THE MANITOBA
Professional Engineer
June, 1997
APEM

Students and Engineers – An Evening Together

By: W.G. McKay, P.Eng.(Ret.)

The annual engineer-student dinner was held on March 20, 1997, with some 160 students and engineers in attendance. The function was chaired by Doug Kramble, Chair of the Manitoba section of the Canadian Society for Civil Engineering (CSCE).

The evening opened with a general reception, with host engineers and their students becoming acquainted, followed by more dinner conversation around the tables.

Chair Kramble introduced and thanked all those who had assisted in the organizing of the evening's proceedings. APEM President Mal Symonds and a number of the APEM Councillors were also introduced.

Special Award

A special award by the CSCE was made to Professor Sami H. Rizkalla, Faculty of Engineering, University of Manitoba, in recognition of his outstanding career in structural engineering. The award is a "Certificate of Appreciation for his contribution as a National Lecturer" – one of his many contributions to engineering on a local, national, and international basis.



Doug Kramble (l) presents Sami Rizkalla with CSCE certificate of appreciation.

"Challenge of Change"

Mr. Kramble then introduced the guest speaker of the evening, the Honourable Gary Filmon, P.Eng., Premier of Manitoba.

The Premier introduced the topic of change by referring to changes in the health plan, the sale of the Manitoba Telephone System and the operation of corporations in general which, though having made major profits, are still changing through restructuring. He noted that there is a natural resistance to change; but while change is inevitable, growth is optional. He reminded us that we are in the midst of a huge, dramatic shift in the economy, advising that, in the year 1900, agriculture was 85% of the economy, but by 1950, manufacturing accounted for 55%, and predicting that, by the year 2000, the handling, retrieving and analyzing of information will be 45%. The status is akin to "you think you understand the situation, but what you don't understand is that the situation has just changed".

Mr. Filmon noted that the economics of production have been influenced by the vast amounts of information and technology now available. Moreover, research and development are essential to a better command of the market-place. As an example, he noted that the furniture, printing, trucking and fashion industries in Manitoba have all advanced, not so much from favourable labour situations but from the application of technology.



Premier Filmon challenges engineers to embrace changes.

Manitoba's industries are now exporting more off-shore than they are trading within Canada. Industry is taking advantage of these markets. For example, a local manufacturer of prefabricated

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Mandatory Professional Development is Coming!

By: B. Jorowski, P. Eng.

Recently, the APEM Council requested that your Professional Development Committee prepare a draft proposal for implementing a mandatory professional development (PD) program.

This article is the initial stage in a communications strategy intended to keep members informed about the proposal as it is being developed, and to initiate feedback on related issues. This strategy also includes plans for future articles in the MPE, a focus group session involving all interested APEM committee members in June, mailing out a draft program proposal to each member in August, and a Special General Meeting on the proposed program in September. This article discusses the rationale behind the concept of a mandatory professional development program and provides an idea of what such a program will look like.

There is no question that practising engineers must remain competent. The question is, what role should APEM play in promoting continuing competence? The Association has several options:

1) It could continue with the status quo, which is to include in its Code of Ethics the requirement that all members and EITs remain current in their areas of competence, and therefore expect the public to trust that a Professional Engineer will maintain his or her competency,

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P. Yamada, P. Eng., Thompson
R. Menon, P. Eng., Brandon

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

Engineers in the News

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

Tom Gillman, P.Eng., was a featured guest-speaker at the Manitoba Association of Architects' Continuing Education Seminar, held at the U of M Faculty of Architecture on February 8. The day-long program dealt with Building Codes and Architectural Practice.

Mr. Gillman, who was the sole professional engineer amongst eleven invited speakers, presented a paper entitled, "Life-Safety Systems: Life Saver or Liability?". In underscoring how design professionals can unwittingly incur serious liabilities, and using case-history slides of actual loss-investigation assignments, this presentation showed how simple errors in the implementation of well-designed building life-safety systems led to enormous fire- and water-damage episodes.

◆ ◆ ◆ ◆ ◆

Winnipeg's own **Motor Coach Industries (MCI)** recently won first place in the Machine Design and SDRC 1996 Concurrent Engineering Award competition for its design of the Renaissance coach.

