AUSTRALASIAN ASSOCIATION
FOR ENGINEERING EDUCATION

NEWSLETTER

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The 2nd East-West Congress on Engineering Education, with the theme: Enhancing Engineering Education Research, will be held at the Technical University of Lodz, Poland, between 20 and 24 September 1993. A call for papers and other Congress contributions is now in circulation. Any person interested in submitting a paper proposal and attending the Congress should contact the Newsletter's Editor. Picture above shows the University Chancellor's Office, the 19th century villa of the Richter family of Lodz industrialists.

FROM THE PRESIDENT

A Tribute

The rapidly growing membership of AAEE is a sure sign of an organisation whose time has come, and a tribute particularly to our Immediate Past President, Professor Trevor W. Cole, and to the indefatigable Dr Zenon J. Pudlowski, our first Vice-President, Executive Director and first winner of the Inaugural Medal of our Association. They have made things happen in engineering education and reminded us of our continued responsibility to do likewise. *Quality* is now a buzz word in higher education. Many struggle to define it. The best way to define quality is to produce it, as they have done: manifestly to add value to engineering education. The quality of their work in AAEE is a solid foundation for others to build on.

The Dread Vision

I have always believed in concentrating on the positive and have previously written of an Ideal Vision for engineering education in the Australasian Journal of Engineering Education. It is worthwhile, however, to remind ourselves of what it is that we are distancing ourselves from:

"Narrow minded young men (and very few women) who have taken the science stream at school choose engineering because it is 'science with a job at the end'. They have always played with computers and electronics kits, but have no other interests.

At university, they are packed into stuffy run-down lecture theatres, and what little spirit they have is crushed by interminable boring lectures from academic staff who are tired, underpaid, lack teaching skills or training, have no career prospects and little interest in their students or in the world outside their laboratory. They believe that physics and mathematics is engineering. The course is thoroughly overloaded because the staff all believe that more material in their own area is essential, and no-one has the courage for radical surgery.

The engineering students take no part in university affairs, and are despised by the rest of the student body. Reality, to them, is what they see on the computer screen. The curriculum and teaching methods are never revised. The next generation of academic staff comes from the students who get the best results, who are generally the most uninteresting. The others go out to struggle in a declining economy and become servants of managers who are not engineers.

The resources of the Faculty are constantly shrinking, as a result of internal indecision and external meddling by bureaucrats and politicians imposing inappropriate policies and structures. Industry has a low opinion of the university, and vice versa. Gloom prevails."

The Place to Be

It is heartening that the quality of engineering students is generally rising as the era of the paper shufflers is discredited. Young men and women are seeking exciting, productive careers, often in engineering. The self image of engineering students is changing for the better. Substantial female participation plays a great part in this. Our obligation as engineering educators is to optimise the growth of this talent, to nurture technically competent, confident and multi-dimensional graduates, whose humanistic development is in harmony with their professional training. In spite of the lamented decline in participation in full maths and science in senior secondary school, engineering is more commonly being seen as *the place to be*. Better students generally have a more confident self image and better communication skills, and this can only be good for the profession, and ultimately for our countries.

There is much meaning in the words of the Spanish philosopher, Jose Ortega y Gasset: *Let*

engineers see that to be an engineer, being an engineer is not enough.

A Plea

Your colleagues who are not yet members of AAEE should be encouraged to join our Association. I believe that membership of AAEE will become a necessary (but of course, not sufficient) condition for engineering educators to demonstrate that they have a professional attitude to their occupation.

Professor Peter LeP Darvall
Faculty of Engineering
Monash University
President of the AAEE

TWO EUROPEAN CONFERENCES IN SEPTEMBER 1991

Overview

This article discusses my observations and conclusions from my attendance at two conferences on engineering education in Europe in September 1991. It is an abbreviated version of my original conference report. The first was the International Conference on Computer-Aided Engineering Education in Prague, and the second was the Conference on Innovative Teaching in Engineering in Sheffield.

