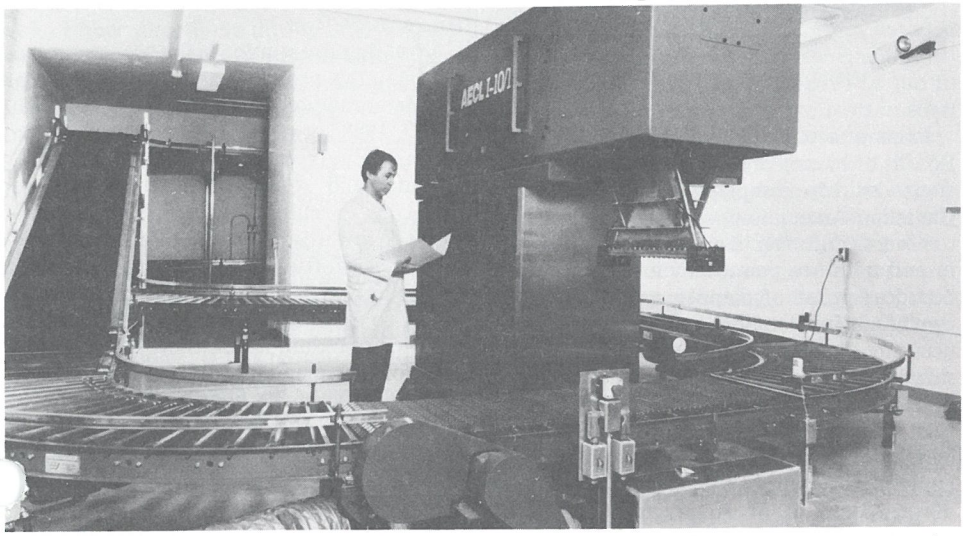
THE MANITOBA

Professional Engineer

OF THE PROVINCE OF MANITOBA

June, 1988

R & D For The Asking



A 1 kW 10 me V electron beam from the newly installed I-10/1 Industrial Accelerator will be used to enhance the qualities of a variety of products ranging from food to plastics.

by D.A. Ennis, P.Eng.

When most Manitoba Engineers think of AECL and Pinawa, they often focus on the controversial underground research laboratory. The Research and Development Committee Breakfast meeting held on March 23rd, 1988 was an excellent opportunity for engineers to develop an overview of the company's very broad spectrum of other research and development activities.

Mike Wright, the Pinawa-based General Manager of Support Services for the organization, provided an interesting review of the background of the forty years of AECL as a research company and a profile of the numerous commercial spinoffs from its engineering and scientific activities. He noted that Manitoba had benefited from some of the technology transfer that had taken place, mentioning such organizations as Bristol Aerospace, The University of Manitoba and the R.H. Institute.

The research facilities available at the Whiteshell Nuclear Research Establishment include those for facture-mechanics testing, ceramics manufacturing and food-irradiation. It was interesting to note that the food irradiation facilities are capable of processing semi-trailer load quantities on a "while you wait" basis.

Among the examples of interesting commercially viable products that have been developed are: INSIGHT — a system to monitor steam quality that is of particular interest in the field of steam recovery of heavy oil, FERROSCAN — an intelligent sensor system used to monitor the ferrus wear contaminantes in lubricants used in such applications as the gear boxes of helicopters, PLT — a pressure-level temperature remote recording system to provide information on ground water flows.

One can only conclude that the activities at WNRE are so varied that only an overview could be provided in a time permitted at a meeting such as this one. Perhaps members may wish to take advantage of the Winnipeg Chamber of Commerce Tour of the AECL facilities which will take place at the end of June. For more information on the tour contact Ernie Klein at 237-5840. □

The Future Of Engineering

by John R. McDougall, P.Eng.

The following paper was presented to the 1988 Canadian Conference on Engineering Education.

It is always a pleasure for me to come to Winnipeg. I have two boys in school here just down the river a mile or so and it gives me a chance to visit them in between holidays. I am also especially pleased to have the chance to tell you about my labour of love over the last few months — the CCPE Task Force on the Future of Engineering in Canada.

It is almost exactly one year since Phil Lapp asked me to serve as Chairman of a task force to look at the engineering profession in Canada. Little did I know the trek we were setting out upon when I said yes.

This afternoon, I will give you an overview of our year's work, lay out some of the key findings and offer a preview of the recommendations we are taking to Yellowknife to place before the CCPE and its constituent associations.

THE STUDY

Perhaps the best way to begin is to describe how we came to be and what we set out to accomplish. For some years now, the CCPE has been struggling with admission standards. A number of special committees have explored the process, and in particular, the entry portal for those who do not possess accredited degrees. Many useful ideas have evolved from this work. Probably the most visible outcome to date is the new Canadian Engineering Qualifications Board which deals with issues affecting admission to the profession which are not properly the responsibility of the CEAB.

Another benefit from the work was a growing recognition that the profession is changing but that there was no solid view of how significant the changes would be or how we should respond to them.

Phil Lapp ultimately distilled the problem by suggesting a strategic planning study to assess the situation on a sectoral basis. The Task Force was struck in May last year with Alan Cagney, Clayton Milroy, Bob Burridge, Rejean Parent and myself as members. Since Clayton passed away in November, Al Schuld has been working with us.

Once we were in place, the first job was to establish some specific objectives. Three major objectives were ultimately set out:

1. To examine trends within the marketplace for engineers on a sectoral basis,
2. To identify subject areas for a

(continued on page 4)

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Notice

Payment of Outstanding Fees and Deregistrations

All members who have not paid their 1988 Annual Fees and the late payment penalty fees are reminded that, if all outstanding fees are not received **in the Association office** on or before June 30th, 1988 then such member will have his name removed from the register and he shall cease to be a member. No exceptions are allowed under the Associations By-laws.

Those who are deregistered for non-payment of fees can apply for reinstatement. This incurs extra expense and the applicant will have to write and pass the Association's Professional Practice Examination and provide Council with a satisfactory explanation as to why he allowed his membership to lapse. □

Letters to the Editor

Urgent Request

This letter is an urgent request for help for engineering consultants. Immediate action is required in light of the upcoming Canada/U.S. Free Trade Agreement.

I hope that even though you may work in other fields, you will take a few moments to read this letter. If you agree with it, I hope you will join and assist me in my efforts to obtain for Canadian consulting engineers the same access to the U.S. as our American counterparts presently have to Canada.

The problem is that there is no reciprocity between any of the 55 U.S. State and Territorial engineering licencing boards and any of our 12 Provincial and Territorial Associations.

I am not accusing any of the U.S. licencing Boards of bias or prejudice against Canadian engineers. My complaint is that while the Canadian Associations usually are prepared to accept education in an accredited university and a licence granted by a U.S. licencing board as proof of competency of an applicant American engineer, none of the U.S. licencing boards reciprocate in their consideration of applications from Canadian professional engineers. Instead, they require that Canadian engineers write the same lengthy examinations as American engineers applying for their first licence. (They usually don't require it of Americans licenced in another state, since most states have reciprocity/comity agreements.)

I believe this is unfair to Canadian engineers with lengthy work histories, who are demonstrably competent in their fields, but who graduated from university many years ago (24 years ago, in my case). It would impose a perhaps insurmountable hardship on many of us to take the necessary amount of time from our consulting practices in order to re-acquaint ourselves sufficiently with the present academic programs to pass those exams. (Some might question whether passing an examination, particularly on fundamentals of maths, physics, etc. is proof of competency.)

The result is that, in general, licenced American engineers have relatively easy access to the Canadian market, while many of our best engineers are effectively excluded from the U.S. In light of the implications of the F.T.A. for increased cross-border activity, some of which will be due simply to increased awareness by Americans of opportunities in Canada (perhaps encouraged by the U.S. government), it is critical that this injustice be corrected before the F.T.A. comes into effect.

I feel that negotiation is the best method of resolving this problem, and am heartened by the Memorandum of Understanding of January 17, 1988 between the Association of Consulting Engineers of Canada (ACEC-Canada) and ACEC-U.S., which indicates that U.S. consulting engineers are prepared to work towards providing us access to their market. Unfortunately, it has to be pointed out that the ACEC-U.S. not only has no ability to make this come about, but also, as the Memorandum notes, they will not transgress on the mandates or responsibilities of established licencing boards.

In addition, the ability of the ACEC-U.S. to influence the American licencing boards is limited because they are state and territo governmental agencies, unlike our self-regulating Associations. To further complicate the matter, there appears to be no single organization in the U.S. similar to the Canadian Council of Professional Engineers to negotiate on behalf of some or all their 55 boards.

