THE MANITOBA
Professional Engineer
December, 1994
APEM

1994 Annual General Meeting

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

The 1994 Annual General Meeting was held at the Holiday Inn Crowne Plaza Downtown on Saturday, October 29. About 100 members turned out for the meeting after the Eurotunnel presentation at breakfast. Council members and visiting guests were introduced, a moment of silence was held for deceased members, and the meeting went ahead. A brief summary of the items of interest will be covered here.

Should the APEM Own its Building?

Carl Anderson discussed the Association's efforts to date to find its own facility. The Association is looking for a 370 square-metre (approximately 4,000 square-foot) existing building in the $400,000 price range. Items of importance include a location somewhere close to the downtown area, access to public transit, and availability of parking. To date, a slight preference for ownership over leasing has been expressed. The Association has enlisted the help of the SMI Realty Group and has looked at twenty possible locations. The Association has also spoken with the Manitoba Certified General Accountants, who have similar recent experience and currently own their building on Donald Street.

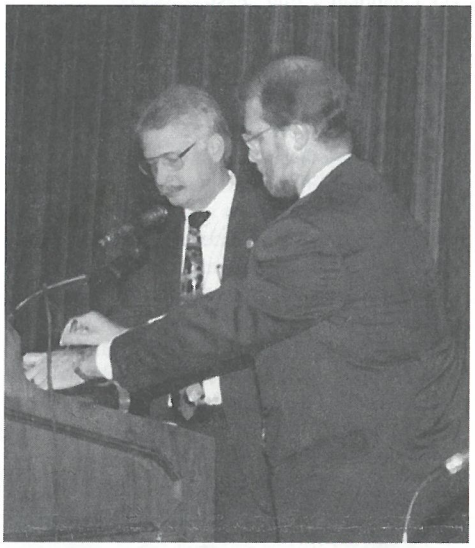
The design-build option has also been considered. Initial estimates are in the $500,000 to $600,000 range, which represents a high initial capital outlay.

Space is also currently available adjacent to the existing APEM offices. Because of existing vacancies, the owner is offering very favourable terms. At this time, a yearly lease has been negotiated and this item is to be re-visited in May, 1995.

In comparison, both the Professional Engineers of Ontario and the Association of Professional Engineers and Geoscientists of British Columbia are moving into, or beginning construction of, new facilities. British Columbia, with its buoyant economy and high real-estate values, has set aside $4.2 million for construction.

Manitoba Engineers and Manitoba Architects

Hans Boge has spent considerable time recently in discussions with the Manitoba Association of Architects (MAA) to define the responsibilities of architects and engineers in the planning, design, and construction of buildings. Even though both Associations have agreed to further good-faith discussions, the MAA has proceeded with litigation against a member of the APEM for performing duties under the Manitoba Architect's Act. In this case, the APEM is seeking status as an intervenor.



Doug Chapman passes gavel to Don Osman.

Council Elections

There are 3485 members currently registered in the Association who received ballots. Engineers' apathy is great; only 702 ballots were returned, which represents 20% of the vote. R. Britton, A. Permut, M. Symonds, S. Ursel and P. Washchyshyn were elected to serve on Council. B. Thomson is the newly-appointed lay member of Council. D. Osman was selected to serve as President for the next year.

Continued on page 4



APEM's New Council (l to r): Ron Britton, Bob Partridge, Ertrice Eddy, Mal Symonds, President Don Osman, Arnold Permut, Past-President Doug Chapman, Stella Fedenuik and Stuart Ursel. Missing: Arthur Kempan, Kathy Stewart, Bonnie Thomson and Peter Washchyshyn.



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S.K. Fedeniuk, P. Eng.
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A.H. Permut, P. Eng.
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J.M. Symonds, P. Eng.
B. Thomson
S.L. Ursel, P.Eng.
P. Washchyshyn, P.Eng.

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D. Bilodeau, Admissions Co-ordinator
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D. D'Amour, P. Eng., Thompson
R. Menon, P. Eng., Brandon

Opinions expressed are not necessarily those held by the APEM or the Council of the APEM

Committee Members Wanted

By: S.M. Matile, P.Eng.

Are you interested in continuing education? Professional development?

Would you like to assist in organizing seminars and meetings for the members of APEM?

If so, the Professional Development Committee has a job for you!

Please call Doug Kramble, P.Eng., Chair, at 956-0980. □

Practice Note

TOPIC: The Professional Engineer as/and the Contractor

By: C.R. Bouskill, P.Eng.

One matter which was recently concluded by the Investigation Committee concerned the potential for a conflict of interest in the practice of professional engineering, specifically where the engineer is also acting as a contractor, or is in the employ of a contractor.

The concern expressed in this matter was that a potential for conflict of interest may exist in that the advice proffered by the engineer/contractor could be deemed to be self-serving in that it might be directed more towards creating business and profit for the contractor than in being in the best interest of the client or employer.

Clause 3.g of the Professional Engineers' Code of Ethics states the "professional engineer shall inform each client or employer of any interests, circumstances or business connections which the client or employer could deem as influencing his or her engineering judgment, or the quality of professional services, before accepting an assignment". Another, somewhat related clause is Clause 3.l, which states "the professional engineer shall not receive any gratuity from, or have any financial interest in, the bids of any business in work for which he or she is professionally responsible, without the prior written consent of the client or employer".

Each professional engineer who is acting as or for a contractor is encouraged to examine his or her practices in the light of the above-noted clauses, and to take action to advise each client or employer of any potential for a conflict of interest, in clear unequivocal terms, either before, or at the time of, providing an opinion that is, or may be deemed to be, a professional engineering opinion. □

WE HAVE LOST CONTACT. MAY WE HAVE AN ADDRESS?



J.R. Aitchison
D.C. DeLeeuw
J.H. Enns
M. Green
G.N. Grunau
N.Y. Haddad
R.V. Houghton
M. Husain
A.F. Joyce
A.W. Lindsay
G.M. Liukko
P.W. Martens
C. Mistry
J. Pawelkiewicz
A. Pele
A.D. Round
G.R. Siebert
T.K. Simpson
R.L. Soviak
G. Strong
S.L. Wilson

ENGINEER-IN-TRAINING MEMBERSHIP SEPTEMBER & OCTOBER, 1994

C.G. Asmundson
S. Bal
D.B. Braun
D.C. Bynski
P. Cordeiro
M.P.J. DeGagne
D.M. Fraser
D.V. Hantscher
J.E. Innes
A.R. Jansen
M.R. Koshel
P.J. Kroeker
E.A. Lacroix
M.J. McRae
R.M. Marko
I.J. Montufar
J.D. Nolin
L. Osmani
P.J.T. Pagtakhan
A.N. Passalis
L.A. Penner
D.C. Poole
J.W. Pottie
L.S. Rankin
N.E. Scott
B.R. Shearer
T.E. Small
R.J. Swan
G. Trachilis
J.G. Veilleux
V.S. Walkes
J.R. Westmacott
S.J. Wiecek
D.S. Yarko
J.M.L. Yeow
K.C. Yuen

NEW MEMBERS REGISTERED SEPTEMBER & OCTOBER, 1994

M.J. Bender
T.G. Beuthe
K.G. Blakely
S.J. Block
D.D. Dambly
M.G. DeCaire
E.L. Doherty(AB)
J.F. Duncan
R. Espey(NS)
A.S. Forzley
T.J. Fujino(AB)
M.M. Hrabok(SK)
J.W. Johnston
D.D. Keller(AB)
K.M.A. Koshelanyk
D. Krahn
N. Maksymiw
K.J.L. Martens(AB)
N.F. Masood
J.M. Mensah
L.M. Paley(SK)
P.P. Papanikolas(AB)
J.W. Patterson
P.D. Peters(ON)
J.A. Purcha
G.A. Rae
S.A. Taskinen(AB)
H.S. Tataryn
G.R. Thiessen
R. Tyc

LICENCES ISSUED IN SEPTEMBER & OCTOBER, 1994

N. Blackburn(ON)
R.W. Bruynson(ON)
M.M.R. Chang(AB)
T.A. Douglass(NB)
F.G. Driedger(AB)
D.F. Duprey(BC)
M.D. Gallant(ON)
J.H. Goertz(SK)
T.C. Greenlaw(MA)
G.P. Hawley(AB)
M.B. Inglis(ON)
R.H. Karius(SK)
A.G. Mulholland(ON)
M.C. O'Krancy(SK)
M.G. Renaud(PQ)
H.R. Rudolph(SK)
W.J. Vangool(ON)
J.A. Wilson(MO)
J.A. Wood(PQ)

In Memoriam

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

G.W. Carter
B. Chappell

President's Message

D.G. Osman, P.Eng.



