

THE KEYSTONE PROFESSIONAL



The Association of Professional Engineers and Geoscientists
of the Province of Manitoba

DECEMBER 1999
www.apegm.mb.ca

1999 APEGM Awards

By: M.E. Baril, P.Eng.

At this year's Annual General Meeting, two of the Association's members were recognized for their service to the Association, the engineering profession, and the public. They were the 1999 recipients of the Honourary Life Membership Award and the Outstanding Service Award.

Honourary Life Membership Award

The Life Membership Award is awarded to a member who has been deemed to have rendered meritorious service to the Association and who has preferably been a registered professional engineer in Canada for not less than 35 years. This year's recipient of the award was Walter Saltzberg, P.Eng. Since becoming registered with APEGM in 1959, Walter has served a total of 40 years



Honourary Life Membership Award winner Walter Saltzberg, P.Eng.

on various Association committees. Included in this 40 years of service is 6 years as a Council member (1975-1981) with one of those years

being served as the Association's President (1980). Walter is also a former recipient of the Association's Merit Award (1984) and the Outstanding Service Award (1988). Walter retired in September 1997 from his position as the Director of Bridges and Structures at the Manitoba Department of Highways.

Outstanding Service Award



Outstanding Service Award winner Catherine Stewart, P.Eng.

The Outstanding Service Award recognizes outstanding service rendered to, or on behalf of, APEGM by a member of the Association. This year's recipient was Catherine Stewart, P.Eng. Since joining the Association 11 years ago in 1988, Catherine has provided 48 committee years (that is not a typo) of service to the Association, including five years as a Council member (1992-1997), with one of those years being served as the Association's President (1996). She was also on the Executive of the Thompson Chapter from 1989 to 1997. Cathy is currently the Supervising Metallurgist in the Refinery at Inco Limited in Thompson. ■

Our New President – John Hosang, P.Eng.

By: V.L. Dutton, P.Eng. (Ret.)

The genealogists amongst us will be interested to know that our new president is a product of Canada's "melting-pot"; John's father immigrated from Switzerland while his mother traces her roots back to England.

John was born and raised in Toronto. An older brother had attended our Royal Military College so that set the path for John; he studied Civil Engineering. He returned to the College in 1969 to complete a Master's degree in Civil Engineering, specializing in geotechnical studies.

Until John retired from the Canadian Forces, he and wife Pat were stationed in various locations across Canada looking after the many structures that DND owns. Their two daughters are U of M grads, married and living in different parts of the country. The elder daughter followed her father by becoming a computer engineer.

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The Communications Committee would like to hear from you. Comments on your newsletter can be forwarded to us through the Association office. Members are also encouraged to submit articles and photos on engineering or business topics that would be of interest to the membership.

Although the information contained in this publication is believed to be correct, no representation or warranty, expressed or implied, is made as to its accuracy and completeness. Opinions expressed are not necessarily those held by the APEGM or the APEGM Council.

Are The Promoters Of Transgenic Corn Full Of Prunes?

Source: *Science et Vie*, July 1999 translated by V.L. Dutton, P.Eng. (Ret.)

If the research is confirmed, the item in Bourse de Novartis tells the reader that Monsanto, Rhone-Poulenc, and other jewels in biotechnology are in great danger of taking a fall. The prestigious American publication, *Science*, has just published the results of a study that proves that the corn codling-moth is resistant to the toxin Bt (*Bacillus thuringiensis*) produced by certain kinds of transgenic corn.

The argument advanced by the industrialists, thus far, has been that transgenic corn does not need an insecticide since the plant secretes its own toxin that is fatal to the lepidoptera that ravages the fields of corn. ■

Notable UM Library Website

The internet Resources Newsletter, a premier reference site for scientists and engineers, at www.hw.ac.uk/libWWW/irn/irn.html, has named the Donald W. Craig Engineering Library as one of its 'New Sites by Week'. It is described as "an interesting site which lists engineering sites and journals found each week by the Donald W. Craig Engineering Library staff".

The library site can be found at www.umanitoba.ca/academic_support/libraries/units/engineering/newweeks.html. ■

EITs Enrolled September & October 1999

K. Anderson	J.E. Kilayko	M.N.K. Singh
S.N. Chapman	A.G.M. Kirouac	M.E.J. St. Laurent
S.R.J. Courmoyer	J.H. Kudlak	M. Szymczyk
S.J. Dueck	M.J. Long	C.D. Thorn
G.A. Ebbrell	J.J. Ran	L.N. Weslowski
M.J. Fetherston	M.J. Reimer	T.G. Whiting
P.G. Gordon	D.L. Robinson	D. Yang
J.R. Gunning	J.A. Rueda	
H.T. Ho	J.R. Simmons	

New Members Registered September & October 1999

L.E. Barden	R.E. Haller	T.P. Pohjoisrinne
R.T. Bjarnason	A.I. Jittu	J.R.R. Pronovost (ON)
H.E. Boge	G.M. Lecuyer	G.G.B. Robinson
D.B. Braun	L.Y.W. Leung (ON)	E.S. Schraml (ON)
L.M. Buss	B. Liu (BC)	S.C. Seymour (BC)
R.C. Butler	K. Mains (ON)	G. Stillo (ON)
T.L. Ellchuk	J.Q.A. Menec	E.A. Thornton-Trump
D.A. Gauthier	M.D. Penner	B.M. Zikman
W.D. Gustafson (AB)	J.R. Pickell	

Licences Issued September & October 1999

C.J.G. Barratt (BC)	P.E. Kessler (ON)	J.J. Sweeney (ON)
A.D. Esmail (ON)	K. Lau (ON)	E.T. Tan (ON)
S.H. Gebler (IL)	D. Nguyen (ON)	S. Toprak (ON)
M.B. Hodder (ON)	R.L. San Giacomo (NY)	T.E. Walstrom (MN)
M.C. Kazdan (ON)	S. Segal (ON)	

Reinstatements September & October 1999

A.J. Ament	M.F. Dobran	R.A. Halliday	J.E. McClung
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Cannot Locate...

J.M.H. Bergeron	A.J. Peterson
G.F. Drouin	B.E. Petzold
M.A. Harris	W.J. Solonecki
C.K. Lodon	L.Q. Tran

Correction

Our apologies to K.L. Lund, whose name was misspelled in the EITs Enrolled July and August 1999 in the October Issue.



President's Message

John Hosang, P.Eng.

"The Next Chapter"

The month of October brings with it many changes in Manitoba. The obvious transition is the onset of the winter season; however, an equally profound change is the emergence of a new Council and Executive of the Association. As your new President, I am honoured to sit at the head of the Council table with the committed men and women who have been elected, re-elected or those who continue to serve out their mandate from previous elections.

This evolution, repeated on a yearly basis, is critical to the Association. I have heard comments made from time to time that Council functions in isolation, or is out of touch with its membership. Such comments usually occur when someone disagrees with a Council decision or action. In response, I offer that Council evolves every year by taking in new members with new ideas from as wide a range of disciplinary and work experiences as possible. In subsequent issues of "The Keystone Professional" you will have the opportunity to learn more about each of your new councillors as their individual backgrounds are published for your information.

As your new President, I believe I should give you my views on the major issues that are currently before Council. Much of this will be a repeat of my address to the Annual General Meeting on October 31st. Those of you who were able to attend will have to endure the repetition, but as we learned during the Professional Development Conference, communication is a complex issue and repetition is often essential to ensure that the message is successfully transmitted. But more importantly, the vast majority of members who were unable to attend the AGM deserve to hear my views.

A year ago the major issue before us all was the proposal to institute mandatory professional development. Following the membership's rejection of the concept, Council launched the Member

Competency Task Force to evaluate all of the issues surrounding the subject. The heart of the issue is to ensure that our members are, and are perceived by the public to be competent in the future. The Task Force is well along in its work, but final conclusions and recommendations have not been reached. Whatever those conclusions and recommendations may be, Council will weigh very carefully what actions, if any, should be taken on these matters. Nothing will occur without a well-planned process of communication with the membership.

"Ongoing, meaningful communications are essential to the proper functioning of our organization."

Our Association's Act and name were revised in 1998 to include Geoscientists. These were the first of many changes that will occur if we are truly to become an association of two equal groups of professionals. This growing of the Association is at a critical point with the grandparenting of geoscientists about to enter the final stage. I believe that during this critical time the most important issue is to attract them into the organization and to make them feel that in doing so they are equal partners. For anyone who has ever joined an established organization as an outsider, you will recognize that many things done inadvertently, or which may be seen by others as being minor, can prevent you from feeling 'at home' or part of the group. Things such as use of terminology, being open to concerns, or setting agendas all need to take into account our broadened mandate. I suggest further, that we must remain alert to these issues for many years until they become second nature.

Our ongoing discussions with the Manitoba Association of Architects (MAA) have been frustrating to say the least. It could be claimed that we are worse off than we were a year ago, with the termination by the MAA of the 1997 Memorandum of Agreement. However, Council remains committed to defending the legitimate areas of jurisdiction of professional engineers, while reaching a mutually beneficial agreement with the architects. All of this must be done remembering that the overriding concern is to protect the public.

