Publications Mail Agreement Number 1693700

THE KEYSTONE PROFESSIONAL

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

DECEMBER 2000
www.apegm.mb.ca

2000 APEGM Awards Presentation

The annual Awards Dinner was held on Saturday, October 28, at the Best Western International Inn.

Don Osman, Chair of the Awards Committee, made the presentations of the Honourary Life Membership Awards to Ray Scouten and Leonard Bateman. He also presented one of the Outstanding Service Awards, to Don Anderson and was clearly surprised as Cathy Stewart took to the podium and presented him with the other Outstanding Service Award.

Honourary Life Member, Ray Scouten

Honourary Life Membership

Ray Scouten has been a member of this Association continuously for 42 years.

He was a member of Council for four years and has also served on the Executive/Finance Committee, the Consulting Engineers Committee, the Legislation Committee, the Admissions Review Board, the Nominating Committee, the Bulletin (Publications) Committee, the Practice & Ethics Committee, the Ad Hoc Committee to Review the Code of Ethics, the Awards Committee, and has been the Chair of the Discipline Committee for the past nine years. His contribution totals 43 committee years of service.

Ray received the Association's Outstanding Service Award in 1982.

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Meet Our New President: A. J. Pollard, P.Eng.

By: L.E. Liem, P.Eng.

It was an excellent opportunity for me to speak with Mr. Alan Jonathan Pollard, P.Eng., our new president. During our twenty-minute interview, Alan was eager to talk about his background and personal life, as well as his most important tasks and expectations as the new president of APEGM.

New President Alan Pollard

Alan's mother was born in Wales while his father was born and raised in Winnipeg. Born 45 years ago, Alan is a native of Winnipeg. He went to the University of Manitoba and earned a bachelor's degree in electrical engineering in 1976. After graduation, Alan was employed by MTS for 23 years. Alan is now the Director of Information Technology at the Law Society of Manitoba, the counterpart of APEGM for lawyers.

Alan's wife, Morva Bowman, attended the University of Manitoba and obtained a bachelor's degree in English in 1977, as well as an MBA in 1983. She used to work at the University of Manitoba but is now self-employed as a professional organizer. Their son Rhys, who just turned fifteen, is the youngest member of the family. At present, he studies at Kelvin High School.

During his spare time, Alan likes wood-working and fencing. Morva's interests include reading and volunteer activities, while Rhys enjoys fencing as well as working with computers.

As our new president, Alan understands that there are a number of things that have to be done. The two most important tasks that he would like to accomplish are to normalize our relations with other associations in Manitoba, and to apply policy-based governance resulting in more general, consistent, and organized policies, that are more understandable and transparent to the members.

In concluding our interview, Alan would like all members to be more active and help our Association grow. ■

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850A Pembina Highway, Winnipeg, Manitoba R3M 2M7

Ph. (204) 474-2736 Fax (204) 474-5960
E-Mail: apegm@apegm.mb.ca

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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 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.

Publications Mail Agreement Number 1693700

New Members Registered September & October 2000

M.C. Alfaro	M.S. Famulak (SK)	E.T. Kozak	M.E. Shewchuk (AB)
M. Arapovic	W.A. Flannery	N.T. Kukko (ON)	M. Singh
D.A. Babulic	K.J. Friesen	L.R. Larson	J.R. Stewart
M-A. Bernier	M. Gascoyne	H.T. Loo (AB)	M. Szymczyk
J.V. Boblinski	G.T. Gingara (SK)	W.S. McLean (ON)	P. Theyer
W.M. Buhay	F.C. Hawthorne	S.J. Mooney	I.D. Trinder
H.D.M. Cameron	R.E.L. Healy	A.A. Mufti	P. Vilks
R. Cameron	T.H. Heine	I.A. Osmani	B.A. Wellenbrink (BC)
A. Chandonnet (QC)	P.A. Ingram (ON)	P.G. Palmer	E.J. Wright
P.J. Chornoby	M.J. Issigonis	P.W. Pitman	H.R. Young
L.B. Chung	B.W. Janser (SK)	J.G. Sephton	
G.G. Conley	C.A. Kaszycki	M.H. Serzu	
P.J. Deveaux	D.K. Knutson (AB)	B.L. Sherriff	

Members-In-Training Enrolled September & October 2000

R.M. Baillie	K.S. Hartikainen	L. Mancs	L.M. Simonson
R.E. Barrett	E. Ho	K.L. Meyer	T.W. Smeall
B.T. Calley	M. Karpenko	S. Patel	R. Sri Ranjan
I.R.H. Edwards	S. Koeuth	B.P. Pilat	D.J. Thomson
J. Fehr	P.A. Levesque	K.D. Rogers	T.D. Ulmer
L.A. Foronda	K. Louie	J. Sandhu	A.G. Wsiaki
C.G. Gulay	M.M. Magalhaes	L. Sedore	R.T. Yonza

Licences Issued September & October 2000

C.L. Chin (SK)	C.M.E. Dumitrescu (ON)	R.L. San Giacomo (NY)
R.M. Coble (FL)	S.H. Gebler (IL)	T.E. Walstrom (MN)
	G.K. Holder (QC)	

Cannot Locate

Members

V.L. Aronson
W.P. Brown
K.G. Edginton
J.S. Fedorowich
J.R. Fogg
D.M. Mcleod
G.S. Mychajlszyn
A.J. Peterson
E.G. Plett
A.W. Ptak
A.J. Scheres
B.C. Scott
B. Weeks
A.L.N. Yap

Members-In-Training

G.A. Ebbrell
A. Janzen
S.C Ladd
J.P. Penner

We're Hunting for Experts

APEGM's Image Enhancement Committee is compiling a list of engineers and geoscientists who would be willing to be interviewed by the media (television, radio, newspapers) on news stories related to their fields of "expertise". This endeavour is part of an initiative by the APEGM to increase public awareness of the role of professional engineers and geoscientists in society. The committee is asking Association members to write, fax, or email the APEGM to volunteer their own expertise and offer recommendations as to other engineers and geoscientists who can inform the public and enhance the image of the professions through the media.

Please see the article "Small Steps – Big Concepts" on Page 13. ■

In Memoriam

The Association has received with deep regret notification of the deaths of the following members:

William Donald Hurst
Clarence Victor Thio
Robert Ian Thomson

Science Fair Judges Urgently Required – Can you help?

Innovators in the Schools needs 180 judges for upcoming science fairs. Please contact the Program Manager at 988-0669 or fax 944-1167 to volunteer.

President's Message

Alan J.Pollard, P.Eng.

Welcome to the 21st Century!

Whether you believe the century changes in 2000 or 2001, I have the privilege of being your President both now and in January and so will take the poetic licence and extend the welcome now.

As we enter a new century and a new millennium, it seems a good moment to consider what it means to be a Professional Engineer or a Professional Geoscientist. A professional is one who professes openly to be something. The professional is defined not by the simple task, but by the way a job is done.

Competence and skills alone are not enough. The professional must also have a goal beyond the simple completion of the task. He or she works to a higher standard with the public interest taking precedence.

As the number and variety of fields in engineering and geoscience expand at an ever-increasing rate, we find ourselves struggling with definitions. What is geoscience? What is software engineering? What is architecture? During the next years we will increasingly be faced with defining professionalism in a way that is meaningful both to the public and to our members.

Otherwise, as more and more corporations and groups strive to achieve what our profession already has, we risk having our relevance as a profession further eroded. The name Engineer is, it seems, much coveted for the cachet it brings to things which have little to do with our traditional role. I expect the Geoscience professionals will soon face the same situation as their title becomes more widely known. We must work to establish what the value of P.Eng. or P.Geo. really is in the mind of the public. Simply put, people are increasingly unwilling to pay for anything they cannot see as valuable. We already are valuable, as demonstrated by those who covet our title. We must be more visible or the public will be placed at risk because they do not recognize our value and use alternate ways of obtaining engineering services.

We share many of these concerns with the other professions in Manitoba. Over the past few years my predecessors have spent many hours working with these professions to resolve differences and focus on the common benefit and public good. The results have been generally good but more work remains to be done. On your behalf, I shall continue the work for a positive professional community in Manitoba that will benefit the public and also the participating professions.

Over the years, the science of running a professional organization has evolved and we on APEGM Council are working to put those new developments to work for the members. We are entering the transition year for the migration to a governance philosophy based on articulating policy and allowing staff to implement those policies. This differs from the traditional 'micro-management' model and, I feel, allows Council to concentrate in a more meaningful way on the issues that face our profession. We will be able to work more directly with the goals of the professions and the changes that are inevitable in any field where technology plays such a strong part.