When I was elected to Council two years ago, I had several objectives in mind which I presumed I would have the opportunity to raise at Council and would perhaps become a reality. That is how the democratic system is supposed to work. I can say that this was the case with the adoption of the Policy and Guidelines for Sustainable Development and the subsequent establishment of the Task Force on Sustainable Development. However, there have been many issues that have required the attention of the Council and which have consumed the lion's share of the available time. As a consequence, there has been little time for other initiatives along the way.

This year, as part of the long-range planning process, I will propose the inclusion of an opportunity to specifically accommodate consideration of the issues which have been on the platforms of current and recently elected Councillors. After all, their platforms are partly responsible for their being elected. The long-range plan is a living and evolving document which will help Council and its committees to effectively serve and protect the public.

There are currently many issues before the Council which require appropriate closure. Some of those matters are: the proposed changes to our Act; the Report of the Law Reform Commission; the government's proposals to change and consolidate the various pieces of safety legislation review and response on the Safety Legislation II; the proposed Memorandum of Understanding with the MAA; the Task Force on Lagoons; establishing an Environmental Committee; a decision on purchase or lease of premises; voluntary or mandatory reporting of continued competency; and enhancement of the image of the profession. There are also several others.

The October issue of the Manitoba Professional Engineer (the Bulletin for those of us who are older) included reports from the many committees of Council. A review of the 30 committees has been conducted and the information is being assessed to determine what changes will be desirable to effect, in both the short and long term, the Council's strategic plans.

Council will continue to operate with an eye to the same system of efficiency which has made it possible to fulfil our mandate and leave us in a positive cash-flow situation. With the increasing demands being placed on the Association to perform investigations, maintain discipline processes, undertake enforcement activities, administer the four-year EIT program, hear appeals and some of the similar activities, we will have to be looking towards the hiring of at least one additional staff person in the next year. This will be necessary because of the additional work requirements anticipated and to take some of the very heavy load off the shoulders of the very dedicated staff. There have been significant numbers of vacation days which, because of the demands, have not been taken over the years. This will, if not addressed, have a negative impact on performance after some period of time. We need to see this for what it is and be prepared to take this necessary step within the next year to 18 months.

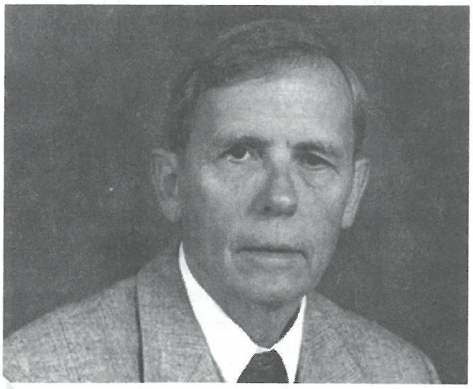
I would like to thank Doug Chapman for his offer of support as I go into this next challenging year. I look forward to addressing these challenges in the most effective manner possible. We will continue to seek innovative approaches to the problems at hand. We will focus on doing the right thing, as have past Councils, and with the high calibre of the people on the Council I am confident that it will be done right. I look forward to serving the membership and the public for another year. □

Dr. D.H. Shields – New Dean of Engineering

By: W.G. McKay, P.Eng.

Donald H. Shields, P.Eng., became the new Dean of the Faculty of Engineering on September 1, 1994.

After graduating in Civil Engineering from the University of Saskatchewan in 1955, he was awarded an Athlone Fellowship for continued study at Imperial College, London, where he earned a D.I.C. In 1963 he completed Ph.D. studies in Civil Engineering at the University of Manchester.



Dr. D.H. Shields.

Dr. Shields began his career in the consulting engineering field of soil mechanics. He has worked for four consulting firms across Canada and abroad, his longest and most senior position being that of Vice-President of William Trow of Toronto.

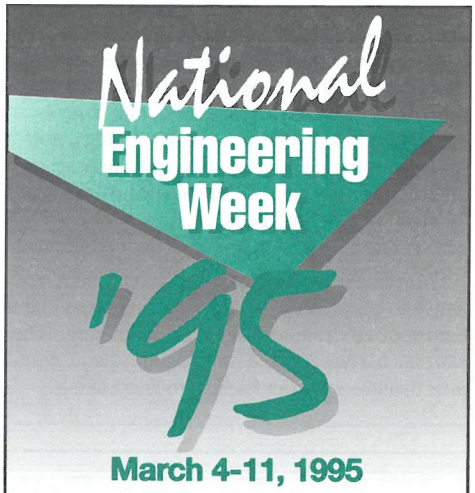
His first teaching post was at the University of Ottawa. It was during this period that he became associated with an engineering research team at the Ponts et Chausées in France, a successful cooperative effort that has continued for more than 20 years.

In 1980 Professor Shields was appointed Head of Civil Engineering at the University of Manitoba where he was instrumental in a redirection of research toward infrastructure concerns. Much of his work in Canada and abroad has been associated with asphalt pavements – in particular, cracking in cold temperatures. He is a member of the Infrastructure Committee of the Transportation Association of Canada on soils and materials relating to pavements. Recently he has directed his energies toward soil remediation through the use of bacteria for removal of spilled fuels.

Dr. Shields is Past-President of the Canadian Geotechnical Society (CGS) and is a strong supporter of local CGS Branch activities. He is a recipient of the Hogenteler Award (for design of soil-mechanics instrumentation) from the American Society of Testing Materials. His publication record is long and varied, and he is the holder of patents for a groundwater-level measuring device.

On the community level, he has been a board member, and later President of the Prairie Theater Exchange. He is married to novelist and playwright Carol Shields.

With experience in both the consulting and academic fields, Dr. Shields comes to his new post with the desire to improve the image of engineering at the U of M, locally, provincially and nationally. We wish him every success. □



March 4-11, 1995

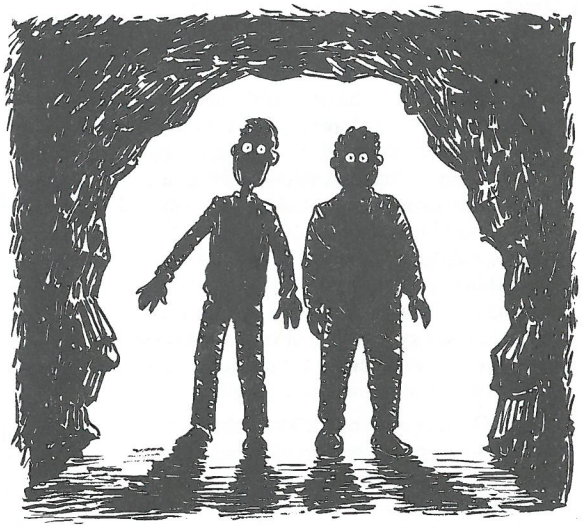
Be part of it! Participate! Help increase awareness of the importance of engineering in our everyday lives! Help encourage young people to consider engineering as a career!

This week-long celebration (formerly named "Festival of Engineering") will be held March 4-11, 1995. Exhibitions, displays, open houses, student design competitions and career information sessions will be held all across the country.

Tell us how you would like to become involved. Please call Marianne Fillion at 474-4895 for more information. □

Engineers Display Tunnel Vision

By: D.R. Strang, P.Eng.



They may never make the cover of the Rolling Stone, but these two gentlemen are rock stars in their own right. Dr. Brian Stimpson and Mr. Larry Martin recently joined forces to showcase developments in rock-breaking methods used for excavation in mines and other underground passages. The occasion was the September 15 luncheon meeting sponsored by the Research and Development Committee.

