Publications Mail Agreement Number 40062980

THE KEYSTONE PROFESSIONAL

In This Issue:

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

DECEMBER 2005
www.apegm.mb.ca

Three Receive Honorary Life Membership Award

David Ennis

David Ennis, *B.Sc. (Civil) P.Eng.*

Dave Ennis comes from McCreary Manitoba, east of Riding Mountain National Park. Dave didn't enter university immediately after high school, instead, his first paying job was as a rodman with a Water Resources survey crew composed of engineering students. That experience must have influenced his subsequent career choice. After migrating to Winnipeg he worked as rodman with the Canadian National Railway before entering the Faculty of Engineering, University of Manitoba, from which he earned his degree in Civil Engineering in 1961.

After graduation he worked four years with the Bridge Division of Manitoba Highways under the tutelage of George DePauw and Walter Saltzberg, both of whom later became Presidents of APEM. During that period he was on-site engineer for three crossings of the Red River Floodway.

His next career move spanned 22 years, when he joined Macaw & McDonald Limited, a bridge construction and piling contractor with projects in Manitoba, Saskatchewan and Northwestern Ontario. While at Macaw & McDonald, and at the urging of George DePauw, he became involved with APEM, first on the Salary Committee, and then on the Practice and Ethics Committee. He served on the Practice and Ethics Committee for 12 years, with two as Chair, before joining the staff of APEM in 1987 as the Act Administration Officer.

His career with APEM/APEGM continued, and he become Executive Director & Registrar in 1990. As Executive Director Dave oversaw major developments of the Association, from typewriters in a cramped downtown Winnipeg office, to computers and the internet at a new location on Pembina Highway. He presided over another major change for APEM in 1998, when the Act was ammended to include geoscientists.

Dave will retire at the end of 2005. He often said cemeteries are full of indispensable people, but in reality his deep knowledge of association affairs and his dedication to the job will be hard to replace.

David E. Cross

David E. Cross, *B.Sc. (Mechanical), P.Eng.*

David Cross became registered with this Association on July 11, 1963, and has been a member continuously for 42 years.

Dave served as a member of Council from 1980 to 1984, and was President in 1983. He also served on the Nominating Committee for two years, the Consulting Engineers Committee for one year, the Admissions Review Board for two years, the Executive Finance Committee for three years the University Liaison Committee for one year, the Awards Committee for one year, the Bulletin Committee for three years, the Ad Hoc Committee on Act Enforcement for one year, the MAA/MOU Task Group for three years, the Safety Committee since 1988 (17 years), the Past President's Committee since 1998 (7 years), and the Investigation Committee since 1993 (13 years). This totals 58 Committee years of service. Dave received the Association's Outstanding Service Award in 1995.

Throughout his career in developing a successful consulting business, Dave has demonstrated an unwavering commitment to the engineering profession. His commitment and leadership has been a valuable resource to the Association and every Committee he has served on.

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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

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.

Publications Mail Agreement Number 40062980

New Members Registered August, September & October 2005

A.T. Abrera (ON)
G.D. Atamanchuk
K.M. Atamanchuk
K.W. Bannister (AB)
R.M.D. Barrette
A. Basic-Bilic
R.L. Baxter (ON)
J.I. Bergen
P.A.J. Bernardin
T. Bolt (NB)
M.W. Boonstra
R.A. Bracken
S.R. Brown (ON)
L. Bu
G.L. Bunio (AB)
D.R. Burgess (AB)
S.M. Burland Ross (ON)
M.T. Burns (ON)
J.E. Burson (TX)
T.A. Constantine (ON)
S.T. Cooper (ON)
S.R.J. Cournoyer
J.G. Dickin (AB)
T.A. Dixon
D.R. Donald
A.W. Duncan (ON)
J.R. Ferguson
N.J. Ferreira
R.E. Fitzpatrick
B.E. Fraser
C.J. Gentile (AB)
M.V. Gilhooly (AB)
O.R. Glendon (ON)
P.A. Hachkowski
M.W. Hagos
A.D. Harmsworth (BC)
B. Huang
M.W.M. Ibrahim
R.T. Johnson
C.L. Keller
M. Khan
G.D. Kowerko
M.J. Kroeker
K.K. Kumedan
M.W. Kumthekar
S.M. Langille (ON)
I.A. Maclean
I.J. Maharaj (ON)
M.M. Majcher
R.G. McGregor (ON)
F.V. McPhee
M.K. Montazeralghaem
A.D. Murray (ON)
G.V. Nagel (MN)
P.J. Oliver
R.P. Parikh (ON)
D.G. Patton (NS)
B.C. Piniuta
A.C. Pradhan
L.M. Sargent (IA)
E. See-Toh
S.C. Shairp
K.D. Shaw
K.K.T. Sim
J.L. Smaizys
W. Stachowski (AB)
B.K. Williams
T.J. Williams (ON)

Reinstatements August, September & October 2005

W.D. Latiff (AB)
R.F. Mazza (BC)
I. Neill (ON)

Members-in-Training Enrolled August, September & October 2005

S.M. Alminar
J.R. Baldwin
V.S. Beach
M. Brzezowski
H.M. Davidson
B.S. Ellis
Y.A. Fernandez
J.D. Fontaine
T.G. Froehlich
K. Han
C.W. Hanuschak
R.M. Hudon
P. Ionita
D.K. Isleifson
F. Jian
L.P. Kotyk
J.J. Lanoway
M.J. Lee
L.M. MacBride
R.J. Martin
A.J. Muzyczka
S.E. Nachtigall
G.A. Naigeboren
P.L.N. Nayar
Y.I. Nodarse-Soler
P.M. Oakley
S.V. Ott
R.B.T. Owen
P. Rafajlovic
M.M. Rahman
K.L. Robbins
D.E. Romero-Buitrago
B.P.D. Sellers
J.S.D.A. Stoezel
E.N. Tackie
X.H. Tan
S.S. Tanapat
B.S.B. Tang
G.T. Thouas
S.P. Walrond
K.J. Wilson
D.Yu

Certificates of Authorization

Alpine Environmental Ltd.
Beach Rocke Engineering Ltd.
Boulder Engineering LLC
Coley Water Resource and Environmental Consultants
Concentric Associates International Incorporated
Chorley & Bissett Ltd.
D.B.K. Engineering Ltd.
D.G. Patton Consulting Incorporated
Dessau Soprin
Eleven Engineering Business Trust
Epcor Water Services Inc.
Epp Siepman Engineering Inc.
First Nations Engineering Services Ltd.
GHL Consultants Ltd.
Hatch Acres Incorporated
Ionic Engineering Limited
J.L. Richards & Associates Ltd.
Jager Building Systems Inc.
Manuel Engineering Ltd.
Marshall Macklin Monaghan Limited
Martoni, Cyr & Associates Inc.
MTE Consultants Inc.
R.W. Tiller Structural Engineering Inc.
SNC Lavalin Pharma Inc.
Starco Engineering Ltd.
Varcon Inc.
Viking Fire Protection Inc.
XCG Consultants Ltd.

In Memoriam

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

Alexander B. Thornton-Trump

President's Message

D.S. Jayas, P.Eng.

First of all, I thank the membership for electing me to the Council and the Council for electing me as APEGM President. I am honoured and humbled by the privilege given to me to serve APEGM in this role. Your Council has been dealing with several issues of importance to the profession and is working hard to resolve these in the best interest of the public. In my first message, I am raising the issue of "off-shoring" that requires your input and, therefore, invite you to write or email me with your thoughts (jayas@cc.umanitoba.ca). The issue applies equally to both engineering and geoscience members.

APEGM is a regulatory body, and as per the Act, one of its purposes is to "govern and regulate the practices of professional engineering and professional geoscience in Manitoba." All other regulatory associations in Canada have similar functions. The issue that needs to be understood and discussed is "What is the role of a regulatory body in dealing with the issue of off-shoring?"

In its simplest form, the word "off-shoring" can be defined as the substitution of domestic labour by foreign labour. Initially, the idea was used by the software industry to provide technical assistance to customers by setting up "call-centres" in low-cost regions of the world such as India and China. There could be several reasons why this was done but one of the main motivations was probably the availability of highly qualified personnel at a considerably lower cost. Later on, it extended to technical service on a significant number of engineered products and recently to professional work such as accounting, architecture, engineering, geoscience etc. For professional work, an additional motivation is to speed up the completion time of a project by taking advantage of the time difference between Canada and the off-shore location and high-speed data transfer. For example, by having two teams, one working in Canada and the other in India, the project team in Canada can work while it is daytime here and transfers the work to the Indian team which continues the work in daytime there and then transfers work back to the Canadian team. Thus, work is done almost on a 24-hour basis without any of the teams burning out. The completed design work is then submitted to the client or the appropriate body for permits. Some companies have used "off-shoring" for expanding their business. Having design teams in two or more countries allows them to submit bids on projects in multiple countries and pool human resources from all offices to complete the projects.

The issue for APEGM or any other regulatory body is that if the project is to happen in its jurisdiction, then the person doing engineering or geoscience should be licenced in that jurisdiction except when the performance of professional engineering or geoscience work is done by a "natural person who is employed or engaged under the immediate and direct personal supervision and guidance of a professional engineer or professional geoscientist who assumes all responsibility for the work. The key phrases in the exception clause are "immediate and direct personal supervision and guidance" and "assumes all responsibility for the work." The question is that in the off-shoring situation, is immediate and direct personal supervision and guidance being provided? The person stamping and signing the drawings or documents is certainly assuming all responsibility for the work although it may be based on the review of the work not necessarily on the direct supervision of the work. Another question is, "Is the public of Manitoba well protected by off-shoring?" The answer is that it depends on the circumstances.

In a situation, where a small number of engineers or geoscientists in Canada are supervising a large number of engineers and geoscientists in an off-shore location and are taking responsibility for their work, the answer is "maybe." On the other hand if the teams are well integrated as described above the answer is probably "yes." In brief, there is a need for the regulatory bodies to develop guidelines to deal with the issue of off-shoring of professional work for the protection of the public in their jurisdiction and your feedback will assist APEGM in deciding the need for developing such guidelines. ■

IEEQ Can Connect You with Engineering Professionals

Do you have staff with non-Canadian engineering credentials (university degrees obtained overseas) that could benefit your company by becoming registered with APEGM? Consider the Internationally-Educated Engineers Qualification Pilot Program – IEEQ – a one-year program of university engineering courses and industry work experience that leads to Engineer-in-Training registration for immigrants with engineering backgrounds.

Are you looking for engineering talent? IEEQ can connect you with engineering professionals available for summer co-op terms as well as longer term or permanent contracts. This year, IEEQ program participants available for May 2006 employment include experienced professionals with backgrounds in electronics, electrical, mechanical, material science, and civil engineering.

A program unique to Manitoba, IEEQ is delivered by the Faculty of Engineering, University of Manitoba in partnership with APEGM and the Government of Manitoba. It provides a time-effective route for eligible internationally-educated engineers to obtain formal recognition of non-Canadian credentials. IEEQ also coaches participants in the cultural and business practices of engineering in Canada to facilitate full participation in the labour market.

For more information, visit http://ieeq.eng.umanitoba.ca, e-mail ieeq@UManitoba.ca, or call Marcia Friesen, P.Eng., IEEQ Director, at 474-7873. ■

Professional Development

The 2005 AGM Professional Development Conference

N.J. Kelly, P.Eng.

