



AUSTRALASIAN ASSOCIATION FOR ENGINEERING EDUCATION

NEWSLETTER

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The above picture shows Prof. Mark Wainwright, Dean of the Faculty of Engineering at the University of New South Wales, Sydney, Australia, presenting an introductory address about his Faculty. Prof. Wainwright was elected the President of the Australasian Association for Engineering Education (AAEE) at the 7th AAEE Annual Convention and Conference. The Association meeting was held at the University of Melbourne between 10 and 13 December 1995. His brief biography is included overleaf. On behalf of AAEE members and the AAEE Executive Committee, members of the Editorial Board of the Newsletter wish Prof. Wainwright a very successful Presidency.

INTRODUCING OUR NEW PRESIDENT

Mark S. Wainwright holds a Personal Chair in Chemical Engineering (since 1989) and has been Dean of the Faculty of Engineering at the University of New South Wales since 1991. He gained the degrees of BAppSc (Hons) and MAppSc at the University of Adelaide and was awarded his PhD at McMaster University, Ontario, Canada in 1974.

His university teaching career commenced at the University of New South Wales as a Lecturer in Industrial Chemistry in the School of Chemical Technology in 1974 and from 1981 to 1988 he was an Associate Professor in the School of Chemical Engineering and Industrial Chemistry.

Professor Wainwright's research interests have centred on four main areas: applied catalysis and reaction engineering, mineral processing, adsorption processes in pollution abatement, and gas and liquid chromatography. In the past 10 years he has been successful in obtaining research funding in excess of \$3 million from government and industry. Since 1974 he has published more than 200 papers and patents. His major current research interest is in the development of novel catalytic processes for the production of synthetic fuels and chemicals.

Professor Wainwright is a Fellow of The Institution of Engineers, Australia, a Fellow of the Australian Academy of Technological Sciences and Engineering and a Fellow of the Royal Australian Chemical Institute (RACI). In 1987 he was a joint recipient of the RACI Applied Research Award - Erich Heymann Medal for research into copper catalysts and catalytic processes based on copper, and in 1989 he was awarded the RACI R.K. Murphy Medal for applied research in reaction engineering and minerals processing. In April 1996 he is to receive the Murray Raney Award of the Organic Reactions Catalysis Society in Atlanta, USA.

PRESIDENT'S REPORT - AAEE 1995



Prof. P. Darvall

After another twelve months of strong activity, I am pleased to again report to members of the Australasian Association for Engineering Education. This report spans the twelve months activity of the Association since the last Annual General Meeting in Sydney on the 11th December 1994.

The major activities in these twelve months have been the 6th Conference at the University of Technology, Sydney, the 1995 International Congress of Engineering Deans and Industry Leaders at Monash University from 3-6 July 1995, for which AAEE was a co-sponsor, and the 4th World Conference on Engineering Education held in St Paul in the USA last October. AAEE also was a co-sponsor of the UNESCO International Conference in Engineering Education in Moscow in May.

The AAEE 6th Annual Conference was held at the Faculty of Engineering within the University of Technology, Sydney, with the organisation under the leadership of Professor Peter Parr, Dean of the Faculty of Engineering. The Conference attracted 260 attendees with approximately 170 papers published in the proceedings. The theme was *Inspiring Integration - Futures in Engineering Education in Australasia*. The 1994 AAEE Medals were awarded to Professor Jean Michel (France) and Professor Emeritus Hugo K. Messerle.

In May, the Association collaborated with the Russian Association for Engineering Education and other international organisations in organising an International UNESCO Conference on

Engineering Education in Moscow. The Conference attracted about 400 participants, mostly Russians, with AAEE being represented by the President, the first Vice-President and two other members. Many of the conference deliberations concentrated on the role and function of the engineering education institution in transition from a state controlled system to a free market economy. This conference was one of a number of national and international conferences to stimulate interest for the International Congress of Engineering Deans and Industry Leaders.

The 1995 International Congress of Engineering Deans and Industry Leaders was the fourth in an international series supported by UNESCO and the first to be held in Australia. This Association was a co-sponsor of the Congress which was well attended by about 200 participants from 35 countries resulting in 120 papers in the Congress proceedings. The Congress program included plenary sessions and panel sessions. A Report based on the summaries provided by each of the six panels and Summary Recommendations presented at the conclusion of the Congress by the Operational Chairman of the Panels, Professor Russel C. Jones has now been published and makes interesting reading.

Your Association was also a co-sponsor of the recent 4th World Conference on Engineering Education held in St Paul, Minnesota, in October. AAEE was very well represented at the Conference, being the third largest group, after the US and UK, in a total of about 300 delegates from forty countries. The message from that Conference is consistent with what we often hear here in Australia, that employees are most satisfied with the technical expertise of graduating engineers, but believe they need to be more familiar with the global and societal context of their work and the business perspective. Further, graduates must have leadership skills, the ability to effectively cross cultural boundaries and have distinct communication skills. We, as educators must inspire our students and by example show the importance of such higher order skills. The style and tone set by staff is just as important as curriculum and teaching technology.