Brian Stimpson, a professor of Geological Engineering at the University of Manitoba, began the luncheon presentation by reviewing the impact that efficient rock-breaking has had on society. Until very recently, man has not had the ability to go underground efficiently or to great depths, Stimpson indicated. As recently as 1857, advance rates in tunnelling were as little as 23 centimeters per day. However, modern methods of blasting and tunnelling have allowed advance rates of up to about 60 meters per day. The last two decades have seen an "explosion in the use of underground space."

Blasting is, and will continue to be, the more common form of rock-breaking in hard-rock mining. However, recent advances in technology have improved the feasibility of tunnelling as an alternative technique. While blasting offers more flexibility, especially in areas of complex geology, it also has several drawbacks. Being a non-continuous operation, it causes constant process interruptions in mines. It can also cause damage to areas surrounding the excavation, produce dangerous fumes, and increase the risk of accidents.

Machine excavation, though an elegant alternative to blasting, has so far been little used in the hard-rock environment of Canadian mining. The extreme hardness of the rock requires large, complex machines for mechanical rock-breaking. Further factors such as steep gradients, varying widths of ore-bodies, unpredictable rock condition, collapses, and advances in blasting techniques have all combined to limit the attractiveness of tunnelling machines.

This situation is providing a challenge for HDRK, an industry consortium that undertook a project to build, test, and demonstrate a new roadheader at an Inco mine in Thompson, Manitoba. Participating in that challenge as a consulting engineer for the last three years was one of Manitoba's hard-rock veterans, Larry Martin. Following the introduction by Dr. Stimpson, Mr. Martin, now with Wardrop Engineering Inc., proceeded to describe the factors involved in implementing tunnelling technology in the mining industry.

One of the most critical factors, he indicated, is the hardness of the rock itself. Commonly found rock varies in a hardness-related characteristic called "specific energy", from limestone at 102 MPa to Dresser basalt at 380 MPa. Under conditions of very high hardnesses, especially when combined with high rock abrasivity, tunnelling becomes very difficult. In such cases, the use of a tunnel boring machine (TBM) becomes impractical. However, tunnelling with smaller "roadheader" machines may still be practical. Using a full-face cutting head, a TBM continuously cuts a circular tunnel, defined by the perimeter of the head. A roadheader, on the other hand, features a smaller cutter on a boom which must be moved around the face of the tunnel. In addition to the ability to cut harder rock, the slower roadheader method offers advantages in terms of more variable profiling and cornering.

As with the two basic categories of machine design, there are two basic cutter designs. These include disc cutters and picks, with the difference being that picks pluck or shear the rock and cutters crush.

The presentation concluded with a video showing a roadheader at work from the HDRK project at an Inco mine. Martin, who consulted on the project, noted that the machine had proved itself capable of cutting rock with uniaxial compressive strengths of up to 260 MPa.

While acknowledging that the technology for hard-rock tunnelling is "not fully developed yet", Martin concluded with his vision of the components necessary for sustained technical progress. He indicated that the design of the actual cutting tools is of primary importance.

However, other aspects of system design need to be improved as well. For instance, automatic machine controls require upgrading and an automated tunnel-roof support system will have to be developed. And, even when these advances are implemented, improvements to material-handling systems and machine maneuverability will still provide tough design challenges to mining and machine-design engineers of the future. □

Letter To The Editor

Doing Things Differently

In his remarkable book, Dr. Saul points out that "Memory is always the enemy of structure."

Have we forgotten that, only two years ago, we were vitally concerned about the Roblin Commission and its study of post-secondary education? Have we forgotten that our Association made a presentation to the Commission, as did a number of individual members? How many members have studied the Commission's Report, "Doing Things Differently", that was issued last December? Did the Commission meet our hoped-for objectives?

Before "Doing Things Differently" becomes yet another forgotten report collecting dust on the shelves of offices in the Department of Education, might we have an analysis of it from our Council?

Sincerely,

V.L. Dutton, P.Eng.

Saul, J.R., Voltaire's Bastards: *The Dictatorship of Reason in the West*, Penguin Books, 1993

1994 Annual General Meeting

Continued from page 1

Budget

Within the next year's budget, funds have been set aside for the promotion of the 75th year of the profession in the province and for the publication of a roster.

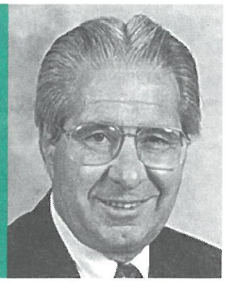
There will be no change in members' dues next year.

Admissions

Shirley Matile made a presentation on the four-year-work-experience requirement which takes effect on January 1, 1995. As part of that process, all EITs will be required to provide semi-annual reports on their experience, training, and professional activities; attend a new 15-hour Professional Practice Seminar; and complete a formal Professional Practice Examination.

Overall, the Annual General Meeting was quite informative. However, because the Breakfast Meeting presentation ran over the intended time, it made for a time-constrained meeting with little opportunity for discussion within the general membership of these important issues. □

CCPE President's Message



Dr. Garland E. Laliberte, P.Eng.

The world is shrinking. Markets are becoming more and more international.

These two statements may sound like clichés but they are, nonetheless, representative of current realities. The way the world does business is rapidly changing.

The Uruguay round of the GATT talks was finally concluded with the outcome that a new world trade organization would be formed. This comes on top of a NAFTA agreement to which we are still adapting, not to mention that the EEC is quickly moving towards complete commercial integration while the Asia-Pacific region is quickly gelling into a trade block which some analysts say could become the most powerful of all.

As an important part of the process of wealth creation and commerce, Canadian engineers will face many opportunities and risks as the world redefines the rules of business. This is why the CCPE is involved in, and is monitoring, a large number of international activities. I'd like to mention briefly some of the major areas in which we participate.

World Federation of Engineering Organizations – Our Executive Director, Donald Laplante, P.Eng., is a Vice-President of this organization. The WFEO is heavily involved in education and professional issues.

The Canadian Engineering Accreditation Board Mutual Recognition Agreement – The CEAB is a standing committee of the CCPE. The Mutual Recognition Agreement concerning accreditation of engineering programs currently includes Canada, Australia, New Zealand, Ireland, the UK, the US and South Africa as signatories. There is a possibility that Hong Kong will soon join. This agreement helps the mobility of engineers between the signatory countries. There is anticipation that Mexico and other Latin American countries may be interested in joining.

Fédération européenne des associations nationales des ingénieurs – This federation includes all of the European Community, with Poland as its most recent addition. There's a chance that other east European countries will be admitted in the future. Potential for mutual recognition between the CCPE and FEANI may be limited because FEANI requires that all Eur-Ing's obtain at least one element of their formation (education or experience) in Europe and because FEANI rules allow admission of candidates which the CCPE has traditionally considered to be technologists.

Commonwealth Engineers Council – Our Executive Director is a Vice-President of the CEC. The CEC is very active in the area of engineering education and training.

North American Free Trade Agreement – The NAFTA stipulates that engineers from the three countries must negotiate professional licensing reciprocity with a short time frame. To this end, the CCPE has been very active within the NAFTA Forum. This will have a significant short-term impact on engineers from the three countries.

Canadian International Development Agency – The CCPE is involved in a CIDA project to develop a framework for accreditation in five Latin American countries (Peru, Mexico, Costa Rica, Chile, Columbia). With an expected project duration of three years, the objective is to assist these countries in establishing consistent policies and standards which can be recognized internationally.

France – the Ordre des ingénieurs du Quebec has requested that the CCPE give its Board of Examiners a national mandate to negotiate a recognition agreement with France on educational qualifications.

Union Panamericana de Asociaciones de Ingeniéros – The CCPE is a member and holds the Chair of a newly established professional practice committee which has objectives similar to CCPE's Canadian Engineering Qualifications Board.

The CCPE is involved in many other monitoring and liaison activities which have, in the past several months, brought contacts with China, Japan, Greece, Nigeria and others.