The ongoing dispute with Memorial University of Newfoundland over use of the term "engineer" has taken a number of unexpected turns. Each step of the process appears to have caused dissension among the Associations. Your Council has adopted the position that we must resolve these differences so that we can put forward our best case in our negotiations with the academic community.

Our relationship with the University of Manitoba will continue to be a priority with Council. Programs in the Faculty of Engineering are scheduled for an accreditation review in the near future and the Association is prepared to work with the Faculty in whatever way it can to ensure the success of the review. A strong working relationship benefits professional engineers, the Faculty and students.

The Council is also committed to developing a plan to implement the Carver Model of Governance within

the Association. The Carver model has been, and continues to be, successfully implemented by organizations whose Boards or Councils have streamlined the process of addressing major issues facing the organization by reliance on an established set of governance policies. Your Council believes it can benefit in similar ways.

In conclusion I wish to emphasize my commitment to ongoing, meaningful communications. They are essential to the proper functioning of our organization. It is a never-ending challenge that places demands both on your Council and you to communicate ideas, concerns and questions. One of the best ways to communicate is to become involved with the Association's various committees. I challenge you to submit your name to the Nominating Committee if you have not already done so. ■

NOTICE

Payment of 2000 Fees

Annual Dues invoices have been mailed to all members, Engineers-In-Training and Geoscientists-In-Training. If you have not received yours, please contact the APEGM office. ■

EIC and APEGM Sign Continuing Education Agreement

APEGM has signed an agreement in principle with the Engineering Institute of Canada (EIC) to cooperate and provide engineering professionals with a program of continuing learning of professional relevance to be recognized by awarding Continuing Education Units (CEUs) and Professional Development Hours (PDHs).

The EIC's Member Societies and Participating Partners (http://www.eic-ici.ca/english/cont_ed/pp1.html) offer education and professional development activities

linked to the EIC web site and available to members of APEGM. The EIC's permanent Registry for recording CEUs and PDHs will be available to APEGM members; for a modest fee transcripts will be available from EIC upon request.

This news means that APEGM has joined APEGN (Newfoundland), APEPEI (Prince Edward Island), and the EIC in recognizing the importance of life-long learning for engineering professionals, and has agreed to collaborate and promote continuing education and professional development. ■



CCPE President's Message

Dan Levert, P.Eng., L.L.B.

RE: Agreement with AUCC and Memorial Agreement on Resolution Process is Good News

In what should result in a win-win outcome for both the engineering profession and the university community in Canada, the Canadian Council of Professional Engineers (CCPE), Memorial University of Newfoundland and the Association of Universities and Colleges of Canada (AUCC) reached an agreement in September on a process to resolve our outstanding differences regarding the term "software engineering."

Through the agreement, CCPE and AUCC will create an independent panel whose mandate will be to consider, and make recommendations on, the use of the term "software engineering" in the

undergraduate university community. The panel will deliver its final report and recommendations within one year. When it does, CCPE and AUCC will sit down at the negotiating table and use our best efforts to achieve a mutually acceptable compromise on the use of the term "software engineering," based on the panel's recommendations.

Essentially, the agreement restores the cooperation, trust and willingness to work in concert that has traditionally existed between the engineering profession and the university community in Canada. The same spirit of cooperation that led to the creation of the profession's accreditation system in 1965 will now be used to resolve our differ-

ences regarding the term "software engineering." At the same time, we will establish a precedent that will influence how other key terms related to emerging engineering technologies, such as genetic engineering, are ultimately used in the undergraduate university community.

As a result of the agreement, CCPE has ended its federal lawsuit against Memorial. The case was initiated in 1997 to defend our official mark on the term "engineering", and to prevent public confusion resulting from the use of the term "software engineering" to describe a bachelor of science program offered outside of Memorial's Faculty of Engineering. Our key concern at the time was that the program's name might lead its graduates to mistakenly refer to themselves as "software engineers", which could potentially have threatened public safety.

The agreement addresses the engineering profession's concerns in two ways. First, AUCC has pledged to recommend to its member universities – including Memorial – that they take immediate steps to ensure that students are not confused by the use of the term "software engineering" to describe undergraduate level

programs or specializations offered outside of an engineering faculty. By agreeing to take these actions, AUCC and Memorial essentially acknowledged the validity of the engineering profession's public confusion/safety concerns. Second, Memorial has agreed to abandon the official mark on the term "software engineering" which it acquired in 1997.

Ultimately, the outcome of this resolution process will be determined by the good faith of all the parties involved, and by their willingness to appoint representatives to the panel who are widely respected for their fairness, objectivity and sound reasoning. The other key factor is the willingness of the panel members to approach their deliberations in a manner that will result in the best overall resolution of the "software engineering" question for all parties. All of these issues are addressed in the agreement, and I can assure you that both CCPE and AUCC are committed to making the resolution process work as it should. This commitment has been evident in my preliminary meetings with Robert Giroux, the president of AUCC, and in the renewed spirit of cooperation that is growing between the engineering profession and the

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Despite the fact that this Committee Report was submitted on time for the October issue, it was inadvertently not published.

Image Enhancement Committee Report

Chair,
R. Bernhardt

Members

N. Dunn
J. Giesbrecht
A.M. Gole
K. Huminuk
W. Jackson
C. Nieuwenburg
A. Pollard
J. Prendergast
D.C.H. Prowse
M. Rheault
J. Rooney
B. Thomson
(Liaison Councillor)



The Image Enhancement Committee's objective is to enhance the image of professional engineers by increased public awareness of the role that the engineering profession plays in our society. This is done in order to ensure support for APEGM's legislated mandate, and in order to encourage individuals to consider engi-

neering as a profession. The objective is fulfilled in a number of ways, such as organization of National Engineering Week events, participation in and/or sponsorship of similar events organized by other associations or interest groups, placement of newspaper advertisements, and preparation of public awareness literature.

The majority of the committee's time and energy during this past year continued to be devoted to the pursuit of two events. The first is National Engineering Week, which occurs in the first week of March. As in the past, this year's National Engineering Week featured a variety of competitions, displays and demonstrations. Returning events included the Celebrity, Mir-In-Motion, Spaghetti Bridge, and Whisser competitions, and a display area in Polo Park. The Straw Tower competition also made a comeback after an absence of a year. A special screening of the IMAX film "Mysteries of Egypt" was used as the kickoff event for the week. This special screening was available only to APEGM members and their families. The interest in the screening was again quite strong and ticket sales were very brisk. The committee views this as an indication that the screening should be continued.

The second event upon which the committee focuses is the Manitoba Schools Science Symposium. The committee continued its support

of MSSS by providing a monetary grant to offset the costs of the organizing committee, and by providing Special Awards for engineering related projects. The winning projects were again selected by APEGM members who volunteered to act as judges.

The IE committee also continued to provide support for the University of Manitoba Handbook by sponsoring an advertisement, and for the Innovators in the Schools program by providing financial assistance.

In the area of membership, both Michelle Rheault and Nicole Dunn joined the committee during the past year. While it is not official at the time this article was written, it is anticipated that Bonnie Thomson (Liaison Councillor) will no longer be available to serve as a committee member. The committee thanks Bonnie for her great contribution, and in particular for her organizing of the Celebrity competition that has taken place during National Engineering Week in the past three years.

The committee thanks the large number of Association members, both P. Engs. and EITs, who had a hand in ensuring the success of the committee's initiatives during the past year. The committee also thanks Shirley Matile and Lorraine Dupas at the Association's office for their invaluable help and support. ■

The Annual General Meeting – Saturday, October 30, 1999

By: V.L. Dutton, P.Eng. (Ret.)

Friday's Professional Development Conference was likely responsible for the small turnout of members for this meeting. One wonders if the raking of the leaves might not have been postponed for another day or so.

The morning's program started with an Information Session. Ralph Eschenwecker reported on the Member Competence Task Force. Our Executive Director, Dave Ennis, then talked about Certificates of Authorization and what they mean to the consulting engineers and corporations providing engineering services.

Following this, Councillor Alan Pollard gave us a summary of the Survey of Graduates and Employers carried out recently. Please watch for an article in a future issue of the KP. The one point I noted was that 90% of the Engineering graduates found work within eight months of graduation. I found this rather remarkable as I know of a young lady who took Chemical Engineering at the University of Saskatoon. Her mother tells me that, after two short-term jobs, her daughter has just found what appears to be a meaningful job with the firm at the other end of our Association's building.

The mid-morning break (the muffin I had was very tasty) provided an opportunity to meet some of the visitors from "away". The first gentleman I met was Gordon Williams, Ph.D., P.Geol., who represented APEGGA and is Past-chair of the Board of Directors of the Canadian Council of Professional Geoscientists. To my amazement, Gordon was born in Minnedosa and knows Craig Gibbs who runs Gibb-Bees Apiaries where this old cook buys his honey.

Then, to keep the surprises in western Manitoba, Barry Biglow, a member who lives in Alberta, spent the first five years of his life in Shoal Lake. Barry is an Electrical Engineer who did his studies at the University of Manitoba.