While our goal is agreements between our 12 and their 55 organizaitons, a practical first step might be the negotiations of a reciprocity/comity agreement between one or more provincial associations and state boards, which could then serve as a model for other agreements. However, this assumes

(continued on next page)

LICENCES ISSUED IN APRIL AND MAY

D.P. Allison (Ont.)
R.A. Baynit (Ont.)
C.B. Campbell (Ont.)
G.V. Crawford (Ont.)
D.A. Crocker (Sask.)
P.J. Cruiskshank (Ont.)
E. Czerkawski (Ont.)
M. Dunberry (Que.)
L.G. Farrant (B.C.)
G.G. Firth (Alta.)
G.M. Goetti (Ont.)
J. Gow (Que.)
R.D. Hounslow (Alta.)
D.A. Houston (Ont.)
E. Krudko (Alta.)
T.L. Johnson (Missouri)
R.D. Juaneza (Ont.)
A.J. Kaminker (Ont.)
C.J. Kemp (B.C.)
C.K. Khana (Ont.)
G.R. Lavoie (Que.)
G.T. Lawton (Ont.)
D.B.C. Lee (Ont.)
R.R. Lefebvre (Sask.)
E. Lim (Ont.)
R.A. McNally (Alta.)
J.L. Mohart (Kansas)
J.A. Patra (Alta.)
R.E. Pelkey (Alta.)
R.I. Phipps (Alta.)
A.M. Rossall (Alta.)
B.K. Sareen (Sask.)
J.B. Shah (Sask.)
A.P. Silva (Alta.)
J.T. Stanley (Ont.)
L.P. Taggart (B.C.)
J. Tiessen (Alta.)
G.Y.M. Tong (Alta.)
C.F. Velcic (Alta.)
E.F. Vickers (Ont.)
C. Wantasen (Ont.)
E.M. Waschuk (Ont.)
A. Wasnea (Alta.)
W.J. Wishlow (Sask.)

NEW MEMBERS REGISTERED — APRIL/MAY —

G.S. Bailey
E.H.K. Chin
N.K. Chopra
E.J. Christiansen
K.R. Colcomb
G.N. Giesbrecht
B.W. Graham
P.M. Griffiths
B.N. Hanna
R. Herchl
C.P. Judt
N.G.D. Krolman
B.E. Mamrocha
L.R. Malone
J.L. Peterson
M.R. Phaneuf
D. Ramsden
A.D. Silk
D.G. Skinner
T.P.A. Small
D.M. Struthers
O.B. Wolfe

Congratulations to the following people who achieved 100% on the professional practice e amination:

R.E. Pelkey
N.K. Chopra
C.P. Judt

ENGINEERING GRADUATES — APRIL/MAY —

A.P.F. Ammeter
K.H. Kelly

that at least one state body is willing to negotiate reciprocity/comity with a Canadian association. Regretfully, none have indicated a willingness to forego the examinations. Therefore, there seems to be no hope for a satisfactory resolution of this matter.

I feel Canadian engineers would be exceedingly naive and foolish to merely stand by and hope that the state boards change their position. In recognition of the importance of reciprocity to Canadian consulting engineers, I am recommending to our Associations:

a) Either directly or through the CCPE, to immediately request of neighbouring state boards that they enter negotiations intended to lead to reciprocity agreements,

b) in order to create a pressure on the Americans to negotiate reciprocity, to immediately change present regulations and procedures for licencing American engineers so that regardless of their academic qualifications and experience, they will have to write and pass the same types of lengthy confirmatory examinations that are required of us by the U.S. bodies. If this request is adopted by the Canadian Associations, then the situation will be identical for engineers on both sides of the border, and no one can argue that such an agreement is unfair.

Because I feel this matter is of great importance to sustaining the Canadian engineering consultant industry, and time is of the essence, I request that my fellow Canadian Professional engineers immediately urge their Associations to adopt these recommendations, and to pursue them vigorously.

David Waldman, P.Eng., (APEM, APEO)

P.S. If any Engineer would like to help me organize this campaign in your province or territory, please send your name and mailing address, and any comments you may have, to 356 Hargrave St., Wpg., MB. R3B 2J9 and I will assist in co-ordinating your efforts. □

Re: Professional Development Cells

I am writing in response to the item in *The Manitoba Professional Engineer* of February 1988 on Professional Development "Cells".

I would like to suggest the organization of a cell to study the use of computer simulation for facility planning and operation improvement. My particular areas of interest are mechanical shop planning; and the operational improvement of material handling facilities.

If you want further information, please give me a call at my office at CN Rail's Research Services at 946-2230.

Derek Wilson, P.Eng. □

Re: A message from the President of EIC to APEM

Ahem! In the interest of accuracy, The Canadian Society for Professional Engineers (CSPE) as a national service organization should have been included in Mr. Filer's count of national engineering organizations.

For over 20 years engineers toyed with the idea of forming a voluntary service organization exclusively for professional engineers similar to the Canadian Medical Association and the Canadian Bar Association for doctors and lawyers respectively.

In 1979 an important step was taken when a legal charter was granted to CSPE. Since then CSPE has become an effective body, representing engineers and assisting them through such services as legal advice in many diverse areas of law; salary income model; Canadian Engineering Resource Bank (CERB), and so on. At the same time, CSPE offers professional engineers the means to lobby government and industry on pertinent issues.

CSPE believes the results of its services and lobbying efforts will help improve the future of every professional engineer.

Eileen Richmond, Executive Administrator, The Canadian Society for Professional Engineers. □

ENGINEERING—The Invisibile Profession

President's Message

W.D. Christie, P.Eng.

What is professional engineering? Ask your neighbour. Ask your children. Ask your spouse. The answers that you get back may be disquieting to you, but these answers may be a measure of the status of our profession as preceived by society.

The other evening, I asked my son's girlfriend that question. The answer was, "Aren't they the people who drive trains?". This response bothered me; primarily because it was the answer that I would have expected to get had I asked the same question 30 years ago when I graduated from universi- I was convinced then that engineering was the dawn of a new era in which our profession would be recognized for the critical contribution that it makes to our society. I knew that it would not be long before we received the recognition that we so justly deserved. How naive can you be!

One of the constant themes of my conversations recently with professional engineers has been the image that professional engineering has/has not. The concern of these engineers has been that the only occasions on which engineering appears to be newsworthy is when there is a problem. Witness the recent shopping centre collapse in Burnaby, British Columbia. But what of the many good works that engineers perform, and which are seldom reported?

Why is this the case? Are engineers only worthy of attention when there is a foul up in one of our projects? I don't believe this for a minute! I firmly believe that if society (your neighbour, your children, your spouse) was made aware of the contribution that the profession makes to this country, that it would be agreed that we deserve a much higher profile. Then why do we not get that recognition?

I think that a prime reason is that engineers have no contact, or at best very limited contact, with the end-users of their services. If the public doesn't have a direct contact with the engineer, how is it to appreciate the contribution that the profession makes to society?

The engineering input to a product which is the output of a manufacturing industry, is not something that many members of society ever have an occasion to consider. The "manufacturer" receives the credit for a product that performs well, or the complaints if the product has problems meeting the consumer's expectations. It is not often that the engineer who designed the item has a direct interface with the end-user. In many instances the consumer has no appreciation that there was any professional engineering involved with the item. Consequently, the consumer has no base from which to form an opinion about the profession of engineering.

What of the engineer in government service? The majority of these engineers probably have little opportunity to relate directly with the public that they serve. Rather the public applauds or castigates the "government", and either votes for them or against them at the next election. The public often seems to expect that it is their right to enjoy the services (roads, bridges, water supply, waste disposal, telephone service, electric power, etc.) which the government provides to them. However, the engineering content of these services does not often receive a great deal of attention. Once again engineering does not end up with a very high public profile.

The engineer working in a consulting engineering environment, often provides services through another engineer employed by a private or public organizaiton. Thus the consultant may often be insulated from direct contact with the person who benefits from the service which he provides, even though the engineer through whom the service is provided may appreciate the expertise

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The Future Of Engineering

(continued from page 1)

workshop on the future of the profession in October 1987 and prepare issues papers, and

3. To make recommendations.

At the time, this all seemed so simple. We would hire some consultants, let them do a study, vet their results and publish a report. If only things worked out that way in real life.

Our procedure was established without too much trouble. We all believed that a market driven approach would lead to the best end product. We felt that if we went to the senior people who make the decisions, we would learn what they expect from their engineers and what kind of skills they would be seeking in the future.

We decided to interview about 100 senior executives, predominantly private sector, but with a small sample from government and academia as well. We believed that by conducting interviews all over Canada, we would learn whether there are variations between regions and if so, whether they mattered. Finally we would be able to determine what the profession was doing right, what could be improved and where we were missing the boat altogether. Not only that, but we would do it all by Christmas.

Early on, Employment and Immigration Canada expressed an interest in participating. We agreed there would be benefits, so we signed what they called an IAS agreement (that is an Industrial Adjustment Study Agreement). And so, we began to set up a bureaucracy. Now we had two committees but still no action.

The task was large, so we wanted assistance. After a good deal of effort, we retained three consultants. These consultants came from varied backgrounds and had never met before the study began. However, they came with open minds and free of bias (at least free of the normal bias that we who are too close to the profession are sometimes prone to). Bob Clarke is a management consultant and financial consultant with labour market planning background and experience with advanced technology organizations, Noal Seymoar is a social scientist, a former government official and a business person. Clive Simmonds is a scientist, an engineer and a futurist.