APEGM is a professional organization and, as such, it exists to serve the public interest. However, we are also an organization of professionals. We have a duty to those in our professions to make it one on which the public looks with respect and our members look with pride. Both of these require a commitment on the part of each of us to conduct ourselves in a professional manner. Professionals do not simply take up a career, they accept a calling. Each action of the professional reflects on all of us. We rejoice in the successes of our members and we share the stain when a professional fails in their duty. Each of you, with your diverse backgrounds and knowledge, has a stake in your profession as it has in you. If you are prepared to share your abilities with your Association in any capacity, on a committee or as an elected councillor, please join us. I look forward to working with you during the coming year. ■

World Class Telecommunications Research at University of Manitoba Anchored Through Generous Donation by Alumnus

By: B. Stimpson, P.Eng.

A $1 million Chair in Telecommunications Research has been created in the Faculty of Engineering, University of Manitoba, through a generous donation from one of its distinguished alumni (1983), David Graves, who is probably best known for establishing Broadband Networks, Inc. in 1994. The Centara Chair in Telecommunications Research, as it will be called, is named after the Centara Corporation, a venture-capital firm founded by David Graves that focuses on high-tech communications investments and support for new companies in that field.

The donation will support the hiring of an internationally recognized leader in the telecommunications area to develop a centre of excellence in the Faculty of Electrical and Computer Engineering with close ties to industry. The Department is already very active in this field, notably in telecommunications applications and access technologies, but the area of telecommunications transport hardware and software is less well covered. The Centara Chair will focus on this area with the expectation that a world-class centre will emerge in 3-5 years and grow to include 3 or 4 professorial staff, 102 engineering staff, and 15-24 graduate/post-doctoral students.

Dean Doug Ruth noted that this significant donation will enable the Faculty to increase the number of graduates in this high-demand area and to enhance the Faculty's already considerable efforts in the field of telecommunications. ■

SMARTpark at the University of Manitoba

By: J.A. Blatz, EIT

If you recently had the opportunity to visit the University of Manitoba and drove along Chancellor Matheson from Pembina Highway you will have noticed to the South, considerable activity in what was previously agricultural lands. The commotion represents a new and exciting vision for the University of Manitoba and local industry as they move towards a common base to share and collaborate in what is now termed SMARTpark.

In 1982, the University's Board of Governors designated the parcel of land bounded by Pembina Highway, Chancellor Matheson Boulevard, University Crescent, and the northern end of Fort Richmond to be used for research by industry "directly relating to University activity." Until SMARTpark, the University of Manitoba was one of the only research-intensive universities in Canada that did not have a research park affiliated with it.

Around the world, research parks are recognized as key catalysts in the creation of innovative ventures and the attraction of high-tech firms and research establishments. Both Fortune and the Report on Business Magazine, in studies on the most innovative or "Smart" Cities, have identified research parks as key components of an innovative infrastructure. There are over 400 such parks world-wide, housing over 11,000 tenants, and the parks have proven to be a useful vehicle to facilitate increased University-industry interaction and to support community economic development.

In the fall of 1996, the University prepared a site plan to attract government support to install the necessary services. This action was in response to expressed needs from

Continued on page 14

Saturday October 28, 2000

The Annual General Meeting

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

Any meeting that starts with this old warrior's hand full of a king-sized bran muffin has to be a good one. Mind you, there were a couple of tense moments when it looked like we might not be having a meeting. Do our members really work every Saturday, or were they all down closing the cottages for the winter? The quorum for the AGM is fifty. By including members from Thompson and Flin Flon (visible from teleconferencing), President Hosang declared that we had a quorum and the meeting could go on. (Only two of our members from the Brandon area were available for teleconferencing so you will be pleased to know that, for reasons of economy, the Brandon link was cancelled this year.)

President Hosang called for a moment of meditation for departed members. With Armistice Day only a fortnight away, this old soldier had some long thoughts, indeed.

The President then introduced the members of Council and our staff – Mrs. McKinley and Mrs. Dupas.

We were then introduced to our guests, to the representatives of the MAA, the Land Surveyors, and the Consulting Engineers of Manitoba, and to the three representatives from academe - Dean Ruth and Dr. Stimpson from the University of Manitoba and Dr. Springer of the Department of Geology at Brandon University.

With these pleasantries out of the way, the meeting moved on to the business items. This reporter found it interesting that the new Councillors, whom the President had introduced, had been elected by only 18% of our members returning their ballots.

The Auditor's Report was presented. Don Osman questioned certain figures and was not convinced by Dave Ennis' explanation. Our Past-President from Thompson, Cathy Stewart, questioned why the fees should be increasing. Our President attempted an explanation but I was not certain how successful he was.

Following the mid-morning "stretch", Councillor Ralph Eschenwecker gave us an illustrated talk on the Association's Guideline on Voluntary Professional Development.

Our new Councillors are:

For a two-year term:

Moe A. Barakat
Lawrence Ferchoff
Arnold H. Permut
Alfred J Poetker
Eric C. Syme

For a one-year term:

Jerry W. Bogan
Kelly V. Gilmore

The morning's session was completed with the passing of the Scott gavel from President Hosang to our new President, Mr. Alan Pollard.

Our luncheon speaker was the Director of the Engineering Access Program at the University of Manitoba, Randy Hermann, who gave a very interesting talk. ■

New Members Reception

By: J.W. Bogan, P.Eng.

On October 26, 2000, members gathered at the Best Western International Inn to welcome new members who joined the Association between March and October of this year. The wine and cheese reception gave members the opportunity to mingle with their peers and meet many of the new members. Outgoing President John Hosang and Director of Admissions, Shirley Matile, presented certificates, and gave a brief introduction for each new member. It's always interesting to learn of the diverse backgrounds of engineers and geoscientists now practising in the province.

University scholarships supported by the Association were also presented to six engineering undergraduate students. As always, the qualifications, achievements, and activities of the recipients outside University never fails to impress this writer. One scholarship recipient may even be destined for a political future, as a comment was made about the current government's election promises and the status of fees at the university. ■

Don Osman (r), Chair of the Awards Committee with Scholarship recipients Jenny Chuang (l), Lindsey Brown and Katarzyna Rak.

Alan Pollard thanks Pat Hosang for her support.

APEGM – new members.

2000 APEGM Awards Presentation

Continued from page 1

Leonard Bateman registered with this Association in 1948 and has been a member continuously for 52 years.

Leonard was a member of Council from 1956 to 1960, and was President in 1958. He served a further four years on Council from 1982 to 1986. He has also served on the Executive/Finance Committee, the Advisory Committee, the E.I.C. Management Committee, the Plan for Unity Committee, the Architects/Engineers Committee, the Legislation Committee, the Awards Committee, the Old Pinawa Committee, and the Past Presidents Committee. His involvement totals 28 committee years of service.

He received the Association's Merit Award in 1976.

Leonard was Chairman and Chief Executive Officer of Manitoba Hydro from 1972 to 1979. He was the last person to hold both positions. After retiring from Manitoba Hydro in 1979 Leonard formed "Bateman and Associates Ltd."

Len Bateman graciously accepts the Honourary Life Membership Award.

Don has served on two committees for an aggregate of 29 committee years of service. He served on the Board of Examiners (Academic Review Committee) from 1971 to 1993. Don became a member of the Experience Review Committee in 1994 and continues to serve as a member of this Committee.

Don retired from the University of Manitoba in 1986 after a lengthy career as Professor of Geoscience.

John Hosang presents the Outstanding Service Award to Don Anderson.

Honourary Life Memberships were granted to Ray Scouten and Len Bateman in grateful recognition of their many years of dedicated service to APEGM and their outstanding contributions to the engineering profession.

Outstanding Service Award

Don Anderson first registered with the Ontario Association in 1956. He transferred his membership to this Association in 1969, and has been a member continuously for 31 years.

He now operates his own geological consulting firm from Hillside Beach, Manitoba.

Don Osman registered with APEGM in 1977, and has been a member continuously for 23 years.

Don was a member of Council for four years, and was President in 1995. He also served on the Executive/Finance Committee, the Registration Committee, the Safety Committee, the Enforcement Committee, the Discipline Committee, the Research & Development Committee, the Emerging Technologies Committee, the Awards Committee (of which he is currently Chair), the Nominating Committee, the MAA Memorandum of Understanding Task Force, the Task Force on Sustainable Development, the Technologists Ad Hoc Committee, the Law Reform Commission subcommittee, the CCME – Task Group on Environment, the Long Range Planning subcommittee, the Environment and Sustainable Development Committee , the Premises Committee, the Publication Committee, and the Advocacy & Member Services Board. This adds up to a remarkable total of 60 committee years of service!

The contribution made by Don Osman to the Association in so many areas of its activities has been generous in the extreme. His dynamic personality, peppered with his ever-present sense of humour, has livened up many committee meetings.

Don Osman receives the Outstanding Service Award from Cathy Stewart.

Don works for the University of Manitoba as Research Development Officer.

Outstanding Service Awards were conferred upon Don Anderson and Don Osman in recognition of their many years of valuable and loyal service to the Association. ■

Notice

Certificate 0f Authorization

Effective January 2, 2001, the APEGM will, subject to ratification of the applicable By-laws, begin accepting applications for Certificates of Authorization for corporations and other entities to engage in the practice of professional engineering or the practice of professional geoscience as is provided for under section 16 of The Engineering and Geoscientific Professions Act.