Following the intermission, in the Issues Forum, the subject of Professional Responsibility concerning Design-Build Project Delivery was presented by Darren Burney

and discussed by a number of members.

Then Dave Ennis introduced the issue of Member Services and Dues Levels. This brought a goodly number of our comrades to the microphones. Speaking at the microphones was essential as the Thompson, Brandon, and Kelsey (Flin Flon/The Pas) Chapters had joined us via the videoconference set-up in the room.

The vexing question of how to designate ourselves, now that "engineer" and "engineering" appear to have been taken over by whoever wants to use the terms, was discussed. Mr. Gerry Suek, from the Newfoundland Association, reported on the current situation vis-à-vis Memorial University, while Mr. Hancock, from the Canadian Council of Professional Engineers and the B.C. Association, reported on how they are attempting to handle the situation on the other side of the Selkirks.

The final topic of the morning – Ownership Requirements for Professional Firms – was not dealt with due to a lack of time.

While in the queue for lunch, more surprises came from western Manitoba. One of the operators of the television-camera equipment, Doug Germain, is the nephew of a Miss Kenny who had taught school at Birtle and had worked for my Dad in his store at Clear Lake in the 1950s. The other TV chap, Sheldon Barnhard, is from Dropmore and knows the world-famous Skinner Nursery well.

Our new Dean of Engineering, Dr. Doug Ruth, was the guest speaker at the luncheon. With the help of slides, he showed us how virtually everything the ordinary citizen touches is dependent on engineers in one way or another.

Our President, Dr. Ron Britton, chaired the Business Meeting following lunch. Legislation Committee Chair, Don Spangelo, presented

the changes to our By-Laws that are being proposed by his Committee and on which you will be asked to vote by letter-ballot.

The Association's proposed Budget for the coming year elicited several questions from the floor. These were received as information for the new Council.

The report of our Executive Director not having been printed in the reports of the Association's Committees, Dave Ennis presented it to the meeting. He made special note of the Association's Web-Site developed by Dr. Kinsner.

The penultimate duty of our retiring President was the presentation of certificates of appreciation to retiring appointed Councillors

Bonnie Thomson and Dr. Ertrice Eddy for, respectively, five and six years of duty to our Association. Having worked with Ertrice on the Professional Development Committee, I can personally attest to the time these ladies have given the Association. I wish them well in their "retirement".

The meeting ended in the now-traditional handing over of the Association's unique gavel to our new President, John Hosang. John's short speech told us that our Association continues to be in good hands. ■

Wine & Cheese Reception

Friday, October 29, 1999

The Canad Inns Fort Garry was the site of a reception held on Friday, October 29 to welcome new members, to recognize volunteer committee members and to award the APEGM student scholarships.

Scholarships were presented to:

- Colin Gilmore – First Year Engineering (Electrical)
- Delbert Dueck – Second Year Engineering (Computer)

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President Hosang thanks Dorothy Britton for her support.

Environment and Sustainable Development

Global Greenhouse Gas – Manitoba Hydro's Commitment

By: P. Janzen, P.Eng.

In the August, 1999, issue of *The Keystone Professional*, Jean Van Dusen, P.Eng., described the Kyoto Protocol on global warming and what it could mean to Canada and Manitoba. This article will illustrate how Manitoba Hydro intends to meet the Protocol's targets.

Manitobans are indeed fortunate in having an abundant supply of cheap, renewable hydro-electric energy. It is the most environmentally benign conventional energy source having the fewest negative impacts. (This holds true with respect to natural-gas combustion, which generates carbon dioxide, a greenhouse gas.) However, in order to meet peak power-demands and ensure reliable capacity during drought cycles, Manitoba Hydro must supplement hydro generation with thermal generation, resulting in some greenhouse-gas emissions. These come primarily from coal-fired stations at Brandon and Selkirk, as well as diesel generating stations in remote areas.



In December, 1997, Canada made a commitment to the Kyoto Accord to reduce greenhouse-gas emissions by 6% below 1990 levels by 2008-2012, and Manitoba Hydro's intent is to meet the same target. In 1990, Manitoba Hydro produced the equivalent of 0.53 megatonnes of greenhouse gases (less than 0.1% of Canada's total) the major source being coal and diesel generation and the remaining 2.7% being fleet-vehicle emissions.

Even with these low emissions, Manitoba Hydro expects to do even better than the targeted 6% reduction. Under "normal operating conditions" (normal water flows and equipment outages) expected average emissions would only be 0.3 megatonnes by 2010/11 – a reduction of 40% below 1990 levels.

Manitoba Hydro's strategy for reducing greenhouse gases includes:

1. An increase in reliance on hydro-electricity, which does not produce significant emissions of greenhouse gases. The 1330 megawatt Limestone Generating Station, which came into full production in 1992, increased electrical capacity by 25%. (It should be noted that initial filling of reservoirs can generate greenhouse gases as submerged vegetation rots, a phenomenon being studied by the University of Manitoba at the Experimental Lakes Area in Northwestern Ontario. However, this effect is less significant over the longer term after the reservoir ecosystem reaches equilibrium.)
2. A decrease in reliance of coal-fired generation, which is a major source of greenhouse gases, has become possible. Hydro's hydro-electric system, now being larger, gives it more opportunities for the strategic operating of its various components. This is enhanced by Hydro's membership in the MAPP (the Mid-Continent Area Power Pool). Four thermal generating units were removed from service at the Brandon Generating Station in 1996,

reducing thermal generating capacity by about one third at that time, and the Selkirk coal-fired generators are scheduled to be decommissioned in 2006. As a result, greenhouse gas emissions from coal-fired generators will fall to 45% of 1990 levels.

3. Nine communities previously served by diesel power have been connected to the land-line transmission grid. By 2010/11 emissions from diesel generators will be 53% below 1990 levels.
4. Demand-side energy initiatives ("Power Smart") have resulted in a peak instantaneous energy saving of 45 megawatts since 1990 and supply-side (efficiency) energy initiatives have produced savings of 152 megawatts.

While reducing greenhouse-gas emissions, it is expected that annual energy production due to hydro-electric operations will increase from 19,200 gigawatt hours in 1990 to 26,500 gigawatt hours in 2010/11. As a result, the intensity of greenhouse-gas emissions will fall from 0.03 tonnes per megawatt hour in 1990 to 0.01 tonnes per megawatt hour in 2010/11.

Manitoba Hydro should have no difficulty meeting its emission targets and, indeed, improving on them. In fact, the utility is uniquely positioned to make a much larger contribution to national and international efforts. Manitoba has significant undeveloped hydro-electric potential. If the potential of the ten most economic sites were realized, Manitoba's hydraulic generating capacity would double to 10,000 megawatts. This energy could be used to power Manitoba's economy while contributing to Hydro's international environmental responsibilities.

At this time, further hydraulic power development is not expected until 2014. But these plans could be advanced under appropriate market conditions and with supportive government policies. Manitoba Hydro continues in a state of readiness should the opportunity for additional hydroelectric development arise sooner than anticipated. ■



MGI Canada Inc. – an established leader in the insulation industry since 1977 – is seeking an engineer on a part-time basis. This individual will assist in the engineering of our state of the art polyurethane plant located in Selkirk, MB. Knowledge of manufacturing and CNC software is crucial. This market-driven, multi-faceted plant requires an individual who possesses an abundance of organizational skills supported by experience in the mechanical, electrical, and hydraulic engineering areas. This position and the flexibility we can offer may be well suited for someone retired who just isn't ready to hang them up.

Should you require more information or wish to set up an interview, please contact the owner, Ed Aspersen at 772-3991, or fax a resume to 772-4005.

The EIT Road to Registration

By C. Berkis, EIT

Unless you are an EIT, many of you probably aren't aware of an anniversary that came and went at the beginning of this year. Starting on January 1, 1999, the first EITs were completing the new four-year pre-registration program on the way to achieving P. Eng. status. It was in January of 1995 that the former APEM instituted the four-year pre-registration program to replace the previous two-year program. Topics covered in the new program would include work experience, continuing education and professional service activities.

At the time, the prospect of another four years of work to achieve P. Eng. status did seem daunting, considering we had just completed four years (or more) of engineering courses at the U of M. However, in hindsight, these four

years have gone by quite quickly and, in fact, the requirements of the program aren't that difficult to fulfill. The purpose of this article is to give some information to current EITs, whether you have just entered the program, or are already part-way through. Some of what you will read is already listed in your EIT packages, however its importance should be reiterated.

1 Keep a log

This is probably the most important thing that you can do, not only as an EIT, but also as an Engineer. During your apprenticeship, this will be your source of information when you fill out your progress reports. It can also be used as a guide to show yourself how you are progressing as an EIT. Record all of your activities

throughout the day and list their results, as well as any problems. Write down all faxes and e-mail sent and what they contain, as well as phone calls to customers and suppliers. You will soon discover that having a log is more than a source for progress report information. If you are ever questioned about your work or a task you were asked to perform, either by your boss or a lawyer, you have a permanent written record to cover your side of the story.