It is impossible for me to mention all of CCPE's international activities in this short space, even less to analyze the impact and importance of each specific activity. I hope that I've given you a feeling for the importance and potential impact this work can have for Canadian engineers and the scope of our current involvement.

If you have questions, concerns or suggestions, I invite you to contact me through the offices of the CCPE at 613-232-2474 or by Fax: 613-230-5759. □

Contract in China with Teshmont Consultants

By: C.P. Gray, P.Eng.

It is difficult to imagine being involved in over 50% of the world's work in your area of expertise, but that's exactly what Teshmont Consultants have achieved in their 28 years. Teshmont Consultants of Winnipeg specialize in High Voltage D.C. Transmission with projects around the globe from Manitoba to South America to Japan.

Teshmont is involved in the Tian-Guang HVDC Transmission System in south China. Hydro-electric power at Tianshengqiao (in southwest China on the Nanpan River) is transferred to Guangzhou (in southeast China), a distance of approximately 1000 km over mountainous terrain. By comparison to Manitoba projects, Radisson to Winnipeg transmission length is about 900 km. Size of the transmission is about 1800 MW (which is similar in size to Bipole 2 on the Nelson River). Teshmont competed successfully in the international arena for the two-million-dollar consulting contract. Teshmont's role in the Tian-Guang HVDC Transmission System is to carry out system studies, prepare international bidding documents for procurement of the converter terminal equipment, telecommunication equipment and design of the electrodes, assist with evaluation of the bids and assist with the commissioning of the complete transmission system. Also as part of the project, Teshmont hosted several Chinese engineers in Winnipeg to provide good co-ordination of the project.

The current electric capacity throughout China is 170,000 MW with an anticipated increase to 300,000 MW by the year 2000. The greatest increase in power requirement is in the Guangdong Province, closely associated with the expansion of Hong Kong manufacturing. Unfortunately, most of the hydro-electric potential is in southwest China. Nevertheless, it is anticipated 25% of increased power supply will be hydro-electric, with the remaining majority from coal-fired generating stations. □

– Notice –

Payment of 1995 Fees

Membership fee invoices have been mailed to all members and Engineers-in-Training. If you have not received yours, please contact the APEM office. Please be reminded that, according to the By-Laws, THE ANNUAL MEMBERSHIP FEES ARE DUE AND PAYABLE BEFORE JANUARY 1, 1995.

For those members no longer practising in Manitoba, and wishing to resign in good standing, letters of RESIGNATION of membership must be received in the Association office ON OR BEFORE DECEMBER 31, 1994.

Applications to RENEW NON-RESIDENT membership, or to TRANSFER TO OR RENEW RETIRED membership must be received in the Association office ON OR BEFORE DECEMBER 31, 1994.

Members who are unemployed may qualify for deferral of dues. The notice accompanying the invoice provides details of eligibility.

ATTENTION, EITs!

By: S.M. Matile, P.Eng.

Council has made a number of decisions, in recent months, respecting the admissions requirements for persons who have been "grandfathered in" under the "two-year-work-experience" rule.

The following is a summary of some of those decisions:

1. The "grandfathering" policy will apply to anyone who:
   a) is enrolled, or is academically qualified and has made application to be enrolled, as an EIT with APEM by December 30, 1994, continues to be enrolled as an EIT until registration, **and makes application for registration before January 1, 1999;**
   b) will be graduating from an accredited engineering program at the University of Manitoba in February, 1995, has fulfilled all of the requirements for the engineering degree by, and has submitted an application to this Association by, December 30, 1994, **and makes application for registration before January 1, 1999; or**
   c) was assigned a confirmatory examination program before January 1, 1995, successfully completes the program, is deemed academically qualified for registration before January 1, 1993, **and makes application for registration before January 1, 1996.**
2. The simple passage of time will not be considered adequate. Even those "grandfathered in" will be required to demonstrate that they have significant experience in the **application of theory**, and that they have had at least exposure to **practical experience, the development of communication skills, professionalism and ethical responsibilities, and the social implications of engineering.**
3. Early in 1995, everyone "grandfathered in" will be required to submit, and to have his or her supervisor submit, work-experience progress reports for the work experience obtained to date, for the review and approval of the Experience Review Board. The EIT will also be required to report all professional-development and professional- service activities to date. After that, progress reports, on both work experience and professional activities, will have to be submitted semi-annually, until registration.
4. Anyone deemed by the Experience Review Board to require more than an additional six months' engineering work experience, as of January 1, 1995, will be required to have obtained a minimum of ten contact hours of continuing educational/professional development activities and a minimum of two professional-service points in order to qualify for registration. Persons who require six months of work experience or less, as of January 1, 1995, are exempt from this pre-registration requirement.
5. Every applicant who is not a registered member of this Association as of January 1, 1995 will be required to attend the Professional Practice Seminar and successfully complete the Professional Practice Examination. Please note that the Seminar and Examination will be offered twice annually, commencing in the spring of 1995.

In addition, please remember that any post-graduate thesis work completed may be considered as up to a maximum of six months' engineering work experience, provided that it was completed under the supervision of a registered professional engineer who supports the claim with written documentation.

An information kit, providing details of these requirements, will be mailed, to everyone enrolled as an EIT, shortly. Please await the arrival of the kit before calling the office with questions; and please ensure that the Association has your current mailing address. □

Winnipeg Aqueduct – 75 Years and Still Counting

By: E.A. Wolowich, P.Eng.

Seventy-five years and still counting – no, not Tom Pearson's age, but the City of Winnipeg Aqueduct. Following an entertaining introduction by Kelly Kjartanson, Tom gave an excellent presentation on this engineering marvel. Some of the highlights of his talk, though there were many, are briefly presented herein.

Tom gave us a quick review of the aqueduct system. Winnipeg's water supply originates in Indian Bay of Shoal Lake, with a watershed of 930 square kilometres. The aqueduct supplies 390 million litres per day to Winnipeg, by gravity. When the lake level is low, a pumping system is utilized to pump water into the intake, where it then flows by gravity to Winnipeg. The aqueduct cannot be pressurized. Deacon Reservoir was constructed in 1972, for storage purposes, to buffer peak demands and enable shut-down of the aqueduct for repairs. Prior to 1972, the Aqueduct could not be shut down, but now it can accommodate a 16-day shut-down. The City plans to expand the storage capacity of Deacon reservoir to 25 days.

The Aqueduct has been honoured by many organizations, including the CSCE, the Manitoba Historic Society, and the AWWA.

The project was first conceived by the Water Supply Commission in 1906. At that time, James Ashdown recommended using the Winnipeg River as the source, which was sought as a hydro-electric source at the same time. In 1911, Charles Stickler recommended Shoal Lake as the source. With Thomas Deacon as their mayor, the people of Winnipeg voted and selected Shoal Lake as the source of their future water supply. The International Joint Commission granted the project a licence on June 14, 1914. The withdrawal from Shoal Lake was licensed for 460 million litres per day – thought to be adequate, at the time, for a population of one million.

The aqueduct is 137 km long and constructed almost entirely of nonreinforced concrete. In order to undertake the project, a rail line was first built for the entire length of the aqueduct. The Falcon River was diverted from Indian Bay to improve the water quality at the aqueduct intake. Crushing plants, camps and even medical services had to be provided. Construction on the aqueduct began on May 15, 1915 and was completed on April 6, 1919. Prince Edward of Wales officially opened the aqueduct on September 9, 1919. The project cost $17 million.

After many years of operation, the aqueduct is showing some signs of aging. Recent inspections have found root intrusions, joint leaks, sulphate attack of the concrete, and some buoyancy problems. Repairs are presently underway. The aqueduct rehabilitation program will require $50 million by the year 2000. Increasing the water supply capacity is presently being investigated. Options include a supplementary source from the Winnipeg River, or twinning the aqueduct to Shoal Lake. Beyond that, future plans include a water treatment plant.