The approximately 75 people attending this year's Professional Development Conference were treated to a day of enthusiastic speakers and diverse topics. The morning session consisted of three "technical" topics: 'Future Hydro Development in Manitoba and Aboriginal Partnerships'; 'Cargo Airships for Northern Re-supply'; and 'Understanding the Behaviour of Sandbag Structures from the Inside Out.' The afternoon presentations on 'Developing an Engaged "Work-force",' 'Resolving Conflict with Confidence and Courtesy' and the 'Fundamentals of Media Relations' focused on human skills.

Ed Wojczynski of Manitoba Hydro opened the conference with his talk on 'Future Hydro Development in Manitoba and Aboriginal Partnerships.' Ed described the steps Hydro is taking to involve aboriginal groups in Hydro's new energy projects. One of the main themes was that of Aboriginal Partnerships. Aboriginal Partnerships are a new approach for Hydro and are intended to give the aboriginal communities most affected by the projects a greater role in them. Pre-project training is being emphasised so more community members can participate in the project by being employed during the construction phase. Contract opportunities exist for supplying work crews, building site facilities, and ongoing maintenance requirements. Aboriginal communities can also invest in and own a portion of the partnership. In general, Hydro is working hard to engage aboriginal peoples in its future growth.

Dr. Barry Prentice's talk on the use of 'Cargo Airships for Northern Re-supply' provided an interesting and insightful look at current airship technology while making a strong case for the use of airships to supply northern communities. Dr. Prentice, a professor at the UofM's I. H. Asper School of Business, is an enthusiastic promoter and believes that there is a great opportunity for Canadians to advance airship technology and use. Because more than 70% of Canada is without road access, air and sea transportation are limited by weather conditions, and limits are placed on cargo size due to the limitations of current cargo vessels, Dr. Prentice feels that the airship is not only a practical but potentially profitable alternative.

Winnipeggers have a long history with sandbags, and owe a lot to this unglamorous, low-tech device. The last talk of the morning therefore seemed almost ironically appropriate as Dr. James Blatz, Assistant Professor at the U of M's Civil Engineering department, presented the results of recent research in his talk on 'Understanding the Behaviour of Sandbag Structures from the Inside Out.' Dr. Blatz's work has identified several key factors in building a successful dike and created some novel techniques to measure movement and water flow within the structure. Based on his work, Winnipeg now builds leading edge structures and our "sandbag dams" may be very close to the limits of sandbag technology. The audience had many questions and ideas and judging from their response there is much more work for Dr. Blatz on this subject.

Following a great lunch, Deri Latimer, an HR Development consultant, opened the afternoon session with her energetic presentation of 'Developing an Engaged "Work-Force".' Deri presented ideas on how to energise and engage a work force with concepts of: "energy stewardship"; of establishing the values and vision of corporate culture as something people live instead of talk about; and of "personal beliefs of excellence." Deri's talk covered a lot of material and her own energy certainly came through.

Conflict is one of the negative energy activities we all face. Karen Mallet, co-founder of *In Good Company* (the etiquette ladies), spoke on 'Resolving Conflict with Confidence and Courtesy' describing courteous ways of handling various types of office conflict. Conflict resolution is not about winning or losing. It's about finding a common ground everyone can be comfortable with. Mostly, it's an inside job: It's up to you to know yourself, learn how to control yourself, learn some manners and learn to have respect in dealing with others.

Roger Matas, a Media Relations consultant, gave the last presentation of the day. Roger's talk on the 'Fundamentals of Media Relations' examined both getting the attention of the media and handling media interviews. He described the competition that exists for media attention, the perspective of the media, and about how to present your material in a way the media could relate to and use. In discussing what to do when the media calls, Roger stressed finding out who you are talking to, what kind of interview they want to conduct and any other information you can. Then take some time to be fully prepared for the interview, if you decide to grant it, and if you are not experienced with the media get help from someone who is. Always remember that anything you say to the media can and will be used.

Thanks to the Professional Development Committee and all of the volunteers, speakers and attendees who made the conference a resounding success. ■

Dear Dave,

I hope the Publication Committee will be able to find room in a future issue for this letter, a "hail and farewell" message from me.

The twenty years since my retirement have given me opportunities to reflect on my almost 30 years with APEM.

In retrospect, I have much for which to be grateful. While I enjoyed the work, which was varied and challenging, the best memories involve people, the members who have left me with lasting recollections of what they put into my life. I was paid for my efforts, and I was always impressed at the quality and quantity of the service rendered by volunteer members. I do want to acknowledge with sincere gratitude those who made my job easier, and enjoyable.

I can't begin to identify special individuals, with one exception – Fred Jost, a tower of strength on committees and Council, and a genuine friend. When I lost Donald, Fred and Toni Jost were comforting and supportive. I was invited often to their home for dinner – from that sad time in 1972 until I left Winnipeg in 1985. They have come to see me in Victoria several times, and we visit on the telephone regularly.

I am also grateful to the others who invited me to their homes for dinner with their young families. My thanks, too, to the Past President who lured me into the computer world. While I never progressed to being "on-line" I did have two computers, and enjoyed them. Unfortunately, my health does not now permit computer operation.

I also want to acknowledge, with sincere gratitude, the Christmas messages I have continued to receive, long past my ability to reciprocate. It has been very heart-warming to be remembered and kept current on your family news.

Dave, I wish you well on your retirement, particularly good health. One piece of advice – take care of all the outstanding items on your personal agenda before you retire, because my experience was that in retirement there is not enough time, one is just too busy. The first ten of my twenty years were very active. But…arthritis struck my right hip. Unfortunately, I had hip replacement surgery after Paul Martin decided to go for balanced budgets by ravaging the health care system. My 6-day hospital stay expanded to 8 weeks. I did not get pregnant or prostate cancer, but I did get a raft of ailments, some of which I had never heard of before, and some of which are chronic. I graduated from a cane to a walker.

I am still in my own home – the health authorities will do what they can to keep me here – they do not have any space elsewhere. I have adequate help coming in, including the person doing this typing for me. I am in bed most of the time, and have not been out of my unit for 15 months – except for a return trip to hospital, by ambulance, for tests. There is a lot of rigmarole involved but I do get to vote at election time – the ballot comes to me.

Several months ago, good fortune came my way – once again, via a professional engineer – former Manitobans Kees and Marijke Vogel bought the condominium above me. They have been extremely generous and supportive. They are there for me in spades. I have a "Lifeline" so if I should fall in the middle of the night I have only to push a button on a cord around my neck. The Lifeline will contact Kees to come and help me up, call an ambulance, or whatever. Fortunately (for Kees) if has not happened – yet.

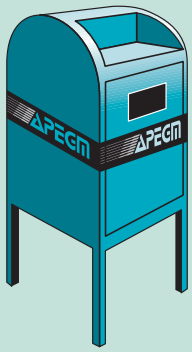
Also on the plus side, Kees' talents were soon recognized; he was put on the Condominium Council, and elected President. A recent article on condominium living appeared in the *National Post,* pointing out the problems, and stating that one "jerk" in a building could render it dysfunctional. We probably have two jerks, and Kees seems to have found the way to handle them. Some owners (including me) would nominate him for sainthood. Certainly Kees and Marijke are a huge comfort to me – it seems fortuitous that a professional engineer with a super wife should be here in my life at age 84.

Dave, one role you won't be eligible for in your retirement – you are white, male, a westerner, a non-immigrant, with no experience at CBC – so the role of Governor-General is out. But do enjoy your retirement, and take care of your hips.

And my thanks to so many members for having enriched my life. I used to come away from Bulletin Committee meetings marvelling that I was paid to have such an enjoyable time.

— Affectionately, Loreen Dunklee

Letter to the Editor



Salary Survey

W.H. Brant, P.Eng.

Good morning. I reviewed the salary survey and found it very interesting. In particular, I was amazed by the various comments and suggestions made by our membership.

Three things stood out. First, a number of members were dissatisfied with their compensation, perceived that the profession lacked appropriate status and connected that lack of status with their remuneration.

Second, a number of members seem to believe that APEGM is responsible for advancing the self interest of the profession, and that it should be doing more to increase engineers' remuneration. This is troubling in that once again, there is clear evidence that our members do not understand the mandate of APEGM, which is primarily related to protection of the public and regulation of the profession.

Third, most of the responses had errors in spelling, grammar and syntax.

This interests me, because I believe it reflects poorly on many of our members. It may explain in part why the profession is not necessarily held in high esteem by society in general. Perhaps when the public listens to us or reads our written words, we come across only too well as inarticulate and less than intelligent, possibly even lazy, as demonstrated by the apparent reluctance to use Spell Check.

One cannot demand respect, one must earn it. It appears to me that as a profession, we have a long way to go. It seems pointless to try to improve the image of the profession when a significant number of its practitioners do not seem to subscribe to a high standard of communication. In the end, communication is the vehicle by which image improvement must be implemented.

I was at one time a member of the Public Relations/ Awareness/Image Committee, but was drawn away by active involvement on the Boards and Executive Committees of several technical associations. Perhaps it is time that I look for a way to participate again in APEGM activities. ■

Notice

Payment of 2006 Fees & Membership Renewals

Annual dues invoices have been mailed to all members and members-in-training. If you have not received yours please contact the APEGM office. Please submit the completed forms with payment by December 31, 2005. Please note that the Declaration of Compliance must be signed annually.

Professional Development

Successful Salary Negotiation – Are You Ready?

by Ms.Yvonne Thompson

Reported by N.Kelly, P.Eng.

Approximately 35 people attended the professional development presentation on salary negotiation on September 29, 2005. The presentation was delivered by Ms. Yvonne Thompson, of Change Innovators Inc.

Ms. Thompson has worked in the Human Resource (HR) field for the past 15 years, as an employee and an employer. During that time she has seen a shift in the employer-employee dynamic. Driven largely by a shortage of skilled workers, companies need to be more creative and attentive to their strategies in order to recruit and retain staff.

This situation puts the employee, or candidate for employment, in a greater position of control than they may otherwise have been in the past. The result is that candidates who do get the opportunity for an interview have a better chance at getting the position, thus identifying a need to change the way they approach the interview process.

Some of Ms. Thompson's tips include:

- Never reveal salary expectations. If you are forced into making a statement, always provide a range.
- It is important to ask questions. One of the most revealing can be "What would be my first challenge/assignment?"
- If you are unemployed, keep that knowledge to yourself. It is never good to appear desperate or needy.
- Always appear alert and interested. Introverts need to make special effort as they are not as naturally "engaging" as extroverts. While a skilled interviewer may recognise an introverted personality type, it is uncommon to encounter skilled interviewers and it is up to the candidate to bridge that gap.
- Be "practiced" so that you can respond well.
- Never accept an offer over the phone and don't be afraid to counter with a higher amount. Most companies have a 10-15% window to work with and a counter that is somewhere in the middle will often be accepted.

Ms. Thompson responded to numerous questions from the audience. A question of negotiating salary when promoted led to a general discussion of employee performance reviews and the general trend toward continuous evaluation systems replacing more traditional periodic evaluations. Ms. Thompson pointed out that finding out what the evaluation and salary progression systems are during the interview process will allow you to make a more informed decision about the opportunity.

In closing Ms. Thompson moved briefly from the topic of salary negotiation to the topic of workplace health. She reminded attendees that consideration of the Workplace Health and Safety regulations must be a part of any building design process. Too often her company sees delayed projects and upset clients simply because the Health and Safety regulations were not considered along with all other construction codes during the design. ■

The New Downtown Manitoba Hydro Building

by T. W. Gouldsborough, P.Eng.

Reported by A.J. Kempan, P.Eng. (Ret.)