Innovative Teaching in Engineering (Sheffield)

I was one of a handful of foreign delegates at the Conference on Innovative Teaching in Engineering, Sheffield in September 1991. It was interesting to observe that most of the problems being discussed were exactly the same as the ones we all face (reduced funding, more variable student abilities, and changes to mathematics in high schools).

I was pleased to see that several authors were advocating a project or design-based approach to teaching engineering, because I had come to similar conclusions myself, and had run two courses in this way in 1991. The following sub-sections discuss some of the threads of discussion which developed at the conference.

Knowledge, skills and understanding

John Sparkes (Open University) emphasised his three-pronged approach, identifying knowledge, skills and understanding. (I think facts is a better word for knowledge, since the latter is often used to imply deeper understanding, eg in knowledge engineering). He stated that the teaching/learning/assessment process should be clear for each of these. It is up to the lecturer to identify what she or he expects the students to acquire.

Facts are learned by memorisation. Skills are taught by instruction and demonstration, and learned by practice or by performing them. Understanding is not easily taught, but is encouraged by providing a rich learning environment, where the students are encouraged to read, discuss, and use the concepts in a variety of challenging projects.

We can see that existing engineering courses are mostly focussed on facts and skills, except for some projects in the fourth year. Unfortunately, some students find the first three years so boring, with little room for them to exhibit their creative skills, that they leave to do other courses which do provide space for their initiative and creativity (eg law, arts, economics). Many students never start engineering because of this reputation. We all know that practising engineering is not like this (on the whole). It is time that we moved the engineering degree closer in style to real engineering by adopting more project-based work from first year. (Architecture, for example, uses this approach).

Quality Assurance as well as Quality Control

Chisholm (University of Salford) pointed out the need for quality assurance in the teaching process, and that we need to draw upon the body of learning theory that already exists. At the moment we rely too heavily on quality control.

Teaching Technology

John Sparkes indicated that computers are very good for drill and practice and simulations (facts and skill development). They can also be used for computer-mediated communications in which students are encouraged to articulate their own understanding of concepts, rather than just listen to the lecturer's version again. (I am currently looking for software to run on our Novell network for this purpose). Television can also be useful for facts and skills, but not necessarily good for developing understanding of abstract concepts.

Experimentation

Butterfield (Southampton) gave an excellent demonstration of teaching with toys. He used a collection of blocks of varying sizes and densities together with rubber mats of varying densities to demonstrate basic foundation engineering. The students used these very simple props to investigate and plot relationships between the height of towers, the weight of the tower, and the foundation conditions.

Grant and Gilchrist (Strathclyde) indicated that the following attributes were important for effective laboratory exercises:

* an element of surprise,
* team work,
* communication skills,
* controversy,
* ample time for discussion, and
* immediate feedback from staff.

We could apply these easily to our own practical sessions.

Projects, case studies and design

Matthew and Hughes (Bradford) described a problem-based learning module for some civil engineering students. They indicated that the process is holistic rather than serialist (like much of our teaching), and it uses problems obtained from industry. Interestingly, it combined material previously given in both Concrete Technology and Water Engineering, and was presented in a 5-week block of time.

Rue and Christison (Leicester) described a similar case study approach. They were interested in production engineering, which requires more than narrow technical skills. The case studies were led jointly by both the engineering department and the business school. Outcomes included skills in computing, oral and written communication, field work, library research, project management, and analysis and synthesis, as well as more enthusiasm for engineering. Once students are *hooked* in first year with such an approach, they are more tolerant of some of the technical subjects later in the course.

Anderson (Lancaster) outlined a design, build and test approach to heat exchangers, including CNC machining of the header tanks. French (also Lancaster), in another paper, continued this approach, indicating that lectures now took a more design-oriented approach (design-build-test), with laboratories largely replaced by design-oriented projects. They found that insight was stimulated by design, and that the students' confidence improved by finding their own solutions, and through relating their answers to what is done in industry. Such an approach needs to be a thread running through the entire course.