Bob Foster thanked the speaker. He conveyed the thoughts of the engineering community in paying tribute to the huge engineering undertaking that went into this mega-project, particularly with the technology available 75 years ago. □



A book entitled "Stored-Grain Ecosystems" edited by Digvir S. Jayas, P.Eng.; Noel D.G. White; and William E. Muir, P.Eng. of the Department of Agricultural Engineering at the University of Manitoba has been published by Marcel Dekker, Inc. The book provides a complete overview of grain storage systems and takes a multidisciplinary approach to grain storage research – applying knowledge from fields of biology, cereal chemistry, economics, engineering, mathematical modeling, and toxicology to the study of the complex interactions among physical and biological variables in stored-grain bulks that cause the deterioration of stored grain. The book contains contributions from more than 25 internationally acclaimed authorities in their respective fields and is based on the invited presentations at the International Symposium on Stored-Grain Ecosystems held in Winnipeg. □

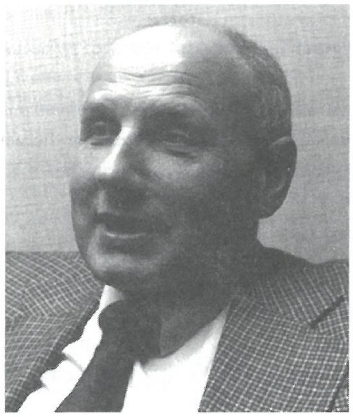
AGM Awards Banquet

By: C.P. Gray, P.Eng.

The Annual General Meeting Awards Banquet was held on October 29, 1994 at the Carlton Club, Winnipeg. Emcee Doug Chapman called upon Bob McKibbin to say grace. The entree was delicious prime rib. After dinner the awards were presented by Pat Feschuk.

Outstanding Life Membership Awards were presented to John Lewis and William (Bill) McKay.

Mr. Lewis has been a member of APEM for 37 continuous years. In that time he served on Council for four years, the Public Relations for seven years, the Publication Committee (previously known as the Bulletin Committee) for eleven years, the University Liaison Committee for five years, the APEM/MANSCETT Committee for three years, the Nominating Committee for two years, the Premises Committee for one year, the Admissions Review Committee for three years, the Executive/Finance Committee for one year, the Awards Committee for one year and the Registration Procedures Review Committee for three years. As well, Mr. Lewis received the Association's Outstanding Service Award in 1976.



John W.J. Lewis.

Mr. McKay has been a member of APEM for 29 continuous years and was previously a member of the Association of Professional Engineers of Saskatchewan for 19 years. Mr. McKay served on the Old Pinawa Committee for one year, the Awards Committee for one year and is presently in his ninth year on the Publication Committee having served two years as Chairperson and one year as Editor.

Unfortunately, John Lewis and Bill McKay were unable to attend the dinner due to previous commitments. Both Mr. Lewis and Mr. McKay are well deserving recipients of the 1994 Outstanding Life Membership Award.

Outstanding Service Awards were presented to Garland Laliberte and William (Bill) McDonald.

Garland Laliberte has been a member of APEM since 1968 and was previously a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta for six years. Garland has served on Council for six years, one of which he served as President, five years on the Executive/Finance Committee, six years on the Board of Examiners, four years on the Admissions Review Board, one of which he chaired, three years on the Nominating Committee, one of which he chaired, two years on the Ad Hoc Committee for group practice, two years on the Ad Hoc Committee on the Code of Ethics, and three years on the Ad Hoc Committee on Technologists. In addition, Garland served one year as the APEM Director on the Board of Canadian Council of Professional Engineers (CCPE), three years on the Executive of CCPE and is currently President of CCPE. Garland was Dean of Engineering at the University of Manitoba from 1989 to 1994. Garland thanked the many people whom he has met during his career and was honoured to be recipient of the Award.

Bill McDonald has been an APEM member since 1968. Bill served on Council for four years, one of which he served as President, chaired five years on the Admissions Review Board, served three years on the Ad Hoc Committee on Technologists, as well as three years on the Nominating Committee, three years on the Investigation Committee, three years on the Executive/Finance Committee, two years on the Practice and Ethics Committee, four years on the Ad Hoc Committee on Admission Standards, one year on the Awards Committee, one year on the Ad Hoc Selections Committee, one year as Liaison Councillor to the Ad Hoc Committee on Engineering Inspection and Supervision, and one year on the University Liaison Committee. Bill said that he hoped serving on the various Committees was of benefit to APEM and its members, as it was beneficial to his personal and professional development.

The Outstanding Service Award was well earned by both Garland and Bill for their dedication and contributions to APEM over the years.

In closing the Awards ceremony, Doug Chapman congratulated new APEM President Don Osman and wished him success in the coming year. The evening was completed by the comedy acts of two Winnipeg comedians, Jon Ljungberg and Irwin Baker. □



William (Bill) G. McKay.

Admissions Update

By: S.M. Matile, P.Eng.

By the time you read this article, many of the new Admissions programs scheduled for implementation with the four-year-work-experience requirement on January 1, 1995 will, hopefully, be in place.

The Experience Review Board's Procedures Manual and Operations Guidelines, the document which addresses the "four-year-work-experience-requirement", is currently in the final stages of review, and should be finalized by the time you read this.

The title "four-year-work-experience requirement" is a misnomer. It is true that the Association previously required a minimum of two years' experience and now requires a minimum of four years' experience, but now there is a "checklist" of experiential components that an applicant is required to have accomplished in order to be considered eligible for registration. **The simple passage of time, even four years, is not adequate.**

Six Experience Requirements

In order to be considered eligible for registration, an applicant must have obtained at least four years' quality engineering work experience, under the direct supervision of a registered professional engineer who has assumed all responsibility for the applicant's work. The work must have been of increasing technical complexity, and the applicant must have assumed increasing responsibility over the four-year period. The work **must** have included the **application of theory**, and must include at least exposure to **practical experience, the management of engineering, the development of communication skills, professionalism and ethical responsibilities, and the social implications of engineering.** The applicant, who is required to have been enrolled with the Association as an EIT, will have been required to submit, and to have had his or her supervisor submit, semi-annual EIT work experience progress reports for the review and approval of the Experience Review Board.

Professional Practice Seminar & Examination

The Professional Practice Seminar and Examination were described, in detail, in the October issue of this publication. The course notes for the seminar should be finalized by January, 1995, and we expect to be offering the first seminar and examination in the spring of 1995. **Please note that the Professional Practice Seminar and Examination will be mandatory for every applicant who is not a registered member of this Association as of January 1, 1995. This includes everyone currently enrolled as an EIT.**

Engineer-in-Training (EIT) Program

EIT enrollment with APEM will be mandatory for all applicants – for the full four-year "apprenticeship" period. During that time, the EIT will be expected to complete a minimum of 40 contact hours, or 10 contact hours per year, of continuing

Continued on page 12

Council Reports

September 12, 1994

By: C.P. Gray, P.Eng.

AT WHICH COUNCIL DISMISSES CONCERNS OVER THE INTERIM INTER-ASSOCIATION MOBILITY AGREEMENT AND ADOPTS NEW GUIDELINES FOR THE ETHICAL USE OF THE SEAL

Numerous important issues were brought before the Council on the September 12, 1994 meeting.

Concern was expressed regarding the Interim Agreement on Mobility of Professional Engineers in Canada which APEM had signed in May – an agreement that will move towards interprovincial mobility of Canadian Engineers. This agreement is limited to full-time, practising engineers only. The agreement takes precedence over all current APEM policies. Concerns were expressed about:

i) registration of engineers from other provinces who are presently ineligible for registration in Manitoba; and

ii) present mandatory registration requirements for APEM members which are not required by other Associations.

It was agreed further discussion with other Associations are required to deal with conflicts with registration. Also, Council moved that former APEM members who failed to pay the de-registration fee but otherwise qualify under the Mobility Agreement will be required to pay the outstanding de-registration fee before they are eligible for registration.

Council adopted the document prepared by the Task Force on the Seal and entitled "Guidelines in Respect of the Ethical Use of the Seal" with minor changes.