Application forms and other details will be available from the Association office after December 15, 2000, and through the Association's website at ***www.apegm.mb.ca.***

It should be noted that section 59 of The Engineering and Geoscientific Professions Act prohibits contracting with a corporation, or other legal entity, for any work that requires the services of a professional engineer or professional geoscientist unless that corporation or entity holds a Certificate of Authorization. Section 59 does not apply if the work is being contracted with an individual professional engineer or professional geoscientist operating as a sole proprietorship. ■

Professional Development

Professional Development Conference

By: L.L. Douglas, EIT

The annual PD Conference, held on Friday, October 27, 2000, provided two options for professional development. Over 80 people attended the morning session, covering what the conference facilitator Barbara Mackay described as soft skills. The afternoon session comprised two groups focusing on "hard" skills at a computer-related session and a seminar on proposal writing and negotiating skills. John Hosang, APEGM President, opened the conference by stressing the importance of professional development not only in traditional technical fields but also for self-improvement.

Deri Latimer started the first seminar by explaining to the group the concept of Emotional Intelligence (EQ). In the past, IQ according to Ms Latimer, would get you hired, while EQ would get you promoted. As companies are striving for global competitiveness and responsiveness to technical innovations, a shift in hiring philosophy has occurred. The ability to learn, communication skills, and team skills have surpassed technical capabilities in importance. Now, companies are looking for personnel with high EQ, because technical capabilities can be learned. Companies are using EQ as a new yardstick in computing their monetary worth. Leading the way is Nortel Networks, which places intellectual capital on its balance sheet.

Ms Latimer closed her presentation by providing us with ways to develop our EQ, namely, through self-awareness, social skills, and motivation. By seeking feedback from co-workers, creating pictures of future events, being able to read what people are telling us through body language, we can all improve our EQ.

Time is something none of us really has enough of, but how do we find more time? This was the question Barry Booth, the second presenter, posed to the group. He then went on to discuss how to better manage the time we have. He first explained the difference between important and urgent, important being of great effect or consequence while urgent means immediate, instant or imperative. With the use of the Time Matrix, one can better determine what priority to give to certain tasks.

The highest priority quadrant, being both urgent and important, defines crisis-like situations. For example, Barry explained, forgetting your third wedding anniversary. Tasks in this quadrant are of most urgency and should be attended to immediately. The next quadrant (Q2) is important but not urgent. It includes such tasks as planning, preparation, and relationship-building. Quadrant three is urgent but not important, namely the never-ending interruptions of meetings and e-mails. Quadrant four, of course, comprises the non-urgent, non-important tasks, namely water-cooler discussions.

Mr. Booth finished off by presenting some guidelines as to how to manage our time. By dealing with the big rocks in our life first, we can then fill in the smaller rocks of mundane day-to-day tasks. Ideally, we should spend 20% of our time in quadrant one, 70% in two, and the other 10% between quadrants three and four.

Drew Henderson provided the group with some valuable skills on communicating a technical presentation. He talked in great detail about how to start a presentation, do's and don'ts, common myths, and finally, what to do when disaster strikes.

He summed up how to give good presentations into the following steps. First, start well, grab the audience's attention, let them know why they should be listening to you, be clear, be quick, be gone. Secondly, distill technical information to the core. Studies have shown that audiences do not want too much information presented to them. Technical detail and equations can be detailed in supplementary notes. The third skill is to show enthusiasm and energy. Only 20% of what you say has an impact on the audience, the remainder coming from your body language. The fourth skill covers the importance of visuals. Although necessary, they should not include every word of your speech, nor should they contain too much detail. Finally, smile, and have a plan for when presentation disasters strike.

Leadership skills are important for both management and non-management personnel. Dr. Ray Findlay started off his presentation with a quote by Peter DeLisle on the definition of leadership, "ability to influence other people with or without authority". He then went on to describe some leadership attributes - specifically integrity, honesty, charisma, and passion.

Another important leadership skill, according to Dr. Findlay, is taking blame. He told the story of his secretary mis-spelling an associate's name. Dr. Findlay phoned the associate and, instead of blaming the mistake on the secretary, took the blame himself, in her presence. By taking the blame, Dr. Findlay was able to gain trust from his employee, and an awaiting cup of coffee on his desk each morning.

The afternoon started off with the two concurrent sessions. The first was a series of information sessions on computer operating systems and security. The second was a presentation on proposal writing and negotiation.

Marc Rogers started the afternoon discussing computer security and ways to ensure that information is protected. Rasit Eskicioglu then explained the benefits of the Linux operating system over traditional Microsoft products. The series of computer-related discussions ended with Grant Forsman discussing GeoMedia and its place in industry.

Court Stevens started his presentation to the second group on the importance of clarity in Request-for-Proposal (RFP) writing. He illustrated this point through the story of ordering a burger in a bilingual restaurant in Quebec. The order in English was simply "cheeseburger". On the other side, the order in French was "boeuf brulé avec fromage et moutarde et tomate". On the English side the customer can only guess what exactly is in the burger, whereas the French orderer knows exactly what to expect. Clarity, according to Mr. Stevens, is the most important aspect of proposal-writing. Authors must be exact in what they expect from sellers, including factors used in contractual award decision-making.

Mr. Stevens then went on to discuss what should be included in the RFP, what pricing strategies to ponder, and what evaluation techniques should be employed. Key evaluation categories include the scope of the project plan, qualifications of the seller, the interview, and price.

The second half of Mr. Stevens's presentation involved the art of negotiation. This "art" is the ability to persuade the other party through dialogue and reason rather than with argument and force. A soft and palatable voice is useful in negotiations, which is why the majority of negotiators are women.

The keys to successful negotiations are planning, collaboration, and trust. Without these, negotiations can break down rather quickly. By keeping your cool, gaining the trust of your opponent, and planning your strategies, you can be part of a successful negotiation process. Mr. Stevens also stressed the importance of not taking the initial bag of gold that is put on the table, but instead waiting for the one-carat diamond that will be offered later. You must be careful in what you acquire and use as bargaining chips in the beginning because, in the end, you may miss out on the bigger prize.

For the final presentation, both groups convened for an information session given by the Faculty of Engineering librarians. Tracey Keryluk provided the group with a lot of useful tips on searching for information and navigating around the net. She started off with the introduction of the University of Manitoba's Faculty of Engineering web-site, ***www.umanitoba.ca/academic_support/libraries/units/engineering***. This site provides many links to engineering-related subjects, including technical resources and Canadian job-search sites. Ms Keryluk then pointed out one of her favourites, which is maintained in England, called EEVL. This site provides many links to engineering-related topics found at ***www.eevl.ac.uk/***. The favourite of the crowd, however, seemed to be ***www.engnetbase.com***. This site contains most of the Engineering handbooks on-line in full-form using Acrobat Reader. You must first fill out a form for a trial log-on password. ■

2000 APEGM Fall Golf Tournament

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

This year's APEGM Fall Golf Tournament took place on Tuesday, September 12th, at St. Boniface Golf Club. Unlike last year's tournament, all the golfers managed to finish their round before the sun fell beyond the horizon. The weather co-operated, starting with overcast conditions but finishing in the sunshine with no rain. The wind remained light throughout the afternoon with temperatures in the high-teens to low-twenties – a perfect afternoon for golf, if the course had co-operated. Some of the groups played as many as five or six temporary "greens" as the greens were being aerated and sanded. It appeared at times that the greens crews were doing their best to remove the flags from the greens to temporary shaved fairway "greens" just moments ahead of our tournament's lead group.

After the golf, we convened to the clubhouse for a buffet roast-beef dinner. After the dinner, prizes were awarded to the top two individual golfers. First place went to Bruce Donald with a round of 80. Second place required a countback as more than one golfer carded a round of 81. After the countback, Shane McCartney was declared the second-place finisher. The remainder of the prizes were awarded by a random draw.

This year's tournament saw about 50 golfers participating, which was similar to last year's turnout. The Sports Committee would like to thank the companies and individuals who donated prizes for the random drawing. See you in the spring. ■

Will Manitoba Soon Be Facing a Shortage of Civil Engineers?

By: B. Stimpson, P.Eng.

Across Canada, the number of university students electing to study civil engineering is declining. At the University of Manitoba, for example, the numbers have slipped from 59 new students for the 1997-98 Session to 27 for the 2000-2001 Session. If attrition is taken into account and the presence of international students who return to their home countries, it is conceivable that within three years the University will be producing only 20-25 civil engineering graduates per year.

Civil engineering programs are unlikely to see the large enrolments of the 60's again because the demand for graduates has declined. However, given the demographics of the profession where large numbers of pre-baby-boomers and baby boomers are approaching retirement, is the profession headed for a shortage in this area? Furthermore, if it is, what can be done about it?