Words like "state of the art" and "hi-tech" are often so overused they tend to lose their meaning. The Manitoba Hydro office building, under construction in downtown Winnipeg, restores one's faith in those words. This is what members learned while attending the October 11, 2005 professional development meeting at the Holiday Inn South on Pembina Highway.

Mr. Tom Gouldsborough, P. Eng., was host to the noontime gathering of approximately 65 members and guests. Tom is a graduate of the University of Manitoba, and Division Manager of Corporate Planning & Business Development at Manitoba Hydro. Tom took the crowd through the design rationale and the detailed planning that went into the project.

When Manitoba Hydro bought Winnipeg Hydro, one of the purchase conditions was for Manitoba Hydro to build new offices in downtown Winnipeg. Presently Hydro has numerous sites, many of them along Waverley Street, along with the well-known headquarters building at 820 Taylor Avenue. The new headquarters would consolidate most of the workforce and make a bold statement. The new complex would be highly energy-efficient, provide a healthy and productive work environment, and at the same time would not increase consumer energy costs.

From the outset the design process for this project was unique. In a conventional design, a basic building is conceived and then the "add-ons" are incorporated: energy-efficiency, comfort, sustainability. The Hydro project started with these principles and designed from there. Early on the designers determined that worker productivity was dependent upon several factors; air quality, daylight, thermal comfort. As a result, the new building would have individual ventilation controls, above average sunlight, and radiant ceiling-mounted heating and cooling. The workspace would be flexible and highly reconfigurable for future office environments.

After sixteen design iterations Hydro and their consultants had the plan finalized. The building has two towers, east and west, bisected by a central, six-storey high, south-facing atrium which plays a major role in capturing solar energy. The back of the building, on the north side, has a massive "solar chimney" which provides for natural convective air movement in the building. Under the building are 280 boreholes reaching down 400 feet into a slow moving aquifer. In the summer the building is cooled by transferring heat into the aquifer, and in winter heat is pumped back into the building. To make the process sustainable, the inflow and outflow of aquifer heat is balanced over the seasons. The designers expect a 60% reduction in energy consumption for a building of this type. Since the design is unique finding an energy consumption baseline can be difficult.

After the presentation the audience directed several thoughtful questions at Mr. Gouldsborough. Since the building has so much open space, resembling open stairwells found in older buildings, what was being done about fire safety? That was an on-going issue and one the designers were still working on. What was the relative cost per square foot for this building versus a more conventional building? The Hydro design was more costly, but over a period of 15-18 years it would pay for itself and then actually save money.

N.B. For a detailed view of the building and its unique features visit the Manitoba Hydro website at www.hydro.mb.ca/. See the building go up on the construction cam. ■

Professional Development

Update on Red River Floodway Expansion

by D. McNeil, M.Eng., P.Eng.

Reported by N. Soonawala, Ph.D., P.Geo.

The Red River Floodway is being expanded so that it can protect the Winnipeg area from floods in severity of up to that of a 1-in-700-year flood. This $665-million project will see twenty-one million cubic metres of material excavated to raise the flow capacity from 1700 to 4000 cubic metres per second. Structures and utility crossings along the Floodway will need modification, including the replacement of 7 bridges and modification to 5 others. Under the leadership of the Manitoba Floodway Authority (MFA), there will be contributions from numerous contractors and consultants, the University of Manitoba, the public and the three levels of government. A comprehensive environmental assessment has been successfully completed.

We thank Doug McNeil, M.Eng., P.Eng., Vice-President Hydraulics at the MFA, for briefing APEGM members on the above developments in a comprehensive Professional Development presentation at a luncheon meeting at the Holiday Inn South, Winnipeg on September 21, 2005. McNeil has devoted a good part of his career to combating floods, including taking a lead role during the flood of 1997. This presentation was a follow-up to another by McNeil at an APEGM Professional Development luncheon in February 2004.

The Floodway in its present configuration provides protection for floods in severity of up to 1-in-100-years, such as the flood of 1997. According to some, Winnipeg was only a basin-wide rainstorm away from disaster during that flood. With only the present Floodway for protection, it is estimated that a 1-in-700-years flood would cause economic damage in excess of $12 billion, in addition to severe environmental degradation. The expanded Floodway will protect about half a million people in Winnipeg, East St. Paul and West St. Paul, 140,000 homes and 8000 businesses. And a mega project of this magnitude always gives a boost to the provincial economy.

The pre-design data collection for the Floodway expansion commenced in early 2003 and the detailed design, still in process, started in late 2004. The components of the expansion project relate to: Floodway channel expansion; inlet control structure upgrading; replacement of the outlet structure; channel crossings (such as railroad, road bridges and utility lines); and the raising and extension of the West Dyke. In order to protect groundwater, the channel will not be deepened but only widened.

As would be expected, a host of consulting firms and governments at all three levels have contributed to the project, but also noteworthy is the research at the University of Manitoba directed specifically at problems related to the Floodway expansion.

Numerous engineering and scientific disciplines and sub-disciplines have been consulted for the Floodway expansion, including some "traditionally non-engineering" disciplines from the biological and environmental sciences. Some of the engineering activities for the project include: channel design, river analyses, ice process analyses; dam safety analyses; energy dissipation improvements at the outlet structure; groundwater modelling; slope stability analyses; replacement and retrofit of gates and bridges; road and railway safety improvements; and electrical and mechanical controls and power supplies for gates and hydraulic systems.

Before the project could commence, approval was required under the Canada – Manitoba Agreement on Environmental Assessment Cooperation. The MFA's environmental case was presented in an Environmental Impact Statement (EIS). In addition to scientific and engineering information, the EIS also required public input consisting of four rounds of consultations, 20 community meetings and information sessions and distribution of 100,000 newsletters. The EIS was submitted in August 2004 with supplementary information submitted in November 2004. The environmental assessment process came to a successful conclusion on July 8, 2005 when the MFA received the approval of the federal government and a licence from the provincial government.

The MFA is following a five-year schedule for the awarding of contracts. Contracts awarded to date include those related to: the Grande Pointe Embankment Gap; highway bridge girders; highway detour barriers; gas mains; and detour of Highway 59 south. Contracts bid upon but not yet awarded include: the Highway 59 south bridge; Trans-Canada highway east bridge; excavation for channel widening; and utility crossings. Near future contracts will involve the CNR Sprague railroad bridge and temporary steel girders for railway detours.

Doug McNeil made this presentation while the drowning of New Orleans was very much in the news. So, it was comforting for the Winnipeg audience to hear that serious work is being done to protect their city from an unforeseen hit by Mother Nature. The mobilization of talent, skills and resources for the Floodway expansion project is truly impressive, and Doug gave us an authoritative overview of the whole effort. ■

Canadian Engineering Memorial Foundation Announces Scholarship Award Winners

The five recipients of the Undergraduate Scholarship (valued at $5,000 each), are: Zoë Sarrat-Cave of Vancouver, British Columbia (University of British Columbia), Cynthia Ené of Montreal, Quebec (McGill University), Andrea Evans of Ottawa, Ontario (Queen's University), Johanna Hoyt of Stillwater Lake, Nova Scotia (Dalhousie University) and Annalisa Wilson of Lantzville, British Columbia (University of Alberta).

The Claudette MacKay-Lassonde Graduate Scholarship (valued at $15,000) has been awarded to Christina Catley of Ottawa, Ontario. Ms. Catley is completing her Ph.D. at Carleton University, specializing in biomedical engineering. Christina actively promotes the participation of young women in engineering in her role as President of the Ottawa-Carleton Chapter of Women in Science and Engineering.

CEMF honours the memory of the 14 women from École Polytechnique whose contributions to Canada ended so tragically and prematurely on December 6, 1989.

The Foundation is committed to creating a world where engineering meets the needs and challenges of society by engaging the skills and talents of both women and men alike. To that end, CEMF is dedicated to attract women to the engineering profession so they may contribute in a truly inclusive manner.

CEMF partners with other organizations that help promote the study of mathematics and sciences to young women – recognizing that a strong foundation in these subjects is the prerequisite for entering the engineering field. ■

Council Reports

Thursday, September 22, 2005

J.Q. Menec, P.Eng.

SCOPE OF PRACTICE OF ARCHITECTS AND PROFESSIONAL ENGINEERS

The fall Council meeting of 2005 was held at the APEGM office on September 22 and was promptly called to order at 9:05 a.m. Following the adoption of a modified agenda and approval of the previous Council minutes, the meeting eventually turned to an important issue regarding the interrelationship between the scope of practice of architects and professional engineers in the Province of Manitoba.

A judgment by the Court of Queen's Bench of Manitoba was delivered on September 16, 2005, granting the Manitoba Association of Architects (MAA) injunctive relief against the City of Winnipeg for its interpretation of the *Winnipeg Building By-law, No. 4555/87* (the *Building By-law*). The MAA's position of the City's misinterpretation of ***The Architects Act***, whereby the City has been issuing building and occupancy permits on the basis of drawings prepared, signed and sealed by professional engineers and resulting in the City permitting engineers to practice outside the scope of their profession contrary to ***The Architects Act***, was affirmed through this ruling.

Guests to discuss this issue at the meeting included Mr. Robert A. Dewar, Q.C., APEGM's legal counsel in the hearing, and MaryAnn Mihychuk, M.Sc., P.Geo. and former MLA. The central issue discussed lay in the interpretation given to the practice of architecture and professional engineering as defined by governing legislation. Whereas ***The Engineering and Geoscientific Professions Ac***t, updated in 1998, has an exemption for individuals *"…registered, licensed or certified under or has otherwise acquired rights pursuant to any enactment of Manitoba or Canada which licenses, governs or regulates the practice of a profession…"* such as architects practicing under ***The Architects Act, The Architects Act*** does not contain a similar exemption in respect of defined practices of other legislated professions.

The judgment was a strict interpretation of ***The Architects Act***, which only permits limited work by non-members for "architectural work in connection with the erection, construction, enlargement, or alteration of, (a) a building that does not exceed 400 square metres in area or three storeys in height and that is used or intended to be used for residential, business or personal services, … (b) any building outside a city or town, used or to be used for a private dwelling, or for farm purposes, or for outbuildings or auxiliary buildings in connection therewith; or (c) any grain elevator or grain warehouse." Whereas the City of Winnipeg's *Building By-law* incorporating *The Manitoba Building Code* (an adaptation of *The National Building Code of Canada 1995*) permits *"plans, drawings and related documents…signed and sealed by an architect or professional engineer…"*, it is a regulation, not an Act, and is subordinate to ***The Architects Act & The Engineering and Geoscientific Professions Act*** and cannot be used to expand or limit the scope of professional regulation.

The impact of this ruling is that where there is an overlap between the two professions, such as with the construction of buildings, only architects are permitted to carry out the work. The tasks that an architect can perform and extent of involvement within this overlap is yet to be determined ("architecture" itself is not defined), but according to the interpretation made with the September 16 judgment, an architect is required for any *"planning or supervision for others of the erection, enlargement, or alteration of buildings"* engaged for *"hire, gain, or hope of reward"* as defined in ***The Architects Act.***

APEGM council's belief is that this interpretation is incorrect and that the courts should adopt a position fostering competition, militating against a monopoly whereby architects are in an advantaged position of leveraging their participation requirements and limiting the defined scope of practice of professional engineers.

While ***The Engineering and Geoscientific Professions Act*** contains the exemption in respect of other enacted professions, this exemption should not translate into the notion that professional engineers cannot perform such work. Agreement was made that a basis for appeal on the specifics of this case is present and should be pursued. It was also acknowledged that this judgment is not conducive to a negotiated solution by the Joint Board established between MAA and APEGM. While encouragement to seek such a solution was expressed, legislative amendment would be required to sanction it.