Wright (Strathclyde) described an interesting approach to structural modelling where the

students were asked to design and construct a structure from match sticks to span a space of 300mm by 300mm by 50mm. This project was innovative because the students first designed and drafted their proposed design, but were not allowed to construct it. Instead, they had to bid on other designs, win the tender, and then construct that one. Thus, experience was gained in design, tendering and construction. The final mark was a function of all these factors, including whether or not it passed the test. (Failures were attributed either to the designer or the builder).

Comments

This conference reinforced my own feelings that a problem-oriented approach is more likely to encourage our students to excel compared to our current approach. It is important that we introduce such an approach throughout the four years of the course, and particularly in first year when it is vital that we capture the interest of the students, and encourage them to see the relevance of some of the *harder* subjects.

Computer-Aided Engineering Education (Prague)

A range of media are now being used in computer-aided education, particularly for distance education, eg text, television, radio, interactive video, computer-aided learning, computer-aided design/drafting, satellites and multimedia. Much interesting work of this kind is being done by Zenon Pudlowski's group at Sydney University, including the development of a Graduate Diploma in Engineering Education.

There was an interesting paper on using computer-aided learning in numerical methods. Although the author used conventional programming languages in the course, much could be achieved (in my opinion, more quickly) by using spreadsheet programs. This is a good example of a course suitable for a problem-based approach.

Annie Bloch (France) described how hypertext might be used to allow students to build their own understanding of a subject domain. An important outcome of such an approach is the teaching of information use and processing, activities in which most of us have poorly-developed skills.

Jarand Rystad (Norway) suggested that more fundamental changes need to occur in engineering education before computer-based learning is worth considering: namely, it should be based on real world problem solving. Computer-aided learning could be used for simulations of the real world, for presenting lecture material so that students can concentrate on the problems, and as a catalyst for discussion between two or three students grouped around a terminal.

Conclusions

There is much scope for innovative teaching in engineering. Our existing courses are dull and uninspiring, and fail to develop all the skills that engineers need (eg communication skills, teamwork, leadership, innovation). We should include more project work, which will encourage self-motivated learning, teamwork, communication and management skills. Such a change must occur from first year. The conference in Sheffield contained several examples of courses being run in this way (see later), and my own experiences are contained in a paper in the AAEE 1991 Conference Proceedings.

There is a recent trend to apply techniques of Total Quality Management to the educational process. This could result in some interesting developments in the next few years.

Computer-aided education is difficult to justify for limited numbers of students. I suspect that only a small number of courses at Monash University (or at any other university) could justify the development cost, and most of these would be at first year level with large numbers of students.

However, I believe that by adopting standard approaches across several universities (eg Monash, Sydney, Queensland, Adelaide, etc) where the same computer-based material could be used, we could improve the economy of scale. This is unlikely to happen until we develop some standardised courses across these institutions. Universities are run as cottage industries, with few attempts made to cut costs by providing standard courses. Such courses would offer the added benefit of easing credit transfer between institutions.

There is scope within engineering courses to use computer conferencing. Students can discuss their course material with each other and with the lecturer in this way. I am currently seeking suitable software (to run on our Novell network) for use in 1992.

If you are interested in such systems, you can contact me by e-mail as roger.hadgraft@eng.monash.edu.au.

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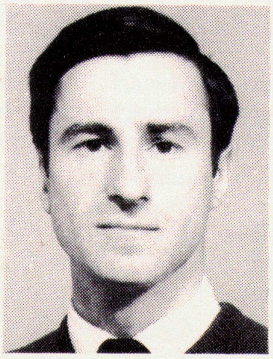
AN INTERNATIONAL INVESTIGATION INTO THE NATURE AND EFFECTIVENESS OF ENGINEERING CURRICULA



Prof. K. Rochford

Throughout the world, diversities exist in undergraduate and postgraduate engineering with respect to their philosophical orientations, their degrees of specialisation, the science content they consider basic, the natures of the professional courses they offer, their policies towards students' projects and the teaching loads of their academic staff. These have been surveyed in a two-year investigation based in the Department of Electrical Engineering of The University of Sydney, and its preliminary findings have been prepared for publication in the *Australasian Journal of Engineering Education*, (Vol.3, No.1).