2 Send in your progress report every six months

Nowadays, I'm sure virtually every EIT satisfies this requirement. But there was a time, a couple of years back, when APEGM's Experience Review Committee put its foot down on those who didn't follow its requirements. Apparently, some EIT's were handing in one report a year, while others hadn't sent one in at all. This was promptly ended by APEGM with a letter to all EIT's

explaining that if you didn't send in your reports by the deadline, you would lose the affected work experience time. A grace period was given for the submission of tardy reports. From conversations with Shirley Matile, APEGM's Director of Admissions, the influx of progress reports was huge. You see, I was calling about a progress report I had sent in some three to four months earlier. It seems that the Experience Review Committee hadn't lost my report, it's just that the piles were so high, they hadn't got to it yet. These lengthy delays caused some problems when it came to figuring out how many professional development hours and professional service points I had, and trying to coordinate around it to make sure I was keeping up, but there weren't any problems that couldn't be solved.

3 Ensure you have a P. Eng. available to assist you

When accepting a job offer, a question you will want to ask is if your new company has a P. Eng. on staff to assist you with your EIT development. In my case, I accepted a job with a company that didn't have any engineers on staff. I informed my new managers of this concern, but I assured them that I would take care of the problem. It turned out that a lot of the people I deal with are engineers, and through some inquiries, I was able to locate one who would take responsibility for my work. I would have saved a lot of time and searching if I had called APEGM as soon as possible for advice and assistance.

4 Call to verify your progress

After four years of University, and then four years of work experience, you don't want to find out when you're applying for registration that you are missing one component of your program. Call the APEGM office periodically to verify that what is said in your progress letters is actually in your file. There is a case of an EIT, close to registration, who was led to believe he had more professional service points than the records actually showed. This has forced the EIT to scramble somewhat, so that everything adds up once the registration process begins. Now, this is probably an isolated incident, so I do not recommend that EITs start flooding the APEGM

Wine & Cheese Reception

Continued from page 5

- Oscar Ramirez-Iraheta – Fourth Year Engineering (Mechanical)
- Jennifer Schick – Fourth Year Engineering (Industrial)
- Ian Edwards – Fourth Year Engineering (Electrical)
- Maggie Malapad – Fourth Year Engineering (Civil)
- Clinton Stewart – Fourth Year Engineering (Electrical) ■



APEGM scholarship recipients. (Missing: C. Stewart)



New APEGM members.

Continued on page 11

Council Reports

Tuesday, September 14, 1999

By: A.N. Kempan, P.Eng. (Ret.)

COUNCIL FINDS THAT GRANDPARENTING ISN'T EASY

Present for this meeting were Councillors Eschenwecker, Ball, Matthews, Macleod, Hosang, Thompson, Quinn (via teleconference), Washchyshyn, with President Britton presiding.

This meeting had its usual quota of minutiae, but several items dominated the discussions.

The situation in Newfoundland, which saw their provincial association square off against Memorial University of Newfoundland (MUN), could be accurately termed a Mexican standoff. A solution was reached, but neither side could be satisfied with the result. The disagreement stemmed from MUN's use of the term "software engineering" to describe a course in their computer science department. The Association of Engineers and Geoscientists of Newfoundland objected to their use of a protected word, "engineering", and threatened to sue, whereupon Memorial invoked academic freedom and fought back. The Canadian Council of Professional Engineers (CCPE) allied itself with APEGN and the Association of Universities and Colleges of Canada joined forces with MUN. Both sides enlisted the help of the legal profession.

Council learned that under the terms of the settlement CCPE agreed to drop its litigation, without costs, for a period of five years. MUN set aside any claim to "software engineering", but could continue to use that name for its course, with appropriate disclaimers, for the same five year period. APEGN, which had refused to accredit MUN's real engineering programs as a bargaining tactic with MUN, agreed to reinstate the accreditation process. Under the agreement, an impartial four-member panel is to be struck to deliberate and make recommendations for the use of the term "software engineering" and to report within a year. In this way, it was hoped, a permanent solution would be found that would be agreeable to all parties. It was rumored that both parties, combined, had spent \$800,000 on legal expenses and the burn rate as \$10,000 per day.

Tuesday, October 12, 1999

By: A.N. Kempan, P.Eng. (Ret.)

COUNCIL SAYS GOOD-BYE TO FAMILIAR FACES

Inevitably, we have reached the time of year when we bid good-bye to retiring Councillors and prepare for the newcomers who will take their place in November. Some councillors are retiring voluntarily, some perhaps involuntarily (after the elections), and some have another term to serve. November will see a new environment around the Council table.

Two major topics dominated this meeting. First, we had the on-going battle over the word "engineer." The last few meetings dealt with term "software engineering" and Memorial University of Newfoundland; however, the adversary on this occasion was Microsoft Canada and the bone of contention the term "systems engineer". Microsoft doesn't see a problem with this because they always use the full title "Microsoft Certified Systems Engineers" and make no claim to be engineers as designated under our Act. APEGM disagrees with their interpretation.

Councillor Ball told of a conversation with a colleague who felt that fighting over "engineer" was a waste of time. Councillor Rizkalla mentioned the case of train engineers, which he was informed, is acceptable usage since the Act makes provisions for it. Councillor Pollard thought Microsoft wanted to use "engineer" because it made money for them by conveying a higher educational status. Councillor Eschenwecker said that APEGM is bound to uphold the provisions of the Act. If other parties wanted changes they must work through APEGM.

At this point President Britton put the question to Council, they could be passive or take a risk enforcing the Act. What did they want to do?

As with most disputes, the agreement came at a cost. Gerry Suek, President of APEGN, did not agree with the CCPE-lead settlement. Suek described it as sell-out of APEGN's legal responsibilities for the term "engineering." President Britton asked Council how APEGM should respond to the settlement. Council agreed that APEGM would back CCPE.

Change usually does not come easily, and our geological brethren are experiencing this phenomenon. When the geologists negotiated their entry into the Association, a provision for "grandparenting" was included. Grandparenting of geos has turned into a major rhubarb in some circles, mainly among those geos who regard writing the Professional Practice Exam (PPE) as an unnecessary imposition. Councillor Matthews said that the PPE does not have a lot to do with the day-to-day work of geos. Councillor Quinn thought many of the problems were logistical; packages weren't received promptly, timing of the exam was a problem, as was the associated expense. She said that many geos felt pressured into writing an exam that doesn't have much to do with a geos' practice, and that the grandparenting committee should have looked into it more closely during the planning phase. Councillor Matthews reiterated that engineers did not impose the grandparenting process on geos.

On the other side, and there's always another side, Shirley Matile, Director of Admissions, said that the grandparenting process had been agreed to by the geos representatives during the amalgamation talks, and the requirements shouldn't be a surprise to anyone. The information had been out for several months, but few signed up to take the exam. Now that the deadline was drawing near people were panicking. Since two members of Council were traveling north to meet the Kelsey Chapter on other business, they would meet with concerned geos to gather information and to discuss the issue.

Councillor Eschenwecker gave a brief update on the Member Competence Task force and noted an interesting case in British Columbia. The BC Association disciplined one of its members. Since suspension of practice wasn't part of the penalty, the member continued to work and eventually a second infraction occurred. That in itself isn't particularly newsworthy, but it appears that the client of the disciplined member is suing the BC Association, maintaining that the Association was guaranteeing the competence of the disciplined member by allowing him or her to continue to practice. That judgement will be of interest in many associations. ■

Councillor Rizkalla asked why CCPE hadn't pressed the issue. It was because they had their hands full presently with the "software engineering" battle with Memorial University of Newfoundland and the Association of Universities and Colleges of Canada. Executive Director Ennis reported on initiatives within CCPE on the matter.

The September meeting had some fireworks regarding the grandparenting of geoscientists and this meeting was an incendiary continuation. Kelly Kjartanson, Chair of the Registration Committee and Dave Parberry from the geoscience community were guests at the meeting. They both had been active in organizing the entry of geoscientists into APEGM and could add to the discussion. Councillor Hosang led off by recapping the events of their visit north and the meeting there with concerned geoscientists. Dave Parberry said that writing the Professional Practice Exam was most irksome to highly experienced geoscientists. On the other hand, Mr. Kjartanson said that APEGM should stick to the process.

At this point President Britton shared the contents of a letter from Wells Peever, legal counsel to APEGM. It was Mr. Peever's opinion that the Association couldn't ask geoscientists to write the PPE under the grandparenting provision. Councillor Roberts took the radical view that not only should geoscientists write the PPE, but that all members should.

Councillor Hosang made an impassioned plea for grandparenting, saying that it was justified as a time-limited, special provision for quickly enrolling geoscientists into APEGM. He said he didn't write the PPE when he joined and that he thought it was unfair to ask experienced geoscientists to do so. Director of Admissions Shirley Matile was equally firm in insisting that the established process be followed. She pointed out that entrants from other countries were required to write the PPE.

Practical Flexible Working Arrangements

By: B.A.K. Danielson, P.Eng.