Council expressed the need to prepare for worst case and that a prudent course of action would be to seek appeal of the injunction and seek legislative change towards similar exemption within ***The Architects Act***. Mihychuk Consulting led the group through the legislative amendment process and was subsequently retained to assist APEGM in this effort.

Council reviewed a number of other items, some in-camera. The outgoing councilors thanked the group for the privilege of working with such dedicated individuals. APEGM President Allan Silk, in turn, concluded with a corresponding thank you for working with such a great Council, one that effectively got to the many issues, talked through them, and resolved them. Meeting adjourned at 2:55 p.m. ■

Provincial Engineering & Geoscience Week (PEGW)

The Planning Committee has been busy organizing events for the upcoming 2006 Provincial Engineering & Geoscience Week! Come join us at St. Vital Centre, March 3 - 5, for the following events:

- Celebrity Competition
- Spaghetti Bridge Competition
- Special Imax Presentation
- Children's Activities
- PENGEO Activity Book
- Entertainment

For more information please see our website: www.apegm.mb.ca

See you there!

THOUGHTS ON

Design

...is it a right or a responsibility?

M.G.(Ron) Britton, P.Eng.

The Court of Queen's Bench ruling on September 16, 2005, regarding the Manitoba Association of Architects' challenge to the manner in which the City of Winnipeg was interpreting the Building Code has certainly focused attention on the implications of legislation regarding professions. What began as a dispute involving those in the building industry has grown to a debate centered on the right to professional self-regulation.

As I understand it, the judge's decision was based on a question of which legal document, the Architects Act, the Engineering and Geoscientific Professions Act, or the Winnipeg Building Bylaw, took precedence. The only conclusion one can draw from the decision is that the Architects Act, which has no exemption provision, prevails over the Engineering and Geoscientific Professions Act, which has an exemption clause. In other words, as far as the building industry is concerned, Architects determine what Engineers can do. This is the issue that moved the disagreement into the self-regulation arena.

And how does a self-regulation dispute relate to design? Isn't design what Engineers do for a living? Isn't it what Architects do for a living?

Often, when I am attempting to clarify my thinking about a situation, I dig out the dictionary to see if it contains useful clues. One of the definitions I found for "design" (noun) is "*the art or action of producing a plan or drawing to show the look and function or workings of something before it is built or made*". Ok, so that defines the end product, but what about the act of designing? In this case "design" (verb) had two useful definitions, *"conceive and produce a design for" and "plan or intend for a purpose"*.

Nothing in these definitions casts any light on either rights or responsibilities. They simply define an end product and a process. Left to these definitions, one could conclude that anyone has the right to design. But then the legal system sets in.

In Canada, professions are regulated under provincial legislation. The Acts define the profession in question together with the constraints under which they can practice. Typically, and certainly here in Manitoba, administration of these Acts is assigned to those who are licensed under the Acts. So, while we may think of an Act as ours, it is in fact, an Act on behalf of the people of Manitoba. We, the practitioners, are permitted the privilege of self-regulation because it is assumed that we know more about our respective professions than those outside of our domain. Again, typically, professional Acts contain exclusion clauses that allow professionals to practice under their own Act, even though there may be "gray areas" of jurisdiction. This acknowledges the difficulty in drawing distinctions with respect to similar competencies that can, and do, exist in both professions.

Each profession has been granted the "right" to "define its turf" and that "right" is matched by the "responsibility" to assure that their members work within the constraints imposed by that definition. The Engineering and Geoscientific Professions Act requires us to

govern and regulate the practice of professional engineering and professional geoscience in Manitoba; promote and increase by all lawful means and in the public interest, the knowledge, skill and competency of its members and students in all things relating to the professions of engineering and geoscience; and advocate where the public interest is at risk.

Further, it defines the "practice of professional engineering" as

. . . any act of planning, designing, composing, measuring, evaluating, inspecting, advising, reporting, directing or supervising, or managing any of the foregoing that requires the application of engineering principles and that concerns the safeguarding of life, health, property, economic interests, the public interest or the environment.

About the only "right" associated with this is the "right" to self-regulation. That, in turn, places the "responsibility" on engineers to conduct themselves in a manner that will protect the public interest in any and all things associated with engineering. In addition, engineers bear the "responsibility" to pay for the process of self-regulation.

So, if design is what engineers do, and if engineering design is conducted under the Engineering and Geoscientific Professions Act, the reality is that design is a "responsibility". And if, under that same Act, engineers are given the "right" to self-regulation, it seems logical to conclude that they also have the "right" to define what constitutes the profession of engineering. At the moment, in the buildings area, that does not seem to be the case. ■

Call for Nominations

CCPE is seeking nominations for the following eight awards. The deadline for nominations is **4:00p.m. EST., Friday, January 13, 2006.**

1. The **Gold Medal Award** for exceptional individual achievement and distinction in a field of engineering;
2. The **Young Engineer Achievement Award** for outstanding contribution in a field of engineering by an engineer 35 years of age or younger;
3. The **Meritorious Service Award for Professional Service** for outstanding contribution to a professional, consulting or technical engineering association or society in Canada;
4. The **Meritorious Service Award for Community Service** for an exemplary voluntary contribution to a community organization or humanitarian endeavour;
5. The **Medal for Distinction in Engineering Education** for exemplary contribution to engineering teaching at a Canadian university;
6. The **National Award for Engineering Achievement** for outstanding engineering projects or achievements by an engineering team in which Canadian engineers were involved;
7. The **Award for the Support of Women in the Engineering Profession** for outstanding support of women in the engineering profession and engineering excellence; and
8. The **Gold Medal Student Award** for outstanding leadership, contributions to society, and volunteerism by an undergraduate engineering student.

Information and the terms of reference for the eight Canadian Engineers' Awards, as well as nomination forms, are posted on CCPE's website at www.ccpe.ca. ■

Engineering Endowment Fund

By: J.B. Martino, P.Eng., Chair Engineering Endowment Fund Advisory Committee

The Engineering Endowment Fund (EEF) for the Faculty of Engineering at the University of Manitoba was begun in 1989. Since that time the money in the fund has grown to over $2.8 million dollars and is growing each year through generous donations from alumni, corporations, staff and students. This year the students voted to renew their support of the EEF at $100 per student per year, on top of the $75 they each give to the new Engineering and Information Technology Complex (EITC) building fund. Ryan Supeene, this year's senior stick for engineering states "The strong voter turnout in favor of continued contribution to the endowment fund shows that money is directly affecting students and that they believe in the EITC Project."

The EEF was created to provide support for initiatives and projects that promote excellence in education, research and public service in the Faculty of Engineering. The Engineering Endowment Fund Advisory Committee (EEFAC) is a standing committee of the Engineering Faculty Council and was established to recommend policy, develop guidelines for the management of the EEF for reviewing applications for financial support from the Fund, and provide recommendations on the funding of those applications. The funding for applications is derived from interest generated from the EEF; the capital donated to the fund remains invested in the fund. The fund is professionally managed and the Dean's Office informs the EEFAC of the available funds each year. Over one million dollars in funding has been awarded to date.

The Dean of Engineering disburses funds available from the EEF after receiving recommendations from the EEFAC. The committee membership includes four engineering academic staff members, one engineering support staff, four undergraduate students, one engineering graduate student, three engineering alumni (one of whom serves as chair/administrator) and an administrative secretary from the Dean's Office to manage EEFAC business. The EEFAC application process is web-based. This year the web page is being rebuilt to include new information on recent projects and to improve the application process.

Until recently, the funds were only distributed through the annual competition or by special request. The annual competition is held each fall. Applications typically include student projects, laboratory and facilities improvements, and outreach projects. Special requests have included large items like the $52,000 to the Electrical and Computing Apple Computer Laboratory in 2003, which was required to meet accreditation requirements or for smaller projects that come up during the year.

Such large special requests to the fund show that the need for improvements to teaching laboratories at the University has become critical. So, in cooperation with the Dean and department heads, a critical laboratory needs list was developed this year for all areas of the faculty. This list will be updated annually. It is important to note that the competition is still the primary funding method with funds are primarily distributed via the competition results, with only those funds remaining after the competition going towards meeting needs identified in the list.

This year $103,975 was awarded based on needs identified by the department heads and dean with input from students and staff members. Dean of Engineering, Doug Ruth, states "In this period of financial constraint across the University, endowment awards are often the only way to address equipment shortages in our laboratories". While all departments were identified as having strong needs for laboratory improvements, Mechanical and Manufacturing Engineering has decreased from 10 laboratory teaching experiments to four. This year the EEFAC allocated $80,000 towards the purchase of a new gasoline engine test unit to begin to address the problem. The Department of Mechanical and Manufacturing Engineering identified a very strong need for an internal combustion engines lab. The operation of an engines lab ceased several years ago due to the 20+ year old equipment becoming obsolete. It is the intent of the department to reintroduce an internal combustion engines lab through support received from the EEF. The quoted price for a [gasoline engine] test facility is about $110,000. It is anticipated that the $80,000 received from the EEF will be supplemented from funds generated from industry and faculty. "A 420 sq. ft. lab space has been allocated in the new engineering complex to establish this lab", says Dr. Balakrishnan, outgoing department head. Other departments received smaller amounts, for other teaching tools. Depending on availability of funds after competitions, the concept of awarding to assist with purchasing a large item will be rotated through the departments. Obviously, the road to restoring the full hands-on capability of the laboratories will take some time but the EEF is making a strong start.

The competition in the fall of 2004 awarded a total of $92,288 which was distributed to 24 applicants. Among the recipients were many student groups, principally for competition projects, but also for computers and other equipment. The competitions not only give students practical application of their classroom knowledge, but also provide project management experience. The

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Proposed Changes Would Clarify Roles of Architects and Engineers

Manitoba Government News Release

Labour and Immigration Minister Nancy Allan announced proposed changes to the Manitoba Building Code and to the architects and engineers acts that would clarify the roles of the two professions.

"We view engineering and architecture as equal and valued professions and respect the work that each of them do," said Allan. "Our government has worked towards introducing changes that are practical and in the public interest. We want to ensure that projects can continue in a safe manner, without any unnecessary construction costs or delays."

Proposed changes include: Amending the Manitoba Building Code to:

- clarify which buildings must be planned by architects and those which may be done by architects or engineers.

For example, industrial buildings, farm buildings, arenas with fixed seating capacity of less than 1,000 people and residential, office or retail buildings less than 600 square metres (approximately 6,458 square feet) would not require an architect.

Residential and office buildings and retail outlets over 600 square metres would require an architect, as would hospitals, prisons and places where people gather such as churches, libraries, community centres or restaurants.

Amending the architects act to:

- permit non-architects to plan certain buildings as determined by the Manitoba Building Code,
- permit firms to employ architects and offer both architectural and engineering services, and
- allow for the grandfathering of professional engineers currently planning certain buildings that would be restricted to architects.

Amending both the architects and engineers acts to:

- require the Joint Architect-Engineer Board to deal with disputes in a timely manner and make joint recommendations of the board binding on both professions.

The proposed changes would deal with the backlog and allow building permits that have been held up as a result of the recent court decision to move forward.

"We do not want the recent court ruling to bog down Manitoba's impressive construction boom," said Allan. "We have consulted with the two professions as well as construction industries and municipal governments and have introduced a workable solution that is in the best interest of the public." ■

Book Reviews

Book Review by B. Collins, Q.C.(Can). P.Geo. (APEGS) CCPG President

Proud Heritage: People and Progress in Early Canadian Geoscience; Edited by R.W. Macqueen

Geological Association of Canada, St. John's, NL; hardcover, 217 pages, $38.60.