The research had its origins in the World Conference on Engineering Education for Advancing Technology, which was held at The University of Sydney in February 1989, when many academics demonstrated a strong involvement in the design of engineering education curricula. Concern was expressed in regard to the existing exchange of information on different concepts, ideas and approaches used in the development of engineering curricula. There was a lack of understanding of different education systems around the world, and inadequate communication between various tertiary engineering education institutions.

A consequence of this was a proposal by Professor Tadeusz Lipski of Poland and Dr Zenon J. Pudlowski of Sydney University Electrical Engineering to undertake a comprehensive survey. For the initial pilot study, a questionnaire was devised and sent to twenty reputable institutions training engineers on five continents. The theoretical model adopted for the preliminary construction, content and development of the questionnaire was one appropriate to research processes requiring repetition for several consecutive steps until a final version is reached. The replies received have now been analysed systematically, and the responses, conclusions and recommendations presented for publication. The main findings may be summarised as demonstrated below.

Findings at the undergraduate level

Diversity in philosophical orientation

One third of the respondents report that their undergraduate engineering curricula are industry-oriented; one third science-oriented; and one third both - for example, with fundamental principles being applied to current technology.

Diversity in degree of specialisation

Although respondents differ widely in regard to what they classify as *general* subjects in the undergraduate engineering curriculum, some respondents perceive only three of their syllabus subjects as *general* whereas others list up to a dozen. The numbers of contact hours allocated to *general* subjects range from 59 in one Israeli university to 1500 hours in one Swedish university.

Diversity in basic science content

Over the various universities sampled, the numbers of contact hours assigned to chemistry as a subject range from 0 hours at five institutions to 164 hours at one university in New Zealand. Large ranges also occur in the numbers of contact hours assigned to physics as a subject and to mathematics as a subject. However, the reported data has to be interpreted carefully since, at some universities such as in Britain, the fundamental principles of physics and mathematics are applied and integrated into specialised engineering technology subjects, rather than being taught separately as individual subjects in their own right.

Diversity in basic professional subjects

The respondents who answered the survey questionnaire list a total of more than 50 subjects which they consider to be basic professional subjects in undergraduate curricula specialising in electrical engineering. No doubt many of these subjects overlap in content, but are called by different names.

Diverse policies on student projects

A worldwide trend appears to be away from purely theoretical projects towards experimental or mixed projects. However, at four of the sampled universities there is no requirement for a final year project leading to the award of a BE degree; instead this is the requirement for a master's degree.

Diversity in academic teaching loads

The average time per week spent by an academic on the preparation of teaching assignments varies from 4-6 hours at sampled universities in Japan, FRG and USA, to 30 hours at a Swedish university. In laboratory courses for a BE degree the overall student/teacher ratio varies from 6:1 at a sampled Polish university to 30:1 at the Swedish university. The magnitude of these ratios for any particular university appears to be unrelated to other variables such as research publication output, or number of patents acquired, or the average annual teaching load of an academic in the school/department concerned.

Findings at the postgraduate level

Diversity in staff research productivity

Some variation is apparent in the average number of publications reported per scholar per year in the school/department of engineering at each sampled university. In this particular survey, the range is from 0.5 to 4 publications per scholar per year. In addition, a wide spectrum of variability is apparent across the world with regard to the ratios of teaching time to research time; and in the ratios of times devoted to basic and applied research.

Diversity in the nature of research degrees

All the sampled universities award PhD degrees in engineering. Four offer it as a combined course, incorporating master's and/or undergraduate courses, but virtually all the institutions offer the PhD as a separate course. Three universities require the PhD to be obtained by

research alone (in India, FRG and RSA). The remainder offer the PhD as research combined with course work, as an alternative.

Moving from the doctoral to the master's degree level, the respondents from the sampled universities report one to two-and-a-half years as the typical completion time for a post-BE degree. At three universities, this is gained by course work alone; at no university sampled is the ME or MEngSc degree awarded for research alone; and, at all the sampled universities, course work is an integral part of the master's degree program. The total number of teaching contact hours in master's degree course work programs varies from 20 at the sampled university in Israel to 1700 at the sampled university in India.