Council adopted a new policy on reinstatement of members. Members who have resigned in good standing shall pay all dues required, pass the By-laws and Code of Ethics Examination (if re-registering within a year) or pass the Professional Practice Examination (if re-registering after one year), and provide the minimum four years of acceptable engineering experience. Members who have been de-registered for non-payment of dues are required to fulfil the above obligations in addition to providing a letter to Council explaining why his or her membership has lapsed.

Council adopted a sunset clause for those grandfathered under the two-year work experience requirement to be set for December 31, 1998. In addition, EITs are required to submit semi-annual reports to APEM commencing January, 1995 until applying for registration.

Council authorized the Manitoba CCPE representative to endorse the NAFTA Forum on Engineering Registration and Practice. Council further authorized the CCPE representative to endorse the 1995 CCPE Budget and Assessment. Council moved to send a letter to CCPE to suggest that Public Relations funding be reduced for subsequent budgets.

Council adopted new terms of reference for the APEM President, Past-President, Executive Member, Executive Committee, Lay Councillors and CCPE Director, which were previously unspecific.

Council approved the recommendations of the Consulting Engineers' Committee to discontinue the existing "Standard Form of Agreement between Client and Professional Engineer in Consulting Practice". □

October 11, 1994

By: B.A. Dobran, P.Eng.

AT WHICH COUNCIL APPROVED A REVISED MANUAL OF ADMISSIONS AND PRE-REGISTRATION PROGRAM

With all but one Councillor present, President Doug Chapman called the meeting to order promptly at 12:30 p.m. The first item of business was to adopt the proposed 19-item Agenda, and add two more items. The minutes of the September 12, 1994 Council meeting were then adopted.

Dave Ennis advised that there had been delays in switching to the in-house computerized system, and that the August statement will be mailed to the Councillors once it is available. Council then considered the Draft Auditor's Report, and approved it for presentation to the membership at the Annual General Meeting.

Council then received the report of the Task Force on Sustainable Development. Jack Atchison, Chair of the Task Force, commented on the activities of the Task Force and answered questions put forward by Council. Council then referred the recommendations of the report to the appropriate committees for comments on implementation and for recommendations to Council by January 15, 1995.

Council next received the Registration Board Report – Applications approved September 21, 1994.

Council then received the minutes of the Executive Committee meeting of October 3, 1994, and ratified the actions continued therein.

Council next considered a memo from Shirley Matile, Director of Admissions, regarding the regular Review of Decisions of the Board of Examiners by the Registration Board. Council approved the revised Terms of Reference, included with Ms. Matile's memo.

In other important Council Business, Council approved APEM's revised Manual of Admissions. Council then approved, in principle, the Pre-Registration (EIT) Program as outlined by Shirley Matile.

Council considered a recommendation from the Board of Examiners dated September 7, 1994. It then appointed Dr. Chapman to Chair the Board of Examiners effective November 1, 1994.

Congratulations to Doug Chapman on a successful year as President of the APEM! □

Thompson Chapter News

By: D.M. D'Amour, P.Eng.

On September 29, 1994 the Thompson Chapter of the APEM held its annual general meeting. Forty-one members turned out for the event at the Hub Restaurant. A chapter activity report was presented by Rodger Blunden. Of note was the success of the annual APEM/CIM golf tournament in September. Forty-eight golfers turned out for the event, with Dave Nicholls winning with low score.

Cathy Stewart reported on the activities of the APEM Council. She mentioned that the APEM is looking at mandatory reporting of professional development activities, possibly in 1996. In addition, she discussed that the Association is setting guidelines for ethical seal use. Cathy also welcomed new members Dale Andres, Rick Miller and Garth Liukko. Ian Farr gave the nominating committee's report. Members elected to the Chapter executive council for a 2-year term include Vera Marie Meier, George Nickel, and Wayne J. Stewart.

Following dinner, Rodger introduced Doug Chapman, President of the APEM. His presentation was on "Supervision and Mentoring of the Engineer-in-Training". The topic was well received by the members present. Doug's talk included discussion of the change in the EIT program to include professional development seminars. Many members expressed interest in having these seminars offered in Thompson.

The executive has since met and put forth plans for next year. These plans include increasing community awareness of engineering. We hope to accomplish this by way of National Engineering Week (March 4-11, 1995), involvement with the city-wide Science fair, and participating in career days at the high school. We hope to enhance professional development in our chapter with our spring meeting (slated for February 1995), a professional development seminar in Thompson, and our AGM next September. Socially, our plans include either a softball or bowling tournament in the spring, and our annual APEM/CIM golf tournament for August. □

Sous La Manche and Back Again

By: V.L. Dutton, P.Eng.

Probably the one person in the audience who most appreciated Mr. Lemley's illustrated talk on the construction of the Channel Tunnel was my friend, Gil Frederick, VE4AG, who attended the AGM Breakfast with me. Gil and Mrs. Frederick were the lucky winners of the Winnipeg Symphony's draw last Spring; the prize was a week in London. Then – talk about good fortune! – Beryl's uncle works for the Channel Authority and lives in Canterbury, so they were able to travel to France and back through the Chunnel on one of the test runs, and Gil has his stamped passport to prove it.

The talk had lots of detail, as one would expect from an address by the CEO of a job that has taken seven years. The locomotives have six driving axles and consume 5.8 MW of power. 14,000 psi concrete was used on the job. Tunnelling shook down to 420 metres per week with the men working under 12.5 bars of pressure. There is one redundancy for everything. Assez?

I feel at liberty to throw in a little French because there was no single language for the job. As a result, there were lots of interpreters. Also, Canada's Bombardier Corporation was involved in a significant way and they talk a lot of French in their plants in Quebec.

Having read, recently, Science et Vie's article on the French contribution to the Chunnel, the slides showing the details of the English side were the more interesting for me. We gained a good impression of the 30 hectares of land that the British share of the 20,000,000 tons of tailings added to the beach near Folkestone. The manufacturing of the concrete components for the lining of the tunnel, cast as they were on the Isle of Gain, made me think of the manufacturing of the components for Mulberry Harbour half a century ago. Space is always critical on Britain's "tight little island" which explains why the rail link between the Tunnel and London still has not been built. However, Mr. Lemley opined that it would be built some time in the next decade.



Jack Lemley discusses Eurotunnel construction.

He then pointed out something that had come to my attention only recently in another issue of Science et Vie. It was a fascinating article on the four (Japanese, German, Italian, and French) high-speed trains that have been developed in the past twenty-odd years or so. What I had not appreciated were the differences between the rail systems in the various European countries and, especially, the differences in their signalling systems. Mr. Lemley told us that, in order to run in Belgium, France, and the U.K., a locomotive using the Chunnel has to have three independent systems for handling the signals that are displayed in the cab by the on-board computer systems. (Things happen so quickly on those high-speed trains that exterior signals, such as those used in North America, are simply unsafe.) So that they can operate into Switzerland, the French have some of their locomotives fitted-out to handle four systems of signalling.

Answering a number of questions following his talk, Mr. Lemley observed that the Europeans are ahead of North American engineers and, as the French railway system demonstrates, are very aggressive in developing technology. He gave the figure of ten years for the lead time we North Americans will have to overcome in spite of Bombardier's efforts.

There was much more and no one, in the "full house", left early. In mulling over Mr. Lemley's talk, I began to think of other major projects to which this one might be compared. The preparations for the Normandy landing in 1944 and the St. Lawrence Seaway a decade later might be thought of as being contemporaneous with the Chunnel. Certainly the structures at Cheops and Luxor come to mind, as does the building of the Great Wall across much of China that was the precursor to the Maginot Line. In Britain itself, and bearing in mind the "engineering" that was then available, Hadrian's Wall, Offa's Dyke, and Stonehenge (what is left of it), must certainly be on the lists. The Chunnel is in good company.

Those who were not at it missed a great talk! □

Wine and Cheese Reception

By: H.S. Zbigniewicz, P.Eng.

The North Ballroom at the Holiday Inn Crowne Plaza was the location of the 1994 Wine & Cheese reception in honour of Past-Presidents, award recipients, delegates, Council and committee members. The formal portion of the evening began with a welcome from President Doug Chapman.