A number of factors play a role in the recent steepness of the decline. First and probably foremost, the emerging fields in electrical, mechanical, and computer engineering have received and continue to receive much media attention. Any citizen, let alone senior high-school students, who hasn't heard about the revolution in computers and telecommunications could not have been paying much attention. But how many know about the exciting developments in composite materials in civil engineering structures or the remarkable achievements of geotechnical engineers in Canada? Relatively few. Some fields hardly need "selling" but civil engineering does now.

Another significant factor is starting salaries and career prospects. Students considering which engineering program to choose commonly ask which area will give them the highest income. While I always try to steer students away from such reasoning and suggest they choose the area for which they have the greatest interest and passion, the reality is that students want to have the material things of life as much as those of us further on in years do and they want to pay off those student loans as soon as possible, too. Tuition fees have increased by 125% over the last ten years. The potential for higher salaries and more entrepreneurial opportunities in electrical and computer engineering than in civil engineering is certainly a factor in students' thinking when considering which program to enter after the first year. Most students expect to do a lot better than the $24,000 per annum, with no overtime, offered to one Master's civil engineering student about two years ago.

What can be done? The Mining Program at the University of Alberta is a prime example of what works best...namely, to recognize that most engineering students are attracted by job- and salary-prospects both while students and after graduating. When the mining industry recognized its long-term health depended upon a steady supply of Alberta-born mining engineers who would stay in the Province near family and friends, it formed a close partnership with the Program, offered summer jobs, talked to new students about jobs upon graduation, and offered attractive salaries. From being a small

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Are you qualified to be a professional?

The following short quiz consists of four questions and tells whether you are qualified to be a "professional."

Question 1: How do you put a giraffe into the refrigerator?

Correct answer: Open the refrigerator, put in the giraffe and close the door. This questions tests whether you tend to do simple things in an overly complicated way.

Question 2: How do you put an elephant in a refrigerator?

Wrong answer: Open the refrigerator, put in the elephant and close the door.

Correct answer: Open refrigerator, take out giraffe, put in the elephant and close the door. This question tests your ability to think through the repercussions of your actions.

Question 3: The Lion King is hosting an animal conference. All the animals attend except one. Which animal does not attend ?

Correct answer: The elephant. The elephant is in the refrigerator. This question tests your memory.

Question 4: There is a river you must cross but it is inhabited by crocodiles. How do you manage it?

Correct answer: You swim across. All the crocodiles are attending the animal meeting. This question tests whether you learn quickly from your mistakes.

According to Andersen Consulting Worldwide, approximately 90% of the professionals they tested got all questions wrong, but many pre-schoolers got several correct answers. Andersen Consulting says that this conclusively disproves the theory that most professionals have the brains of a four year old. ■

Council Reports

Tuesday, September 12, 2000

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

COUNCIL EXPERIENCES THE "BRAIN DRAIN"

President Hosang opened the meeting with an unusual task, that of welcoming new Councillors. No, the election wasn't held early. Dr. Doug Chapman, P. Eng., and Mr. Pat Feschuk, P. Eng., were greeted as appointed replacements for Councillors MacLeod and Rizkalla, who had resigned recently. One may or may not believe there's a "brain drain" in the country, but there's no disputing there is one on Council.

First items for the meeting were the normal routine, Issues and Activities, adoption of an agenda, and minutes. Council agreed to discuss a special service award for a member who had accumulated an incredible 60 years of Council service. Under Issues and Activities Council learned that the Ontario Association wasn't favourable to CCPE's proposal for automatic Secondary Professional Liability Insurance.

Council reviewed an e-mail from Laura Penner who informed them that she was taking a position with a Houston, Texas company and that she was resigning her position on Council. Executive Director Dave Ennis wanted to know if Councillor Penner should be replaced. President Hosang said that given the short time until elections, they should be able to carry on as is.

Since the Annual General Meeting wasn't far off, Council was treated to a thick document outlining APEGM's financial situation, one that appears very favourable. President Hosang commented that APEGM's finances had improved over those of last year.

Again, in preparation for the AGM, Council reviewed a draft document, prepared by the Legislation Committee, one which set out new procedures for conducting Council elections. One of the old regulations required that the candidates' names appear in random order. This meant that the ballots had to be printed in special lots for this to happen. It was believed that having the candidates' names in alphabetical order would encourage people to simply mark them in numerical order, top to bottom, although the logic behind this belief is difficult to understand. However, Council agreed to change the listings to alphabetical order, the way it's done everywhere else. Council also approved a new method of vote-counting....one that would use a piece of software called ChoicePlus Lite. Apparently, ChoicePlus could be easily adapted to the method of vote counting used by APEGM, which is a form of proportional voting. The expected outcome of this automated method of vote-counting was guaranteed accuracy and, in time, a faster way of counting. Council approved the changes.

Next, Council turned to a memo from Executive Director Dave Ennis which outlined the latest happenings in regard to the Certificate of Authorization, or C. of A., as it's commonly known. (It always reminds me of C.Y.A., something we've all used in our working life.) Mr. Ennis explained that the blue paper was a change from the green paper, and the pink paper was a change from the white paper, a necessary exercise to distinguish the changes made by the Legislation Committee. Mr. Ennis's memo stated that the membership was still confused by the Certificate of Authorization concept, and he planned to hold another informational session for the membership prior to the AGM. Council moved that the C. of A. would come into effect on January 2, 2001.

Voluntary Professional Development is a subject guaranteed to make the hair on many people's necks bristle. President Hosang welcomed two Professional Development Committee members to the meeting, Mr. Bob Parsons, P. Eng., and Mr. Hilmi Turanli, P. Eng., both veterans of the PD wars. Mr. Parsons gave an energetic talk about the new PD development model. His presentation of the guideline on professional development was a gem. His delivery was excellent and the guideline an example that we should all try to emulate. It was concise, written in plain language, and provided an insightful way of evaluating one's PD experiences. It should be prescribed reading for all APEGM members. Councillor Eschenwecker congratulated the presenters and Council went on to approve the guideline.

When Council turned to the item "request for clarification on appeal decision," it was obvious that this had the potential for generating fireworks. This was a case where Council had come down on the side of an appellant, an EIT, and gone against a decision of the Registration Committee. The Registration Committee side was represented by Kelly Kjartanson, P. Eng., and Shirley Matile, P. Eng., Director of Admissions. After some tense exchanges, Council maintained that they were not setting a precedent, but making a singular judgement in an unusual and unique case, one that was not expected to be repeated in our lifetimes. Ms Matile appeared relieved, while Mr. Kjartanson was less so.

By this time, the meeting quorum was rapidly disappearing and Council rushed through the remaining items while they could. The revisions to the Westman Chapter's constitution were approved and a special, secret service award was approved for Mr. Don Osman, P. Eng., for his outstanding service to the Association, this award to be presented at the AGM. Please, do not tell Don! ■

Tuesday, October 10, 2000

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

COUNCIL WINDS DOWN

It seemed like President Hosang had just nicely settled into his term when, in fact, this was the last time he would chair the meeting as President. How time flies. The meeting started on a scary note when it appeared there would be no quorum. Fortunately, the timely arrival of appointed Councillor Feschuk saved the day. In addition to Mr. Feschuk, Councillors Ferchoff, Pollard, Eschenwecker, Matthews, Ruff, and Hamilton were in attendance and bolstered by the presence of Past Presidents Washchyshyn and Britton.

The meeting warmed up with the routine items. When the minutes of the September meeting were reviewed, several word-smithing exercises erupted before the document was approved.

Executive Director Dave Ennis presented his report to Council. Appended to the report was a snippy letter to the EIT who took on the APEGM Committees and lived to tell the tale, the one who appealed to Council and won.

At the September meeting Council was apprised of the situation of geoscientists who were practicing without being members of APEGM. At that time Executive Director Dave Ennis offered to give Council some recommendations on how the problem should be handled. Mr. Ennis now drew Council's attention to a study done for the Alberta Association (APEGGA). It indicated that APEGGA needed to become more flexible in its approach to attract the non-member geoscientists.

Our relations with our architectural brethren is never absent for long from Council business. President Hosang told Council that a new Joint Board had been formed and that they would be given a few solvable issues to start, in the hopes that it would be the catalyst for a long-term, harmonious relationship. If not, government would take action to resolve our differences, possibly through the dreaded "matrix" solution.

The Governance Task Force presented Council with another batch of documents for their consideration. The Task Force was using a time-honoured engineering approach to the problem of writing the manual; they were using materials from another association to assist them in their deliberations. Councillor Eschenwecker suggested that Council digest what they had, and come back to it in the future. At this point there was much discussion of "end statements," which then led into another discussion of what are "means" and what are "ends." Whenever Councillor Pollard thought something was an end, Councillor Chapman said it was a means. This led Mr. Chapman to inform Council on how the Carver method works. Mr. Chapman is hard to resist in these types of discussions since he is clearly the most well-versed on the topic.

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CCPE Chief Executive Officer's Message

Marie Lemay, ing.

Full Speed Ahead...

