Engineering Education, entitled *International Cooperation between Industry and*



*Academia.* The forum is organised jointly by the European Society for Engineering Education, Fédération Européenne d'Associations Nationales d'Ingénieurs and Internationale Gesellschaft für Ingenieurpädagogik. It is co-sponsored by the International Association for Continuing Engineering Education, and will be held in Lisbon, Portugal, between 28 and 30 October, this year.

The main topics of interest include:

- \* European distance education.
- \* The future of continuing engineering education (CEE): Interesting experiences and new initiatives.
- \* Continuing education for the environment.
- \* Human resources development strategies.
- \* Networks and information channels for CEE.

Further information may be obtained from Professor M.F. Ramalhoto, Instituto Superior Técnico, Av. Rovisco Pais, 1096 Lisboa Codex, Portugal. Tel: 351-1-7143311/801181, fax: 351-1-899242 and telex: 63423 ISTUTL P.

### **IMPRESSIONS AS A YOUNG ACADEMIC STAFF MEMBER**

The 2nd Annual Conference of the AAEE brought together engineering educators, representatives of engineering employers from industry and government, and representatives of The Institution of Engineers, Australia (IEAust.). Individuals from each of these categories were able to exchange ideas and communicate on a broad range of issues primarily centered around the education, accreditation, employment and professional development of engineers.

The IEAust. took the opportunity to raise various issues. It put the case, as did representatives of organisations that employ large numbers of engineers, that there is a growing requirement for engineers in the workforce, and that one logical way in which this need could be addressed is by the introduction of three-year undergraduate courses. The corresponding accreditation requirements were also addressed by the IEAust. This discussion was supported by a comparative study of the current and projected number of engineers in this country, and abroad. A further issue raised was the need for continuing education of engineering graduates in order to maintain their respective skills bases up to date. Dr Mike Sargeant concluded the IEAust. discussion with an impassioned plea to all people associated with engineering education to promote leadership and managerial qualities in future engineering graduates so that they may be able to lead the way in improving the international standing of the Australasian region's economic competitiveness.

Representatives of engineering educators from diverse academic institutions within this region, and from North America, were able to meet and exchange ideas arising from issues raised at the conference. Problems such as increasing class sizes, and inadequate levels of funding for undergraduate teaching were discussed. The issue of what type of professional engineer should an academic institution strive to produce was raised, and juxtaposed with the engineering employer's expectation that the engineering graduate should ideally be very young, and yet at the same time have a great deal of industrial experience.

Overall, the conference seemed to generate much enthusiasm among its participants, if only for a short time.

*Mr Francesco Crusca*  
*Lecturer in Power Systems and Control Systems*  
*Department of Electrical & Electronic Engineering*  
*The University of Melbourne*





*Participants of the 2nd Annual Convention and Conference of the AAEE, which was held in Melbourne last December, enjoyed a short stroll through Melbourne town. Picture shows Bourke street, the place for gatherings and European-style shopping.*

---

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

Dr Zenon J. Pudlowski, School of Electrical Engineering, The University of Sydney,  
SYDNEY, NSW 2006, Australia, Tel. (02) 692 2000, Fax: (02) 692 3847

---

*Association members and tertiary institutions are invited to contribute to the Newsletter on matters relating to membership and engineering education.*

*Send contributions to the Editor at the address above.*