Additional findings

Assessing the quality of industry involvement in *teaching programs* carried out in their own schools and departments, the respondents' overall ratings tend to range from fair to good.

When asked how they assess the quality of industry involvement in *research programs* carried out in their own schools and departments, the respondents' replies are more favourably distributed : the overall rating is good to very good.

There appears to be an appreciably greater degree of satisfaction with industry's participation in reserch programs than with industry's involvement in the teaching domain. In future liasons between industry and academia, perhaps redress of this imbalance might be considered. *The teacher remains the key* to unlocking and disclosing any syllabus. The teacher's own level of professional development and personal example remain critical for the success of a curriculum. Without this, even an optimally-conceived curriculum program may fail.

Conclusions

To a greater or to a lesser extent, the data collected in this investigation suggest empirical support for weaknesses which have been thought to exist in current engineering syllabuses and curricula for some time. For example, there is no broad uniformity in the various curricula, leading to problems of accreditation of engineering degrees in the international market place. The quantum of practical training is not well defined. Exposure of students to liberal arts, humanities and management studies appears to be superficial. There is little interaction between faculties, practising engineers and students. Engineering studies have been fragmented to such a degree that even those acquainted with recent developments may be confused by the variety of nomenclatures in use: the same syllabus can be given totally different names in different institutions. Times devoted to various activities and studies vary widely. Practising engineers in the field tend to play a very small role in shaping or improving curricula. There is too much emphasis on the acquisition of extensive information and know-how, rather than on the assimilation of knowledge and its utilisation in the broader context of engineering work.

Recommendations

Future directions for this investigation include a more representative and widespread collection and analysis of empirical data using a revised and refined version of the questionnaire which has now been developed. This will continue to inform the on-going debate on accreditation and recognition of qualifications for admission to professional organisations. Which subjects, in addition to design, should be included in all engineering curricula? Which matters should be dealt with in the individual subjects? Which educational objectives are to be achieved? What weightings are to be given to individual subjects? Which relationships should exist between the subjects, and in which order are they to be arranged? How can the curriculum be balanced to produce not only advanced technologists but also engineers who are focussed both managerially and economically? What attention should be given to communication skills? How should the liberal arts be presented to student engineers?

The ultimate purpose will be the evolution of a methodology appropriate to the development of future curriculum models for engineering education.

Assoc. Prof. K. Rochford
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Visiting Scholar
Sydney University Electrical Engineering

AAEE 3RD ANNUAL CONFERENCE AT ADELAIDE

Prof. D. Elms

Adelaide is an attractive city, so it was good to meet there, enjoy Adelaide hospitality, and enjoy a thoroughly stimulating conference to boot. Of course we will remember good food and good organisation, dinner at the winery and celebrations at the Old Parliament House, as well as friends old and new. Serious stuff (though not to be taken too earnestly); but so also were the papers.

There were, by my count, 71 papers and about 110 delegates. Neither are easy to summarise, but I will stick to the papers. They were on so many different subjects the conference organisers must have been hard-pressed to group them under topic headings. Still, some overall groupings emerge. First, there were the papers on very specific topics: three, for instance, on the teaching of statistics. Because of their narrow focus, even though some were very good, I will not discuss specific-topic papers here. Instead, I will try to look at some general themes.