Who would we ask? And what would we seek to find out? After a brain storm session, we agreed that we should ask the widest possible range of organizations, but that we should seek out firms and individuals who are acknowledged leaders in Canada. We would ask them to describe their organization and to tell us how they use their engineers and technicians and technologists in facing these challenges. We would seek to find out how they view professional registration.

Naturally, we would emphasize the future — where the company is going and how important technology is to its future — how they use automation and how this affects the demands for and use of engineers, scientists and paraprofessionals. We would talk about the growing concern for "product" liability and whether their engineers have any role to play in this area.

We would explore what all these things mean in terms of educational requirements, public responsibility and interaction of engineers with other occupational groups and with society as a whole. And finally, we would talk about licensing and its relevance in a marketplace where the vast majority of engineers are employees of large corporations.

Overall, we interviewed nearly 100 executives. They were from all sectors and all parts of the country. The companies ranged from the largest in Canada to some of the smallest. We talked to traditional firms in mining, transportation and forest products. We talked to electric utilities, telecommunications companies and pipelines. We talked to research organizations, automotive manufacturers, biotechnology and electronics firms. We talked to food manufacturers, chemical companies, oil and gas explorers and developers, consultants, shipbuilders, real estate developers and aerospace firms. We even talked to business organizations, universities and a number of government officials.

We covered all 10 provinces and, we estimate, the employers of more than half of Canada's engineers. Although our sample is not a statistically valid one, we certainly feel we have gained a solid understanding of the issues.

Then, we followed up with a survey which quantified the key issues which had emerged.

THE ISSUES

The survey was a fascinating process. We found that our subject was of great interest to the executives, of whom, incidentially, somewhat more than half turned out to be engineers. They were pleased to give us significant time, and in most cases, the interview stretched to well over an hour.

We learned a lot.

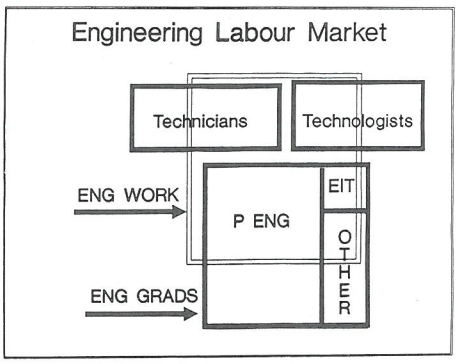


FIGURE 1

To help put the issues into context, let me first describe the engineering labour market in Canada. Figure 1 illustrates the engineering marketplace. There are two major elements. First, there is what I have called engineering work. The size of this box is determined by our definition of engineering, but I will come back to that later. Second are the people who are involved in doing engineering work. This is where all the complexity enters the picture.

Engineering work is not necessarily done by engineers. The people involved may be graduates from engineering schools, graduates from programs in technology or from other fields such as the basic sciences. Among engineering graduates, we see that some are registered as professional engineers or EIT's and some are not. We also see that some professional engineers work outside the field we would normally describe as professional engineering. All we can conclude from this is that engineers and engineering cover a spectrum whose boundaries are unclear.

If we look at the work environment where engineering is carried out, we see some other basic factors about engineers.

Engineering has been called the invisible profession. It is less visible than other professions because engineers seldom deal with the ultimate end user — the public — like doctors or lawyers, but instead act through intermediaries such as governments, contractors and corporations. Also, engineers tend to work for organizations rather than to be self-employed.

So, the large majority of engineers are employees. But even more important, the company for which he or she works probably has much more collective knowledge and experience than the individual engineer. In terms of technical sophistication, the companies are often highly developed. They are busy translating the technology which they possess, through their engineers and other employees, into products and services which are ultimately delivered to the public, but which are often controlled through product liability and civil law. The individual engineer is often just a small part of the total and rarely, if ever, has anything to do with the end user.

These features almost certainly colour the way in which engineering is viewed. However, let's get back to the issues.

a) The Business Environment

The organizations view productivity improvement as the most important issue in terms of their future business success. Export marketing and free trade are also important, but somewhat less so. They see engineers as highly important players in all these areas, but most especially in productivity improvement.

b) The Role of Engineers and Technologists

Clear differences in the role of engineers and technologists emerged from the study. Engineers are seen as the planners, organizers, managers, conceptual designers and innovators. Technologists play a role in all these activities, but as supporters rather than leaders. However, they rise to the forefront in the area of routine design. Figure 2 illustrates the view of industry on a scale where 5 is critically important and 3 is somewhat important to the process.

The Future Of Engineering

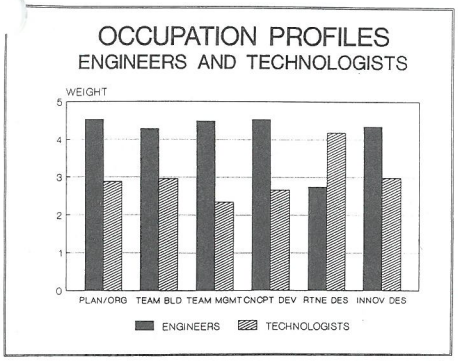


FIGURE 2

A number of important factors fall out of this difference. First, it is engineers who are expected to take responsibility for the work. In this regard, they are expected to understand the conceptual underpinning of technology as well as the broader social context in which it will be applied. This is so because engineers in the future will be employed primarily to manage technology rather than perform routine calculations and repetitive design.

We also learned that engineers should take a much more active leadership role in society to interpret technology for the public. This means explaining the impact of technology and the long term implications of various options. This public profile requires a host of skills — communications, marketing, public relations, political savvy — that are not typically seen as strengths among today's engineers.

c) Future Demands

There was a sense that the gap which existed and which lead to the rapid expansion of technologists in the engineering workplace has now been largely filled. If this is true, it means that the growth rate will drop and so will enrolments. There are currently about the same number of engineers as technicians and technologists in Canada—about 130,000 of each. However, graduates from technical programs have been near the 11,000 per annum mark as compared to about 8,000 engineers. I would expect technology output to drop to about 8,000 per annum fairly soon. Figure 3 shows the recent number of graduates by program.

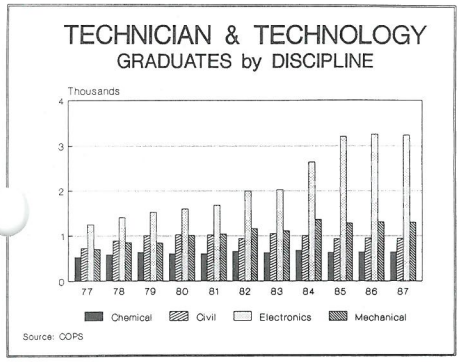


FIGURE 3

If we take a traditional view of engineering, a similar problem will develop. That is, the number of engineers will likely decrease. However, we have been told that the employers seek three different "types" of engineers — technical specialists, generalists and managers. The view of the Task Force is that the opportunity to expand the role of the engineer is as a team builder and manager and that is the generalist and manager role. Figure 4 shows the proportion of each type of engineer which industry expects to require in the future. Note that generalists and managers are the majority.

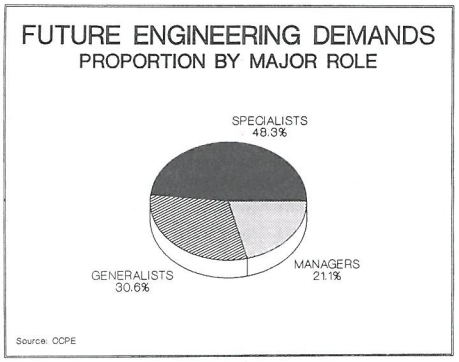


FIGURE 4

d) Licensing

We found generally strong support for the regulatory process as it presently exists in Canada. However, a significant number of survey respondents are critical feeling regulation under a professional act is unnecessary and an interference in their business. These firms believe that the company is the one to maintain adequate standards of practise.

e) Education

Education received a better review than many of you might have guessed. Generally, repondents are satisfied with the product you are producing. Many believe that faculty and curriculum are keeping up with the times, but a fair number are not sure. All believe that engineers must have a social perspective so that their technical solutions are appropriate to the needs and values of society. However, there is uncertainty as to how the educational system should achieve this goal.

The respondents tend to favour CO-OP programs as the preferred form of engineering education. They think that strong links should exist between industry and universities at the staff level as well. They recognize a compelling need for continuing education, but think it is the individual's responsibility to see that it happens.

FINDINGS AND CONCLUSIONS

Our work is nearing an end and we are now drafting recommendations. What have we learned and what do we think has to be done?

At work, engineers have evolved from "doers" to "managers" of technology. Generalist engineers are (once again) emerging. They have the flexibility to ensure that projects FIT into the broad business, environmental and social context and to integrate the project team. The team may include engineering technologists, technicians, scientists and specialist engineers. Specialist engineers will be the experts in a narrow field of engineering where they will be expected to develop innovative solutions to non-routine problems.