"I have dined with lords and ladies, chatted with Queen Victoria, and been formally received by the Emperor Napoleon, yet my most cherished memories come not from the fine salons of Europe, but from a leaky tent, a bark canoe, my rockhammer, compass and theodolite, and the vast and mysterious wilderness of Canada."

You have just read one of the best opening paragraphs ever written in the English language.

The extraordinary man who wrote it was Sir William Logan (1799 1875), the founding Director of the Geological Survey of Canada. This book contains three papers about Logan. One looks into how he became a world famous geologist without benefit of formal training in geology. Another tells how he wrote the first history of the Survey in 1850. The third is about "Logan's Line", a structural dislocation in the St. Lawrence River valley which he properly interpreted when critics said he was all wrong and should "turn in his hammer."

Logan is a giant figure in our past. A Maclean's Magazine poll placed him as the most important scientist in Canada's history. The highest peak in Canada, Mount Logan, is named after him. A government proposal to rename it "Mount Trudeau" was defeated by public outrage.

The declared objective of this book is "to give the work of some of these early geologists and geological observers more of the recognition that it richly deserves, and to remind the present generation of an earlier generation of geologists, many now almost forgotten." In truth, any geoscientist who reads the book will be left with a much greater sense of professional pride. With typical Canadian modesty few of us realize we are standing on the shoulders of many great men, of whom Logan is only one.

Thomas Sterry Hunt (1826 1892), Canada's first geochemist, laid the foundations of chemistry in this country. Among other things he invented and patented the green ink used to print bank notes in Canada and the United States. His paper on the Chemistry of the Earth, in the Smithsonian Report for 1869, "ranks with the great classics of the geological sciences." He is said to have been 100 years before his time. A colleague paid tribute to him by saying that the fundamental ideas on the origin of the crust of the earth are "only known to God and Dr. Sterry Hunt." He was "one of the greatest geochemists and mineralogists of all time."

Elkanah Billings (1820 1876) was Canada's first paleontologist. Over the course of his career "he erected sixty one new genera and one thousand and sixty five new species." Like Logan he was "an entirely self taught man."

Frank Dawson Adams (1859 1942) was the founder of modern structural geology. He "recognized full well that theory and experiment must always reckon with the facts of nature, a fact that no geologist should ever forget."

The Greats are not all in the distant past. This book is dedicated to the memory of University of Saskatchewan Professor Bill Sarjeant (1935 2002), whose five volume Geologists and the History of Geology is an essential reference for anyone taking a serious interest in the history of geology.

It "can be said, without exaggeration, that it did for the history of geology what the Oxford Dictionary did for the English language."

The meat of the book is its collection of "celebratory" biographies of geoscientists, but there is more. There is a Timetable of Canadian Geology which begins in 7000 BC, with Quartzite mining on Manitoulin Island in Ontario, and ends in 1965 when Professor Tuzo Wilson published his paper on plate tectonics, beginning a new era in earth science. The Timetable and the abundance of bibliographic references make the book a good roadmap for extended study of the history of Canadian geoscience.

All of which brings us back to the matter of why one should read this book. The history of geoscience, in the sense of learning about the lives of its leading characters, is mentioned in university courses only incidentally, if at all. Most of us have a bit of an educational gap which could use filling. This book is an excellent place to begin doing so.

Whisky on the Rocks; Origins of the "Water of Life"; by Stephen & Julie Cribb

Keyworth, Nottingham, U.K; British Geological Survey, 1998; 72 pages; $14.50; paperback.

This delightful book combines a tour of the geology of Scotland with a tour of the watersheds surrounding its 114 single malt whisky distilleries. When we pause during the tour to savor the whiskies we are reminded that Scotland was the home of James Hutton, the father of modern geology, and Sir Charles Lyell, who taught us that the geological present is the key to the past. To any geoscientist with a taste for the finer things in life a tour of this kind would be "like having one foot in heaven!"

The word "whisky", often spelt "whiskey" on this side of the ocean, is derived from the Gaelic uisge beatha, meaning water of life. The book focuses on the importance of water in producing good whisky. It explains how the underlying rocks can affect the character of the water and, in turn, the character of the whisky. A reliable supply of good water is essential for processing the mash, cooling the stills, diluting the distilled spirit and, ultimately, splashing in the drinking glass to release the aromatics in the whisky and increase the perception of both taste and smell. The splash is optional and has been known to generate a good deal of serious discussion, if not argument.

The tour begins on the ancient island of Islay (pronounced Eye La), off the west coast. That tiny island hosts eight distilleries and produces some of the most distinctive malts, such as Lagavulin and Laphroaig. (To keep the record straight, Islay was not the hilarious "Tight Little Island" of British comedy movie fame. That was Eriskay, a bit further north). The tour proceeds clockwise from the very old Islay gneisses up into the Highlands then across the Great Glen Fault, the Highland Boundary Fault, the Southern Uplands Fault and the intervening formations, then back up the west coast to the younger volcanic islands of Skye and Mull.

Naturally, there is something to be said for each of the 114 whiskies. They are conveniently indexed, from Aberfeldy to Tullibardine, in the back of the book. To mention a few: The Glenlivet, perhaps the most famous of all Scotch whiskies, is created with water from a spring in glacial sands and gravels. The smallest distillery in Scotland is Edradour in the Grampian Highlands. The Grampians also host Tomatin, the largest malt whisky distillery, and Dalwhinnie, the highest at 350 metres above sea level. Auchentoshan, which produces the light, pale ladies malt, is located on the Clyde River, near Glasgow. Talisker, a favorite produced in a remote area on the Isle of Skye, is made with spring water from the lava flows. Dr. Johnson described that part of Skye as: 'the sort of place where a hermit might expect to grow old in meditation, without the probability of disturbance or interruption.'

The old rule of thumb said the best water for distilling was: "Soft water, through peat, over granite" but less than 20 of the distilleries now use water fitting that description. One well known malt, Glenmorangie on the northeast coast, attributes much of the character of its product to hard water mineralized by the Old Red Sandstone formation. Highland Park in the Orkney Islands, arguably the most northerly of all Scottish distilleries, is also proud of its hard water. The new criteria call for crystal clarity, purity and a reliable source.

It would be unfair for a reviewer to get carried away by fascination with the whiskies. The geological aspect of the tour deserves equal credit. It is a blend of the old and the new with well drawn sketches, interesting satellite images and useful commentary. Some of us who have been inland P.Geo's for

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Honorary Life Membership con'td

Kenneth A. Buhr

Kenneth A. Buhr

B.Sc. (Civil), M.Sc. (Geotechnical), P .Eng

Kenneth A. Buhr became a registered Professional Engineer with this Association in 1969, and remained an active member until 2003 when he switched to the P .Eng (Retired) category. He received the APEGM Outstanding Service Award in 1994.

Ken served as a member of the APEGM Council from 1985 to 1991, and was President in 1990. In addition, during his working career he volunteered on 19 different APEGM and associated committees for a total of 66 equivalent committee years of service. Ken also represented this Association at the national level, serving as a Director of the Canadian Council of Professional Engineers for two years.

Ken started his career as a Geotechnical engineer with the Manitoba Water Resources department in 1967 and eventually reached the level of Manager and Chief Engineer. As Chief Engineer he was responsible for managing a $10M annual budget for work related to construction of water-works and sewerage services in Manitoba.

Ken moved to Poetker Engineering Consultants as one of its Principals in 1981 where, in addition to his geotechnical work, he was also responsible for the financial and administrative functions. For the next 17 years he continued to work in similar roles as Manager, General Manager and Associate at the major consulting service companies Poetker-MacLaren Environmental Services Ltd and DS-LEA Consultants Ltd. In these jobs he was responsible for the assessment, investigations, remediation and impact assessments of contaminated sites.

Ken joined the staff of the Association of Professional Engineers and Geoscientists of Manitoba as Manager-Administration in 1998. In this function he was responsible for human resources management, financial administration and maintenance of computer services. During these years he had also provided administrative support to a number of APEGM committees and supervised the logistics and organization of various APEGM functions. Ken retired from full time employment with APEGM in 2002. ■

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.

Leadership Award

Lloyd R. McGinnis

B.Sc. (Civil), M.Sc., Ph.D., P.Eng.

Lloyd McGinnis was born in Roblin, Manitoba. He attended high school in The Pas, Manitoba and received his B. Sc. from the University of Manitoba, and his Master's degree at Georgia Institute of Technology in Atlanta, U.S.A. During his 42 years as a consulting engineer with Wardrop Engineering Inc. he served variously as project engineer, Head of Public Works Engineering, on secondment for three years to CIDA as an advisor to the Government of Tanzania, Africa, Vice-President, International Division, President of Wardrop Engineering, and Chairman and CEO (a position he held until his retirement in 1998). In 1997, Lloyd became Chief Executive Officer of ISIS Canada.

Lloyd has made a career of distinguished service to his profession, to the University of Manitoba, community, and country. He has not only been a leader in innovative design and application of new technology, but also in management, international marketing, community service, and in sustainable development. He was instrumental in establishing MANSCETT and established a scholarship at Red River College. He championed the cause of women in engineering through public presentations and hiring. As a result, Wardrop was presented with the 1989 Canadian Engineering Memorial Fund – Corporate Award. In addition to on-going contributions to the University of Manitoba engineering activities, he served for several years on the boards of the Microelectronics Centre, Downtown Continuing Education, University Development Council, ISIS Canada, and as a member of the Faculty of Management "Associates". To recognize a colleague, he lead the establishment of the D.R. Grimes Fellowship in Civil Engineering at the University of Manitoba. In community affairs, Lloyd has made outstanding contributions. He believes "I have taken much out; it behooves me to put much back in". He was, at various times, Chair of the Winnipeg Business Development Corporation, Chair of the Winnipeg Chamber of Commerce, President of the Rotary Club of Winnipeg, President of the Manitoba Club, President of St. Charles Country Club, and Vice-Chair of the Board of Governors of Red River College. In serving his country, Lloyd was Chair for the Canadian Chamber of Commerce during which he refocused the Chamber to establish its own national agenda, rather than merely responding to government policy. Lloyd served as Chair of the Canada/USA Business Council. As a member of the Prime Minister's National Advisory Board on Science and Technology, he helped develop increased scholarships for women and the eventual creation of the National Centers of Excellence Program, which facilitated the establishment of ISIS. As a member of the National Task Force on the Environment and Economy, Lloyd contributed to policies that led to the establishment of the Canadian International Institute for Sustainable Development (IISD) in Winnipeg. Lloyd was also Chair of Rotary International World Community Service Committee for District 555.

Among the many awards Lloyd has received, some of the more important ones include: Fellow of the Canadian Society for Civil Engineering, Association of Professional Engineers and Geoscientists of Manitoba Merit Award, Canadian Council of Professional Engineers Gold Medal Award, Manitoba Chamber of Commerce Outstanding Business Citizen of the Year, Fellow of the Engineering Institute of Canada, Engineering Institute of Canada Julian C. Smith Memorial Medal, Rotary International World Community Service Award, Canadian Engineering Memorial Foundation Corporate Award, Province of Manitoba Sustainable Development Award of Excellence, Red River College Honorary Diploma, 50th Anniversary of United Nations Global Citizen Award, and the University of Manitoba Peter D. Curry Chancellor's Award. ■

Outstanding Service Award

Raymond P. Hoemsen

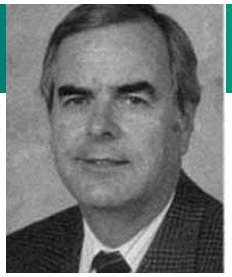
B.Sc. (Agricultural Engineering), M.Sc., P.Eng.