A sub-committee of the Women in Engineering Advisory Committee (WEAC) has prepared a series of articles to provide information to members of APEGM about flexible working arrangements that began in the October, 1999 issue of "The Keystone Professional". The members of the sub-committee are: Brenda Danielson (Chair), Elan Swatek (WEAC Chair), Meghan O'Laughlin, Carolyn Geddert, Kelly Olischefski, and Robin Hutchinson. The complete document is now available on the APEGM website under "What's New".

The following is the second in a series of seven articles.

Job Sharing

Description

Job sharing is a voluntary work arrangement in which two or more people share the responsibilities and duties of a full-time job. The benefits and salary are prorated based on the hours of work of each individual. Generally job sharing involves only two people sharing one full-time job.

The act of sharing a job varies depending both on the individuals involved and on the job itself. For some jobs, tasks or projects are specific and defined. Two people sharing this type of job may not have to interact regularly and may work essentially independently. In jobs where specific duties will be shared by the individuals, frequent interaction and team work is required. In addition, job sharing schedules may be based on sharing days, sharing weeks, sharing months, or sharing years. Most practically, individuals share days or weeks. One partner may work more hours than another. For example, one person may want to work three days a week and the other only two. Again, depending on the individuals, the company,



and the job tasks, job sharers may fill in for each other during vacation time, sick days, and extended leaves.

Considerations

The likelihood of significant team work should be considered. This may require shared decision-making and responsibilities. Communication and organizational skills are significant to success and may require extra hours. These factors should be recognized both when considering the job-sharing work arrangement and when choosing a job-sharing partner.

Advantages

- reduces absenteeism due to illness, personal appointments, vacation, or extended leave

- reduces staff turnover (and loss of experienced people)
- increases productivity – either due to the diverse skills of job-sharing partners or due to decreased fatigue of individual workers
- increases time and opportunity for professional development
- reduces working hours in high-stress jobs
- increases time for family responsibilities

Disadvantages

- both employee income and benefits will be significantly reduced
- less potential for advancement
- increased administration and/or training costs required by two employees ■

CCPE President's Message

Continued from page 4

university community. I am confident that when the panel delivers its report and recommendations, they will form the basis for an agreement between the engineering profession and the university community which can and will be acted on.

In recognition of the time required for the university community to implement changes as a result of the resolution process, CCPE has agreed to refrain from initiating legal action against AUCC member universities pursuant to our official marks for a period of five years following the tabling of the panel's report. Our constituent member associations are of course free, and in some cases obligated, to take whatever action they deem necessary against universities which breach the provincial or territorial statutes in their respective jurisdictions.

The agreement on "software engineering" would not have been possible without the hard work and perseverance of the Association of Professional Engineers and Geoscientists of Newfoundland (APEGN). As a profession, we owe our Newfoundland partners a debt of gratitude for the difficult decisions they made on our behalf, and for making the university community fully aware of our concerns regarding its use of the term "software engineering" to describe non-engineering programs.

We now have a resolution process in place that can and should be embraced by the engineering profession in Canada and the 152,000 professional engineers of Canada. ■

Letter to the Editor



I am responding to the Letter to the Editor from F. A. Jost, P.Eng (Ret.) contained in the October 1999 edition of *The Keystone Professional*.

Mr. Jost raises some interesting points. I must take him to task on one issue, however. He claims that "we are our own worst enemies when it comes to the preservation of our right to reservation of title under the Act." He then cites in support of this claim Professional Engineers in the employ of the Provincial Government voluntarily joining a non-professional union.

Professional Engineers employed by the Government of Manitoba have never been members of a non-professional union. When we gained the right to join a union in the mid 1970's, we formed our own independent union, The Organization of Professional Engineers Employed by the Province Of Manitoba (OPEEPM). We operated as an independent union from 1976 until 1987. In 1987, we joined the Professional Institute of the Public Service of Canada (PIPSC) and became the OPEEPM Group of PIPSC. The

Professional Institute is the largest union representing professionals in Canada, having some 35,000 members employed by the Governments of Canada, Manitoba, and New Brunswick as well as by Atomic Energy of Canada, Nav Canada, the Canadian Food Inspection Agency, and the National Research Council. The Institute represents over 2,000 Professional Engineers nation wide.

N.J. Harden, P.Eng
Chairman, OPEEPM Group
The Professional Institute of the Public Service of Canada

University News



By: B. Stimpson, P.Eng.

Department of Civil and Geological Engineering

Under the Canadian Foundation For Innovation New Opportunities Program, Professor Robin Hutchinson, P.Eng. has been awarded \$60,000 towards an automated control and data acquisition system for assist in modeling the true behaviour of civil and test structures under conditions of changing loads in a laboratory environment.

Dr. Sami Rizkalla, P.Eng., Dept. of Civil and Geological and President of ISIS Canada (one of Canada's Networks of Centres for Excellence), received the 1999 National Transportation Week Award of Achievement for his contributions to improving the performance and life expectancy of infrastructure by the application of new materials.

Department of Electrical and Computer Engineering

New Staff

Dr. Zahra Moussavi, Assistant Professor, in the area of biomedical engineering and signal processing. Zahra received her B.Sc. in Electronic Engineering from the Sharif University of Technology, 1987, and her M.Sc. from the University of Calgary. After completing her Ph.D. At the University of Manitoba with Prof. Ed Shwedyk, she was a Research

Associate at the Children's Hospital and a Post-Doctoral Fellow at John Hopkins University Hospital and the University of Maryland. She has teaching experience and for a time was a journalist.

Dr. Joe Lo Vetri, Associate Professor, in the area of electromagnetic compatibility. A graduate of the University of Manitoba (B.Sc. E.E., 1984, M.Sc. 1987), he completed his Ph.D. at the University of Ottawa in 1991 and joined the University of Western Ontario as an Assistant Professor. He has good industrial experience from the NRC Institute for Information Technology, the Communications Security Establishment, and Sperry Inc. A year ago he spent a research leave at the Netherlands Organization for Applied Scientific Research working on ground penetrating radar system.

Dr. Gabriel Thomas, Assistant Professor, in computer engineering. He received his Bachelor's degree from the Tecnológico de Monterrey and his M.Sc. and Ph.D. from the University of El Paso, Texas. His research interests are radar signal processing, time-frequency analysis, computer vision, medical imaging and neural networks. He has taught courses in digital design, distributed systems, information systems and neural networks.

Prof. Withold Kinsner, P.Eng. received the Best Paper Award for "An implementation of a distributed education and training system" co-

authored by Wayne Warren at the Engineering Education Unbounded Conference, Santa Clara, CA, July 1999. He also received the Outstanding Achievement for Contributions in Organizing and Chairing the IEEE Wescanex 95 and Wescanex 97 Award given by IEEE Canada and IEEE Western Canada Council at the Canadian Conferences on Electrical and Computer Engineering, Edmonton, May 1999.

Professor Waldie Lehn, P.Eng. has had three of his papers from Applied Optics and the Journal of the Optical Society of American re-issued by the Optical Society of America in a Classic Reprints on CD-ROM series entitled: On Minnaert's Shoulder: 20 years of the Light and Color Conference.

Dr. Digvir Jayas, P.Eng. has been appointed as Associate Dean (Research) for the Faculty of Agricultural and Food Sciences.

Dr. Jayas joined the U of M in 1985 as an Assistant Professor in the Department of Agricultural Engineering (now Biosystems). In 1989, he was promoted to Associate Professor and in 1993 he was promoted to the rank of Professor. In 1997, he became Head of the Department of Biosystems Engineering.

Over the past 14 years, Dr. Jayas has attracted over \$6.5 million in research grants and contracts, has published over 140 refereed papers and serves as an editor for seven different technical journals. ■

APEGM Fall Golf Tournament

(September 16, 1999 - Lartars)

By: C.N. Perrett, P.Eng.

Everyone able to attend this event was treated to excellent weather, a great golf course and a superb dinner. The event was held as individual ball format with prizes being awarded to the top two players, in addition to a closest-to-the-pin and a longest-drive competition. First place was awarded to Art Robert for his score of 76 and second place went to Ron Amann with a score of 80. Scott Bailey won the longest-drive contest and Prez Skiba took the prize for the closest-to-the-pin competition with a distance of 7'-2". Many thanks to National Testing Laboratories for their generous donation of some of the door prizes.

Watch your mailbox for the notice announcing the next curling bonspiel. Please feel free to voice your opinion to members of the Sport & Social Committee as to new activities you would like to see or recommended changes to current procedures. ■



Craig Perrett (r) congratulates first...

"Engineering" Sisters Win Prestigious Duke of Edinburgh Award

By: B. Stimpson, P.Eng.

The Duke of Edinburgh's Award is an individual achievement Award Program for 14-25 year olds that promotes community service, skills development, physical fitness, explorations and expeditions. In an arduous range of activities, which typically take several years to accomplish, participants set their own goals, so the challenge they undertake is a personal one. This personal commitment promotes self-discipline, self-help, and self-reliance.