In this setting, the engineer of the future will combine communication and people management skills with technical management and marketing know-how to play a vital socio-economic role.

This perspective of the future has a number of implications:

a) A two stream concept for engineers — specialist and generalist — must be properly developed.
b) The emphasis must shift towards technology management.
c) The definition of engineering must be broadened to encompass the management and application of technology.
d) A lot of work is going to be necessary to ensure that the educational system for engineers is appropriate.
e) Ways must be found to expand the number of work term places available for CO-OP students.
f) Engineers must be encouraged to take a more active and visibile public role.

There is a clear challenge ahead for us all. I am looking forward to it. I hope you are as well. □

Professional Inspection

by V.L. Dutton, P.Eng.

In Quebec, they call it "professional inspection" which immediately tells me that there is non-professional inspection, too. Until one of you readers suggest a suitable expression in English, I shall ask you to recognize the compound-noun "professional-inspection".

The Quebec Order devoted a two-day symposium to the subject of "l'inspection professionnelle". Participating also were representatives of the chartered accountants, physicians and surgeons, barristers, and architects. It appears that the practices of the first three groups are similar to those of their compatriots in Manitoba. The Architects carry out 75 inspections each year, which involves some 100 of their members. In addition, a complaint initiates an immediate investigation. After eight years of work, the architects have completed their own manual of practice.

This made me wonder about Manitoba's architects. A call to their office made me aware of their Canadian Handbook of Practice — a four-volume collection with which you may be familiar. One wonders if the need for a special Quebec document is because of their "unique society" in la Belle province?

Another call to our own Dave Ennis alerted me to the pamphlets issued by the Ontario Association, and the one on structural work recently issued by the Alberta Association. If you feel that it is time that your Association began to do something along these lines, please let the office know. □

PRICE COMPETITION...

The Association of Consulting Engineers of Canada, representing almost 900 Member-firms employing close to 30,000 people, strongly advocates ability and opposes price as the basis for competition between and the selection of consulting engineers. As members of the private sector, consulting engineers are advocates of the free enterprise system and are committed to its continuance and vigorous growth. Opposition to price competition among professional consulting engineers should not be misconstrued as being inconsistent with this advocacy of free enterprise, nor does it imply collusion or price fixing. The ACEC believes that competition between its member-firms should be based on knowledge, experience, quality of service, availability, demonstrated competence and integrity. More simply stated, competition should be on the basis of ability and not price.

When price is included as a factor in the selection process, there is a strong tendency for it to become the primary, and eventually the only factor, because less knowledge and skill are required to compare prices than to compare other factors. Also, the selection decision by price is more easily defended against criticism levelled by others who are not experienced with the proper selection process.

The result of price competition is that the client does not necessarily obtain the best possible value for his money because, while a small saving may be made on engineering costs, there is a much greater likelihood of higher capital, operating and maintenance costs, and of not taking into consideration all alternatives.

The ACEC strongly recommends that clients undertaking projects thoroughly analyse the total costs and benefits they expect. Usually, the client is in the best position to estimate benefits. The consultant will provide cost estimates which must consider three principal parts: engineering, construction and operation and maintenance over the life of the project.

It is readily apparent that the places to save money are in construction and operation and maintenance. To achieve savings in these areas, the best quality of engineering service must first be obtained. This prerequisite will provide the client with an economic design and essentially trouble-free performance. The ACEC, therefore, contends that the selection of a consulting engineer based on the cost of his service may lead to insufficient value engineering in the preparation of a project with the likely result of higher capital, operation and maintenance costs. The ACEC position is that the competitive evaluation of consulting engineering services should be based on factors which will result in "best value" for the client. To achieve this, the client should follow the steps outlined in the Appendix.

The last step in the selection process is for the client and the selected firm to negotiate a contract based on the most appropriate method of remuneration. The suggested fee schedules published by the Association of Professional Engineers of each province set out alternative methods of remuneration which are fair and reasonable. During the negotiations, a budget for consulting engineering costs must be mutually agreed upon with appropriate provisions for revision if this becomes necessary.

In contrast to the orderly procedure advocated by ACEC, a number of problems are introduced when priced proposals are used in selecting consultants.

- ***First,*** there is the problem of obtaining meaningful price offering. This is because good engineering involves many variations, concept, approach and interpretation which will lead to work differences in estimated engineering costs especially at an early stage when the scope of work is very difficult to define. Competition based on price is best suited to cost comparison, commodities and services which can be defined precisely.
- ***Second,*** in order to compete on a low fee basis, the design professionals must develop a minimal budget approach to the engineering of the project in question. Should they be successful, their hands will be tied by the constraints of that same budget which will limit their flexibility for the exploration of innovative avenues to reduce construction, maintenance and operation costs.
- ***Third,*** when the consulting engineer and client work under a fixed price arrangement arrived at through price competition, the relationship tends to be that of adversities. The client tries to obtain as much work as possible under the contract regardless of the consultant's costs. The consultant is forced by budget constraints to perform a minimum amount of work consistent with the contract provisions. This a condition far removed from the proper professional relationship in which the consultant is the confident and most trusted agent of the client. Charged with representing the client's interest in every facet of the project, the consulting engineer must ensure to the best of his ability that his design is one in which the capital cost is as low as possibly consistent, first of all, with satisfactory performance in accordance with the purpose of the project and, secondly with the lowest possible maintenance and operation costs throughout the life cycle of the project.

If a minimal budget produces a sub-optimal design, the construction and operation and maintenance costs will be increased far more than the supposed short term savings which might have been realized. This is not conducive to value engineering.

Consulting engineers are frequently involved in pre-design services and research and development activities that sometimes do not lead directly to the construction of a facility. Such assignments often require considerable innovative thinking and effort to maiximize the benefits to the client. Selection procedures for this type of project sometimes involve a large number of firms; consequently, price is a substantial factor in awarding the work. The contract terms of such assignments also frequently require a firm upset price. This application and cost determination of routine procedures is much simpler and cheaper than that of innovative thinking, hence to be commercially competitive a firm will of necessity restrict itself to routine procedures as much as possible.

Selection by ability, on the other hand, ensures a professional relationship between client and engineer. It encourages flexibility in research into cost saving innovations. Finally, it deals with the engineering services contract, not as an isolated expense, but as a critical function which drastically affects the total project cost.

In the last few years, some clients have been placing the responsibility for retaining consulting engineering services in the hands of procurement officials. This responsibility has traditionally been a function of the client's engineers and administrators. Experience has demonstrated the widsom of assigning the responsibility to these engineers or professional administrators because of their professional training and judgment and because their duties normally include the inspection of the operation of the completed facilities. For the client to thoroughly appreciate the cost savings achieved by good design and construction in terms of reduced operation and maintenance costs, the ACEC strongly recommends the continuance of this traditional arrangement.

In summary, the ACEC feels that competition on the basis of price for professional services by no means assures the public that its money is being carefully spent. On the contrary, it introduces elements that may result in wasteful construction practices and excessive operation and maintenance costs.

In the words of Rear Admiral G. Iselin, in charge of procurement of engineering services for the U.S. Navy:

"In my opinion, any proposal which seeks to reap a near-term saving by reduction in design costs, while increasing the risk of diminished technical quality of the design effort, is shortsighted in the extreme. We will be forced to live with the cost impacts of that diminished technical quality for the full economic life of the facility."

On the basis of the arguments set forth herein, the ACEC is, as a matter of policy and logic, strongly opposed to the use of price for services in the selection of consulting engineers.

APPENDIX

The Evaluation and Selection Process

1 The client should:

- describe in general terms the need for the proposed project and its purposes and objectives;
- identify the various phases he wishes the project to be divided into;
- set out a desired timetable for the work;

(continued on next page)

(continued from page 6)

- identify all the problems he knows are likely to arise;
  determine the order of magnitude of the funds available for all phases of the total project;
- select three to five firms which offer the required services, either from his own knowledge or from an appropriate directory such as the one published by the ACEC; and
- give the selected firms the project information set out above and invite them to offer their services.

2 ***The consulting engineering firm should:***

- respond with a letter of interest offering to do the work;
- demonstrate an understanding of the project;
- provide evidence of the firm's ability to perform the work;
- submit profiles of the firm's principals and staff who will be assigned to the project;
- give references, including previous clients for whom similar projects have been carried out; and
- provide evidence of the firm's financial capability.

3 ***The client should then evaluate the responses and select a firm with which to begin negotiations.***

The above article is a position paper prepared by the Association of Consulting Engineers of Canada. □

Professional Development Meeting

by Tracy Murray, P.Eng.

Mr. Pieter Van Vliet, P.Eng., incoming President of the Engineering Institute of Canada, was the guest speaker at the most recent Professional Development breakfast meeting on May 17, 1988. Mr. Van Vliet offered a refreshingly frank perspective on continuing education and the professional engineer.