Raymond Hoemsen became registered with this Association on May 14, 1979, and has been a member continuously for 26 years.

Ray served as a member of Council from 1990 – 1993 and from 2002- 2005 (a total of seven years). Ray also served on the Executive Finance Committee for one year, the Nominating Committee for one year, the Research and Development Committee for five years, the Public Relations Committee for four years, the Awards Committee for three years, the Consulting Engineering Committee for one year, the Investigation Committee for 12 years and the EGAIAR Joint Board since 2003 (three years). This makes a total of 37 committee-years of service.

Ray, who grew up on a farm near Elkhorn MB, has had a wide-ranging and varied career. His first job was with Versatile Farm Equipment, as a Quality, Design, and Testing engineer. In the early 1980s, Ray joined the Industrial Technology Centre and became manager of the agricultural and mechanical engineering group. In 1986, Ray moved from ITC to the University of Manitoba to take up the post of Research & Development Coordinator for the Institute for Technological Development. Ray had much success as he moved through a series of technology transfer roles culminating in 2000 as Vice President/Director of Operations of SmartPark. Ray Hoemsen is the President / Managing Director of NEXUS Manitoba, a company he founded to pursue the business side of technology development. He is currently Director of Applied Research & Commercialization at Red River College.

In addition to his professional pursuits, Ray has a keen interest in volunteering, so he maintains a dizzying array of commitments to sports, cultural, and business interests. ■



Robert W. Menzies

B.Sc. (Electrical Engineering), Ph.D., P.Eng.

Robert Menzies became registered with this Association on February 19, 1969, and has been a member continuously for 36 years.

Rob was a member of the Membership Committee for two years and has been a member of the Academic Review Committee for the past 26 years, making a total of 28 committee years of service. He received the Association's Merit Award in 1983.

Rob Menzies holds a BEng Degree from McMaster University and a PhD degree from St. Andrews University in Scotland in 1967 on an Athlone Fellowship. He has been a professor at the University of Manitoba since 1967 and Head of the Electrical and Computer Engineering Department for ten years from 1995 – 2005. His experience in industry includes study leaves with ABB Industries AG, Brown Boveri et Cie, and Westinghouse Canada; and consulting assignments with Spiroll Kipp Kelly, Manitoba HVDC Research Centre, Flyer Industries, Dickenson Mines, Bristol Aerospace and Atomic Energy of Canada Limited. He is a member of the Institution of Electrical Engineers (UK), the Institute of Electrical and Electronics Engineers (USA), the Canadian Electrical Association, and the Canadian Society of Electrical and Computer Engineering.

In addition to active service in the teaching and administrative life of the university, Rob Menzies has been an active researcher. His interests include delivery of electrical power using high voltage direct current (HVDC), large induction motor design, use of thyristors of invertors and switched capacitors, supply of energy to remote centres, and the protection provided by textile fabrics against high energy flashovers. In a busy career of producing the next generation of engineers and researchers, he has graduated 33 graduate students and has supervised 5 post-doctoral fellows. Rob Menzies holds five patents on a variety of topics in Canada, the USA, and Switzerland. ■

INCO Boosts Scholarship Funding to Encourage Women to Presue Careers in Engineering

With an aim to reverse the declining enrolment of women in Engineering, the Canadian Engineering Memorial Foundation ("CEMF") today announced that Inco Limited will quadruple their funding and sponsor three additional graduate scholarships for women in engineering.

Inco is funding four scholarships, which will be known as the Inco Limited Masters Scholarships in Engineering. The scholarships are worth $10,000 apiece, and will be awarded annually for three years. The funding increase brings Inco's total commitment to $120,000. Scholarship recipients will also be offered summer employment at one of Inco's Canadian facilities.

Total full-time female undergraduate enrolment in accredited engineering programs in Canada declined from 20.6% in 2001 to 18.5% in 2004. This decline is even more dramatic when compared with the fact that women account for close to 60% of the overall undergraduate student body in Canadian universities. As well, women represent only 10% of the 160,000 licensed engineers across Canada.

"Encouraging women to pursue studies in engineering is a priority at Inco," says Scott Hand, Chairman and CEO, Inco Ltd. "We're focused on trying to improve gender diversity in our workforce. We need more women like Heather White, who is the mine manager at our new Voisey's Bay nickel mine in Labrador and a professional engineer."

These new scholarships, which will be awarded based on extra curricular activities and dedication to encouraging women to enter engineering and not on academic performance, join the Foundation's existing series of graduate and undergraduate scholarships for women. Criteria and application information and forms are available on the CEMF web site www.cemf.ca. The scholarships will be awarded in December 2006 at the Annual CEMF Scholarship Awards Luncheon, which takes place at the Canadian Council of Professional Engineer's annual meeting.

Inco Limited was one of the Foundation's original supporters and CEMF is proud of their continued partnership. "These scholarships will help encourage women to continue their studies in engineering," says Dr. Suzelle Barrington, CEMF's President. "And it gives us the opportunity to honour the memory of the 14 women from École Polytechnique - not just as victims, but more importantly, for the spirit and dedication to their chosen fields and the example they set as trail-blazers for women in engineering across Canada." ■

2005 Making Links Engineering Classic Golf Tournament

By R. Hudon, EIT

The second annual Making Links Engineering Classic (MLEC) was held this year to help support and raise funds for the APEGM Design Studio in the new engineering building. The engineering graduates would remember this room as "Room 229", a room where young engineering students would be challenged to sink or swim during exams.

This years MLEC had a number of highlights with a hole-in-one contest, the sale of mulligans/kicks/ throws, a silent auction, and a Winnipeg Harvest charity giveaway.

The weather started out cool and windy with a bit of rain but as the day went on the weather improved to sun and cloud.

All golfers received a gift bag including an APGEM golf shirt, sleeve of balls, key chain, water bottle, pens, tees, golf magazine, Canad Inns gift certificates, and a golf bag towel. It was a great opportunity for businesses to take out clients or for others to get out and enjoy some golf with friends, spouses, or co-workers.

When golf was complete we indulged in some great food that included a full course chicken meal and an unbelievable dessert. Silent auction prizes followed along with a few speeches to announce winners and thank everyone for coming to support the cause.

This year's tournament winners were John Jonasson, P.Eng., Rick Lemoine, P.Geo., Paul Bauer and John McCabe, P.Eng. They are the second group to make it on the MLEC tournament trophy.

I had the opportunity to be on the committee that organized this golf tournament and am glad to say that the tournament was a great success with over 100 people in attendance. The committee would like to thank everyone who came out for their generous support. Although winter weather has just begun, I look forward to golfing next year in the MLEC tournament. Hope to see you all there. ■

APEGM President, Digvir Jayas and John Alho, Director of Government Relations at the University of Manitoba, enjoy some brief time away from their computers.

John Jonasson P.Eng., Rick Lemoine, P.Geo., Paul Bauer and John McCabe, P.Eng.

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APEGM receives many inquiries from the public looking for engineers to conduct residential work and pre-purchase home inspections.

Please contact Kelly Mofet at kmofet@apegm.mb.ca, if you would like to add your company name to the "please call for residential work" list that will be made available to the public.

A History of Electric Power Development in Manitoba Industry • Part I of II

L. A. Bateman, OM, P.Eng.

"Reprinted by permission of the IEEE Canadian Review editor Dr. V.K.Sood (v.sood@ieee.org)."

1.0 EARLY HISTORY

Electric Arc Lamps were first seen in Winnipeg, Manitoba in March 1873, just three years after the Province of Manitoba was formed. This was six years before Edison invented the incandescent lamp. It was not long after this that a newly incorporated company received a contract to install arc lamps in the City. This was the beginning of several business ventures by a variety of new companies, and when electric trolley conveyance was demonstrated in 1891, it was the Winnipeg Electric Railway Company (WECO) that received the franchise from the City. This company built a thermal generating station on the banks of the Assiniboine River. It purchased its last competitor in the mid nineties. With a rapidly growing city and the demand for more uses of electricity, WECO looked to the Winnipeg River for hydroelectric development.

It was not the first company to develop a hydro plant in Manitoba. This was done by a company in Brandon some 120 miles west of the City of Winnipeg. They developed a plant on the Minnedosa River (now known as the Little Saskatchewan River) but the flow was such that the plant could only operate for a maximum of eight months of the year. The plant served the City of Brandon using an 11 kV wood pole line. The plant was dismantled in 1924.

2.0 DEVELOPMENT OF THE WINNIPEG RIVER

At the beginning of the 20th century, WECO examined the possibility of a development on the Winnipeg River. The consultants that they engaged selected the Pinawa Channel, which is a channel parallel to the Winnipeg River, partially bypassing the Seven Sisters Falls site. It required the construction of a weir to divert the water into this channel with some enlargement of the intake. To build a hydroelectric plant in the wilderness with horses was a remarkable achievement. There were no roads or railways; access was by river or winter road. Construction started in 1902 and the first power was delivered using a 60 kV steel tower line to Winnipeg in 1906. The output of the plant was 22 MWs.

The WECO had a monopoly on the supply of electric power and was charging twenty cents per kWhr, which did not sit very well with some of the aldermen of the City. The company did lower its rate to 10 cents per kWhr when the Pinawa plant was completed. One alderman in particular, Alderman John Wesley Cockburn, managed to get the water rights for the Pointe du Bois site on the Winnipeg River and when the City Charter was amended to permit it to float a bond issue for the development of a hydroelectric site, he transferred the rights to this site to the City. The citizens of Winnipeg voted in favor of developing Pointe du Bois with the promise of power at 3 cents per kWhr. A railway was constructed from the nearest CPR line at Lac du Bonnet. This involved building bridges over the Winnipeg River and the Pinawa Channel. This site was developed into what is now the oldest plant still operating on the Winnipeg River. It has a 46-foot head and is rated at 78 MW. The first power was delivered in October 1911. The rate was set at 7 cents per kWhr. This sparked a vehement protest from the citizens who had been promised 3 cents. The public outcry resulted in City Council lowering the rate for power to 3 and 1/3 cents per kWhr, which the private company met. This rate remained in use until 1968.

The delivery of power from the City's plant caused a mad scramble to connect customers. It was not uncommon for the City to begin construction of a line on the opposite side of the street on a Saturday morning to supply an industrial customer on Monday morning. The multitude of lines eventually resulted in a judicial decision in 1912 to require both utilities to share the same poles. This arrangement continued until the power industry was rationalized in 1955.