I am pleased to report to this Association that I was elected Chairman of the International Liaison Group for Engineering Education (ILG-EE) for the next three years, with Professor Pudlowski as Secretary. A proposal for the UNESCO Supported Centre for Engineering Education (USICEE) to hold the next World Conference in 1998 in Cracow, Poland was accepted.

The Australasian Journal of Engineering Education (AJEE) has continued to flourish. The Australian Vice-Chancellors Committee awarded Monash University a grant to investigate the electronic publishing of technical journals. A project committee involving Monash University Library, the Unit of Medical Informatics and USICEE was set up and the AJEE selected for this research. As a result, a full electronic version of the journal has been produced and is currently available on the Internet.

Your Association has supported the *Australasian Women in Engineering Forum*. Two forums have been held prior to our annual conference. The Forums bring together a diverse range of people and perspectives and are open to all interested women and men. The 2nd Forum was held at RMIT on Saturday, 9 December 1995, with the aim of presenting, debating and discussing aspects of the engineering culture which affect the number of women entering, and the subsequent number of women remaining in engineering.

AAEE is also a co-sponsor of the 3rd East-West Congress on Engineering Education to be held at the Gdynia Maritime Academy in Poland from 16 to 20 September 1996. It is a follow up to the extremely successful 1st and 2nd East-West Congresses on Engineering Education held in Cracow, Poland in 1991 and in Lodz, Poland in 1993. The theme of this 3rd Congress is Re-vitalising Academia/Industry Links and I exhort you all to submit a paper and attend what will be a most exciting Congress.

The National Review of Engineering Education is reaching its final stages. A progress report will be presented at our Conference by Professor John Simmons, immediate past Chairman of the Council of Engineering Deans, and Deputy Chairman of the Review. A draft report, to be written by Professor Simmons and Dr David Radcliffe, will be circulated for comment in about March, 1996. Since some of our members have serious reservations about the methodology of this review, a special session of our Conference will be arranged to discuss the matter.

It has been a busy and productive year for AAEE in 1995 and I wish to thank all AAEE members for their contributions during the year to the advancement of the Association.

We all look forward to an even more successful year in 1996, with a new President of AAEE.

*Professor Peter LeP Darvall
Deputy Vice-Chancellor
Monash University
President of AAEE*

SECRETARY/TREASURER'S REPORT



A/Prof. T. Berreen

Membership of the Association is now 320 members, including 62 members from 5 institutional memberships. Currently there are 170 subscriptions to the Australasian Journal of Engineering Education.

The attached auditors' report shows that the financial position is again strong with a balance of \$16,058, which is just less than the 1994 balance.

The subscription for 1996 will be \$40 and IEAust members who nominate AAEE as their society of first choice pay \$25, with IEAust providing a subvention of \$15 to bring the total to \$40. It is suggested that Association members who are also members of IEAust adopt this method of payment through IEAust. For those members, please take care when completing their IEAust membership form.

Non-IEAust members may pay their subscriptions directly and such members and new members may do that at this Conference. Subscription to the Journal is \$35 and may also be paid at this Conference.

I thank you for your support and assistance on all matters relating to the administrative and financial arrangements of the Association in 1995.

*Associate Professor Terry Berreen
Department of Mechanical Engineering
Monash University
Secretary/Treasurer of AAEE*

A BRIEF REVIEW OF AAEE ACTIVITIES IN 1995

The AAEE, whose Headquarters are based at the UNESCO Supported International Centre for Engineering Education (USICEE) at Monash University, has vigorously pursued its local and international activities throughout the seventh year of operation. It should be stressed

that throughout 1995 the AAEE Secretariat experienced a neverending problem with the management of the Association's database by the Membership Division of the IEAust. This was the most likely reason for a substantial loss of many AAEE members. It is a pity that our *big brother* is unable to get its act together and to provide its members with basic statutory services.

Again, a successful Annual Conference was held in December 1995. The Conference general theme *Internationalisation of Engineering Education* was chosen to address the challenges and opportunities for collaboration coming from the fact that the world has become a global community. On this occasion, in preparing the Conference academic program, the Program Committee made a conscious decision to limit the number of papers to be presented at the Conference, hence reducing the number of Conference streams and allowing for better interaction between participants.

Close to 140 academics, government and industry representatives and postgraduate students attended the Conference, which this time was organised by the USICEE in collaboration with the University of Melbourne. Over 110 presentations were made at the Conference and 100 papers were included in the Conference Proceedings, published by the Centre.

On behalf of the AAEE President, Professor Peter LeP Darvall, the AAEE Executive Committee, and indeed myself, I wish to congratulate Prof. William Charters, Assoc. Prof. Mohammad Aldeen and the entire Conference Committee for their excellent job.

On the publication front, it is our pleasure to report that the sixth volume of the *AAEE Newsletter* published in 1995, consisted of 56 pages of material. Several interesting and stimulating papers on engineering education were included in the volume, as well as material concerning the Association's activities and issues of importance for the engineering education community.