Two sisters, Ana Magalhaes (B.Sc. Civil Engineering, U of MB., 1996) and Maria Magalhaes (4th year Electrical Engineering student, U of MB.) were each recently awarded the prestigious Duke of Edinburgh Award, gold medal category. In addition, two other members of the family, Cristina (1998 graduate in Management, U of MB.) and Luisa (1st year, U of MB.) joined their "engineering" sisters in a quadruple triumph with gold and silver medals respectively. Of the eight gold medals awarded in

Manitoba during the Princess Royal's visit to Winnipeg during the Pan American Games, three bore the name "Magalhaes." Quite an accomplishment!

The medallists' father, Dr. L. Magalhaes, P.Eng., taught in the Civil Engineering and ENGAP Programs at the University of Manitoba from 1977-1995. Their mother, Ms. C. Magalhaes is Sessional Instructor in the Faculty of Human Ecology at the University of Manitoba. ■



...and second place golfers.

Letter to the Editor

On page 13 of your August 1999 issue, there is an article which contains two deliberately untrue statements. Since you likely knew that these were not true, were you thus likely in violation of our code of ethics?

This Foundation provides opportunities solely for females. There is no token of financial assistance for male students. Watching, while another student gets money, and a summer engineering job, can hardly be called an "opportunity" for a male student.

The rhetoric used by Lassonde is misleading and does not apply to what she is advocating. It is toned down from what the American speaker said at the first anniversary Memorial gathering in 1990, at the U of Manitoba, when she called for members of her audience to get guns and kill prominent males, to make a clear message to other males, that the Lepine killings were not acceptable. This speech, which included this clear hate crime, was unlawfully broadcast the next day by the CBC. Nearly ten years later, even our cherished Professional newsletter can still wallow in euphemism and mis-statement, in support of this type of gender bias.

I have been devoted for many years to bringing girls and boys into the Science and Engineering community. I have worked hard at those parts of this effort which are not gender biased. I find repugnant those parts with clear gender bias, like the CEMF and the student award programs it supports, which also provide summer and permanent jobs for Females, but refuse applications from males. Why do so many live for so long in denial of this bias? The role models provided by Lassonde, Roberta Bondar, etc. are far more powerful than the double-edged sword of clearly-biased financial programs. If we are going to publicize and give money to these entities, we should demand that they remove the gender bias from their financial awards.

Even though this is not an easy issue, I look forward to your reply.
D.H. Grant, P.Eng.

The article to which Mr. Grant refers was actually a call for nominations for the Corporate Award, which is only one of a number of awards offered by the Canadian Engineering Memorial Foundation.

The Foundation does not provide opportunities solely for females. While its scholarships are only available to women, the Students Project Award is available to university engineering students societies – many of whose members are men; the bursaries offered to the underprivileged to attend summer Youth in Engineering and Science Camps are offered to both boys and girls; and the awards honouring the corporations and university faculties which are supportive of their women engineers surely cannot be described as "providing opportunities solely for females".

The Canadian Engineering Memorial Foundation does not support programs which "provide summer and permanent jobs for females, but refuse applications from males". Yes, there is gender bias in the awards offered by the Foundation. The tragedy at Ecole Polytechnique (and isn't it unfortunate that we all know the name of the perpetrator, but very few of us have ever even heard the names of his 14 victims?) represented, among many other things, a great setback in the progress being made by the engineering profession in including and welcoming women. The Memorial Foundation was created to help overcome that setback by honouring the memory of the victims, and providing an incentive, in their name, to young women who may otherwise have been discouraged from pursuing engineering as a career.

Yours truly,

S.M. Matile, P.Eng.
Vice-President,
Canadian Engineering Memorial Foundation

Our New President

Continued from page 1

She now lives in Ottawa, and her three-year-old daughter is obviously too far away for the liking of the Winnipeg grandparents.

To keep things balanced, the Hosang's second daughter followed her mother by becoming a nurse. She calls Calgary home.

Who amongst you, has heard of World Wide Marriage Encounter? It is a major spare-time activity of the Hosangs. As John described it, it is a type of retreat for "good marriages". These retreats are mostly held in hotels on weekends and provide a method for couples to improve their communications. With the amount of time devoted to the subject of stress in our magazines and on the air, it would appear that

this activity is much needed today.

Our new President recognizes the tasks that face him and our new Council. The ones he mentioned were:

- The continuing efforts to reconcile areas of responsibilities with Manitoba's architects.
- Bringing the geoscientists into the Association.
- The review of professional competence issues.
- The move to adopt the Carver model of governance.
- Controlling the use of the terms "Engineer" and "Engineering", as highlighted by the Memorial University problem.

In concluding our interview, John stated how impressed he was by the commitment of the many members of our Association who keep our Association running. ■

October Council Meeting

Continued from page 8

Here Councillor Roberts invoked Carver saying that the matter should be sent back to the Admissions Board, since Council was micro-managing the issue. CCPE Director Doug Chapman said that Council could make the rules, Carver notwithstanding. Several members then began to coalesce around the idea of sending the matter back to the Admissions Board, but that Council must be prepared to accept their verdict. Councillor Matthews felt that writing the PPE needn't be an issue, since there was no infringement of the Act involved. The matter ended with a 4-3-1 decision to send it back to the

Admissions Board. A second motion, which permitted grandparenting candidates until June 28, 2000 to apply was tabled until the next Council meeting.

Council approved the admission of the Pembina chapter to the APEGM family. Organizing meetings there were well attended and it appears that they will have an active and enthusiastic group.

It was time to say good-bye to our two Lay Councillors, Bonnie Thompson and Ertrice Eddy. To mark the occasion President Britton presented both with "Introduction to Engineering" booklets to remember us by. In turn, it was Council's pleasure to thank President Britton for his stellar service to Council and APEGM. The November meeting will have at its helm, our new president, John Hosang, P.Eng. ■

The EIT Road to Registration

Continued from page 7

switchboard. However, if you have any doubts or questions about any area of your pre-registration program, call APEGM, and they will help you out.

Another good reason to call APEGM is to check up on how your supervisors are doing. Remember that they also have to fill in progress reports and submit them to APEGM for review. Your experience won't count until the Experience Review Committee has seen the reports from your supervisors. If you have

submitted a progress report, and you haven't heard from APEGM for a few months, it is likely that they haven't received all of the relevant reports.

These are a few of the key things that EITs can do to make the pre-registration and the registration process go by smoothly. There are probably more helpful tips out there, such as expanding on the list of activities that are acceptable to qualify for professional service points. In the spirit of the Code of Ethics, it is our responsibility to support the professional development of our colleagues, so let's see some more tips and ideas on these pages. ■

Professional Development

Annual PD Conference

How Technology is Changing the Way We Live and Work

By: K. H. Hill, EIT

The annual PD conference was held on Friday, October 29, 1999. It was an all-day event featuring six guest speakers and a panel discussing the effect of changing technology on our lives.

Dr. Norman Ball was the first speaker, discussing "Information Technology and the Death and Re-birth of Engineering as We Know it?" He addressed what is changing in our workplace, how we deal with the confusion, how the engineering profession can respond to the change, and who will accept the engineering challenge it poses. With advancing technology, it is important that everybody, especially engineers, become more diversified and versatile.

Already we are seeing some of the changes Dr. Ball described. As information technology improves, engineers are finding themselves having to communicate with non-technical people. He describes it as a need for "relationships experts." Communication skills, both technical and non-technical, are becoming more important for engineers.

Dr. Ball expects some university with moderate entrance requirements to redefine engineering education to meet changing market demands and become a leader in the field. He concluded with the challenge that the University of Manitoba should become the university that changes the rules.

Dale Sobkowich, then discussed "GPS/GIS: Introduction to this exciting new Technology and its Impact on Engineering and Geoscience." He also offered a demonstration showing how GIS technology can be applied in order to more easily view data on gravel pits.

GIS is Geographic Information System, and refers to the mapping of tabulated geographical information for the purpose of problem solving. Mr. Sobkowich cites the first use of GIS in 1854, where maps were used to locate contaminated water. With improving computer technology, GIS has adapted and

become more powerful and important than ever.

GPS stands for Global Positioning System, and refers to the use of a satellite system to accurately locate a signal coming from an object nearly anywhere in the world. Together, GIS and GPS can work to obtain data and present it in a form that we can most easily understand.

The third speaker, Marc Rogers, addressed "Security Issues in E-Commerce and Internet Communication." It is important to maintain the confidentiality, integrity, and availability of data as we become more dependent on our computers and data.

Mr. Rogers predicts increased intrusion and malicious code and improved security systems to combat all of this. It is also noted that offenders are using more sophisticated tools to do their dirty work yet are becoming less sophisticated and skilled themselves. As a conclusion, he warns us that at present we do not have a single protection system to solve all of our problems, and that each system has strengths and weaknesses.

Our fourth speaker was Philippa Campsie, who talked about "How to make the most Effective use of Electronic Communications." Before addressing this issue, she described the huge range of communication media we have at our disposal, and emphasized the importance of choosing the appropriate means of communication.

The advantage of e-mail is that it offers us a fast, low-cost means of communication. The drawbacks are that it is difficult to distinguish different types of e-mail, and it is an ideal means of distributing junk mail. In this presentation, it was explained how to make an effective e-mail message, one that will make an impact when the receiver must generally sift through a myriad of other e-mail messages.