The Renaissance is MCI's new flagship intercity coach, developed over the past three years in MCI's state-of-the-art design studio, under the New Coach Program.

Machine Design Magazine created this award five years ago with SDRC, a design and research firm, to recognize companies that revolutionize product design by supporting aggressive change to development and manufacturing through concurrent engineering processes. MCI shares this prestigious award with such past recipients as Chrysler, General Dynamics and Honeywell.

Congratulations, MCI Renaissance Design Team! □

Civil Engineering Journal Goes On-Line

Full text of the *Canadian Journal of Civil Engineering* is now available on-line through the World Wide Web. All scientific articles, notes, and discussions can be accessed free of charge for a limited trial period. Check out our Web site:
http://www.nrc.ca/cisti/journals/rj.html □

In Memoriam

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

W.R. McQuade

NEW MEMBERS REGISTERED MARCH & APRIL, 1997

P.D. Carter (AB)
R.G. Cooper (NS)
S.J. DeLory
S.E. Egland
T.G. Edginton
E.O. Golding (ON)
W.R. Haldane-Wilsone
W.J. Hargrave (ON)
W.A. Hazel
R.L. Himbeault
C.D. Hryhoruk
M.R. Klein
J. Kork
G.L. Kreke (SK)
D.O. Lyhkun
S.A.D. McBride
M.L. Mikhail (AB)
J.D. Nolin
R. Prakash (SK)
S. Rangarajan
H.J. Rempel
A.B. Ringor
R.G. Schappert (SK)
K.R. Switala (AB)
R.J. Weatherburn
S.J. Wiecek

EITs ENROLLED MARCH & APRIL, 1997

S.P. Abbott
B.A. Baldwin
B.D. Batchelor
R.R.D. Brodeur
W.J. Curry
A. Dhawan
R.C. Forbister
J.V. Joaquin
T.J. Jobb
R.G. Keenan
W. Konefal
K.L. Larsen
T.R. Mackinnon
M. Mandilaras
H.M. Meiklejohn
D.G. Mitchell
M. Nassif
J.G. Paulmark
R.K.N. Rajapakse
S.I. Thomas
X.L. Yao

REINSTATEMENTS MARCH & APRIL, 1997

L. Stocco

LICENCES ISSUED MARCH & APRIL, 1997

S.S.Y. Arrata (AB)
D.H. Berkowitz (MN)
B.B. Billay (SK)
J.E. Budke (MN)
A. Gilis (ON)
G.V.R. Holness (MI)
A.R. McIvor (BC)
K.J.J. Pontiff (PA)
L.M. Sargent (IA)
S.S. Attawar
M.L. Ayari
G.M. Fagerstrom
A. Festa-Bianchet
T.H. Higgins
A.J. Kondel
J.A. Longbottom
G.D. Marshall
R.W. Smith

WE HAVE LOST CONTACT. MAY WE HAVE AN ADDRESS?



Young Engineering Entrepreneurs

The Business Development Bank of Canada has created a new fund for young (18-34 years of age) entrepreneurs to start their own businesses. Applicants must follow a four-step process: Project Evaluation, Management Support, Financing, and Ongoing Support. For more information contact Francine Cléroux (BDC) at 514-496-7246.

President's Message

J.M. Symonds, P.Eng.



The Way Ahead

In the last issue of the "Manitoba Professional Engineer", Shirley Matile reported on Council's development of a new Vision for this Association. As a part of that exercise, your Council used this Vision to examine our present position and to chart a future for the APEM.

APEM VISION

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

The practice of professional engineering is complex. It has a very real, constant, and beneficial effect on the everyday life of each and every member of Manitoba society. It also has the potential for having a very large negative impact if technical and ethical obligations are not met by practising engineers. This, of course, is the basis for the existence of the Association: to regulate and control how engineering is conducted in the Province. It follows, therefore, that these obligations should also provide the framework for the creation of the Vision and the action plans. We required action plans that were built upon the principles of the Code of Ethics, the control of who can practise engineering, the investigation of unskilled or unethical conduct, and the prevention of future occurrences as much as is possible. The primary objective here is to protect the public. The proper functioning of the Association in support of the above mandates will help to ensure this goal.