The *Australasian Journal of Engineering Education* again published two issues with 220 pages of material. The first issue of volume 6 of the Journal was a regular issue. The second issue was a special issue, consisting of keynote addresses and special presentations made at the *6th AAEE Annual Convention and Conference* which was held at the University of Technology, Sydney (UTS), in December 1994. It was edited by a team of UTS academics under the leadership of Prof. Peter Parr, Dean of Engineering.

The 7th Annual Convention of the AAEE was held on Sunday, 10 December 1995, and annual reports concerning the status of the AAEE were presented by the President, Professor Peter LeP Darvall and the Secretary/Treasurer, Associate Professor Terry Berreen (the reports are included in this issue). The general meeting elected a new Executive Committee, consisting of twelve individual members of the AAEE. At its first meeting, held after the Annual Convention, members of the Executive Committee elected the Executive Officers. The Executive Committee is:

President: Prof. Mark S. Wainwright, The University of New South Wales, Sydney, NSW, Australia.

1st Vice-President & Executive Director: Assoc. Prof. Zenon J. Pudlowski, Monash University, Melbourne, VIC, Australia.

2nd Vice-President: Mr Barry Drew, TEAMTEC, Melbourne, VIC, Australia.

3rd Vice-President: Dr Cynthia Mitchell, The University of Queensland, Brisbane, QLD, Australia.

Secretary/Treasurer: Assoc. Prof. Terry Berreen, Monash University, Melbourne, VIC, Australia.

Member: Dr Jean Armstrong, La Trobe University, Bundoora, VIC, Australia.

Member: Prof. Trevor W. Cole, The University of Sydney, Sydney, NSW, Australia (Past President).

Member: Prof. Peter Darvall, Monash University, Melbourne, VIC, Australia (Immediate Past President).

Member: Mr Scott Grenquist, The University of Newcastle, Newcastle, NSW, Australia.

Member: Assoc. Prof. Stephen Johnston, the University of Technology, Sydney, NSW, Australia.

Member: Mr David Parsons, The University of Southern Queensland, Toowoomba, QLD, Australia.

Member: Mr Jeffrey Stewart, University of Ballarat, Ballarat, VIC, Australia.

AAEE MEDAL FOR DISTINGUISHED CONTRIBUTIONS TO ENGINEERING EDUCATION

The AAEE awarded its Medal for distinguished contributions to engineering education at the 7th Annual Convention and Conference for the fifth time. This time only the 1995 AAEE Medal in the Australasian division was presented.

Professor Trevor W. Cole, Head of the Department of Electrical Engineering at The University of Sydney, Australia, was awarded this Medal. Prof. Cole is very well known to members of the AAEE for his tremendous contribution to the formation and initial operation of the AAEE. He was the Inaugural President of the AAEE between 1989 and 1991. As the AAEE President, Prof. Trevor Cole helped formulate and implement the objectives of the AAEE, and the award is also in recognition of this achievement.

Presenting the solid sterling silver medal the AAEE President, Professor Peter Darvall, read the following citation:

Trevor Cole has been the Peter Nicol Russell Professor of Electrical Engineering at The University of Sydney since 1980 and Head of its Department of Electrical Engineering for many of those years. During that time the degree programs and student educational experience have developed significantly under his direction. The number of students have doubled, new degree combinations have been introduced and an enhanced focus on student learning and quality has developed.

In approaching engineering education, Trevor draws on the breadth of his own experience and interests. His first degree was in Electrical Engineering from Western Australia, his doctorate was in the field of radioastronomy in the Physics Laboratory at Cambridge, and his research experience covered the Netherlands, CSIRO and even a short period with NASA. This developed in him a broad view of science, technology and engineering which was mixed with a strong appreciation of the historical and social context in which engineering contributes to the quality of life.

He is also one who has a strong interest and involvement in the role of design and in the