In addressing proper style for e-mailing, Ms. Campsie speculates that there will be e-mail personality analysis, just as there is handwriting

analysis. Today, there is little time to read e-mail, as we are absolutely flooded with e-mail messages. We should therefore go straight to the point and provide other details later, forgetting the formalities and etiquette that we learned in Grade 3, respecting the reader's time instead.

As communication technology improves, it becomes more important that engineers be able to communicate effectively, both technically and non-technically. One important aspect of communication is conflict resolution. Lloyd Kornelson offered us an interactive session on "Interpersonal Communication in Relation to Conflict Resolution."

Mr. Kornelson related to us the story of the three little pigs as seen from the perspective of the Big Bad Wolf. In this dialogue, he stressed that there are two sides to every story, and that each side is valid.

We have a natural tendency to view our opponents as bad people when in fact, they might be decent, intelligent, honourable, and reasonable. One of the first steps of conflict resolution is to break past this perception barrier of good guys versus bad guys.

Our final topic was "Managing Change/Managing Technology," presented by Dr. Charles Meltzer. The changes caused by technology cause a lot of workplace stress. Dr. Meltzer examined some means of coping with rapid change and reducing individual stress.

To do this, Dr. Meltzer asked the audience to consider their career objectives when they took their first job. Generally, we want a job with good salary, and lots of learning and advancement opportunities leading us to good overall job satisfaction. Then he asked us about what workplace stress stands in the way of achieving these career objectives.

When dealing with workplace stress, Dr. Meltzer emphasizes that it is important that we take an active direct approach. By this, he means that we should confront and solve the problem directly. This, coupled with the discussion on conflict resolution, will work wonders in improving our stress levels at the workplace.

The conference closed with a panel of five moderated by Manfred Jager of the Winnipeg Free Press. This panel discussed "Technology and Society: What will the Future Hold?"

Dr. Norman Ball was part of the panel. He re-stated his views, and noted that we will be laughing at the predictions we are making 150 years in the future.

Robert Garrigue cited that the number of war-related deaths in the 50 years following the Second World War is well past twenty million. He believes that we should use our improved communication technology to solve the world's conflicts.

Dr. Barry Prentice outlined the difference between incremental improvements and technological breakthroughs, and their impact on our society. He is optimistic that our society can meet the challenges that a changing world brings.

Dr. Lotfollah Shafai related his experience in coming to Canada in the 1960's, and how everybody was speculating the coming of 2-3 day work-weeks. Ironically, we are now talking about less spare time with advancing technology, rather than more.

Finally, Dr. Moe Barakat stated that we have adapted to every technological change that has occurred as far back as mankind can collectively remember, and there is no reason why this should change.

Questions addressed by the panel included how the limiting factors of poverty and lack of education in other parts of the world will affect the spread of technology, and whether the computer-illiterate older generation will act to retard technological progress. The panel generally agreed that we must do what we can to address these concerns but that there is no reason why we cannot embrace rapid technological change. ■

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Canada's Construction Codes are Changing

This article is based on information provided by the Canadian Commission on Building and Fire Codes.

The National Research Council is currently preparing changes to Canada's construction codes and the codes development system. They are introducing codes in an objective-based format, likely at about the end of 2003, which are expected to have beneficial effects for code users.

The documents will be written with greater clarity and contain specific statements of objectives that will make it easier to introduce innovative designs based on a common understanding of requirements.

This is how the Canadian Commission on Building and Fire Codes is responding to a request from users to make the national model codes more flexible, especially concerning innovation, while keeping codes as similar as possible to those they are familiar with.

Thus, committees are looking at each requirement in the national model codes and clearly identifying the intent of each. The results of this bottom-up analysis will be used to

restructure the codes in a new objective-based format.

The new codes will contain objectives and functional requirements in one part, with direct referrals to solutions in another part – which at first will be an updated version of the familiar 1995 codes.

Thus a design, system or product that doesn't meet the prescriptive requirements could satisfy the clearly stated objective and functional requirements, opening the door to new, acceptable solutions.

There will be some differences between old and new, and training will be available to ease the transition. This will most likely take the form of one- or two-day seminars to show design professionals how to take advantage of the added flexibility being written into the new codes.

Some things, though, will be unchanged. Using an alternative instead of the prescriptive requirement in the present codes does not shift responsibility, nor will it under the new codes. But the introduction

of objective-based codes should make the use of alternative solutions easier by providing clearer intents and objectives.

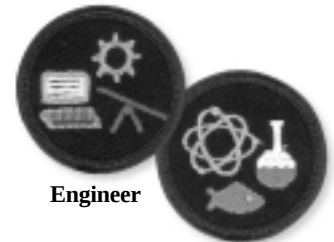
Code users should watch for opportunities to comment on the new codes during a public consultation on objectives sometime in 2000 and on the draft codes in 2002.

In addition, the Commission and provinces and territories are working on a single, coordinated review and development system. It will retain the best features of the process in use until now, but will allow provincial and territorial concerns about the development of provincial codes to be heard and addressed at the same time as concerns regarding Model National Codes. The result will be more widespread participation by code users, and a coordinated public consultation procedure.

Further information may be obtained by contacting the Canadian Codes Centre at (613) 993-9960 (voice); (613) 952-4040 (fax); or by e-mail at codes@nrc.ca ■

Girl Guides of Canada Introduces New Engineer & Scientists Badges

By: B. Thomson



Girl Guides of Canada introduced five new badges into their program this year. Two of them are meant to encourage girls to follow a science and technology path. I would like to encourage engineers and geoscientists to volunteer their time in the teaching and testing of these challenges. These are the unedited versions of the badges. The edit will not change the intent of the challenge. The girls completing these badges will be 9 to 12 year olds.

Engineer

Purpose: To promote interest in the many aspects of engineering.

Challenges:

1. What is an engineer? Name four different types of engineers and tell what they do.
2. Bring examples of some of the following: lever, pulley, scales, wedge, roller, piston, gear, wheel and axle, circuit and circuit board, magnetism, chemical reaction, battery, volt meter, pop bottle rocket, model or paper airplanes, blue prints, synthetic fabrics or other examples that show the work of an engineer.
3. What are some common uses of any of the above? Look in playgrounds, your garden, your kitchen, and your home and at school.
4. Construct a bridge, a mousetrap or a simple machine that show some engineering principles.
5. Name some devices and materials that engineers have made to make life better for people.

Scientist:

Purpose: To encourage your interest in the world of scientific inquiry. ■

Conversion of Manulife Financial into a Publicly Traded Company

Are you currently insured for life insurance under the plan sponsored by the Canadian Council of Professional Engineers (CCPE)?

Early in 1998 Manufacturers Life announced it was developing a plan to "demutualize": to convert from a mutual company owned by its participating policyholders to a publicly-traded company owned by shareholders. In May 1999 the formal plan was approved by the company's Board of Directors. This plan must be approved by a vote "of eligible participating policyholders" and, in Canada, by the Minister of Finance for Canada. On July 29, 1999, 98.5 percent of voting eligible policyholders approved the plan of demutualization. Manulife Financial is now seeking regulatory approval which, if received, will lead to an initial public offering contemplated for the Fall of 1999.



A recent change to The Companies Act of Canada has defined which policyholders are "eligible" to receive demutualization benefits. All of Manulife's eligible policyholders are owners of participating life insurance policies.

A participating policy is usually labeled as such and entitles the policyholder to share in the profits of the insurance company through dividends and to vote in the election of the Company's Board of Directors.

The CCPE sponsored plan is not a participating policy and neither the CCPE nor the certificate holders under the plan are eligible participating policyholders under the company's plan of demutualization. Therefore, the CCPE sponsored plan and insurance coverages provided thereunder will not be affected by Manulife's demutualization in any way. In light of the nature of the CCPE policy with Manulife, the CCPE and you, the insured member, will not receive any of the profits realized from the demutualization.

Should you have any questions, please contact Manulife Financial at 1-800-783-9495, visit their website at: www.manulife.com, or e-mail at demutualization@manulife.com. ■

Hydraulics Research at the University of Manitoba

By: Dr. J. Doering, P.Eng.

The research being conducted in the University of Manitoba's Hydraulics Research & Testing Facility (HRTF) includes both experimental and computational hydraulics. Dr. Doering, P.Eng., who established the HRTF in 1995, is working with graduate students on a range of fundamental and applied problems that include: the mechanics of sediment transport, numerical modeling, and the hydraulics of frazil and anchor ice growth.

An ongoing research program, in the HRTF 34-m-long random wave flume, is directed at further elucidating the complex processes that govern beach erosion and accretion due to wave action. A state-of-the-art computer-controlled servo-hydraulic wavemaker, which uses software developed at the HRTF, reproduces a "natural" environment in the lab. Unique acoustic instrumentation is used to obtain measurements of the flow, which is caused by the passage of waves, very close to (i.e., within a few millimeters of) a sand bed. Optical sensors are used to obtain simultaneous measurements of sediment concentration. The data are being used to understand the response of a beach to waves with a long-term view to developing better models to predict shoreline change.