Pat Feschuk, Awards Committee Chair, presented seven APEM scholarships to a very impressive group of students from the University of Manitoba. The scholarships were given for highest standing in each recipient's category, and are as follows:

First Year Engineering	Dileepan Joseph
Second Year Engineering	James Penner
Third Year Engineering	
– Mechanical	Erwin Sison
- Agricultural/Geological	Christopher Bailey
- Computer/Industrial	Vincent Gaudet
- Civil	Trevor Poole
- Electrical	Scott Woodford

Pat also had the pleasure of presenting the Major Charles Canada Northlands Development Award to University of Manitoba student, Koren Bear.

The formal portion of the evening concluded with incoming President Don Osman, on behalf of the APEM, presenting Monica Chapman with a gift of thanks for her support to Doug over the course of his term as President.

The informal portion of the evening was a great success and gave all those in attendance the opportunity to meet new committee members, guests and award winners, as well as renew old acquaintances. □



1994 Student Award Winners.

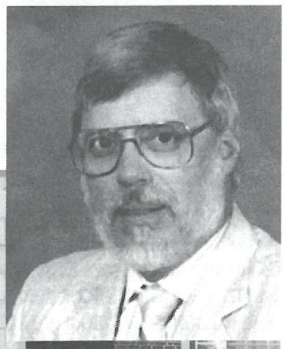
APEM Tours the Energy & Environmental Research Center at the University of North Dakota

By: D.L. Woytowich, P.Eng.

The Energy and Environmental Research Centre (EERC) is one of the world's leading energy and environmental facilities and is recognized as an international leader in low-rank coal research and technology. In May, 1994, nineteen Manitoba scientists and engineers had the opportunity to visit the EERC facility, located at the University of North Dakota (UND) in Grand Forks. The one-day event was organized by the APEM R&D Committee, and commenced with a light luncheon/presentation in the State Conference Room, followed by a tour of the facility.

The luncheon opened with Mr. Frank Beaver, P.E., Ph.D., Associate Director of EERC, welcoming the Manitoba group, giving a brief historical overview of EERC and a slide presentation which highlighted some of the energy and environmental research programs and international projects currently in progress at the centre.

Dr. Beaver explained how the centre evolved from a small, federally funded, lignite-coal research engineering laboratory into a large, self-supporting, multidisciplinary science and engineering facility, which now attracts approximately $20 million annually in contracts (the majority of which are from industrial sponsors in both U.S. and foreign markets). Located on the southeast corner of the UND campus, the main EERC facilities are made up of 21 buildings, with over 1860 sq. metres of laboratory, pilot plant and office space. EERC is operated independently from the UND, and employs approximately 300 research staff/technicians, and 100 students. Many of the students from baccalaureate to post-doctorate levels are from foreign countries and are provided with practical educational experiences.



Frank W. Beaver, Associate Director of the Energy & Environmental Research Center.

Dr. Beaver indicated that the success of EERC can be attributed to their philosophical approach to research, that is, "energy and the environment are inseparable". He also indicated that it was important to build an international network of experienced science and engineering teams which are focused on understanding key energy pathways through the environment, as well as transformations of energy into appropriately convenient forms. Dr. Beaver emphasized that the scope of EERC research remains truly cradle-to-grave, beginning with resource characterization, followed by energy conversion, and culminating with environmentally safe utilization and/or disposal of waste residues.

Dr. Beaver identified several national and international research projects on which EERC is currently working including: the recycling of plastics into liquid feedstocks for the American Plastics Council (APC), the reclamation of a coal mine in Northern Bohemia, the feasibility of hydrothermal processing of lignite in Yugoslavia and the demonstration of new technologies at a groundwater remediation sour-gas site in Alberta. In closing the slide presentation he indicated that EERC has been recently designated as a "National Centre for Excellence on Air Toxic Metals Research" by the U.S. Environmental Protection Agency (EPA).

The next phase of the program was a tour of the various research laboratories at the centre.

EERC services include the testing and analysis of inorganic/organic constituents of coal, coal-by-products, coal-ash-water, wastewater, sludges, oils and tars.

EERC researcher, Stephen Hawthorne, was recently honoured with an international award in appreciation of his pioneering achievements in the development of analytical supercritical fluid (SF) technology. Hawthorne's work focused on using the SF process to develop faster, cheaper, and safer methods to measure pollution and contamination in soil, water, and air.

EERC also provides training and education programs ranging from one-day short courses to full-scale post-graduate international executive courses. The EERC has sponsored a series of energy and environmental conferences in the United States and Europe including the recent International Conference on Energy and Environment: Transitions in East Central Europe, Focus on Technology and Socioeconomic Issues to be held in Prague, Czech Republic on November 1-5,1994.

For more information on EERC services and/or the above Conference, one can directly contact Dr. Frank Beaver, P.E., Ph.D, at: 701-777-5125 or Fax: 701-777-5181. □

Practice Note

TOPIC: Compliance with the Manitoba Building Code and the Winnipeg Building By-Law

By: Consulting Engineers Committee

It has been brought to the attention of the Association that a small number of submissions for building permits to the City of Winnipeg by APEM members are missing very basic information required under the City of Winnipeg Building By-Law. As well, there are sometimes submissions that fail to meet the design requirements of the Manitoba Building Code and related codes and regulations.

Failure to comply with the Code and Building By-Law not only results in delays in approvals which are harmful to those parties upon whose behalf the permits are being sought, but may also be a contravention of the Professional Engineers Code of Ethics.

The purpose of this notice is to remind those members of our Association to whom this applies that they must be appropriately qualified to perform their professional duties and that their design documents must provide the basic data required and must comply with the applicable codes. Failure to make appropriate provision may result in disciplinary action. □

Westman Chapter News

By: R. Menon, P.Eng.

The Westman Chapter, under the leadership of the current Chairperson, Rob Reisz, has had a busy year thus far.

In early March, 23 area engineers assisted APEM at the annual career symposium for the Brandon School Division. Displays for the booth were provided by PFRA, Assiniboine Community College, Behlen Industries and the Department of National Defence. In addition to the display booth, several of the engineers also presented brief seminars on the various aspects of engineering.

Also in March, in conjunction with the Manitoba Chapter of the Canadian Public Works Association, the Chapter organized a mini-workshop. The highlight of the event was the supper meeting where our very own councillor, Stella Fedeniuk, gave an excellent presentation on the 1993 floods along the Mississippi River, in Illinois.

The area engineers really get around. We shifted gears in May to Yugoslavia. Capt. Dave McQueen from C.F.B. Shilo, just back from a tour of duty in the former Yugoslavia with the Canadian contingent, gave a presentation on the assignments carried out by the Engineers Corps. We were delighted to have the APEM President, Doug Chapman at the meeting. Dr. Chapman gave a brief update on the issues presently before the Council.

We are presently in our summer lull and hope to pick up again our activities after the Thanksgiving weekend in October. □



Doug Delgatty thanks Stella Fedeniuk.

Westman Engineers at Brandon Career Symposium.



Environmental Assessment – Whose Domain?

By: C.P. Gray, P.Eng.

The Canadian Bar Association hosted a one-day seminar on Environmental Law issues at the Manitoba Law Society Building on October 22, 1994. Because of the wide range of environmental experts' qualifications and lack of common environmental assessment standards, there is emerging concern among the legal community. To address the concern as to who is best qualified to make environmental assessments, there was a panel discussion with moderator Mr. Don Cameron LL.B., Q.C., Mr. Wells Peever LL.B. (of Pitblado and Hoskin), Mr. Robert Foster P.Eng. LL.B. (of Wardrop Engineering) and Mr. Doug Sigurdson LL.B.

Mr. Peever stated that at present there are no legal guidelines on the title "Environment Auditor" and since society is rapidly putting more trust in environmental audits, environmental experts should have the same accountability as other professionals, such as lawyers, doctors, accountants and engineers. Mr. Peever stated that environmental assessments are scientific in nature, using chemistry, mathematics, biology and geology; and since the engineering profession utilizes these applied sciences, the engineering profession is the obvious choice for making environmental assessments. Mr. Peever added that professional engineering associations are regulated and have the power to discipline members who are negligent in their duties, in conflict of their client's interests or practising in areas where they are not competent. Also, Mr. Peever noted that engineers are legally liable for their environmental assessments, but conceded that it is unclear whether employee engineers are directly liable, citing a recent Supreme Court of Canada ruling. Mr. Peever concluded that a separate professional association could create confusion over who is qualified.