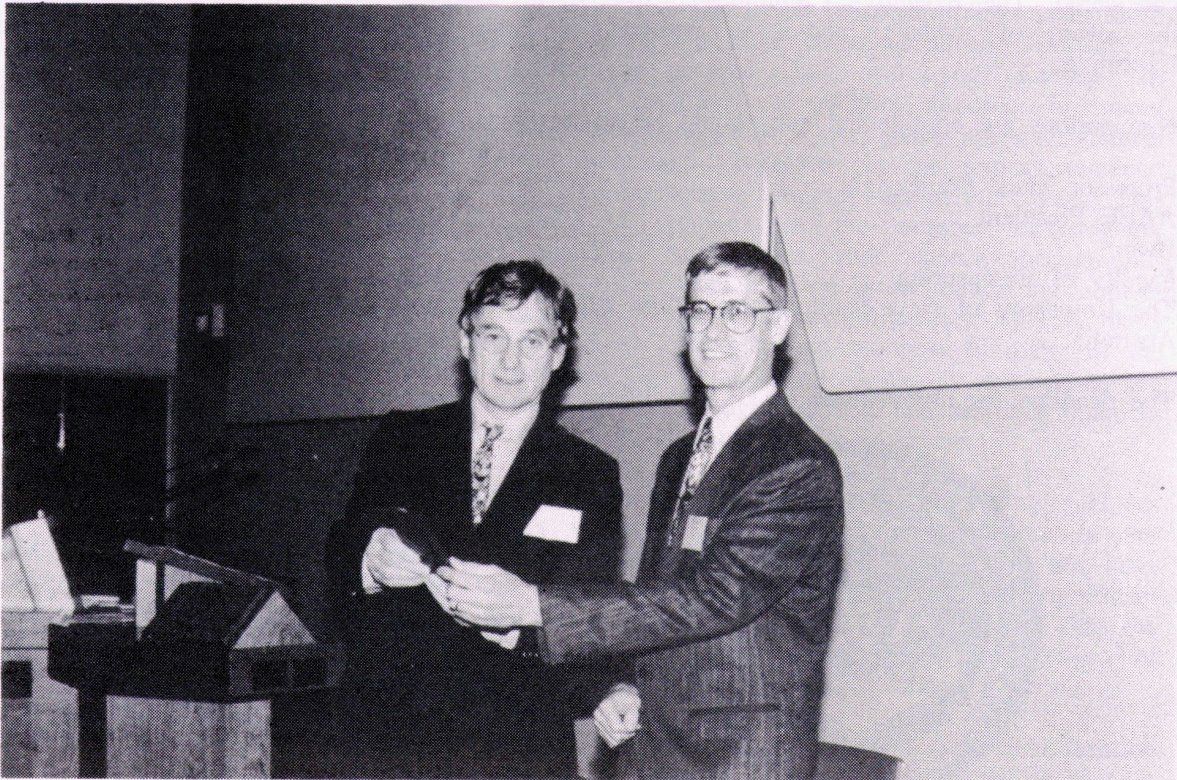
commercial context of product development and engineering based industry. This interest is reflected in the desire to stimulate students in the design process and to be self-directed and motivated in developing their own career towards the creation of real wealth.

Outside the department, Trevor has been most visible in engineering education through his initial stimulation for the creation of the Australasian Association for Engineering Education and his role as its Inaugural President. He has contributed significantly to a number of engineering education conferences in both Australia and Europe including all the annual AAEE conferences, the second, third and fourth World Conferences on Engineering Education, and the two East-West Congresses in Poland. He has been to Poland every year for the last five years assisting the establishment and operation of the Australian-government sponsored International Faculty of Engineering in Lodz and has been part of an official Australian delegation to Russia in the field of Engineering Education.

He is a member of the International Liaison Group for Engineering Education and has often been one of the few Australian keynote speakers at major conferences, as was the case at the last two World Conferences in Portsmouth and St. Paul.

His talks and occasional newspaper articles reflect someone who is passionate about the positive role engineers can and should play in developing a future Australia. They also reveal someone who is impatient to the point of intolerance of any impediment to change.

His wide travelling and broad experience have given him an excellent perspective in which to place Australia's struggles to deal with major and rapid development. It is hoped this Medal will encourage further energy and activity in his significant contribution to engineering education in Australasia



The AAEE President, Prof. Peter LeP Darvall, presents the 1995 AAEE Medal (Australasia) to Prof. Trevor W. Cole.

A call for nominations

The AAEE Medal for Distinguished Contributions to Engineering Education was established in 1991 with its Australasian division. Z.J. Pudlowski was the recipient of the Inaugural Medal. In addition to the Australasian division, in 1992 the AAEE Medal was extended into the international division.

The recipients of these sterling silver medals will be invited to give keynote addresses at the forthcoming 8th Annual Convention and Conference on an aspect of their interests and work in engineering education. Also, the medallists will be invited to submit their addresses for publication in the *Australasian Journal of Engineering Education*.

The purpose of these AAEE Medals is to recognise outstanding contributions to engineering education, both in Australasia and overseas. Such contribution will be identified by books, research papers, reports, journal and conference publications, engagements and achievements in activities carried out by engineering education organisations, etc.

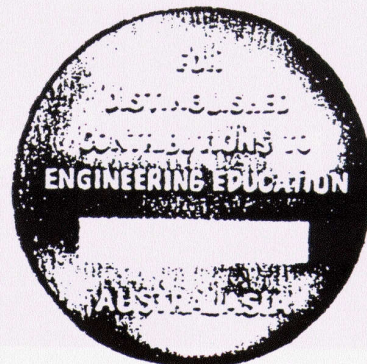
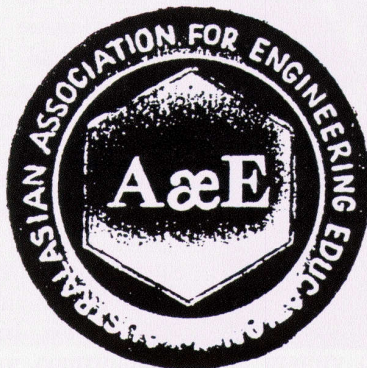
Only members of the AAEE are eligible to nominate candidates for the award of these AAEE Medals. To be eligible for the award of an AAEE Medal (Australasia), a candidate must be a member of the Australasian Association for Engineering Education and his or her research and other activities must have been carried out in Australasia.