In addition to physical hydraulic models, Dr. Doering and his students use numerical models in their hydraulics research. A 2D finite-element model was recently developed to examine the ultimate capacity of the Red River Floodway. The model

has provided valuable insight into the following areas: a) where spilling over the banks of the floodway channel would occur; b) the quantity of water that would spill; and c) the amount the floodway dykes would have to be raised to contain large flood flows. Numerical models have also been developed for the Lake Winnipeg Shore Processes program to predict wave growth and decay on Lake Winnipeg. This information will be used as the input to a model to predict shoreline recession and accretion.

The world's only counter-rotating flume designed for frazil and anchor ice research was a recent addition to the HRTF. Frazil ice forms when turbulent river water becomes supercooled. Active frazil will adhere to just about anything it encounters, including the intake of a hydroelectric turbine which can become completely blocked, leading to the shut down of a unit. If the frazil ice attaches to the riverbed it can form anchor ice and increase water levels. The hydraulic conditions that favor frazil and anchor-ice formation are not understood. Dr. Doering's students are undertaking fundamental experiments and developing a digital image processing system to help characterize frazil and anchor ice as a function of the ambient hydraulic conditions.

Dr. Doering's research is funded by grants from the Natural Sciences and Engineering Research Council (NSERC) Canada, Manitoba Hydro's Research and Development Board, and contract research with

National Survey Finds More Students Entering Engineering

Reprinted with permission from The PEGG, July, 1999

Enrolment in Canadian undergraduate engineering programs is up for the second straight year, according to a national survey conducted by the Canadian Council of Engineers (CCPE) and released last month.

Reported in the CCPE publication *Canadian Engineers for Tomorrow, Trends in Engineering Enrolment and Degrees awarded 1993 to 1997*, the survey results show that enrolment in Canadian undergraduate engineering programs increased by two per cent from 1996 to 1997, following a similar increase from 1995 to 1996. A total of 42,920 students were enrolled in engineering programs in Canada in 1997.

"The survey results indicate that engineering is still a popular career choice for young Canadians," said CCPE President and CEO Dan Levert, P. Eng., LL.B. "They are also indicative of the changes taking place within the profession. We're seeing significant decreases in the numbers of students entering some of the profession's traditional disciplines, such as civil engineering, which are being offset by increased enrolment in new disciplines, such as computer engineering."

Undergraduate enrolment in civil engineering declined approximately 26 per cent from 1993 to 1997, from 6,652 students in 1993 to 4,931 students in 1997. Meanwhile, enrolment in computer engineering increased by 106 per cent over the same period, from 2,157 students in 1993 to 4,436 students in 1997.

"Students are considering their future job prospects, and are entering the disciplines that appear to offer the most opportunities for employment," said Mr. Levert. "The numbers of students entering civil engineering could increase dramatically if, for example, the Canadian government launched a program to rebuild Canada's infrastructure."

CCPE's survey, which was conducted on its behalf by the Canadian Engineering Human Resources Board, also shows a ten-fold increase in the number of women entering the profession since 1975. In 1997, 8,252 (19 per cent) of

Canada's undergraduate engineering students were women, up from 849 students (4 per cent) in 1975.

The survey report provides data on recent trends in Canadian undergraduate and graduate engineering enrolment and the number of engineering degrees awarded by several categories.

Forty-one per cent of all students enrolled in undergraduate engineering programs in Canada in 1997 pursued their studies in Ontario, versus 26 per cent in Quebec. Newfoundland with 627 undergraduate engineering students, had the smallest undergraduate engineering enrolment in Canada in 1997, while foreign students accounted for four per cent of the country's total undergraduate engineering student population.

"The results are positive, but there is room for improvement," said Mr. Levert. "The number of students entering the profession has increased over the past five years, so the decline in the number of undergraduate engineering degrees awarded in 1997 relative to 1996 should be a short lived trend."

What's of more concern is the decline in the total number of undergraduate engineering degrees awarded in Canada relative to the total number of undergraduate degrees awarded in all areas of study of the past several years. Mr. Levert concluded: "As a profession, we may need to increase our effort to promote engineering as a career choice." ■



Mark Your Calendars Student Dinner

When: February 10, 2000

Where: Royal Crown Banquet Conference Centre

Guest Speaker: Kevin Skinner

Topic: Design-Build Construction

The Jamaican/Caribbean Engineering Governance Project

By: G.A. Morris, P.Eng., FCSCE

Introduction

In 1995 the Canadian Society for Civil Engineering (CSCE) and the Jamaica Institution of Engineers (JIE) undertook a CIDA-funded project to enhance the engineering governance system in Jamaica. Currently, the governance of the profession rests with the JIE and the Professional Engineers Registration Board (PERB). Founded in 1977, the JIE is the preeminent Jamaican engineering technical society. It promoted the enactment of the Professional Engineers Registration Act of 1987 which established the PERB and empowered it to register professional engineers. By 1995 there were academic and experience requirements for registration, but neither an accreditation system nor an examination system, and provisions for Act enforcement and experience evaluation were inadequate.

The Council of Caribbean Engineering Organizations (CCEO) is a federation of engineering societies in 12 British Commonwealth Countries in the Caribbean. In 1997 they requested that the system being developed by Jamaica be expanded to serve its member countries as only half of them have professional engineering legislation. While registration is not yet compulsory for most Caribbean countries, state agencies and larger private-sector companies often require it.

Engineering Education in the Commonwealth Caribbean

The Commonwealth Caribbean institutions that grant engineering degrees are the University of the West Indies (UWI), the Jamaica University of Technology, (Utech), and the University of Guyana (UG). The UWI Engineering Faculty, located in Trinidad, offers 6 programs to 1,100 students, seventy percent of whom are undergraduates. Utech offers degree and technology programs in Electrical, Mechanical and Construction Engineering to 800 students. The UG offers undergraduate engineering programs. The UWI engineering programs are currently accredited by the British technical institutions while those at Utech are accredited by the University Council of Jamaica which is the national accreditation agency for tertiary education.



Development of Jamaican/Caribbean Engineering Governance System

The CSCE-JIE Project Team studied the engineering governance systems in Canada, the United States, the United Kingdom, Ireland, South Africa, and Hong Kong and found the following common features. In every case, the governance of the profession is delegated by government to an engineering organization that registers engineers. Registration requirements are academic qualification and a period of supervised engineering experience. Each country has an engineering program accreditation system with similar accreditation criteria, the most important relating to curriculum. Supervised experience periods of 2 to 4 years are required, the experience to include application of theory, visits to engineering works, management experience, development of communication skills, and exposure to the social and environmental implications of engineering activity. Following the experience period is either a "professional practice" examination or an interview.

Significant differences in the governance systems were noted also. While 40 technical societies in Britain, and 24 in the United States, participate in the accreditation of engineering and technology programs, in Canada the Canadian

maintain a set of engineering experience criteria and will monitor the experience histories of all engineers-in-training.

The **Registration Act Enforcement Committee** will implement measures to ensure that only registered professional engineers provide engineering services and that practitioners who violate the provisions of the Act or the code of ethics are disciplined.

To date, the committees have developed their operating policies and procedures and produced their operating manuals. Ten Caribbean engineers have participated in CEAB visits and accreditation meetings, 5 have participated in meetings of the Canadian Engineering Qualifications Board (CEQB), and one PERB staff member has received training in Canada.

Development of CCEO System

The CCEO is currently adapting the Jamaican system for use throughout the Commonwealth Caribbean. A CCEO committee has drafted a model Professional Engineers Act and recommended it to the governments of its member countries. A CCEO Engineering Program Accreditation Committee has been established, and committees to support the other aspects of the governance system will be formed in the near future.

Outcomes of Project

The strengthening of the engineering profession in the Commonwealth Caribbean is essential to the economic and social development of the region. Currently, a significant proportion of building and infrastructure construction is done by individuals and firms with inadequate engineering qualifications, often with unfortunate consequences. Intra-regional harmonization of internationally acceptable standards of engineering education and experience will ensure that only qualified engineers are responsible for the design, construction and operation of engineering infrastructure, manufacturing and the like. The long-term consequences will be environmental improvements, enhanced public safety, and improved living standards. ■

Engineering Accreditation Board (CEAB) alone accredits engineering programs and there is a separate system for technology programs. In the United States, but not in Canada, post-graduation "State Board" examinations are required, even for graduates of accredited programs.

The New Jamaican Engineering Governance System

Because of its relative simplicity, the Canadian system was identified as an appropriate model for Jamaica and, using it as a guide, the following four standing committees were established to advise the PERB on the various aspects of the Jamaican system.

The **Engineering Program Accreditation Committee** will operate an accreditation system for Caribbean engineering programs. Over the next 2 years the Committee will participate with CEAB in "Substantial Equivalency" accreditation visits to UWI and Utech.

The **Engineering Qualifying Examinations Committee** will operate an examination system for those few applicants for registration who are not graduates of an accredited program.

The **Engineering Experience Requirements Committee** will

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