The speaker noted that Canada is neither winning the race, nor even keeping up with the rest of the world in terms of economic and technological development. He stressed that we have a lot of catching up to do before we can reverse this position. Furthermore, we can not depend solely on the new graduate engineers to deal with modern technology, we must also keep our present work force current through continuing education programs.

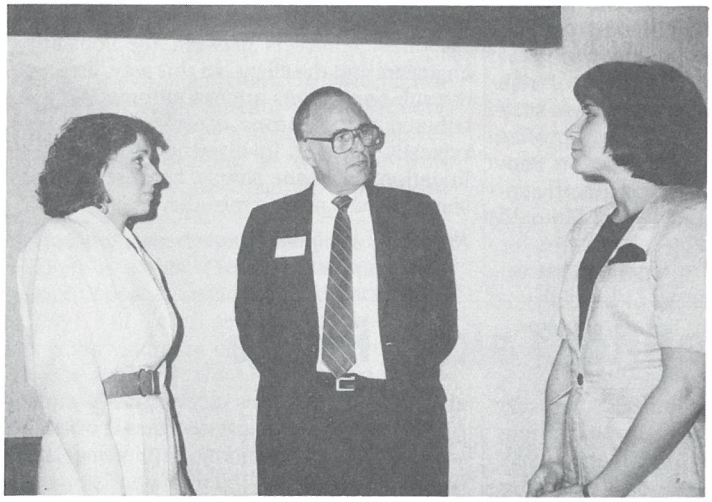
Mr. Van Vliet also noted that small companies are the fastest growing industries and yet they are the least able to afford continuing education programs. At the same time, universities have been perceived as slow to react to the technological demands of society. In an effort to bridge these gaps the Continuing Education Unit (CEU) has been developed. The CEU program is the result of a bilateral agreement between CCPE and EIC and provides a registry for accredited continuing education programs.

Mr. Van Vliet who was in Winnipeg to speak at the Canadian Conference on Engineering Education, encouraged everyone to become involved in continuing education through membership in their professional societies. From the numerous questions from the audience after his talk, it was obvious that there is a genuine interest in this topic among APEM members. □

Hudson Bay Mining and Smelting Donates Lab

Hudson Bay Mining and Smelting has donated a basic rock mechanics laboratory valued at approximately $70,000 to the Department of Geological Engineering. Equipment includes a 200,000 lb. compression frame, a direct shear box, a triaxial cell, lathe, blast vibration monitor, and a variety of miscellaneous and accessory items including pumps, hoses, pressure gauges and transducers. Much of the equipment is already in use by undergraduate and graduate students. □

APEM New Member Reception



(Left to Right): Tracy Murray, Bud Christie and Carla Murray.

(Left to Right): Norm Krolman, Audy Eisses, Cindy Kohuska and Gord Cormeau.

by W.B. Mackenzie, P.Eng.

One of the pleasant tasks of the President is to host a New Member Reception every year. This reception gives him the opportunity to welcome new members in a semi-formal way to the Profession and into membership with APEM. This year the New Member Reception was held at the Wildewood Club on Wednesday, April 20th, 1988. Members of Council, permanent staff members and Association Committee Chairmen attended. A good turnout of new members was present. Although this is primarily a social event and a very pleasant one, nevertheless it gives the new members an opportunity to meet and speak with members of Council and chairmen of various committees.

The new members who attend these functions consist mainly of recent graduates who have qualified for registration and have become registered. Other new members attending are engineers who have transferred their membership from other provinces and engineers from overseas who have joined our Association.

President Bud Christie gave a short speech of welcome. He suggested that new members should find out more about the Association's various mandates and how they are implemented by Council, by Committees and by staff. He emphasized the importance of members taking an interest in and participating in Association affairs. He encouraged new members to consider becoming volunteer members on one of the Association's committees.

The President's speech and the discussions with committee chairmen sparked some animated dialogue. The reception concluded at 9:00 p.m. □

THE FIVE "I's" OF CONTRACT

by Bryan S. Shapiro, L.L.B.

The five I's of contract represent five practical rules which the writer recommends for design professionals to reduce the incidence and severity of professional liability claims between owners and contractors which are so visible in the construction industry today. One method of reducing the claims in both the professional and the construction context is through the use of properly drafted contracts, which is where the five I's derive their importance as described below:

1 Invisible Contracts

Invisible contracts are, as the name implies, invisible to the naked eye. The law deems a contractual relationship to be in existence between an owner and a contractor or between a client and an architect/engineer (A/E), notwithstanding the non-existence of a written form. This does not mean that the parties are somehow absolved from their normal contractual obligations to one another. Judicial predisposition is to favour the poor unsophisticated owner in the construction contract. Both A/E's and contractors would do well to ensure that their contractual arrangements are in fact evidenced by writing. Anyone who steps into the boiling cauldron of construction litigation without the benefit of a written contract to support their position, and who is relying on memory, credibility and the sympathies of the furrowed judicial brow is playing legal Russian roulette. All contracts, no matter how small, should be evidenced by writing.

2 Incompatible Contracts

Incompatible contracts are contracts which do not mesh. That is, where the design professional's own contractrual mandate does not provide for him to render services or to be paid appropriately for the tasks which are otherwise delineated in the construction contract, you have a case of incompatible contracts working to the detriment of all parties in the construction process. The A/E who prepares the Contract Documents for a project, which documents include the form of construction contract, must ensure that the latter is indeed compatible with the contract with the client.

3 Inappropriate Contracts

Inappropriate contracts are contracts which are not appropriate to the particular construction project under consideration. The slavish use of standard form contracts, or contracts with provisions which are redundant and unnecessary to the particular project at hand, is a situation in which appropriate contracts with provisions which do not relate to the project at all, or which are at odds with the true requirements of the project, are prime examples where inappropriate contracts can forment problems and claims between the parties to the construction process.

4 Inequitable Contracts

Inequitable contracts imply the concept of unfair risk allocation provisions in contracts between owners and contractors and between clients and A/E's. Many design professionals purposely prepare Contract Documents containing construction contracts between owner and contractor which inequitably allocate the overwhelming weight of the risk to the contracting commmunity. The effect of this, intangible in the first instance as it may be, is a higher cost of work to the owner as a result of contractor's reasonable self-protectionism.

Ultimately, inequitable allocation of risk under construction contracts, whether such contracts be contracts with design professionals or contracts with construction contractors, result in project friction, inefficiency and increased cost to the owner. It would perhaps be a more credible alternative for design professionals to prepare Contract Documents, including forms of contract between owner and contractor, which more equitably represent a true division of risk based upon what both parties to the construction agreement can reasonably demand from one another. Inequitable contracts ultimately lead to lawsuits which are in the interest of no party to the construction process.

5 Incredible Contracts

Incredible Contracts, which can best be described as masterpieces of circuitous obfuscation, are contracts which are pure fiction in terms of their ability to relate to the project at hand. These types of contracts normally contain not only inappropriate, and in many cases, indecipherable clauses, but also represent contractual relationships which are the least effective and most counterproductive in terms of their ability to facilitate the timely completion of the project at optimum cost to the owner. Such contracts are typified by relationships between actors in the construction community that indeed should not be in contractual relationships with one another. For example, it is not always necessary for the prime consultant A/E to be vicariously liable for all of the sub-consultants on the project. It is possible for the sub-consultants who tend to attract the most liability claims (i.e. structural and geotechnical) to enter into direct contracts with the client, with the prime consultant A/E retaining overall co-ordination and direction authority on the project pursuant to specific provisions to that effect incorporated within the direct contracts between the consulting engineers and the client. In this way, errors of the sub-consultants are not automatically attributed to the prime consultant who then typically becomes involved in the eye of the litigation hurricane simply because he hired someone who made a mistake. □

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Annual Council/Faculty Meeting Takes Place

by W.B. Mackenzie, P.Eng.

Members of the Engineering Faculty, members of Council, members of our University Liaison Committee along with W.B. Mackenzie and Dave Ennis attended a supper meeting on April 19th, 1988. This meeting is normally held annually and is a valuable exercise in that it gives the various parties an opportunity for personal discussions relating to matters which are of mutual concern to the Faculty and the Association. At this year's meeting Dean Kuffel, Associate Deans Glen Morris and M. Chaturvedi shared the head table with President Bud Christie, Vice-President Garland Laliberte and the Chairman of the meeting Vish Gupta, Chairman of the University Liaison Committee.