Becoming the Chief Executive Officer of a multifaceted organization like the Canadian Council of Professional Engineers (CCPE) is a little bit like buying a new car. It takes some time to get comfortable with how everything works, read the owner's manual, and get through the break-in period. You take extra care to avoid situations that could result in a dent or scratch, but at the same time find it difficult to drive slowly for the first 1,600 km or so.

The analogy works quite well, really. Since joining CCPE as Chief Executive Officer in July, I've met with many of my provincial and territorial counterparts from across Canada, been briefed extensively by my staff on key issues, read hundreds of documents – including the CCPE Board Orientation Manual – participated in my first CCPE Board of Directors meeting and, to the best of my knowledge, am getting up to speed without too many dents or scratches. I now have a much better sense of how things work at CCPE and I am ready to move forward in response to the challenges facing our profession.

One of our first priorities will be to achieve a fair, balanced and workable solution to the software engineering issue. The Panel on Software Engineering, established by CCPE and the Association of Universities and Colleges of Canada in September 1999 to make recommendations on the use of the term software engineering in the undergraduate university community, has now tabled its final report. It is recommending the creation of a joint accreditation board, drawn from the members of our Canadian Engineering Accreditation Board (CEAB) and the Canadian Information Processing Society's Computer Science Accreditation Council (CSAC). The advisory group formed by the CCPE Board in November 1999 to consider the profession's positions on the software engineering issue and to counsel our representative to the Panel has also tabled its final report, which is supportive of joint accreditation. At this time, extensive consultation is taking place with all parties involved, particularly our member Associations/Ordre. The software engineering issue will be an important item on the agenda for the November Board meeting.

"The future sustainability of self-governance of the engineering profession depends on the continued growth of registration of new engineering graduates into our profession."

In November, the Board will also consider a report on the relevancy of the engineering profession's regulatory system in the global context, and conduct a half-day strategy session on the issue of relevancy. One of the keys to ensuring the future relevancy of our regulatory system will be our ability to attract engineering graduates to join our ranks as registered members of the profession. CCPE has been proactive in this area with the launch of our national communications campaign to build awareness of the P.Eng./ing. designation among engineering students and promote its value to employers in the emerging-technologies sector.

The second phase of our campaign will be initiated in October of this year. CCPE has placed ads in student newspapers encouraging engineering students to "go the distance" by getting their P.Eng. Another set of ads highlighting the long-term benefits of hiring professional engineers has been placed in three national magazines targeted toward employers and human-resources professionals, and a direct-mail brochure presenting the business case for hiring a P.Eng. is being produced. The goal of the ads and brochure is to attract both students and employers to CCPE's new P.Eng. web-site to obtain more information. If you have not already done so, I encourage you to visit the site at ***www.peng.ca.***

The importance of bringing engineering students into our profession is also reflected in the new Engineering Student Liaison Policy and Program that was approved by the CCPE Board of Directors in September. In essence, the philosophy behind the policy and program is that: "The future sustainability of self-governance of the engineering profession depends on the continued growth of registration of new engineering graduates into our profession. A structured liaison between the engineering profession and engineering students prior to graduation is required to identify and address their ongoing issues and areas of concern with our profession."

Another highlight of the Board's September meeting was its approval of a new policy on women in engineering. This policy recognizes that the enrolment of women in undergraduate as well as graduate engineering programs strengthens the profession. It also expresses our strong and ongoing support for the principles of fairness and equity in all aspects of engineering culture, practice and education, and our belief that by welcoming more women into our ranks, we will enrich the value, relevance and public recognition of our profession.

Speaking of women in the engineering profession, I am pleased to report that Julie Payette, ing., will be the Honourary Chair of National Engineering Week (NEW) 2001. I'm looking forward to the launch, which takes place on March 2, 2001, as well as to meeting engineers from coast to coast in the days and months ahead. ■

New Award to Recognize Engineers Who Make Engineering a Great Career Choice for Women

Canadian engineers who visibly help to make engineering a great career choice for women will soon be considered for a national award.

The Canadian Council of Professional Engineers (CCPE) has added a new award to its Canadian Engineers' Awards program to recognize engineers who, through their engineering work and career achievements, have demonstrated noteworthy support for women in the profession and established a benchmark of engineering excellence.

To be presented for the first time in May 2001, the Award for Support of Women in the Engineering Profession will also increase public awareness of Canada's outstanding engineers, and the ongoing efforts by the engineering profession to welcome more women into its ranks.

The Canadian Engineering Memorial Foundation, which was founded in 1989 with significant financial and administrative support from CCPE, awards both undergraduate and graduate scholarships to women engineering students. It also presents an annual Engineering Students Project Award, as well as the Elsie MacGill Award in recognition of a university that has made significant contributions to improve the climate for female engineering students in an engineering school or faculty.

In the 10 years since the massacre of 13 women engineering students and one female faculty member at École polytechnique in Montreal, the number of women enrolled in undergraduate engineering programs in Canada has more than doubled. The 8,000 women currently registered in those programs make up 20 per cent of all undergraduate engineering students.

Call for nominations for the 2001 Award for Support of Women in the Engineering Profession and the six other Canadian Engineers' Awards must be received at CCPE by January 8, 2001. Information and the terms of reference for the seven Canadian Engineers' Awards, as well as nomination forms, are posted on CCPE's Web site at ***www.ccpe.ca.***

Along with the Award for Support of Women in the Engineering Profession, CCPE presents: the Gold Medal Award; National Award for Exceptional Engineering Achievement; Young Engineer Achievement Award; Meritorious Service Award for Professional Service; Meritorious Service Award for Community Service; and Medal for Distinction in Engineering Education. ■

Notice Under the Engineering and Geoscientific Professions Act and the Association's Discipline By-Law

THIS IS NOTICE that on 25 September, 2000, Frederick Daniel Wolfrom, P. Eng., was issued with a reprimand following a conviction on a charge of negligence in the practice of engineering, unprofessional conduct, unskilled practice of professional engineering, and professional misconduct in accordance with Section 43.4.8(e) of the By-Laws of the Association of Professional Engineers and Geoscientists of the Province of Manitoba. In addition to the reprimand, Mr. Wolfrom's practice of professional engineering will be subject to periodic random inspections, for a period of one year, by a person authorized by the Association's Investigation Committee to carry out inspections, the cost of the inspections to be borne by Mr. Wolfrom, to a maximum of $10,000.00, in accordance with Section 47(1)(e)(iv) of The Engineering and Geoscientific Professions Act.

The conviction is based upon his providing professional engineering services that were substandard, inadequate and incomplete, thereby failing to effectively fulfill the requirement of the engineering work undertaken, his failure to provide adequate detail in the form of drawings and specifications to provide for a preserved wood foundation that conforms to the Manitoba Building Code to be constructed for a residential building, and his failure to provide adequately for the safety of the public.

This Notice is provided in accordance with Section 50 of The Professional Engineers and Geoscientific Professions Act and Section 43.5.8 of the By-Laws of the Association of Professional Engineers and Geoscientists of the Province of Manitoba.

D. A. Ennis, P. Eng.
Executive Director & Registrar

Dear Sir:

Please consider this letter as my acceptance of your proposal as presented in your correspondence dated November 17, 1999.

I wish to make it perfectly clear that I do not agree with the decision of the Investigation Committee, nor condone any of its actions in this matter. I do not believe that I have been dealt with in a fair manner in this Investigation from the outset, and no amount of credible representation, testimony, or expert witness support has had any bearing on their decision. They remain at exactly the same position as they began.

I am only accepting this offer because there is no reasonable alternative, and to proceed to a hearing where the matter would undoubtably be dealt with in the same manner, would be ludicrous.

I would request that my letter of acceptance be published concurrently with your proposed notice of publication.

F.D. Wolfrom, P.Eng.

APEGM VISION

APEGM is the leader and a facilitator of the process that ensures excellence in engineering, geoscience, and applied technology for the public of Manitoba.

NAE's Top 20 Engineering Achievements of the Last 100 Years

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

The following is a summary of an article listing the Top 20 engineering achievements of the 20th century (either having just ended or about to end, depending on your school of thought) which appeared in InTech Magazine in February 2000. The list was selected and ranked from a list of 105 nominated achievements. This list was produced by the National Academy of Engineers (NAE) of the United States, and has been re-printed here for your information/review/discussion, with Intech Magazine's permission. Is this list accurate? Does it reflect the best-of-the-best in engineering achievements that have made the greatest contribution to our present quality of life? Read the list and decide for yourselves, but whether or not you agree with all 20 and their rankings, take a moment to congratulate yourselves on providing a beneficial and essential service to your community and fellow citizens.

Earlier this year, during National Engineers Week in Washington, D.C., the first man on the moon, astronaut & engineer Neil Armstrong, announced the Top 20 engineering achievements that have had the greatest impact on the quality of life in the 20th century. The achievements, nominated by 29 professional engineering societies, were selected and ranked by a distinguished panel of the United States' top engineers selected by the National Academy of Engineering (NAE). The committee worked in anonymity to ensure the unbiased nature of its deliberations.