3.0 RURAL ELECTRIFICATION

The settlements in rural parts of the province also wanted to share in the benefits of this new form of energy. It spawned a multitude of

Figure 1: Slave Falls Plant (Source: Manitoba Hydro)

entrepreneurs; all charging what they thought was reasonable. In order to rationalize this, the Government created the Manitoba Power Commission in 1919 and undertook to sell power to the municipalities, much the same as Ontario was doing, but by 1933, when the depression forced many municipalities into financial difficulties due to residents not paying their electric utility bills, they amended the legislation to permit the Commission to sell directly to the customer and do away with the so-called middle man. The growth of consumption required Winnipeg to complete the second half of Pointe du Bois, a project they commenced in 1919 as they had a contract to supply the Commission with its requirements. The WECO also undertook to develop a new site at Great Falls on the Winnipeg River with a capacity of 132 MW. This was the first use of propeller type turbines and resulted in some interesting developments. The admission of air to the draft tube to reduce cavitation was first used at this plant and was soon to be the norm. The growth in the twenties required the City and WECO to seek new sites for development on the Winnipeg River. The City received the license to develop Slave Falls [1], while WECO received the license to develop Seven Sisters, with a reservation of 35 MW for the Power Commission. The contract that the City had with the Government to supply the Commission was terminated in 1935 when the Company supplied the power from its Seven Sisters Plant. With the simultaneous development of two sites, nobody foresaw the crash of 1929, and the result was rather catastrophic. The City actually ran its Slave Falls plant with only two units installed on a one-shift basis and incurred a deficit. Units three and four were installed by 1938. The Company shut the three units installed at Seven Sisters down and defaulted on the bond interest. In one respect it was provident that this surplus capacity was available when the 1939 war broke out. It made it possible for the Province to assist in the war effort. However, the growth in the war years required the City to develop a water heater control program, which shut the water heater load off at noon and again during the evening peak, using carrier current injected frequencies into the residential feeders. These were picked up by relays installed in each household. These measures to control the peak demand, along with the use of thermal generation from the Amy Street standby plant that was installed in 1924, resulted in the City meeting its firm load requirements. This thermal plant was built as a result of the loss of all transmission from the Pointe du Bois plant due to a very severe windstorm. It was combined with a central heating system to supply central heat to the downtown city area. Three electric boilers, in addition to the coal-fired boilers, were installed. The operator of these boilers had a recording totatalizer of the Winnipeg Hydro load at his workstation. His job was to utilize all the spare capacity in the system as load on the electric boilers with a resulting saving in coal for

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the central heating plant. This resulted in a very high load factor on the City's two hydro plants.

The supply of some defense industry load during off peak hours, by arrangement with the WECO, further helped the City to meet its firm load requirements.

Even before the war ended, the City received permission from the Wartime Prices and Control Board to order the steel for the extension of the Slave Falls Plant, which was commenced in 1945. The plant with a total of eight units was completed in 1948. The transmission voltage was raised to138 kV - the first use of this voltage in Manitoba. Meanwhile the WECO undertook the completion of the Seven Sisters Plant to a capacity of 150 MW by raising the head and excavation in the tailrace. This utilized the full flow of the river. The retirement of the Pinawa Plant occurred in 1951.

The Government undertook a study of farm electrification in 1942 and with the completion of the war, commenced this program. The growth of the farm and rural load made it evident that someone had to add new capacity to meet these requirements. The private company would not invest in a new plant unless they received an agreement from the Province for a long-term commitment. The City was in a similar position. Without a guarantee, they were reluctant to commit the necessary funds for expansion of either of the two remaining hydro sites on the Winnipeg River.

4.0 BIRTH OF THE MANITOBA HYDRO ELECTRIC BOARD

This stalemate resulted in the Government creating the Manitoba Hydro Electric Board and the development of the Pine Falls site on the Winnipeg River. The City protected its position during the rather prolonged negotiations on how the power industry should be rationalized, by installing two thermal units of 15 and 25 MW capacity in the Amy Street thermal plant it built in 1924.

The plan for reorganization of the power industry, proposed by the Government, was turned down by the citizens of Winnipeg in a referendum. As a result, the Government forged ahead with its plans and bought the WECO and sold the load in the City, formerly supplied by the Company, to the City in exchange for the City load outside the City boundaries. It also agreed to leave the two City plants at Pointe du Bois [2] and Slave Falls with the City, but undertook to develop all future generation needs for the Province and entered into a cost sharing agreement with the City in 1955, based on the peak demand of the City load and the Provincial loads. The latter soon outdistanced the City load, due to the farm electrification program. Thus the competition for customers in Winnipeg by the two suppliers of power came to an end.

An interesting development occurred in January of 1957, when Manitoba Hydro Electric Board received a letter of intent from

Figure 2: Pointe du Bois Plant (Source: Manitoba Hydro)

INCO to supply power for their new nickel mine being developed at Thompson Manitoba. This was a wilderness location, but the Hudson Bay Railway was some 50 miles away to the south. A hydro site on the Nelson River named Kelsey was available some 60 miles away and Manitoba Hydro undertook to develop this site on the Nelson. The schedule was very demanding, requiring power by 1960. This involved building a railway into the site, building dikes on perma-frost, and building the final earth and rock fill closure dam under a hoarding in the wintertime. The INCO estimated load required four units, but in anticipation of growth in the new town at Thompson, a fifth unit was added, and unit Number 7 was installed by 1972. This five-unit plant rated at 160 MW supplied an isolated load, including two arc furnaces rated at 18 MW each. Special governor characteristics were developed to handle the sudden loss of this furnace load, and governor development tests were run on the Pine Falls plant using electric boilers at the Paper Mill, close by, to simulate the condition of the loss of a furnace under load conditions. These tests were run with the help of Woodward Governor engineers to validate the anticipated governor performance. They are reported in a paper at the 1961 meeting of the AIEE and are recorded in the Transactions of the Institute. INCO placed limits on the amount of load that could be dropped; however very shortly after the tests, but before the instrumentation had been removed, an interruption of greater than one furnace occurred, and the governor performance for control of the machines was superb.

This first plant on the Nelson River was a good experience for future developments.

(To be continued in the February 2006 issue of The Keystone Professional)

ABOUT THE AUTHOR

Leonard A. Bateman is an electrical engineering graduate from the University of Manitoba with post-graduate qualifications in Engineering and Business Administration. His career spanned thirty-six years in the utilities of Manitoba. His last six years were

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Book Reviews

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years will be amused to learn that in Scottish terms a Geo is a "long, deep, narrow coastal inlet or cove". Most of us have been called worse things from time to time.

With the new emphasis on continuing professional education could a person justify a tax deductible field trip to Scotland for further study? Thanks to the authors and to our colleagues in the British Geological Survey we now have 114 interesting reasons to give it a try.

"Father to the Fatherless: The Charles Mulli Story"

Written by Paul H. Boge, P.Eng. (APEGM Communications Committee Member)
Review by E.P. Hancox, EIT

"Father to the Fatherless: The Charles Mulli Story" is a compelling account of one man's, or should I say child's, struggle from the depths of horrific physical abuse and poverty to the height of riches and finally to the position of benevolent caregiver to the discarded. At the age of six, Charles Mulli found himself starving and alone; abandoned by his mother and abusive father. Scarcely surviving in deplorable conditions one can hardly imagine, Charles conquered, in childhood, challenges few adults could overcome. The inherent fortitude this little boy possessed translated, as an adult, into vast riches equal to the imagination of many in the "civilized" world.

With a life transformed to limitless wealth, accomplishment, and social position, Charles had an epiphany; "I'm leaving the business world and I'm going to help street children". It was up to him to put an end to this cycle of abuse, abandonment, poverty, rape, and ultimate death to which far too many disposable children of Kenya face. Charles did the unthinkable; he traded his time, wealth, and social status for the future of the street youth of Kenya. Charles Mulli became what is best described by author Paul H. Boge as the "Father to the Fatherless".

Mr. Boge's talent for making the reader live the story wrings emotion from even those attempting a neutral review of his work. The fact that Charles Mulli actually lived the chilling words inked within the pages of this book, and continues to do so, brings a sense of realism to the message his life path represents.

Messages, particularly of the divine nature, are so often wrapped in affairs of the very distant past; the divide of time shadows any connection to the present. "Father to the Fatherless: The Charles Mulli Story", effectively bridges the gap between time lost parable and present reality. Brought home are the possibilities of faith and miracles experienced by people separated from us only by geography; not increments of time measured in millenniums.

It is comforting, but not surprising, that Paul H. Boge is donating all proceeds from royalties earned from the sale of his book to the Mulli Children's Orphanage. ■

Members in the News

Aftab Mufti, P. Eng.

Dr. Aftab Mufti, President of the ISIS Canada Research Network (ISIS) and Professor of Civil Engineering at the University of Manitoba, has received the extraordinary honour of being given the Mirko Ros Award from EMPA, the world renowned Swiss Federal Laboratories for Materials Testing and Research. The Mirko Ros Award is a gold medal that was struck to commemorate the 125th anniversary of EMPA and bears the bust of Dr. Mirko Ros, an outstanding researcher and distinguished academic who was the Director of EMPA from 1924 to 1949.

Dr. Mufti, who is credited with coining the term "Civionics" to define the need to bring together the brightest minds in the fields of electrical engineering, electronics, and photonics to expand the envelope of civil engineering in the future design of civil infrastructure, was presented with the Mirko Ros Award for his outstanding life's work in research and education. ■

Madhav Sinha, P. Eng.

Dr. Madhav Sinha, P. Eng; chief of engineering and head of the quality programs with the Manitoba government department of Labour and Immigration, was honoured by the British Columbia Institute of Technology (BCIT) in Burnaby, British Columbia, last summer, by the establishment of a scholarship at the institute that is named after his name.

The award of Dr. Madhav N. Sinha Scholarship for Quality, supported financially by the local Vancouver Section of the American Society for Quality (ASQ) has been established for a best student in the BCIT's diploma program with a major in operations management.

Dr. Sinha was selected as the most outstanding Canadian who has made so many one-of a-kind contributions in the field of QC and TQM by being a long time enabler and catalyst in the Canadian quality movement scene as a teacher, mentor, pioneer, researcher, a quality activist, book author and founder/co-founder of many "first-ever" programs. ■

MaryAnn Mihychuk, P.Geo. – PDAC's new Director, Regulatory Affairs

The Prospectors and Developers Association of Canada is pleased to announce the appointment of MaryAnn Mihychuk as Director, Regulatory Affairs. Ms. Mihychuk will take up her appointment full-time in January 2006.

Ms. Mihychuk is a former Minister of Mines in Manitoba. She is also a licensed professional geoscientist and has worked as an exploration geologist, an industrial geologist and a project development consultant raising financing for a junior gold exploration company.

She worked as an exploration geologist in Newfoundland in the 1980s, testing drift prospecting techniques in an area outside Gander and looking for new areas to explore. She also worked as an exploration geologist in Manitoba. In 1986, Ms. Mihychuk joined the Manitoba's Department of Energy and Mines. Nine years later she entered politics, spending four years as the opposition critic of energy and mines before becoming Minister of Industry, Trade and Mines in 1999.

As mines minister, Ms. Mihychuk was a strong champion of "super" flow-through shares, a brief she will inherit with her new position. ■

Engineering Endowment Fund

Continued from page 10

groups include Great Northern Concrete Toboggan Race (GNCTR), Air Cargo, Formula SAE, mini-Baja, Waste Education and Research Consortium (WERC) Environmental Design, Canadian Aerospace Glider, and Engineers without Borders. Many teams compete against much larger and better-funded groups. Among these teams Formula SAE placed 75th of 120 teams world wide, mini-Baja placed 76th of 142 teams and WERC were the overall winners for their chemical free arsenic removal system. As the website is redeveloped, completion reports from the applicants will be posted. Since some of these teams have been in existence for long periods of time, a new model of funding has been arranged to provide base funding for groups that meet criteria of three years of continual existence, supplying annual reports and showing good organization by meeting goals each year.

Outreach programs are also supported, some are in-house such as orientation for new students, and others reach out to the community such as support of Women in Science and Engineering (WISE). The EEF has an ongoing commitment to provide ten $1,000 scholarships for second year students entering from the first year program. This is an area that has a low number of scholarships, and may be a deciding factor for students to continue at the University of Manitoba rather than transferring to another institution. An additional annual $5,000 has been set aside for bursaries for engineering students in need of financial assistance.

The EEFAC continues to expand its efforts to enhance engineering education and to attract high quality students towards an engineering career. Dean Ruth states "we in engineering are committed to providing an exceptional education to our students; the EEF is a key support of that commitment".