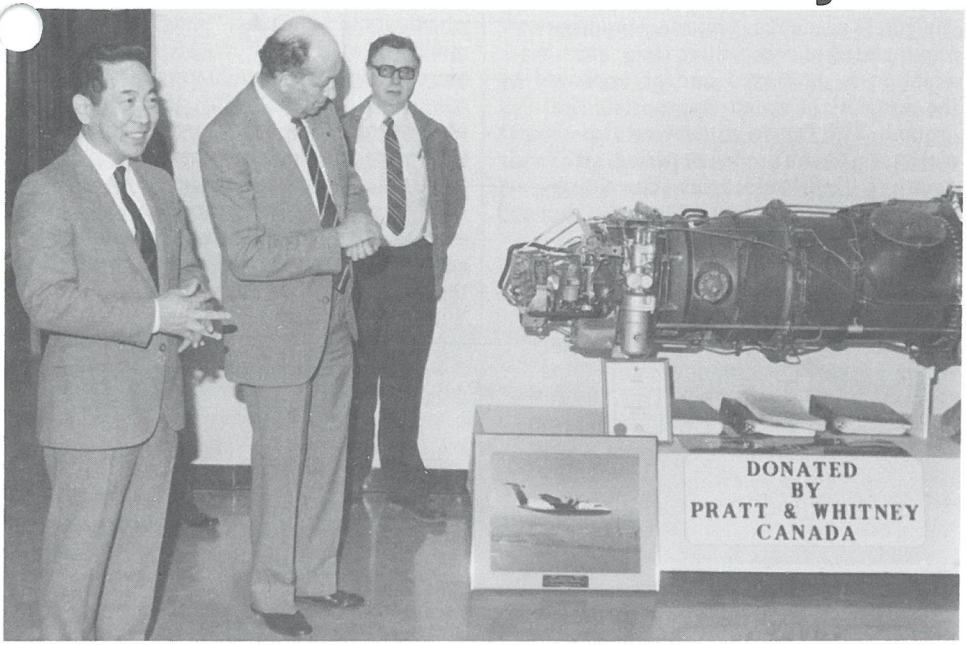
The discussions at this meeting related to a number of questions being addressed by the University Liaison Committee. A very spirited discussion took place on the various questions raised. One of the major issues discussed was the question of a five year Bachelor's program in engineering at the University of Manitoba. This proposal has been raised at national meetings of CCPE relating to the future of engineering. The question of whether or not engineering undergraduates should receive training in business matters was the major thrust of the discussion. This all relates to the role which the professional engineer will be playing in the engineering team and in the business world in the future. Another premier discussion was a suggestion by the Association that the Faculty consider making a course in General Ethics mandatory in the undergraduate Bachelor's program.

The meeting was considered by those who attending to have been very useful. A number of the participants suggested that it would be worthwhile to hold such joint meetings more often. □

Letters/Articles To The Editor

The Editor is soliciting articles or letters to the Editor for future issues. For your information, 1 to 2 pages of text, approximately 500 words per page is suitable. Also 1 or 2 photos add to the interest of the article. For the August issue the deadline is July 13th.

Gift From Pratt & Whitney



P.T. 6A-50 Free Turbo-Shaft Engine. (Left to Right): Dr. T.R. Hsu, P.Eng., Head - Dept. of Mechanical Engineering, Dr. F. Stambrooke, V.P. Academics and Mr. J. Sewell, Chief Technician.

On March 4, 1988, three alumni of Mechanical Engineering, **G.B. Petersen** (1951), **F.R. Cowley** (1957), and **A.L. McBurney** 1961), returned to the Department. On behalf of Pratt and Whitney, their employer, they presented the Department with a PTA-50 turbo-prop engine for demonstration and display use. In a brief ceremony, the gift was accepted by Vice-President, **F. Stambrook** on behalf of the University, by **Dean E. Kuffel** on behalf of the Faculty of Engineering, and **Dr. T.R. Hsu** on behalf of the Department of Mechanical Engineering.

Following the ceremony, **Professor R. Chant** chaired a presentation by the guests on the topic of the development of the PT6 engine over the past 20 years. The presentation by students and staff in acknowledgement of the significance of the occasion. *From the University of Manitoba Newsletter.* □

**WITH DEEP REGRET,
THE ASSOCIATION RECORDS
THE PASSING OF:**

H.A. DALKIE

University/Industry Interaction in Engineering

We bring to your attention a unique engineering design program at the University of Manitoba which has both technical and cost-saving potential for you. By means of this article we wish to inform you of the program and to invite you to participate in it.

The program is a novel form of interaction between industry and the university. It centres about the activities in Mechanical Engineering Design, a senior-year core course in the Department of Mechanical Engineering. Students, working in teams of from three to five members and in consultation with members of the academic staff, present solutions to engineering problems. In the past and as a rule, the problems have been carefully 'posed' engineering situations. In the 1987 Fall Term, several authentic problems from Manitoba industry were introduced in the course. It soon became evident that such problems, being a genuine challenge, provided the students with a far more realistic and stimulating design experience than could be provided by 'designed' problems, no matter how well posed. Accordingly, we intend to use only real-life problems in the course from now on. Would you consider providing such a problem and being one of the professional engineers sponsoring a design team?

A problem should satisfy several requirements in order to be suitable for a design project. It must be authentic, and there must be a real need for its solution. It must have scope for creativity and for the application of engineering technology. It must be broad enough for team participation. Finally, it should be of such magnitude that it, or a distinct portion, can be completed in approximately 200 student-hours of combined team effort. In considering the technological scope of a possible problem, keep in mind that although the course is labelled mechanical, engineering projects are becoming increasingly interdisciplinary. Accordingly, we wish to promote such projects, and we will welcome and make every effort to accommodate problems involving other engineering disciplines so that students may have an opportunity for interdisciplinary design. This willl be possible to the extent that students from other departments register in the course as an elective.

As to the identification of a specific problem, here are several thoughts. Can you subdivide a current engineering assignment and present part of it as a student project? Do you need to design an innovative piece of new equipment or to improve the operation of an existing one? Following is a sample listing of problems and sponsors from the 1987 Fall-Term course.

—Hi-Capacity Riddle Cleaner — Simon-Day Limited
—Hydraulic-Cylinder Wash System — Monarch Industries
—Fiberglass Sliding Window — Dorwin Industries
—Apparatus for Superplastic Forming — Bristol Aero Industries
—Hydraulic U-Bolt Bender — Westland Steel Products.

Perhaps you require a feasibility study or a new-product assessment or a product cost reduction study. In fact, any of your continuing engineering activity could likely be the source of a suitable design problem and a partnership with a team of engineering students.

Everyone benefits from such unique interaction. Students get introduced to real-life engineering. They begin to develop professional attributes such as good teamwork and communication skills. They learn to gather information, and they begin to develop confidence in their engineering ability. Very swiftly, they become aware of the importance of budgeting time and money. In short, they become well-prepared for their coming transition from the academic environment of the university to the real-life world of engineering.

As a sponsor, you will also benefit. You will receive, at minimal cost and for your exclusive use, a suggested solution to one of your current engineering problems. You will have the rare opportunity of observing, beforehand, the work of engineering students you may wish to hire. You will renew university acquaintances and meet new engineering staff members who may be potential consultants. As well, you will get an insight into modern engineering education and gain access to the vast store of knowledge at the university. Finally, you will have the satisfaction of knowing that you have contributed to the professional growth of an engineering student.

If you wish to be a sponsor and if you are willing to spend several hours in the fall term with a team of students, please send us a brief description of your problem. Since the problems are required for the 1988 Fall Term, we would appreciate an early response so that the necessary details could be worked out.

Write to: Prof. J. Shewchuk, P.Eng., Department of Mechanical Engineering, University of Manitoba, Winnipeg, Manitoba R3T 2N2, Attention: University/ Industry Interaction. □

Cooperative Studies In Civil Engineering

by A.H. Soliman, P.Eng. and C. LeBlanc, P.Eng.

Cooperative education is a process which formally integrates students' academic study with paid work experience in cooperative employer environments. Students usually alternate periods of work in industry, government, social services or the professions with periods of academic study.

The first Co-op Program was introduced in 1957 by the University of Waterloo with the enrolment of 75 engineering students. Today over 70 post-secondary institutions across Canada offer Co-op education in a variety of programs. The popularity of the program is reflected in the fact that over 26,000 students are participating in Co-op education with at least 5,000 employers in business, industry and all levels of government.

The Co-op process eliminates the void between the institutional and the business world. Most Co-op placements occur through competition. Students apply for positions through job description displays. Student performance and progress are monitored by the college/university by on-site visits from academics or coordinators providing a link between student-employer-institution relationship.

Employer evaluations remain part of the students' academic records. Students are remunerated at competitive rates. Each work situation is developed and/or approved by the institution as an appropriate learning ground. The Co-op student returns from a work term to the academic period with newly acquired methodologies providing yet another interface between the institution and the organizaiton.

At the University of Manitoba, start-up of the Civil Engineering Co-op Studies Program began in January 1988. The program requirements are basically simple. The participating student must have a minimum 2.00 G.P.A., completed second year Civil Engineering, and have Canadian or landed immigrant status. Work assignment terms are up to four months each, (or two assignments of not less than 12 weeks each). Co-op Studies at the Department of Civil Engineering can provide employers with students for work in the fields of applied mechanics, geotechnical, sanitary and environmental, structural, transportation, and water resources areas.