Armstrong recalled that during the 20th century the world has become a healthier, safer, and more productive place than it had been at the turn of the last century, primarily because of engineering achievements. "As we look at the engineering breakthroughs selected by the NAE, we can see that if any one of them were removed, our world would be a very different, and much less hospitable place," said Armstrong during his speech. "Almost every part of our lives underwent profound changes during the last 100 years thanks to the efforts of engineers...".

According to William A. Wulf, NAE president, "Engineering is all around us, so people often take it for granted, like air and water. Ask yourself, what do I touch that is not engineered? Engineering develops and delivers consumer goods, builds the networks of highways, air and rail travel, and the Internet. It mass produces antibiotics, creates artificial heart valves, builds lasers, and offers such wonders as imaging technology and conveniences like microwave ovens and compact disks. In short, engineers make our quality of life possible."

While many of the achievements listed seem obvious choices, given the immediacy of their impact on society, some may seem less obvious. The No. 4 achievement, for example, literally changed the way people lived and died during the last century. No. 10 underscores how

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Thinking about change?
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University News

Biosystems Engineering

Ms Jennifer Smaizys and Ms. Allison Bale, both in their final year in Biosystems engineering, were elected as Student Ambassadors to the Canada Energy Efficiency Conference 2000 held in Ottawa. A total of 25 Ambassadors were selected from secondary education institutes across Canada.

Mr. Ryan W. Yakimishen was awarded the 2000 William J. Adams Jr. and Marijane E. Adams Scholarship. Mr. Yakimishen was the second Canadian undergraduate student, since 1992, to receive the award presented by the American Society for Agricultural Engineers (ASAE).

Civil and Geological Engineering

Professor Aftab Mufti, P.Eng., is welcomed as a new academic member of Civil and Geological Engineering and President of ISIS. Professor Mufti comes from Dalhousie University (Halifax). He was one of the key people to initiate interest in the use of fiber-reinforced polymers (FRP's) through his founding work as Chair (1989-1993) of the Canadian Society of Civil Engineering Technical Committee on the use of Advanced Composite Materials in Bridges and Structures. In recognition of his outstanding achievements and leadership, Dr. Mufti was recently presented a prestigious "Nova" award and also elected a Fellow of the Canadian Academy of Engineering.

Ms. Rebecca McMillan won the Canadian Geotechnical Society National Competition for best undergraduate thesis. Her thesis, under the guidance of Professor A.D. Woodbury, P.Eng., "Investigation of Seepage from Earthen Animal Manure Storages" was sponsored by the Manitoba Livestock Manure Management Initiative Inc.

Electrical and Computer Engineering

Canada Foundation Innovation Fund Competition (CFI)

Professor Lotfollah Shafai, P.Eng., has secured $948,293 in support of his research in the Antenna Laboratory. The challenge of the research capability in the rapidly-expanding area of micro-fabricated software-adaptive antennas, is to design antennas that can overcome the hurdles thrown up by tall buildings, trees, and other man-made obstacles while still providing the required transmission and accuracy.

The 2000 R&D Partnership Awards

Professor Peter McLaren, P.Eng., and Vansco Electronics were awarded the 2000 University-Industry Synergy R&D Partnership Award sponsored by Natural Sciences and Engineering Research Council and the Conference Board of Canada. The award was for their work on the development, manufacturing and marketing of new programmable power systems protection relays which led to the development of a new division of the company, Alpha Power Technologies.

Chair in Telecommunications

Approval for the establishment of the Centara Chair in Telecommunications research has been received. The Chair will be an Internationally recognized centre of excellence in the telecommunications field, the foundation of a comprehensive telecommunications research program at the University of Manitoba.

Mechanical and Industrial Engineering

Canada foundation for Innovation new Opportunities Award

Professor Meera Singh has received $193,445 for equipment to enable the testing and analysis of civil structures under test loads that reflect actual environmental conditions. Professor Gary Wang was awarded $200,000 to support the creation of a rapid prototyping laboratory for research and innovation in manufacturing, especially the manufacturing of electronics and electrical components.

2000 Fellow Award – Society of ASM International

Professor Mahesh Chaturvedi, P.Eng., was conferred the award of Fellow at the Convocation of Fellows being held during the ASM Awards Dinner, St. Louis, Missouri. The honor of Fellow represents recognition of Dr. Chaturvedi's distinguished contributions in the field of materials science and engineering.

The University of Manitoba Society of Automotive Engineers Student Chapter placed 5th of 22 in the International Air Cargo Competition, beating the American Air Force Academy. They placed 31st of 106 in the Midwest Mini-Baja Competition, and 3rd in the endurance race.

Two new academic members are welcomed: Professor Vijay Chatoorgoon who comes from Atomic Energy Canada. His area of expertise is in Aerospace Engineering. Professor Qingjin Peng has completed his Ph.D. from the University of Birmingham, and his area of expertise is Manufacturing and Production Engineering.

Canadian Engineering Accreditation Board (CEAB)

Dean Douglas Ruth has been re-appointed as Member for Manitoba/Saskatchewan of the CEAB for a three-year period. ■

Coming Soon!

APEGM Engineering Student Dinner – January 24, 2001

Here is your chance to share your experience and provide guidance to engineering students who want to learn more about the engineering profession.

Enjoy a great dinner and an interesting guest speaker. EITs who attend and sponsor students may receive credit for two hours of Professional Service (half a point).

EITs can also earn Professional Service hours/points by helping to promote this event!

Contact Salman Qureshi, EIT at 775-8331 ext. 3392, ***squreshi@bristol.ca*** or Trevor Bowden, P.Eng. at 831-2619, ***trevor.bowden@boeing.com*** for details.

Check out the enclosed insert for more details. Hope to see you there! ■

October Council Report

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Since the Certificate of Authorization will soon be a part of APEGM practice, the question arose as to which Committee should be responsible for issuing them? Executive Director Dave Ennis suggested a solution – that it should be his responsibility. His reasons were that he could do it quickly, (an important consideration), and that he'd been doing it. Council approved Mr. Ennis's suggestion and passed a recommendation to that effect to the Registration Committee. Before passing from the topic of Certificates of Authorization, Council learned that the Mining Association of Manitoba Inc. was concerned with the concept because many of their members were quoted crippling insurance rates for the mandatory insurance contained in the C. of A. Mr. Ennis did not think that it was desirable to exempt a certain group but that more consultation, with all parties, would lead to an accommodation.

Peter Washchyshyn, CCPE Director, reported on the recent CCPE board meeting held in Halifax. Mr. Washchyshyn said that their new leader made a favourable impression, a good omen for the future. CCPE had discussed the Software Engineering problem and it appeared that all parties had taken the cooperative approach to solving the problem. All in all, Mr. Washchyshyn reported that the meeting was cordial and consensus-building.

After the outgoing Council deferred as much work as possible to the new Council, President Hosang thanked them for their support throughout the year and everyone said a farewell to the members who were retiring after the meeting. In November, Councillor Pollard will be transformed into President Pollard. Thank you President Hosang, and good luck to President Pollard. ■

Professional Development

Manitoba Hydro's System Control Centre

By: J. W. Bogan, P.Eng.

APEGM's Professional Development (PD) Committee organized a tour and lecture of Manitoba Hydro's New System Control Centre. The tour took place on October 18 and thirty engineers were able to walk through Hydro's new facility and observe it in operation. Although I work near this facility, it wasn't until the PD Committee organized the tour that I was made aware of the building's function. The sign at the street only lists its address.

Once inside, Manitoba Hydro's Lyndon Miller, who is the Bulk Transmission Support Superintendent, conducted the tour. The group did not have the opportunity to ask Mr. Miller to explain the difference between the transmission of bulk and individual units of electricity (small attempt at humour by a civil-type). We viewed a Manitoba Hydro video presenting the facility's history, from its inception and planning to construction. The building houses the facilities and equipment to oversee the reliable supply of electricity within the province. It operates continuously – twenty-four hours every day through the year.

Within the control room, operators use Hydro's Energy Management System (EMS) to oversee the entire operation, which includes:

- Generating stations
- Flows and reservoir levels
- Transmission, sub-transmission, and distribution lines

The EMS consists of a computer system that collects information describing the power system, analyzes it and presents the information to enable operators to make informed decisions, and communicates operating actions to remote equipment. For example, it's possible to adjust the operation of remote generating stations through the day to meet increases or decreases in consumer demands at peak hours. Another function includes shutting down sections of a power line for crews to perform maintenance. Control of the EMS is divided between four desks. They oversee generation, transmission, network (including the high voltage system) and subtransmission. All controls, status and their operation can be observed through video projections on a wall, which consists of twelve large screens.

The control-room superintendent's desk has seven screens that allow the shift-superintendent to monitor all of the system's integral functions at a glance. Using computer systems designed to be easily upgraded, the superintendent may check the performance of Hydro's communication network, obtain a satellite weather forecast, or change the lighting level in the control room.