If you would like the satisfaction of knowing you're helping to give back to the faculty, and to help train the next generation of engineers, please make a contribution to the Engineering Endowment Fund. Contact the Department of Private Funding, Room 179 Continuing Education, University of Manitoba, or phone 474-9195. ■

Toronto Man Jailed 30 Days for Repeated Violations of Professional Engineers Act

Mohammad Hafeez, of Toronto, was jailed for 30 days and ordered to pay costs to Professional Engineers Ontario (PEO) of $19,863.81,after he was found in contempt of a previous Order of the Ontario Superior Court of Justice for violating the Professional Engineers Act. The previous Order was made by the Honourable Justice Trafford on November 7, 1995.

Mr. Hafeez is not, and has never been, licensed as a professional engineer in the Province of Ontario.

The Honourable Madam Justice Sachs handed down the sentence in the Ontario Superior Court of Justice. Madame Justice Sachs reviewed affidavit evidence on behalf of the application, and heard submissions by PEO's lawyers McCarthy Tétrault. She heard opposing submissions from A.S. Leighl on behalf of Mr. Hafeez, as well as testimonialevidence from Mr. Hafeez.

The Court also heard that Mr. Hafeez had previously been convicted on four separate occasions of misrepresenting himself as "an engineer" while working on various projects in the Greater Toronto Area between April 1993 and December 1998. Fines were levied in the combined total of $85,000.

The current application was brought after an investigation by PEO revealed that in the spring of 2000, Mr. Hafeez had described himself as a "structural engineer" and an "engineer" to clients and another person while working on a construction project in the City of Toronto. Under the terms of the 1995 Order, Mr. Hafeez was ordered to: refrain from using the title "professional engineer" or an abbreviation or variation thereof as an occupational or business designation; refrain from using a term, title or description that will lead to the belief that he may engage in the business of professional engineering; and surrender to the PEO any business cards, site signs, seals or title blocks in his possession containing the words "professional engineer", "engineer", "engineering", or any abbreviation thereof. ■

Canadian Engineers use Space Technology to Detect Threats to Sites on Earth

Canadian News Wire Group

Vancouver engineers for AMEC, the international engineering services firm, will begin working this month to test a down-to-earth use for Satellite Earth Observation technology with the European Space Agency.

The tests will locate and evaluate potential land subsidence problems at seven sites around the globe. Land subsidence can cause significant structural damage to highways, dams, pipelines and buildings if not identified and dealt with early.

"When precision counts, this technology provides a level not seen before on these types of projects," states Colin Russell, Project Manager, AMEC. Russell is a geotechnical engineer who is leading the project with the ESA. "Not only is this accurate and innovative, but the information it provides can forecast problems, increasing public and environmental safety."

Under an ESA-funded technology-development contract, AMEC is working with some of the world's largest resource and infrastructure development companies who must deal with land subsidence problems on projects throughout the world.

Testing will begin this month at underground mine workings in northern Ontario for Placer Dome; a reclaimed mine waste rock dump in California for Kinross Gold; a railway in Germany for Die Bahn; tunnel construction in Germany for Walter Bau; a salt mine in Germany for Sudsalz; an open pit mine in South Africa for Rio Tinto; and a mine access road in Peru for Teck Cominco. Future tests are planned for a pipeline corridor in British Columbia for Terasen Gas, a railway in the United Kingdom for Network Rail and an oil and gas reservoir in Germany for Wintershall.

In Vancouver last month, project leaders met with AMEC and the ESA to develop protocols for using the space-borne technology. The project uses technology that involves images acquired from satellites. The satellites can detect changes in the ground surface with a vertical precision of a few millimetres. This information can find zones of ground settlement that could harm existing or future facilities.

The ESA is an entity funded by 15 European states that promotes space exploration and research. It launches and operates satellites and annually funds contracts to promote the use of earth-observation technology.

AMEC is being assisted by subcontractor and strategic partner Atlantis Scientific Inc., a world-class earth observation provider. It is also employing the services of Infoterra Ltd. of the United Kingdom to provide high-resolution optical imaging services that can be used to help interpret the satellite data. Additionally, the Land Use Planning and Natural Risks Division of BRGM (French Geological Survey) will provide scientific review of the project. ■

86th ANNUAL GENERAL MEETING

By N. Soonawala, Ph.D., P.Geo.

The 86th Annual General Meeting of APEGM was called to order by outgoing president Allan Silk at about 9:00 AM on October 22, 2005, at the Winnipeg Convention Centre. It was actually a triple-header: the business meeting, the stakeholders meeting and the luncheon address by Chief Jerry Primrose of the Nisichawayasihk Cree Nation.

The agenda of the Business Meeting, with one deletion from the 29-item printed list, was formally approved. Since a comprehensive Annual Report for 2005 was distributed to all attendees, many items including committee reports and financial statements were not actually read at the Meeting, thus saving time. Honourary Life Memberships were conferred upon Ken Buhr, David Cross and Dave Ennis. A theme running throughout the entire meeting was the appreciation — expressed by APEGM members as well as visitors from other jurisdictions -- of the 17 years of dedication to the governance of the profession by retiring Executive Director Dave Ennis. Grant Koropatnick, the incoming Executive Director, was introduced and it was noted that he was chosen from amongst several other excellent candidates.

The agenda item *Greetings from Other Manitoba Associations* was led off by the Manitoba Association of Architects who in a brief presentation expressed hope that the outstanding issue between APEGM and MAA would soon be resolved. Other associations were generally supportive of the APEGM position.

In the item *Report of the President*, Silk also stated that the dispute with the MAA should be ended quickly. His report also touched upon the need for professional development and reporting of PD, which he feels is necessary to counter the attack on self-regulation which has been gathering momentum. He also discussed the issue of mobility.

The discussion on minutes of the 2004 AGM included review of the by-law change regarding the designation of retired members and the removal of the (Ret.) suffix, which had been tabled to this year's AGM. Ennis advised that the legal opinion was that there would be no legal risks if the revised wording of the by-law was adopted. After a consideration of the costs that would be incurred in a mail-in ballot, it was decided to table this matter and take it up again at the 2006 AGM.

The representative of the Canadian Council of Professional Engineers informed the Meeting that the CCPE was dealing with the issues of: registration of foreign-trained engineers; a climate change action plan; investment in nation-wide infrastructure; links with the national engineering societies of other countries; a common vision; and providing funding to the Yukon association to assist it in dealing with a disciplinary matter.

Silk read out the report of the scrutineers for the election to the Council. A meager 11.8% of the membership voted. Bill Girling, Donald Himbeault, Bob Malenko and Robyn Taylor were the engineers declared elected for the 2005-07 term, while Tim Corkery was the successful geoscientist. The appointed Councillors were: Avery Ascher, AscherWordSmith.com; Brian Shortt, Manitoba Hydro; Pamela Sveinson, City of Winnipeg; and Arthur Chapman, Citizenship Council of Manitoba Inc.

BDO Dunwoody were appointed as auditors for the 2005-06 fiscal year. No proposals were received for either by-law changes or new resolutions.

Silk's report on legislative initiatives with regard to engineering of buildings was presented to the AGM and was not in-camera as listed in the Agenda. It gave a synopsis of the initiatives in progress to resolve the dispute with the MAA. There has been some progress but no resolution. A petition and the "Engineers Count" public awareness campaign were in progress.

After the recognition of retiring Councillors, the Gavel Ceremony took place, during which incoming President Digvir Jayas accepted the gavel from outgoing President Allan Silk. Jayas found barely enough room on the scroll to add his name to the list of his predecessors.

In the incoming president's address, Jayas visualized the agenda for the Council for the coming year. It included: agreements with sister organizations; expediting the registration of foreign-trained engineers while maintaining standards; graduated licence; inter-jurisdictional mobility of engineers and geoscientists; professional development; and the establishment of an engineering and geoscience hall of fame.

The stakeholders meeting, chaired by Jayas, commenced immediately on the completion of the business meeting. Ennis gave an update on the ongoing negotiations with the provincial government regarding the dispute with the MAA. Then the stage was taken over by John Wood of the Consulting Engineers of Manitoba for a long, involved discourse. MaryAnn Mihychuk then used the floor microphone to suggest a pragmatic and dynamic action plan for getting the APEGM message across to the public, the legislators and the government.

The luncheon address by Chief Jerry Primrose of the Nisichawayasihk Cree Nation also harkened back to another dispute from the past involving engineers – hydro development in the Nelson House area and the flooding of First Nations land. In a very thoughtful and sensitive speech, Chief Primrose put that dispute firmly in the past and concentrated on a constructive, cooperative present and future. He said that he understood the position of the engineering community and the need for development. He envisaged a future where First Nation members would be confident professionals participating in the development of their lands, in full harmony with their traditions of respect for the environment. ■

Notarius' digital signature: reliable technology newly accessible to Quebec engineers.

Montreal, June 6, 2005 – The Ordre des ingénieurs du Québec, which has about 50,000 members,has engaged the services of Notarius for a two-year mandate, with an optional third year, to launch and operate the digital signature service developed for the province's engineers. In order to implement this technological solution, the OIQ has adopted the Regulation modifying the engineers' code of ethics, and imposed procedures for the authentification of technological engineering documents. This modification aims to clarify and adapt the way an engineer works with documents on electronic media.

A digital signature enables users to employ to their full potential new information technologies, and to increase productivity and profitability while meeting the security, integrity and confidentiality concerns associated with the electronic transmission of documents. With respect to the Act concerning the information technology legal framework, the digital signature offered by Notarius is equivalent in value to a handwritten signature. An engineer's digital signature will establish an irrefutable link to the electronic documents, will protect them against any alteration and w ill ensure the confidentiality of the transmitted documents.

The digital signature provided by Notarius' public key infrastructure (PKI) serves as the reference model for the establishment of standards of practice adapted to the information age. The rigorous certification procedure established by the Ordre des ingénieurs du Québec and Notarius ensures a high degree of reliability. The usefulness of a digital signature that is certified by a trusted third party is increasingly recognized throughout the world. However, very few organizations presently have a functional and proven certification infrastructure.

Notarius develops and operates the PKI of the Chambre des notaires du Québec, named the Centre de certification du Québec. This infrastructure ensures the identification and authentification of the signatory and enables the exchange of information in a secure and confidential manner. The role of the Centre de certification du Québec consists of issuing a digital certificate containing authenticated information as to the identity and professional status of the holder of the keys and certificates. What's more, this PKI has been adopted by the Ordre des arpenteurs-géomètres du Québec, the Ordre des évaluateurs agréés du Québec and the Ordre des technologues du Québec in order to provide digital signature service to their respective members. Several other professional orders and associations in Quebec and throughout Canada have shown ■

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spent as Chairman and CEO of Manitoba Hydro. He was the last person to hold both of these positions. He has served as President of the Canadian Electrical Association, The Association of Professional and Geophysical Engineers of the Province of Manitoba. He was the first and founding President of the Canadian Society for Senior Engineers. When he left Manitoba Hydro in 1979, he formed his own consulting company - Bateman and Associates Ltd., of which he is still President. As a consultant he has worked and presented papers in many countries of the world. He has received recognition by his peers in many organizations, and in

1994 received the Canadian Engineers' Gold Medal. In 2002 he was awarded the highest recognition that the Province of Manitoba bestows on its citizens - The Order of Manitoba. He is still interested in traveling as well as volunteering in seniors' organizations, having served the two thousand members of Creative Retirement Manitoba as their President in the years 2001 and 2002. ■