During two sessions of structured reflection, ably assisted by our facilitator, Brian King, the following major issues were addressed:

- Enactment of the new Engineering and Geoscientific Professions Act of Manitoba
- Continuing development of the relationship with the Certified Technologists and Technicians Association of Manitoba (CTTAM)
- Continuing development of the relationship with the Manitoba Association of Architects (MAA)
- Continuing support and implementation of the APEM Organizational Review Action Plan (ORAP)
- Continuing support of, and communication strategies for, the Continuing Competency Program

Timely enactment of our new Act was considered paramount for the future of our profession. The proposed Act contains a number of enabling legislative provisions that will allow many of the short- and long-term goals of the Association to be pursued and realized.Not the least of these is the inclusion of Geoscientists as members of the Association.

There is much to be done to prepare ourselves for the inclusion of Geoscientists in the Association. First among the required actions is to communicate the intention for inclusion in the Act to the present practitioners of Geoscience in Manitoba. To this end, the Chair of the Subcommittee on Professional Registration of Geoscientists in Manitoba (SPRGM), Rick Lemoine, P.Geol.(AB), and I have sent a joint letter to all known Geoscientists in the Province to apprise them of the Association's intention to register those who wish to practise in Manitoba and to explain some of the issues that will accompany that action. One of the more contentious issues is the requirement that anyone wishing to practise professional geoscience in Manitoba be registered with the Association, and that only registered geoscientists be able to call themselves geoscientists, geologists, geophysicists, or geochemists.

This letter is also a first attempt to determine how many geoscientists are currently practising in Manitoba and, as a consequence, what effort will be required to incorporate them into the Association?

To promote the introduction and passage of the new Act, a meeting was held on April 16 with the Minister of Labour, the Honourable Harold Gilleshammer. It is his intention to introduce the Act before the end of the current session of the Legislature. If this is accomplished, we could have a new Act some time within the next three months. There is also a proposed action item to develop a strategic plan for communicating the content and importance of the new Act to all parties in the Legislature, to make the issues clear and facilitate the passage of the Act. Another action item is to ensure that the membership, present and future, knows and understands the Act, to ensure its proper application after passage.

The action arising from our deliberations on the strategic relationship with CTTAM is to continue to follow the directions set out in the Memorandum of Understanding (MOU) signed last year. It is particularly important to communicate the terms and meaning of the MOU, APEM and CTTAM are working on a position document

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Dr. Garland Laliberte, P.Eng. Retires

By: B. Stimpson, P.Eng.

Few people have had as much impact on the engineering profession and engineering education in Canada as Dr. Garland Laliberte. Dr. Laliberte retired from the University of Manitoba last December. APEM now takes this opportunity to recognize his many contributions and to wish him and his wife, Audry, all the best. One part of his life in which there will be no discontinuity is his passion for farming, which he will continue to enjoy.

Born in Walkerburn, Manitoba, Garland received his university education from the University of Saskatchewan (B.S.A.S. and M.Sc.) and Colorado State University (Ph.D.). Within two years of joining the University of Manitoba in 1967 he was a Full Professor and Head of the Agricultural Engineering Department, a position he held for 17 years. He was subsequently Dean of Engineering from 1989 - 1994.

Garland Laliberte has left a mark on the University and the engineering profession through dedicated thoroughness, insightfulness, determination, and people skills. He has served on local, provincial, national, and international committees and bodies too numerous to enumerate. Among them are his charter membership of the Manitoba Economic and Technology Council, his presidency of the Association of Professional Engineers of Manitoba(1988-89) and the Canadian Council of Professional Engineers (1994-95), and his contributions in establishing international standards for irrigation and drainage equipment. Outside Canada he has been recognized by Colorado State University (Achievement in Academe Award (1994)) and by the American Society of Agricultural Engineers (North Central Region Agricultural Engineer of the Year Award (1989)).