Nominations are hereby invited. They should include a comprehensive statement by the proposer(s), and should include a curriculum vitae, 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. The Executive Committee of the AAEE reserves the right not to proceed with the award of medal(s) and/or to nominate its own candidate(s) at a meeting of the Executive.

Nominations are confidential and should be addressed to:

Professor Mark Wainwright
AAEE President
Dean
Faculty of Engineering
The University of New South Wales, NSW 2052
Australia

The deadline for nominations is 31 July 1996.



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

A CALL FOR RENEWAL OF MEMBERSHIP

At the 7th Annual General Meeting the Executive Committee approved the increase of membership fees. It was decided that membership fees for 1996 would be \$40 for individual members and \$A20 per teaching staff member in the institutional category. Association members are kindly asked to renew their membership, and to encourage their colleagues who are not members of the AAEE to join our Association. Although fees are payable by 30 January each year, AAEE members who are corporate members of the IEAust and who wish to nominate the AAEE as society of their first choice, are encouraged to renew their AAEE 1996 membership through the IEAust, using the IEAust's 1996 Subscription Form. Subscriptions to the Australasian Journal of Engineering Education for 1996 have also been increased to \$35 for individuals and \$70 for institutions.

A call for renewal of membership is therefore made and a single-page reminder is included in this issue for those who are not members of the IEAust or who would prefer to renew their membership through the AAEE Secretariat.

FROM THE PRESIDENT



Prof. M. Wainwright

I am taking on the role of President of AAEE at a most challenging time for engineering education in Australia. Furthermore trying to achieve the level of performance of Peter Darvall as President will be a great challenge. There is also our involvement in the DEET-funded Review of Engineering Education.

This is the time of year that Deans of most disciplines, but more particularly Deans of Engineering have come to dread. For several years we have been confronted by decreasing interest in undergraduate engineering programs by school leavers. In many Bachelor of Engineering programs in most states except Victoria there have been significant decreases in the tertiary entrance requirements (TER's for engineering degrees again this year). This trend which is likely to continue as the number of students completing secondary school with the required mathematics and science backgrounds continues to drop. There are several solutions to the problem. One is to reduce the number of offerings by completely closing down degree programs in some universities. This is likely to be unacceptable in the short-term. Another is to reduce student numbers in many of the programs to produce acceptable TER's. Both the Government and University Executives are unlikely to accept this approach. The alternative is to change teaching and learning practices to take into account the span of abilities of students entering the BE programs.

For some years I have been concerned that established Faculties of Engineering such as UNSW have very wide spans of TER's in many courses. This is most true in the traditional disciplines of Civil, Electrical and Mechanical Engineering where there are large numbers of students with TER's in the upper 90's in the same cohort with significant numbers with TER's in the 70's. As the spans continue to widen, it is essential that the issue is addressed. This is one of the areas that should be considered by the Review of Engineering and by the AAEE conference to be held at UNSW in December.

In January I was in the Philippines to assist with the Engineering and Science Education Project (ESEP) conducted by the Department of Science and Technology. ESEP has a number of projects which are directed towards improving engineering education in the Philippines. My visit coincided with the first Philippines Association for Technological Education (PATE) National Conference of Engineering Educators (PATE-NCEE) which was

held at the University of the Philippines, Diliman. The theme of the conference was *Strategies for Quality Instruction in Engineering Schools*.

The conference was attended by around 350 academics from 82 Colleges of Engineering in the Philippines. There were several excellent keynote lectures on the first day. The highlight was a paper entitled, *The Professor as CEO*, presented by Professor Isabel S. Soriano of the Far Eastern University in Manila. Professor Soriano is trained in English and Drama and is a major consultant in effective communications to industry leaders. She very effectively demonstrated the need for academics to improve their communication skills in order to be more capable educators. Her message is a very important one for engineering academics world-wide. We do not actively seek the assistance of such people for training academics although many engineering Faculties including UNSW have such people teaching our undergraduates with great success. There were 26 contributed papers at the conference. The vast majority of which were concerned with computer-related topics including computer-assisted instruction.

The Saturday morning consisted of a workshop in which the delegates separated into 10 working groups to consider the topic *An Evaluation of the Current Status of Instruction in Engineering Schools*. Each group then presented its ideas to the forum and an overview of the topic was then formed. Apart from the issue of increased salaries which is a major problem for all academics in the Philippines, the other concerns were very similar to those facing us in Australia. The main ones were high teaching loads, poor professional development for academic staff (particularly in instructional methodology and communication skills), decreasing interest in engineering programs by the best high school graduates and links with industry.

In participating in the workshop in the Philippines it was apparent that staff in most universities were preparing curricula in similar subjects in almost all the 80 universities represented. There was almost no attempt to share the cost of development of quality coursewares that are required to deliver quality engineering education for the 20th, let alone the 21st century. Unfortunately this is sadly the case in Australia. The current decrease in student interest (and resultant teaching load) as well as decreased funding of universities makes it more imperative that we co-operate in developing our subjects. I hope that AAEE can be part of such a process. At the very least we should consider consortia such as the UNESCO Supported International Centre for Engineering Education (USICEE) to encourage the necessary collaboration.