A favourite theme related to the nature of students, to their motivation and to the kinds of graduate industry wants. It is good to look at the reality of the material we work with, rather than make assumptions which can often be wrong. Law discussed pre-conceptions of student knowledge - her diagnostic test indicated there is a need for rethinking the background a student is supposed to know. Dadswell, et al, assumed there was a problem of declining standards of knowledge in incoming students and outlined the strategies taken by Australian institutions in combating this: most engineering education institutions were surveyed. As to the product rather than the raw material, both Henshaw and Ambrose showed that employers valued people skills over technical competence when recruiting new graduates. Presumably a basic technical competence would be required, though. As for the students themselves, a number of authors focussed on means of improving motivation. Several, Grenquist, for instance, Hadgraft or Jambunathan and Weeks, advocated project-oriented learning (or student-directed learning, or *deep learning*). Such approaches certainly seem to produce excellent results, the difficulty being how to apply them in large classes with poor staff-student ratios. A frequent criticism is that project-oriented learning might mean that essential knowledge was omitted. However, I am personally doubtful that more than a small amount of the knowledge commonly reckoned to be *essential* is normally remembered by students. The main problem is for a student to systematise knowledge in some way, and systematisation via a project is often more effective than through a lecturer's own well-meant logical scheme. Another motivational approach is to use real-life data - Flatt gave a mining engineering example. Even more interesting was the idea of sending students out to teach technology in schools (Penna and Darvall). They must have learned a great deal (the students, that is).

The other main focus was on teaching issues. There were matters of medium - distance learning, for instance: computer-aided techniques (Pudlowski, Crusca, Kearney) or the use of multi-media approaches (Knowles). Papers ranged from in-depth considerations of curriculum (Cole, Lee) to useful tips (Karim). Both types were helpful. Two papers looked at attempts to improve teaching through feedback: the reflective teaching approach described by Heywood and Weeks, or the peer review process of Daniell and Warner. The underlying

question in these and other papers was, how does one measure, assure and improve the quality of engineering education?

I liked Wallace and Black's contention that Australia contains a broad spectrum of approaches to engineering education, and that this is healthy and should be maintained.

Equity issues and the teaching of management formed two well-defined groups of papers. There were five interesting presentations on women in engineering. I look forward to the time when women are so well-accepted and represented in the profession that there is no further need to single out the issue. Already, in university classes, women are in sufficient numbers to be thought of as normal rather than exceptions, though they are still a minority. There were no papers on other equity issues, however, which is a little surprising.

Management teaching was considered in a group of five papers. It seemed to me, as a non-Australian, that it is the newer universities that are leading the way here, particularly in the area of novel initiatives.

What of the rest? There were of course papers dealing with, essentially, political issues; Whitehead's paper on IEAust policy, for instance, and Duggins's on the probable introduction of performance indicators for the evaluation of teaching institutions. There were also papers on relations with industry, by cooperative education or other means. Surprisingly there was not much on continuing engineering education with the notable exceptions of keynote addresses by Keith Williams from the Open University and Maureen Smith of Engineering Education Australia. The discussion of postgraduate education stuck me as rather thin in general. Surprising, too, was the fact that at a time when environmental issues are becoming increasingly urgent world-wide, there was only a single paper on environmental education, by Varcoe.

I am therefore left with the impression of a conference with both strengths and weaknesses. The strengths were in the number of substantial papers dealing with often fundamental issues concerning the nature and practice of engineering education. The weakness, if any, seemed to be in a narrowness of overall scope, on a certain introversion of focus on to immediate issues. Nevertheless, each AAEE conference seems to be better than the last as an increasing number of academics come to see engineering education as a maturing and deepening subject in its own right. Long may the improvement continue.

Professor David Elms
School of Engineering
University of Canterbury
New Zealand
3rd Vice-President of AAEE

CURRENT ISSUES OF IMPORTANCE FOR THE AAEE

The fourth year of operation of the AAEE has already seen a number of successes. After the retirement of the most energetic inaugural President, Professsor Trevor W. Cole, the Executive Committee, at its first meeting, elected as its new President one of the most successful academics in Australasia. I refer to the Dean of Engineering at Monash University, Melbourne, Professor Peter LeP Darvall.

Professor Darvall's vision of engineering, and engineering education in particular, goes far beyond the traditional operation of academia. The Faculty of Engineering, under his leadership, has earned an enormous reputation for its teaching, research and interaction with industry, not to mention a number of government and industry-sponsored research centres established recently in his Faculty.

Prof. Darvall's stand on the status and quality of engineering education is well-known throughout Australasia and overseas. He promotes the recognition of academic teaching as an equally important component of our academic life and activities. His new ventures,

amongst others, include the introduction of education, and the humanities into the main-stream of engineering undergraduate training. This places his Faculty in a unique position in this country.