Mr. Foster agreed with Mr. Peever that regulation of the environmental field and establishing standards for environmental assessment are required. However, Mr. Foster had concerns about limiting environmental assessment solely to engineers, since there are competent people outside the engineering profession who are also qualified to do environmental assessments. Mr. Foster's advice to the legal community was that those chosen to perform environmental assessments should have the proper technical training and have good professional judgement, have a self- governing body that upholds professional standards (such as client confidentiality) and the client has recourse for negligence. Also, Mr. Foster pointed out that since present environmental guidelines are vague, the Engineering Profession Act is difficult to enforce. Finally, Mr. Foster noted that since the public is increasingly scrutinizing professional institutions, revising the Engineering Profession Act may have unfavourable consequences to the Associations.

Mr. Sigurdson first established that environmental audits have many topics such as site assessments and risk assessments that may fall outside the expertise of the professional engineer. As a result of not having the correct qualifications, the engineer may not meet the expectations of the client. Therefore the client himself is the best judge on what expertise best meets his needs in education, skills and experience. In one specific case, a client was requested by a government authority to get an assessment of a product under the Dangerous Goods Act by a list of several Winnipeg engineering firms, which limited the client's selection of qualified experts.

Mr. Sigurdson argued that the engineers' community might not want the responsibility and liability of environmental assessments. He reasoned that although he was qualified to practice family law by virtue of his title as a lawyer, he felt he was not qualified to do so because of his lack of experience. Similarly, he reasoned that engineers by virtue of their titles could practise environmental engineering but not be qualified. Finally, Mr. Sigurdson noted that most engineering firms do not have laboratory facilities and often rely upon other experts (such as chemists) for results and opinions.

A question-and-answer period followed the three presentations, although mostly statements were generated by the audience. Some comments were: unqualified engineers practising environmental work would be in violation of the Engineering Profession Act; small businesses quite often do not know who to go to for environmental advice and cannot necessarily distinguish an expert's qualifications and therefore need an independent, regulating body with established guidelines and standards for their protection; there are inconsistencies between provincial engineering associations with regard to licensing geologists and geophysicists and therefore inconsistencies between provinces on whether geologists and geophysicists can practise environmental work and banks, because of their concerns for fiscal losses from environmental hazards, are a good source of environmental assessors. □

Attention, Employers and Supervisors of Engineers-in-Training!

By: S.M. Matile, P.Eng.

APEM is revising its requirements for registration as a professional engineer. As of January 1, 1995, to be eligible for registration, a person must first be academically qualified (i.e. hold an accredited engineering degree or equivalent), then register as an Engineer-in-Training (EIT) member of APEM, attend APEM's Professional Practice Seminar, successfully complete APEM's Professional Practice Examination, and satisfy APEM's continuing education/ professional development and professional service requirements, all while obtaining at least four years' satisfactory engineering work experience, under the guidance and direct supervision of a registered member of APEM.

Satisfactory Engineering Work Experience

Satisfactory engineering work experience has been defined as comprising the practice of engineering, which **must include** the **application of theory**, and must include exposure to the areas of **practical experience, engineering management, communication skills development, professionalism, ethical responsibilities and the social implications of engineering.**

Supervision of Engineering Work Experience

Satisfactory engineering work experience must be obtained under the guidance and direct supervision of a registered professional engineer who assumes full responsibility for that work.

EMPLOYER AND SUPERVISOR

The employer and supervisor are crucial to the formation of a professional engineer. It is vital that all employers and supervisors of EITs be aware of the Association's requirements for registration and support the EITs by providing every possible opportunity for them to fulfil those requirements.

Responsibility of the Employer

The employer is expected to ensure that all engineering graduates in his or her employ enroll with APEM as EITs.

The employer is responsible to ensure that the EIT's work is being supervised by a registered professional engineer, and that the supervising professional engineer takes full responsibility for the EIT's work.

The employer is also responsible to provide the EIT the opportunity to obtain each of the six required components of engineering work experience, to complete the Professional Practice Seminar and Examination, and to participate in the required continuing education, professional development and professional service activities.

Responsibility of the Supervisor

The supervisor is responsible for assigning work to the EIT. It is important that the work assigned include the Association's six required components, be compatible with the EIT's education, comprise a variety of tasks of increasing responsibility and technical complexity, and provide the opportunity for the EIT to develop professional judgement and the ability to work on a team.

The supervisor is expected to assist in the EIT's professional as well as technical development, by providing counselling, encouragement and support as required, and encouraging continuing education and professional service activities, all while assuming responsibility for the EIT's work.

The supervisor is expected to assist and advise the employer to ensure that the EIT is able to fulfil APEM's requirements for registration.

The EIT and the supervisor will each be expected, every six months (or more often, if the EIT changes positions), to complete and submit to the Association progress reports describing the EIT's engineering work experience in each of the six areas described above.

Upon the EIT's application for registration, the supervisor is expected to serve as a referee, and to comment on the applicant's technical competence, communication skills, ability to exercise professional judgment, integrity, character, ability to assume responsibility, ability to work on a team, and ability to recognize his or her limitations with respect to the practice of engineering.

Information Packages

Information packages for EITs, their supervisors and their employers will be available early in 1995. These packages will be sent, automatically, to the employers and supervisors of anyone who makes application for EIT enrollment after January 1, 1995. They will also be available, to anyone else who may be interested, upon request. □

Admissions Update

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education/professional development activities (courses, seminars, conferences, etc.) During that time, also, the EIT will be expected to obtain a minimum of eight professional service points, or two professional service points per year, by making contributions to the Association and/or to certain technical or learned societies in such areas as committee work, volunteer involvement, etc. The EIT program, detailing the annual requirements and outlining the qualifying activities, should be finalized and approved by Council by Jan. 1995.

Information Packages

By the time you read this article, the revision of the Association's application forms, reference forms, standard letters, etc. and the preparation of information letters and brochures should be well underway. By January 1, 1995, we hope to have all of the paperwork necessary to the implementation of the "four-year-work-experience requirement" in place. □

Coming Events

Manitoba to Host IEEE Conference

Manitoba has been awarded this year's Western Canada Conference and Exhibition, sponsored by the Institute of Electrical and Electronics Engineers, in cooperation with the University of Manitoba and TRLabs. The conference will be held May 5 & 6, 1995 at the Delta Winnipeg. The themes of the conference are communications, power, and computing. For information about submitting papers or attending the conference, contact Dr. P.G. McLaren at 474-8985. For information on the exhibition, contact Mr. Doug Strang at 474-6689.

Manitoba to Host National Co-op Education Conference

May 14-17, 1995

This year's national conference on co-operative education, to be held in Winnipeg, will combine delegates involved in both secondary and post-secondary co-op education. Educators and employers of engineering students and graduates are strongly encouraged to attend to find out more about this growing form of industry/university interaction in engineering education. For more information, call (204) 632-2563.

Call For Papers

An invitation is extended to submit papers for presentation and publication in WESCANEX '95 to be held May 15 & 16, 1995 in Winnipeg, Manitoba.

All papers in the areas of Communications and Computing, or Power and Computing, are welcome, including the following special topics:

COMMUNICATIONS AND COMPUTING

- Multi-media networks with data- and signal-compression
- Network-access technologies
- Software design for real-time systems and networking
- Cellular systems
- Object-oriented design
- Communications systems

POWER AND COMPUTING

- System simulation and analysis
- Instrumentation, protection, and control
- Application of new techniques; e.g. ANNs, fuzzy logic
- FACTS devices and controls
- Harmonic pollution

Please submit a two-page summary of your paper (either **three** copies of a printed form or **one** copy in the electronic form) for evaluation to:

Dr. Peter G. McLaren, Chair,
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