We trust that you will all be present at the *8th Annual Convention and Conference of AAEE* to debate and provide solutions to a number of the problems facing engineering education in Australia. Professor Ian Morrison, Chair of the Program Committee and his Committee will provide an excellent forum at the conference which has as its theme *Keeping Pace with Social and Technical Change*. We look forward to your active participation.

Professor Mark Wainwright
Dean
Faculty of Engineering
The University of New South Wales
President of AAEE

3RD EAST-WEST CONGRESS ON ENGINEERING EDUCATION

Last year members of our Association received a call for papers of the 3rd East-West Congress on Engineering Education, under the theme *Re-vitalising Academia/Industry Links*,

which will be held at the Gdynia Maritime Academy, Gdynia, Poland, between 15 and 20 September 1996. This is the third international gathering of engineering educators to be organised jointly by Australians and Polish academics.

The response from the international community of engineers and educators is excellent with the submission of over 160 paper proposals and with close to 300 expressions of interest in attending the Congress from a total of 35 countries. The proposed papers cover a wide range of topics of interest to the engineering education community, with Australians being the largest national group.

Although the deadline for submitting abstracts has passed (20 December 1995), especially interesting paper proposals from Australian AAEE members will still be considered as they come in. However the deadline for receipt of final manuscripts remains unchanged (29 March 1996). Authors intending to submit late paper proposals should forward them to the Newsletter Editor as soon as possible, preferably by fax or e-mail.

The USICEE has been asked to co-sponsor and support the organisation of an *International Conference on Quality Assurance in Higher Education*. The Conference will be held at the University of Mining and Metallurgy in Cracow (UMM), Poland, immediately after the 3rd East-West Congress (22-24 September). Several international educators will have the opportunity of extending their stay in Poland to visit Cracow, the pearl of medieval Poland. For more details please contact Dr Janusz Szpytko at the UMM by e-mail: szpytko@uci.agh.edu.pl

FORTHCOMING CONFERENCES ON ENGINEERING EDUCATION

Japan, Makuhari, Chiba, 23-26 April 1996 - 2nd Mid-Term AESEAP International Conference on Engineering Education. Contact: AESEAP'96 Secretariat, Japanese Society for Engineering Education, 3-5-21 Mita, Minato-ku, Tokyo 108, Japan.

Poland, Lodz, 30 May - 1 June 1996 - 3rd Advanced Training Course: Mixed Design of VLSI Circuits - Education of Computer-Aided Design of Modern VLSI Circuits. Organised by: the Technical University of Lodz, Poland (TUL). Contact person: Dr Marek Turowski, Tel: +48 42 312620, Fax: +48 42 362238, e-mail: mturowski@lodz1.p.lodz.pl

Ukraine, Donetsk, 11-13 June 1996 - International Scientific and Practical Conference *Region 96 - A Strategy of Surviving and Development of Donbass*. Organised by: Progressive Reforms Support Fund, the Donetsk State Technical University. Contact person: Larisa V. Opanasuk, Tel: +7 0622 925598, Fax: +7 0622 921278, e-mail: info@dgtsu.donetsk.ua

France, Paris, 2-5 July 1996 - World Congress of Engineering Educators and Industry Leaders. Organised by: UATI. Contact person: Dr V. Saminaden, Tel: +33 1 43062029, Fax: +33 1 43062927, e-mail: unispar@unesco.org

Austria, Vienna, 11-13 September 1996 - Educating the Engineer for Lifelong Learning: SEFI Annual Conference'96. Organised by: University Extension Centre, Vienna University of Technology. Contact person: Mr Franz Reichl, Tel: +43 1 58801/4029, Fax: +43 1 5054961, e-mail: reichl@ecx.tuwien.ac.at

Poland, Gdynia, 15-20 September 1996 - 3rd East-West Congress on Engineering Education. Organised by: USICEE/AAEE, Monash University, Clayton, Melbourne, Australia. Contact person: A/Prof. Zenon J. Pudlowski, Tel: +61 3 990-54977, Fax: +61 3 990-51547, e-mail: ZJP@eng.monash.edu.au

Poland, Cracow, 22-24 September 1996 - International Conference on Quality Assurance in Higher Education. Organised by: University of Mining and Metallurgy, Cracow, Poland. Contact person: Dr Janusz Szpytko, e-mail: szpytko@uci.agh.edu.pl

Poland, Lodz, 22-24 October 1996 - World Congress of Industry Leaders and Educators, Fair of Engineering Innovations and UNESCO-UNISPAR Seminar. Organised by: Technical University of Lodz and the Chamber for International Economic & Scientific Cooperation. Contact person: J. Golygowski, Tel/Fax: +48 42 819666 or 848722

USA, California, Irvine, 5-6 December 1996 - 1st International Symposium on Energy and Environmental Management and Technology. Organised by: International Consortium for Research on Energy and Environmental Management and Technology (ICREEMT). Contact person: Prof. M.M. Mansouri, Tel: +1 714-509-1124, e-mail: mmansouri@ccmail.gsm.uci.edu