The facility includes a secondary control room that may be utilized for an emergency, coping with potentially disastrous weather (such as a pending ice-storm), and for training. It can create training exercises or replay events so that others may benefit and learn from the experience.

Hydro explained that the building's location was selected in the West Fort Garry Business Park because of the land's elevation and its distance from major streets, railway lines, flight paths and gas pipelines, which all present potential risks to the facility.

Sections of the building are tornado-proof and incorporate reinforced concrete beams constructed on 350 concrete piles to support eight-inch-thick, heavily reinforced, concrete walls. All building systems are located within. The control centre also features:

- Two independent power supplies backed up by two emergency diesel generators and battery banks
- Backup heating and cooling systems
- Two un-interruptible power supplies to serve as emergency backup to critical computer systems
- Backup communication systems
- Extensive fire detection and suppression systems
- The use of "off-the-shelf" technology which allows for constant upgrading of hardware and software
- Raised floors in the control- and support-rooms to provide space for cables. Modular panels allow for easy access.

Communications for the centre are provided through five separate fibre-optic cable systems, including two independent fibre-optic rings connecting the major power facilities around Winnipeg. The rings are also linked to communications facilities serving remote locations, such as the generating stations in northern Manitoba and on the Winnipeg River.

Total cost for this state-of-the-art facility, including installation of the fibre-optic communications loops around Winnipeg, was $65± million. ■

Notice

Payment of 2001 Fees

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

Small Steps – Big Concepts: Image Enhancement becomes Public Awareness

By: M.J. Samuda Poitras, EIT

This committee's change in names may be the sign of a true shift in identities, and not just acronyms.

What is the image we had been hoping to enhance? Remember the public body we are legislated to protect – they don't really know who we are! Perhaps it is a simpler question we hope to answer for ourselves and for the public at large. We may be the engineers, but who are we and what do we do?

Our individual titles, workplaces, and day-to-day tasks are varied within the single profession. We would like to create an initial image for the engineer, similar to the primary archetype we carry for the dentist, the doctor – even the scientist. A simple image may seem to limit the true depth of the profession, but it could serve as a stepping stone to discovering how our profession fits into the big picture and is a part of everyone's life.

We would like the chance to simply state: We are the engineers – this is what we do. We would like to bring the concepts and results of engineering out of the back rooms and move them into living rooms, classrooms, and boardrooms.

The committee is not working at this in isolation. CCPE is spearheading a new national communications strategy with the main goal of adding value to the "P.Eng. brand". A modest print and television campaign is already underway promoting to corporate Canada the value-added nature of employing professional engineers. A campaign is also planned for students of engineering faculties to promote the value of registration.

Here in Manitoba, the newly renamed PA committee is seeking basic exposure and opportunity to bring widespread understanding of the engineering profession. Committee chair and former broadcaster Wally Jackson is creating a media contact list so that when engineering is involved in breaking news stories, media will have professional engineers at hand to give educated opinions, and display "P.Eng." with their names.

Dr. Doug Ruth, Dean of Engineering at the University of Manitoba, presented "The Enablers of Civilization" at last year's Annual General Meeting. This multimedia presentation is a simple and straightforward introduction to how engineering is part of our day-to-day lives and changes our entire world. The presentation will soon be released on CD and added to an awareness package being collected for schools across the province.

Professionals, as resources, will be made more available to K-S4 math and science teachers to help them teach the fundamentals of the sciences that we apply in our work. We also hope to familiarize guidance counsellors with the profession so that they can do their part in encouraging students to investigate engineering as an educational and career option.

National Engineering week, March 4-10, 2001, will again be a prime event for reaching the public. In addition to our presence at Polo Park, we hope to hold an open event at IMAX and have a presenter put an engineering spin on a feature film. We would like to have a full presence in Manitoba schools, with a blitz of posters, projects, and live presentations co-ordinated with the help of Carolyn Rickey of Innovators in the Schools.

We are always looking for volunteers and nominations for people most adept at demystifying the engineer. Please contact the APEGM office, or the Chair of the Public Awareness Committee at ***wjackson@stantec.com*** for volunteer opportunities. ■

Undergraduate Student Research Awards in Industry Offered

By: D. Thomson

The Natural Sciences and Engineering Research Council of Canada is offering "Undergraduate Student Research Awards (USRA) in Industry". These awards are meant to stimulate the interest in research in the natural sciences and engineering in an industrial setting. They are also meant to encourage students to pursue graduate studies and pursue a research career in one of the above-named fields.

The awards have a maximum value of $4,000 (paid out at $250/week for a maximum of 16 weeks). The companies are required to supplement the award by at least 25% of its value. The company will also be responsible for supplements to the weekly value and fringe benefits (if applicable). NSERC's contribution is paid directly to the host company and, unless the company informs the student otherwise, the salary the student is paid is included in the salary paid by the host company. NSERC will not reimburse the company for any period during which the student works part-time. No payment will be approved for any holidays the student may take during tenure of the award.

For further information if you are interested in getting involved, please contact Dr. Thomson at 474-9835 or by e-mail ***douglas_ thomson@umanitoba.ca***. You can also visit NSERC's website at ***www.nserc.ca***. ■

APEGM VISION

APEGM is the leader and a facilitator of the process that ensures excellence in engineering, geoscience, and applied technology for the public of Manitoba.

Out of Sight, Out of Min(e)d

By: B. Stimpson, P.Eng.

In an ironic twist of technology, the next century may witness both the mining of sulphide deposits from and the disposal of sulphide mine tailings from land-based mines on the ocean floor. Both concepts are controversial because there are widely disparate views on the environmental impact. Environmentally-sound management of the oceans for these purposes, if and wherever they are implemented, will require the skills of both engineers and geoscientists.

The Nautilus Minerals Corporation has been granted the first-ever title to undersea deposits of gold, silver, zinc and copper.

The company has a claim over 5,116 sq. kms. in the territorial waters of Papua New Guinea where, at a depth of about 1.6 km. volcanic vents are spewing mineral-rich fluids and forming storeys-high sulphide deposits containing exceptional grades of zinc (up to 26%), copper (up to 15 %), silver (up to 7 ounces/ton), and up to one ounce of gold per ton. These are high values by land-based mining standards and, if supported by more detailed exploration and evaluation, will constitute a multi-billion-dollar volcanic ore body. Should mining approval be given and the project be highly profitable, one may expect a surge of exploration off-shore and ultimately, as with oil-and-gas, more off-shore production of minerals. However, many of these volcanic vents likely lie in international waters, a fact that will considerably complicate their development.

Ecologists are concerned about the impact of mining on the exotic biota of blind shrimps and giant tube worms and other organisms associated with the volcanic vents. Some are calling for an outright ban on ocean mining while others wish to see the designation of "no-take" zones.

While Nautilus Minerals Corporation has its sights set on mining the ocean floor, Professor Tom Pedersen, an oceanographer at the University of British Columbia, is proposing that the best site for disposal of sulphide mine tailing is on the ocean floor or lake bottoms. Placer Dome Inc. is already managing its tailings disposal at the Misima Mine in the Solomon Sea by releasing a mixture of tailings and seawater offshore at a depth of 100 m. Monitoring of the tailings suggests that they are "fairly benign." Earlier studies of submerged tailings by Pedersen and his students in Anderson Lake, Manitoba, Buttle Lake, B.C. and in the Pacific Ocean off Vancouver Island, B.C., found no evidence of acid or metal release from the waste. On the contrary, metals in the lake and ocean water have been observed in many cases to diffuse into the tailings so that the metal release rates are negative. However, such practice is now illegal in Canada and the United States.

For its advocates, underwater disposal is a superior solution over land-based storage where seepage from reactive tailings into surface and groundwaters can be highly acidic and contain considerable quantities of metals. To ensure that such tailings and their impacts are carefully managed requires a long-term commitment extending beyond the exhaustion of the ore body. Depending on topography, land storage can also bury large areas and require construction of kilometres of impounding structures whose failure may release enormous quantities of highly fluid, acidic, metal-rich tailings into the environment. Clean-up costs, let alone the destruction of fish, wildlife, and farmland, typically run into millions of dollars. For example, the cost of clean-up from tailings release from a Canadian-operated mine in Spain in 1997, which choked the Guadiamar River, is estimated at about $100 million.

While no one questions that the oxidation process is prevented by carefully selected underwater disposal, the concern of other scientists and engineers is that fine particles in the tailings stream can be swept away by currents, travel large distances, and poison marine fauna, including vital fishing stocks. Such migration has been observed at the Island Copper Mine on Vancouver Island where about one third of Rupert Inlet, which opens to the Pacific Ocean, was filled with tailings over a period of 25 years. The retention of tailings in the inlet was not 100% as the engineers had surmised. Sediment plumes stirred up from the submerged tailings pile by tidal water moving back and forth through the narrows into the Pacific were traced a distance of 20 kms from the source. One scientist described these plumes as the equivalent of "marine dust storms". These concerns and the development of new technologies for isolating land-stored tailings from oxidation (e.g. geotechnically-engineered covers) lead others to conclude that surface sites, where one can more readily monitor, control and correct negative impacts should they develop, is more environmentally responsible than placing tailings "out of sight and out of min(e)d." ■

Sources:

Broad, W.J. 1998. First Move Made to Mine Mineral Riches of Seabed.