Once a job is secured, the student qualifies for work assignment course registration to receive one credit hour for each assignment. At the end of the work period, both student and employer submit evaluations of their experiences and the student then writes a report which would be graded "pass" or "fail". A minimum of three work assignments are required in lieu of the graduating thesis requirement and graduates who successfully complete at least three work terms, will receive a Co-operative Education Certificate.

To date, the program's development in the first phase of the various areas of the employer-student-academic administrative activities has progressed smoothly based on the mutual enthusiasms from each sector. Subsequent phases will include the monitoring of the student on the work site by a professor from the University, Department of Civil Engineering.

Participating employers benefit by allowing the planning of the seasonable manpower needs of the company with ease. It equates with time and cost-effective recruiting. Through evaluation of potential career employees, employee turnover is often reduced by hiring graduates familiar with the company's systems and methods. Past experience of Co-op participants has indicated that the Co-op student graduates are groomed for higher levels of responsibility.

The Co-op student, the institute, and the employer are linked to form a successful partnership by applying theoretical concepts to practical and profitable use on the job.

(continued on page 12)

Council Reports

MARCH 14th, 1988 *by D. Spangelo, P.Eng.*

At which Council comes to grips with Group Practice and selects new direction.

Association Membership: Council approved applications as follows: Licence - 18; Engineering Graduates - 7; Transfers - 9; Registrations -19; Reinstatements - 2. Congragulations to the 7 applicants who received 100% on their exams.

EXECUTIVE COMMITTEE MINUTES

Group Practice Licencing: After some rather heated discussion and a tie-breaking vote by the President, Council approved a motion by Mr. Newton to establish another Ad Hoc Group Practice Committee. The mandate of this committee will be to establish a plan to implement group practice licencing. Councillor Ken Buhr agreed to chair this committee which will be comprised of four senior engineers.

Workplace Innovation Centre: The Association has been asked to name a member to the government body entitled "The Workplace Innovation Centre". Council felt that the activities of this board do not fall within the APEM mandate. John Fulton, P.Eng. was a member of this board but could not be reappointed. Accordingly, the Association will not put forward a name for service on the Board of the Workplace Innovation Centre.

Presidential Advisory Committee For Selecting a New Dean of Engineering: Council accepted the Executive Committee's recommendation to submit Mr. Newton's name for consideration by the Advisory Committee.

Engineering Inspection and Supervision Ad Hoc Committee: The basic question considered by Council was whether or not the inspection of engineered works and the supervision of construction engineered works was, in fact, the practice of engineering. Council set up an Ad Hoc Committee to deal with this question. If the committee agrees that this type of inspection and supervision is the practice of engineering, they are required to put forth a plan for implementing these requirements of the Engineering Profession Act. The committee is to be comprised of representatives from the Practice & Ethics Committee, the Safety In Engineering Practice Committee, the Consulting Engineers Committee, the City of Winnipeg Plan Inspection Department, the Fire Commissioners Office and the Mechanical Engineering Division of the Department of Labour.

E.I.C. Continuing Education Program: Council approved the Professional Development Committee's recommendations that the Association endorse, in principle, the E.I.C. Continuing Education Program. E.I.C.'s intention is to manage the program in close liaison with CCPE. However, Council qualified their endorsement by sayig that the implementation of the program must be carried out jointly between E.I.C. and CCPE.

COMMITTEE REPORTS

Ad Hoc Stamping of Shop Drawings Committee: Erwin Weiszmann, P.Eng., Chairman of this committee reported to Council that the committee was still trying to finalize their report to Council. He pointed out that there were two sides to the question and opponents of each side were part of the committee. The engineers are employed by Steel Fabricators and the Structural Consultants. He reported that the differences of opinion were being resolved and that a final report should be in the hands of the Council by September.

Admissions Review Board: Chairman G.E. Laliberte, P.Eng. reported that 22 applications for assessment of academic credentials have been reviewed by the committee since October 1988. Of these, 13 have been judged to be academically qualified and these recommendations were passed on to Council W. Pawliekwich, P.Eng., who recently resigned as Chairman of the committee, was thanked by Council for the many contributions he had made to the board and to the Association.

Sports Committee: W.B. Mackenzie, P.Eng. reported on the very successful Bonspiel and stated the committee is presently making arrangements for the June 28th Golf Tournament. He pointed out that since the committee always operates a slight profit it is not subsidized by the general membership.

Terms of Reference: Council approved new terms of reference for both the Admissions Review Board and the University Liaison Committee.

Act Enforcement: Council commended D.A. Ennis, P.Eng. on his report to Council and the work he is doing with respect to enforcement of the Engineering Act.

MANSCETT: W.D. Christie, P.Eng. outlined the developments regarding MANSCETT. He advised Council that the Association's lawyer has been in touch with the Attorney General's office and will be informed when they receive the proposed MANSCETT Legislation.

The meeting adjourned at 7:00 p.m. □

West-Man Engineers... *by Dick Menon, P.Eng.*

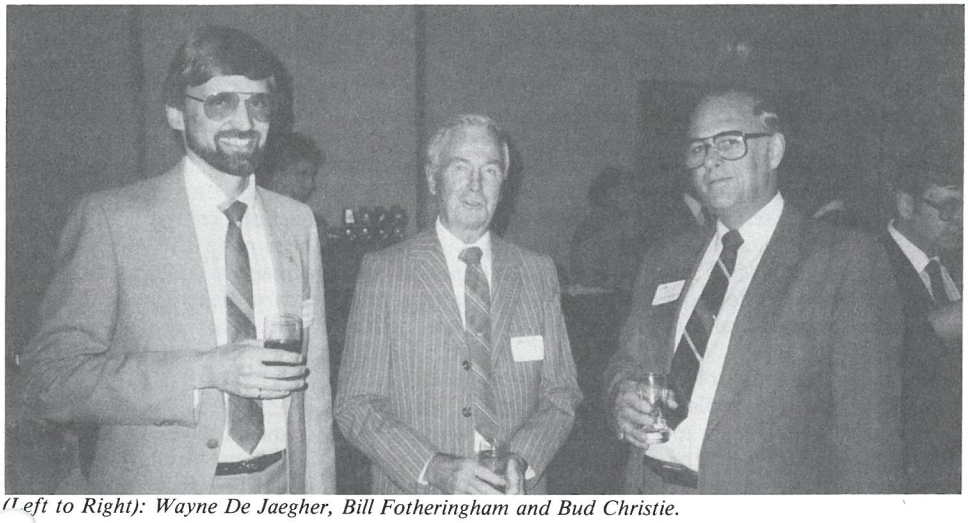
Supper meeting of the West-Man Engineers was held on Thursday, May 12th at the Victoria Inn, Brandon. It was attended by 32 of the area Engineers from Brandon, Birtle, Dauphin, Minnedosa, Neepawa and Boissevain. Also in attendance were eight guests from Winnipeg (APEM executive), including the President of APEM, Bud Christie.

Following supper and brief introductions of all members, a local Chapter was set up to meet the needs of the West-Man Engineers. The main purpose of the Chapter is to get to know the area Engineers through regular supper meetings, etc. The Chapter officers are Don Solkoski (Hydro), Ray Cruikshank (Simplot), Doug Delgatty (MTS), Ian Christiansen (City of Brandon), Stella Fedeniuk (Manitoba Water Services Board), and Dick Menon (Manitoba Water Services Board). The members elected to hold supper meetings as opposed to luncheon meetings to allow out-of-town people to avail themselves of the opportunity to attend the meetings.

The dinner was preceded by a reception during which members mingled with the Association executives. Victoria Inn staff have to be complimented for an excellent roast beef dinner. Following dinner and brief introductions of all present, Bud Christie spoke of his roots in Brandon and several issues such as the responsibility of Engineers in construction supervision, Act administration, monthly breakfast meetings, etc. Bill Mackenzie spoke about Engineers' responsibilities in light of the recent parkade collapse in B.C. and of public awareness. Claude Dube made an excellent point to Bill that Engineering feats (such as the new revolving restaurant) should be directed to the media as achievements because newspapers usually only print Engineering failures. It was felt that perhaps the best way to get the message through would be to direct attention through smaller community oriented media.

Other discussions through the evening centered on the non-availability of Engineering Credit Courses outside Winnipeg, Engineering Awareness at the high school level, etc.

In the next issue, I will be writing about the presonalities of the West-Man group — lighter side of the dinner meeting. Please contact me at 726-6092 or 728-6500 if you have any newsworthy items for the West-Man news. □



(Left to Right): Wayne De Jaegher, Bill Fotheringham and Bud Christie.

APRIL 15th, 1988 *by V.L. Dutton, P.Eng.*

At which Council decides to request CCPE to address reciprocal act enforcement procedures between provinces.

Because the President was unable to attend, Councillor Garland Laliberte, Vice-President, chaired the meeting.