Australia, Sydney, 15-18 December 1996 - 8th Annual Convention and Conference of the Australasian Association for Engineering Education. Organised by: USICEE/AAEE and the Faculty of Engineering at the University of New South Wales. Contact person: A/Prof. Zenon J. Pudlowski, Tel: +61 3 990-54977, Fax: +61 3 990-51547, e-mail: ZJP@eng.monash.edu.au

Australia, Melbourne, 6-9 July 1997 - First Asia-Pacific Forum on Engineering and Technology Education. Organised by: USICEE, Monash University, Clayton, Melbourne, Australia. Contact person: A/Prof. Zenon J. Pudlowski, Tel: +61 3 990-54977, Fax: +61 3 990-51547, e-mail: ZJP@eng.monash.edu.au

A VIEW FROM THE UK



Prof. T.W. Cole

Flying directly from the summertime AAEE Annual Convention and Conference at the University of Melbourne to the depths of winter at Heriot-Watt University in Edinburgh, Scotland was not as big a shock as one might have thought! I had come to the Annual Conference of the UK's Society for Research into Higher Education at the start of a six month period of study leave at Strathclyde University in Glasgow.

Under the title *The Changing University*, a rather mixed collection of papers addressed turmoil and change not unfamiliar to an Australian academic. I was left with an overall impression of the relative excellence of the AAEE both as an Association and as an organiser of high quality papers and conferences. (I had also had this impression after attending the *4th World Conference on Engineering Education* in Minneapolis-St Paul, Minnesota, USA!)

One keynote address which did stand out, however, was by Professor Alastair MacFarlane, Vice-Chancellor of Heriot-Watt and an electrical engineer. He was passionately concerned with the issues raised by his title, *Cost, Volume and Quality* in which the political drivers of cost reduction, improved quality and increased student volume have absorbed all of the marginal changes one might make within the university system. There is little scope left to increase productivity, rationalise activities, and generate external incomes without facing up to quite major and radical changes to the very structure of the university as we know it.

Taking an engineer's systems approach and recognising the key role of technology and networking, he argued strongly for a university system supporting learning rather than simply

delivering information. The contrasts were clear: *active cf passive; interactive cf unidirectional; network cf location; person cf audience; virtual cf real; dynamic cf static; supportive cf impassive; multimedia cf single medium; and asynchronous cf synchronous.*

To support such change, radically new funding approaches were needed. MacFarlane noted the changes in funding of *classical research* where the concentrations, increasing relevance, and increasing networking have demolished the dual system of research funding and led to an incapacity to foster much of what we would consider as excellent. As he said, Socrates would never get promoted since he published nothing and concentrated on small group teaching. Einstein would have problems since he did not teach courses, did not supervise research students and concentrated on just theoretical issues. Wittgenstein similarly would not succeed since he hated lecturing and kept on changing his mind about his research!

To MacFarlane, the university's functions are to impart knowledge, support learning, certificate competence, and create knowledge. This can be done in new ways but only with investment in the right form of research and development. A *Teaching and Learning Board* was called for in the same way as a research council, with the same budgets and status, providing appropriate infrastructure and fostering and developing a community of dedicated developers of just that education environment needed over this coming *most unsettling decade*.

The very structure of the universities themselves needed to be addressed - a topic covered by several other Vice-Chancellors, Professor Graeme Davies from Glasgow and Professor Leslie Wagner (*Principal and CEO!*) of Leeds Metropolitan University. The external pressure of public accountability for expenditure of government funds and the evolving internal pressures of internal organisational culture - collegial, bureaucratic, corporate and enterprise (to use a model of Ian McKay) are undoubtedly of critical importance to all our long term plans. It is a pity that we do not involve ourselves more in discussing it for, as Wagner said, *Many in the universities are happier in the terraces hurling criticism to those on the field rather than being on the field handling the greasy ball* - I will address this in more detail in another place.

But the talk by John Sizer, Chief Executive of the Scottish Higher Education Funding Council, was closer to my specific study leave goals. He addressed the major UK Government White Papers on Technology and Competitiveness, the UK Technology Foresight Exercise and the way that higher education is seen as increasingly central to the long term economic well-being of the country. The parallels with Australia are stark.

In Scotland and at Strathclyde University I look forward to working with Scottish Enterprise, the University, and industry support organisations on how that link between higher education and economic well-being might be better addressed. One project is the development of a multi-media undergraduate course in entrepreneurship.

I cannot ignore the comments this week of the UK Deputy Prime Minister, Michael Heseltine when he said he had deliberately not sought the help of Britain's various engineering institutions over his two white papers on competitiveness because he did not think they had anything useful to say! We must work to ensure that is never the case in Australia.

Professor Trevor W. Cole
8 February 1996

A Course in Computer Aided Learning in Engineering and Science Education

The UNESCO Supported International Centre for Engineering Education (USICEE) within the Faculty of Engineering at Monash University is offering a 5 day advanced course in engineering and science education for academic staff who wish to expand their knowledge and experience of using computers in teaching practice. The course was developed by USICEE for UNESCO.