The Professional Edge, Association of Professional Engineers and Geoscientists of Saskatchewan, October/November (originally printed in the New York Times).

Munro, M. 1998. Out of Sight and Out of Trouble. National Post, December 5th.

SMARTpark at the University of Manitoba

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the business community as well as numerous requests from local companies, developers and government officials. The infrastructure nearing completion at the Fort Garry Campus will facilitate building construction on "SMARTpark".

The vision is to provide a high quality, attractive environment which will foster interaction between the University and industry, support research and education programs as well as the creation and growth of knowledge-based firms in Manitoba. This vision will foster the development of Manitoba's knowledge-based industry through successful University– industry interaction. This environment will also add to the competitive advantage of local businesses and contribute to the economic development of Manitoba.

Based on this vision, the University has selected priority uses for the SMARTpark which reflect not only the desire to work closely with knowledge-based industries, but also to reflect existing areas of strength for the University, coupled with local industry presence and need:

- Information technology and telecommunications – such as software, telecommunications and computer science, and engineering-related industries.
- Advanced materials and manufacturing for applications in areas such as aerospace and civil structures.
- Agriculture and pharmaceutical/ Biotechnology, especially in crop production and drug development.
- Resource-based value-added products and processing, especially for agricultural, mining, and forestry products.

Although the total site is over 100 acres, the first development phase will use about 50 acres, including a 2.5 acre retention pond and six five-acre lots. The first tenants plan to start constructing both purpose-built and multi-tenant facilities in the spring of 2001.

SMARTpark truly offers a high value both to the University of Manitoba and to Manitoba Industry. The park provides the right technology and services to excel in the knowledge-based economy; access to a highly skilled labour pool of more than 20,000 students, and a physical environment that supports and encourages innovation.

Organizations locating their business operations within the SMARTpark environment will enjoy a number of tangible benefits. The park is designed specifically to provide a home for companies using sophisticated equipment and facilities for specialized research programs, computer and information services, and a broad array of medical, agricultural, manufacturing and environment-related technology.

For more information about SMARTpark please contact ***smartpark@umanitoba.ca*** or call John Meldrum (President) or Ray Hoemsen, P.Eng. (Vice-President) at (204) 474-7275.

More information including a conceptual view of the facility is available at the websites listed below. Information for this article was taken from the following websites:

http://www.umanitoba.ca/outreach/smartpark/history.html

http://www.smartpark.org ■

Deep River Science Academy – The Engineering Connection

By M.J. Brown, P.Eng.

"You're spending six weeks of summer doing science?!!"

That's the response our pupils have received over the years when they tell their high-school buddies they won't be around for July. Instead, they headed off to the Whiteshell Campus of the Deep River Science Academy (DRSA). No cutting grass, painting, baby-sitting or pumping gas, but rather an intensive six weeks actively working in science labs. Six weeks of experimentation, writing and (gasp!) presentation. Plus a fair bit of fun and frivolity mixed in.

The volunteer board and paid staff of the Academy want to encourage high-school students to try engineering and science on for size. The Whiteshell campus (Pinawa, Manitoba) of the DRSA started up in 1993, six years after the original Deep River (Ontario) campus, and was later joined by one in Kelowna, BC. A New Brunswick campus is slated for start-up in 2001. The Whiteshell campus was originally centred on the Whiteshell Laboratories of Atomic Energy of Canada Limited (AECL). Since then, the campus has formed research partnerships with other organizations, like Manitoba Hydro, TANCO, the University of Manitoba, ACSION Industries and ECOMatters. The Whiteshell research projects have studied the swimming ability of freshwater fish, reactor fuel channels, archaeological excavation, cold fusion, and composite materials. Each project is a portion of ongoing research being carried out by the research partner.

The projects are supervised by a research engineer or scientist. Each supervisor selects a tutor, usually a second or third-year university student. The Academy hires the tutor, who is both a summer research-assistant (free to the supervisor!) and also a teacher for the high school students. The tutors begin work in early May, learning the research project and preparing a curriculum with the supervisor and the Academy's Principal.

At the beginning of each summer, high-school students arrive from across Canada and are paired off with a tutor. This past summer the Whiteshell campus had six students from within Manitoba (Thompson, Winkler, Pinawa, Tyndall and Shilo) and another eight students from five other provinces (New Brunswick, Nova Scotia, Ontario, Saskatchewan and British Columbia).

The students spent six weeks learning about the project, working on the test apparatus, running experiments, analysing the results, and writing a non-technical summary and final report. Finally, they presented their results to their fellow students, the tutors, supervisors, Academy Board and staff, other researchers, family, friends and the public. Getting up in front of an audience can be the most difficult part.

We also provide evening lectures. This past summer we had talks on good laboratory procedures, report writing, presentation skills, modern mapping systems (Datalink Mapping Technologies), nuclear engineering (Canadian Nuclear Society), medical diagnostic research (National Research Council) and environmental monitoring QA (Manitoba Hydro). There were visits to Boeing and Air Canada, the Underground Research Laboratory and Manitoba Hydro's Seven Sisters dam.

The students receive two Manitoba high-school credits in science for their work, and a post-secondary credit in report-writing from Red River College.

Of course it's not all work. The students go hiking, canoeing, swimming, water skiing, and to Winnipeg for things like a Bombers' game or the Fringe Festival. And then there are the joys of residence life under the watchful eyes of the Academy's residence supervisors.

We are very grateful to the APEGM for its contribution to the Whiteshell Campus this past year. Perhaps some of you would like to join us as a research partner, or you know a young person who'd benefit from a summer of engineering and science. Please contact me at ***brownmj@aecl.ca***, or check out our program in more detail at ***www.granite.mb.ca/~drsa/*** ■

Will Manitoba Soon Be Facing a Shortage of Civil Engineers?

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program threatened with closure, it grew to where it was turning students away because enrolment limits were exceeded. Manitoba, of course, does not have oil-sands projects requiring large work forces but it does have industrial and government organizations that need civil engineers. Where will our next geotechnical consultants come from? Will we have enough civil engineers equipped to look after the next Red River Flood? Remember, even in 1997, civil engineers were called out of retirement to help the city and province with that year's memorable flood. And who will engineer the necessary modernization/upgrading of our infrastructure? For these and many other areas we need civil engineers and we need the best and brightest to stay here in Manitoba.

Because I can only write from a particular perspective, namely that of a grey-haired, long-in-the-tooth professor, the first step in addressing this issue is to determine if industry thinks the declining enrolment in civil engineering is really a problem. If we all agree that there is a problem, we can move to the next step of finding solutions. ■

Top 20 Engineering Achievements

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seemingly commonplace technologies can have a staggering impact on the economy of cities and worker productivity, while at the same time having a profound effect on the distribution and preservation of our food supply.

Even though some of the achievements, such as No. 2 and No. 9, were invented in the 19th century, they were included because their impact on society was felt during the 20th century.

1. Electrification – the vast networks of electricity that power the developed world.
2. Automobile – revolutionary-manufacturing practices made the automobile the world's major mode of transportation by making cars more reliable and affordable to the masses.
3. Airplane – flying made the world accessible, spurring globalization on a grand scale
4. Safe and Abundant Water – preventing the spread of disease, increasing life expectancy.
5. Electronics – vacuum tubes and, later, transistors that underlie nearly all modern life.
6. Radio and Television – dramatically changed the way the world receives information and entertainment.
7. Agricultural Mechanization – leading to a vastly larger, safer, less-costly food supply.
8. Computers – the heart of the numerous operations and systems that impact our lives.
9. Telephone – changed the way the world communicates personally and in business.
10. Air Conditioning and Refrigeration – beyond convenience, it extends the shelf-life of food and medicines, protects electronics, and plays an important role in health-care delivery.
11. Interstate Highways – 44,000 miles of U.S. highway allowing goods distribution and personal access.
12. Space Exploration – going to outer space vastly expanded humanity's horizons and introduced 60,000 new products on Earth.
13. Internet – a global communications and information system of unparalleled access.
14. Imaging technologies – revolutionized medical diagnostics.
15. Household Appliances – eliminated strenuous, laborious tasks, especially for women.
16. Health Technologies – mass production of antibiotics and artificial implants led to vast health improvements.
17. Petroleum and Gas Technologies – the fuels that energized the 20th century.
18. Laser and Fibre Optics – applications are wide and varied, including almost simultaneous worldwide communications, non-invasive surgery, and point-of-sale scanners.
19. Nuclear Technologies – from splitting the atom, we gained a new source of electric power.
20. High Performance Materials – higher quality, lighter, stronger, and more adaptable. ■

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