Financial Statements: After accepting the minutes of the March meeting, the Financial Statement (7 sheets) was discussed briefly. The chair pointed out that a program based on figures from previous years, which is being developed, has not yet reached the stage of being able to provide comparisons between budgeted and actual expenditures. However, using a straight-line projection, Councillor Laliberte reached conclusions that were at variance with those reached by Dave Ennis using an even more rudementary system. Not to worry! The two of them have been appointed by the Executive Committee of Council to work on this matter so I assume that we will wait with bated breath for the outcome.

Licences: Twenty-two licences were granted. One person was accepted to the status of Engineering Graduate member. There were three registrations and one of the four requests for Transfer of Registration was held in abeyance until further information could be obtained. One Reinstatement to membership in the Association was approved.

Legislation Committee Report: The chairman of the Legislation Committee, Don McIntosh, P.Eng. gave a report of the Committee. By-law changes and other matters which this committee has been considering are: 1. Changes to the Manitoba Land-Surveyors' Act which might put it in conflict with the Engineering Profession Act. 2. An amendment to By-law 43 which would institute a new method for proposing amendments to the By-laws. 3. By-law 38: Recommendations to changes in the method of collecting annual fees. This is a "bottom-line" item so watch for further information. 4. By-law 44: A proposed revision relating to the requirements for becoming an Engineering Graduate member of the Association. 5. By-Law 31: A proposal on the composion of committees.

Brandon Visit: Council payed a visit to Brandon on May 12th to meet with members in western Manitoba.

Reciprocal Act Enforcement: Council concurred with a request by Ted Clarke, P.Eng., our Director of the Canadian Council of Professional Engineers, to recommend to the "CCPE Board of Directors that a process be initiated to define and foster, within a reasonable time frame, mutual arrangements among constituent associations relating to reciprocal enforcement of professional engineering acts". The reason for requesting this is that our Canadian system of laws makes it very difficult to bring unscrupulous people to justice should they live in one province and carry out their questionable activities in a different province.

Engineers' Wives Association: The Association of Professional Engineers' Wives annually award four bursaries to students of engineering. They have asked Council to consider the possibility of presenting these bursaries at some appropriate APEM function. Council will consider this further and give their suggestions at a later time.

National Engineering Week: The Council was unanimous in endorsing CCPE's request concerning support for a National Engineering Week.

Free Trade Agreement: A number of documents on the Free-Trade Agreement were circulated to the councillors as background information. This subject arose because of a request from the Association of Consulting Engineers in Manitoba. This group would like us to "state the Association's position on the question of Free Trade". After discussion, Council decided that Canadian Council would be the group to initiate action on this subject.

National Point Rating System: Another topic with national implications was found in the request, from the Nova Scotia Association, to participate in the establishment of a national point-rating system for the salaries of professional engineers. You will be familiar with the points methods used by our own Salary Research Committee. The concept was supported by Council but, again, it appears that the development of such a system is likely to come through the efforts of CCPE.

Briefs to Government: The question of submitting briefs to the Provincial Government required some thought. The brief for the current year is, in effect, ready to be presented as soon as our the election of the new goverment is complete. Council decided to monitor the response to the brief to government through the Executive Committee, and to have the Executive Committee develop topics for a possible future brief.

Council/Faculty Meeting: Council has arranged a joint-dinner meeting with the Faculty of Engineering Council and the University Liaison Committee. □

News from other Associations

The **Newfoundland Association** has struck a committee to meet with the Architects and Draft Joint Board of Practice Agreement. At the same time the Ontario Association reports that **APEO and the Ontario Architects Association** Joint Practice Board has completed its review of applications for "grandfathering" from one profession into the other. One hundred applications for Joint Practice were considered and 38 were recommended (37 engineers into the OAA, one architect into the APEO).

The Council of the British Columbia Association has formally recognized computer engineering as a branch of engineering, after having abandoned its attempt to arrive at a precise definition of computer engineering, noting that it is more difficult to define than other disciplines of engineering. The British Columbia Association has also moved decline to endorse the E.I.C. proposal to act as the sole Canadian registery of **Continuing Education Units.** It was noted that this decision was not unanimous.

The **Saskatchewan Association** in its reformatted publication "***The Professional Edge***" reports that it has undertaken a study among the membership entitled "Getting to Know Ourselves". The study is exploring whether or not a preceived level of apathy within the Engineering Profession regarding participation and membership in the Association is a symptom of a more fundamental underlining problem. The study has used a series of four focused group discussions to bring out the concerns of the members. The same publication reports on the outcome of a **disciplinary inquiry** in which a member was fined the sum of $10,000.00 and ordered to pay the costs of the inquiry.

An article in "**The PEGG**" published by the Alberta Association notes that regulations under the Alberta Occupational Health & Safety Act contain 26 sections which require certification by a Professional Engineer of equipment, procedures, drawings, and manufacturer specification for compliance with overall safety requirements.

The new president of the **New Brunsw Association** reports that the matter of Professional Liability Insurance continues to be addressed by a task force of Council and that the lobbying efforts with a Provincial Government will be intensified.

The **California Council of Civil Engineers and Land Surveyors** reports that the passage of a state bill restricting the California Department of Transportation from competing with private consultants to do local agency work "... will be a major benefit for the public and our members." □

Coop Studies

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This mutual commitment to sound objectives ensures high standards and an enriched Canadian workforce. The combination of classroom instruction and on-the-job skills acquisition, can be utilized to meet the challenges of the tough world-wide competition and the ever-accelerating pace of technological changes.

The Civil Engineering Co-op Studies Office at the University of Manitoba is calling out to potential employers in the Province of Manitoba to examine and take advantage of the benefits offered by the program. Without Manitoba companies' participation, this program will not survive the long range plan and the flow of our top graduates leaving the province will continue unchecked. An opportunity and its advantages has presented itself in the form of this new undertaking at the University. We are looking forward to receiving the required support from industry to encourage our graduating students to remain, develop and grow together.

For more information on how you or your company may participate in Cooperative Studies in the Department of Civil Engineering at the University of Manitoba, please contact Dr. A.H. Soliman, Director, (204) 474-9686, or C. LeBlanc, Program Coordinator, (204) 474-6251. □

The Invisible Profession

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of the consultant. On occasion in a consulting practice, service may be provided directly to the public. However, this is a rare occurence. When it does occur, it allows the non-engineer to develop some understanding of the contribution that our profession can make.

If one contrasts the role as outlined above with the role in society played by some other professions, it may begin to become obvious that direct contact with the end-user of the service is important to the profile of a profession.

The medical profession is one in which the contact between the provider of the service and the end-user of the service is very direct. The service is provided on a face-to-face basis. The patient deals directly with the provider (doctor, nurse, lab technician, x-ray technician, etc.). There are no intemediaries; the interface is close. Consequently, the public gains a very clear understanding of the role of the medical profession in society.

When the public has a need for legal advice, they go directly to a lawyer. This is true whether the requirement is related to leases, mortgages, wills, civil litigation or criminal cases. Again, the profession's role is clear to the public. A similar case can be made for the across-the-desk services provided by accountants. The public seems to have a clear understanding of the role of these other professions through the direct contact which is a part of the provision of the service.

The method of delivery of professional engineering services to the public is unlikely to change appreciably in the immediate future. This means that the public is unlikely to gain a better perception of the contribution of the professional engineer to society, unless some other change is made to enhance our image. If engineers are not likely to have the direct contacts with the public which would result in an improved image for the profession, how are we to enhance our position?

Some engineers I have talked to have recommended a public relations campaign to educate the public about our role in society. This may well have some merit. The Saskatchewan Association has recently implemented a new strategy to improve the image of the engineer. I understand that they have hired a public relations company to provide them with guidance related to this effort. A part of the new image includes a completely new color format for their renamed publication, *The Professional Edge.* Perhaps A.P.E.M. should be instituting a similar initiative.

The suggestion has been made that what we need is more media coverage of our accomplishments. The problem of attracting media attention to the profession is one which has been discussed many times, and is not one which is unique to our professi The theory is that if our engineering successes were covered in the media, our profile would improve. The problem is that there are many stories vying for media attention. The media apparently believes, and perhaps they are correct, that good news doesn't increase readership/listening audience. Consequently, we get the kind of coverage we presently complain about. We can generally get stories about engineering successes into technical publications, but this is like preaching to the converted. Technical publications perform a valuable service to the engineering community, the problem is that they are not widely read by the general public.

At A.P.E.M., we distribute copies of our publication, *The Manitoba Professional Engineer,* free of charge to most daily and weekly newspapers in the province. We would welcome some of the success stories carried in this publication being picked up for reprinting. We don't know of any instances where this has happened.

The council of the Association certainly does not have the answer to this problem. We would welcome your views.

In the meantime, I believe that one of the strongest tools we have at our disposal is a proud and active membership. If each one of you takes the opportunities that presented to you, to discuss your work w your neighbours, your friends, your children or your spouse, perhaps we can begin to improve the image of our profession with the public. Who knows? Perhaps one day we will be recognized for our contributions and will no longer be the invisible profession. □