The course is broadly based and covers basic teaching and learning principles before moving on to examples of applications of computers to aid learning in technical disciplines. It has a strong hands-on emphasis, with half of the course being devoted to using the tools described. Course topics include:

- Principles of teaching/learning and instructional design
- Authoring tools and hardware and software requirements
- Simulation and animation with SCoP and ToolBook
- Hypermedia in a problem based learning environment
- Computer-aided testing
- Mathematical packages - Maple and Matlab
- Using the computer for visualisation
- The Internet and the electronic library
- Future trends

The course, which draws on engineering and science applications, is presented by 11 highly-qualified and experienced staff from various units at Monash University. It is aimed at educators who wish to gain a broad appreciation of the many roles that computers can play in encouraging student learning.

Venue: USICEE, Faculty of Engineering, and Engineering Computer Laboratories
Monash University, Clayton

Date: 9-13 April or 8-12 July or 15-19 July or 30 Sept - 4 Oct

Fee: \$950, inclusive of lunches, refreshments, course notes plus examples on floppy disk.

For further information and enrolment forms please contact: A/Prof. Zenon Pudlowski,
Tel: 9905 4977, Fax: 9905 1547, email: ZJP@eng.monash.edu.au, or visit the course
description on the Web: <http://civil-www.eng.monash.edu.au/usicee/calprogram.htm>

A TRIBUTE TO THE IMMEDIATE PAST PRESIDENT

Professor Peter LePoer Darvall, Deputy Vice-Chancellor of Monash University, decided to stand down as President of the AAEE at a meeting of the Executive Committee held immediately after the 7th Annual Convention of the AAEE. Professor Darvall will remain on the Executive Committee as a member and the Immediate Past President. He was elected AAEE President at the 3rd Annual Convention, held at the University of Adelaide in December 1991, serving over a period of four years, the longest Presidency so far.

Because of the worldwide distribution of our Newsletter, it is essential to present briefly Prof. Darvall's personal and professional silhouette.

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 University. He joined Monash as a Lecturer in Civil Engineering in 1970, after experience as a design engineer with Maunsell and Partners, and with Freeman, Fox and Partners, as Surveyor for a glaciological expedition in Alaska and as Site Engineer for an archaeological 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 many research papers have covered a variety of areas, but in recent years he has concentrated on engineering education and, in the technical area, on softening in concrete structures, and high strength concrete. He was for many years a member of the Monash University Council and was National President of The Federation of Australian University Staff Associations (FAUSA), 1979-81. He has acted as a consultant to a number of engineering organisations.

Peter Darvall has been Professor at Monash University since 1988. He was Dean of Engineering between 1988 and 1994. During his deanship the Faculty underwent a period of radical modernisation and expansion of its teaching and research infrastructure. Several new buildings were erected in this period and two more were commissioned at the beginning of last year. Over the last four years the Faculty has been a partner in eight successful applications for cooperative research centres (CRC) in diverse fields across the Faculty, in addition to another eleven centres based in the Faculty.

During the last year of his deanship he was instrumental in establishing the UNESCO Supported International Centre for Engineering Education (USICEE), the home of the AAEE headquarters, in a move to recognise the need for leadership in engineering education in Australia and the world beyond. An Academic Advisory Committee, consisting of about a dozen outstanding engineering educators was set up to advise the USICEE Director on academic matters, and Prof. Darvall is the Chairman of this Committee.

At the recent 4th World Conference on Engineering Education, held at St Paul, Minnesota, in recognition of his exceptional qualities, as well as outstanding contributions to engineering education, Professor Peter Darvall was elected Chairman of the International Liaison Group for Engineering Education (ILG-EE).

Prof. Darvall, took up the AAEE Presidency at a time when the Australian higher education system was going through a major change and upheaval. During this period Australian academia experienced substantial cuts to its per-student budget, and has had to accept increasing controls by Canberra bureaucrats for a ridiculously small increase of academic salaries. The rationalisation process in higher education has caused tremendous tensions and difficulties. The morale of academic staff has been sorely challenged in this time.

As an academic, as well as a senior academic manager, Prof. Darvall has always endeavoured to minimize the negative effects of this so called reform of Australian higher education. He has been the guardian of academic freedom and the collegiate spirit. He has promoted academic progress, visionary approaches to education, excellence in research and teaching, efficiency and good management. Only a dozen or so engineering educators, such as Prof. Darvall, have had the courage to express their criticism of the bureaucratic approach to higher education and the mistakes made, and have vigorously challenged those directly responsible. He has been a team builder and a progressive voice, and has injected these qualities into the life of the AAEE.



The International Liaison Group for Engineering Education (ILG-EE) held its 4th World Conference on Engineering Education in St Paul, Minnesota, USA, in October 1995. The picture above shows Professor Peter LePoer Darvall, Deputy Vice-Chancellor of Monash University, summarising the outcomes of the World Conference, in his new role as Chairman of the ILG-EE.

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

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Association members and academic 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.