We all remember that Professor Darvall was the only engineering dean invited to present his views in a keynote address at last year's Engineering Summit, convened and organised by the Institution of Engineers, Australia, and held in Canberra. We learned through the grapevine how strongly in his address he lobbied government, industry and professional organisations for our Association, and on our behalf. We do believe that all members of AAEE support the opinion that, under Professor Darvall's presidency, the Association will only flourish.

On the membership front, we should report that our Association has recently recorded, by Australasian standards, an enormous growth. The individual membership has doubled, with close to 350 members overall. From what I know of the other national and international engineering associations, when we add over 200 academics represented through the intitutional grade and about ten persons represented through one industrial member (Telecom), I believe that we are now the second largest engineering education association in the world, after the unbeatable American Society for Engineering Education!

This success is largely due to the initiative shown by Ted Whitehead, the IEAust's Director Education, who last year suggested that the Association's annual membership fees be collected through the 1992 IEAust's membership subscription notice. This has given the Association a much wider access to potential members from the IEAust's 60,000 strong population. Members of IEAust, who have indicated the AAEE as the society of their first choice, were asked to pay only $20 to acquire their AAEE membership for 1992. Those members are given a subvention of $15 from the IEAust to make up the total annual membership fee of $35. The arrangement for the other AAEE membership grades is the same as last year.

So far, we have found this new arrangement with the IEAust extremely beneficial for the AAEE. It lifts the administrative burden associated with collecting fees and maintaining membership records by our Association's staff. The March issue of the AAEE Newsletter included a letter from the Executive Director. We advised AAEE members, who were also members of the IEAust, to renew their AAEE membership through the IEAust subscription form.

However, this has created a slight problem for the AAEE. By losing direct access to membership forms, in the future the AAEE will not be able to provide members with more accurate data on such membership statistics as affiliation, position, titles, etc. Also, so far we have failed to obtain mail labels of AAEE members from the IEAust's Membership Department. But we hope that this issue will be resolved to our satisfaction in the immediate future.

The most immediate AAEE actions include the organisation of its 4th Annual Convention and Conference, which this year will be held at The University of Queensland, one of Australia's most renown tertiary institutions. The 3rd AAEE conference, which was held in Adelaide, has demonstrated that many interesting papers were generated by younger academic staff. I think that this trend will be reinforced at this year's annual conference. As our current President has suggested on a number of occasions, the future promotion of academic staff should depend very much on the quality of their publications relating to engineering education research. New staff should be encouraged to commit more of their time to raising the quality of teaching and education research and development. It is hoped that the trend observed at Adelaide's conference will continue.

As the front cover picture shows, the 2nd East-West Congress on Engineering Education will be held again on Polish soil. This has been strongly advocated by those who attended the first congress in Cracow, last September. This time, the Technical University of Lodz, one of the leading technical universities in Poland, will host the Congress. The theme

Enhancing Engineering Education Research has been chosen to emphasise the importance of systematic and comprehensive research on the methodology of engineering education and industrial training. The AAEE is this time among the co-sponsors of this international gathering of academics and industry representatives. It is anticipated that a large contingent of Australasian participants will again set the tenor of this Congress.

A new issue of our Journal (Vol.3, No.1) is now being circulated. It includes a wide range of papers submitted to the Journal. Due to the large number of papers submitted to the special issue which was entirely dedicated to the First East-West Congress on Engineering Education held in Cracow last September, a few of the remaining papers generated in conjunction with the Congress are included in the latest issue. It should be noted that this issue features three papers which are edited versions of the numerous keynote addresses presented at the 3rd AAEE Annual Convention and Conference.

Picture above shows prominent Australian engineering educators in the audience of the 3rd AAEE Conference. Seated in the first row are (l-r): AAEE President, Prof. P. LeP Darvall; current IEAust President, Prof. L.M. Gillin; EEA Director, Dr M. Smith; IEAust Director Education, Mr Ted Whitehead; and Prof. R.K. Duggins.

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

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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.