As Dean, Garland Laliberte saw the Faculty of Engineering position itself as the largest research Faculty on the Fort Garry campus, as measured by external funding for research and special programs. Three new industrial research chairs were launched, the Engineering and Applied Sciences Industrial Affiliates Program (EASIAP) was established, and enrollment in postgraduate programs increased to record levels.



Garland's selfless work on behalf of his colleagues at the University and for the profession has rightly earned him our gratitude and appreciation. We wish him well. □

Professional Development

Land-Based Information System

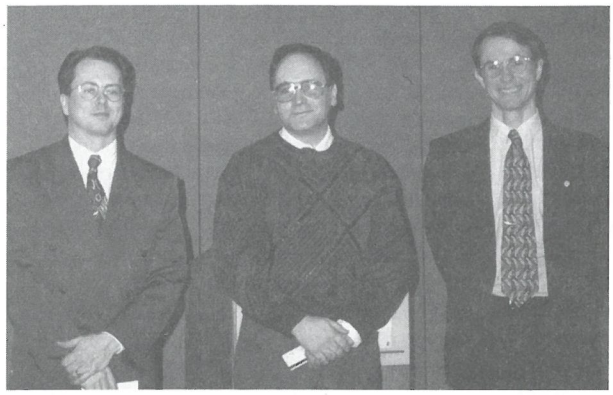
By: G. Kibria, P.Eng.

The City of Winnipeg has implemented a state-of-the-art Land-Based Information System (LBIS). LBIS provides for accurate and up-to-date reports and analyses of traffic accidents in a particular ward/area/street, traffic flow, zoning boundaries, meter-reading routes, water mains, sewage network, property assessment appeals, complaints received in the call centre, crime patterns, etc. The LBIS is a desktop mapping Geographic Information System. It provides a set of tools for data analysis and reporting, and sharing data among civic departments.

Peter Bennett and David Houle of the City of Winnipeg presented the LBIS on February 26, 1997, in the breakfast seminar organized by the Professional Development Committee. As described by Peter, the LBIS links the geographic data stored in the Property Assessment System with the Street Network and Assessment Base Map. The LBIS is thus built on three foundations: Assessment Base Map, Street Network, and Property Address System.

The Assessment Base Map was created using co-ordinates, calculated at the property lines with reference to the existing geodetic monuments, located in specific locations throughout the City.

The Street Network is a database that connects all intersections in the City, all linkages (streets) between intersections, and property address ranges on both sides of the links. The Property Address System contains common geographic data such as ownership, occupants, zoning, use, billing, assessment, permits, etc., of properties. It will assign and store addresses in the City and surrounding areas, and produce addresses in a legal format with correct postal codes and street names.



Bob Bruce, centre, thanks David Houle (l) and Peter Bennett.

David demonstrated that the LBIS is a user-friendly, window-driven program, with good graphic-display capabilities. The LBIS can access, retrieve, and display data quite fast and provides more accurate information than ever before. □

Science in the Summer

Do you know someone who would benefit from a fun-filled summer at the Whiteshell Campus of the Deep River Science Academy?

The Academy, a non-profit private school, provides scientifically inclined high-school students with a unique opportunity to experience an enriched, hands-on science program in an R&D environment in Pinawa, Manitoba. Students are part of a national program and work with professional scientists and engineers on front-line research projects. Many of these projects, in the environmental sciences and energy-production areas, are conducted at AECL's Whiteshell Laboratories. Additional projects are carried out in collaboration with other research partners such as the Manitoba Model Forest Inc. and Manitoba Hydro. Upon successful completion of the six-week program, including the presentation of written and oral scientific reports, students receive high-school and post-secondary credits. It's not all work and no play! For the entire six weeks, under adult supervision, twenty like-minded students from across Canada live in residence and enjoy a jam-packed recreational program that includes tennis, rowing, water-skiing, sight-seeing and the odd movie and barbeque night.

If you know someone who would enjoy a summer like this, and would like more information, please call:

Mrs. Carol Findlay, Administrator
(204) 753-8848, or
1-800-760-DRSA □

Meet Your New Councillor – Kathy Pratt

By: A.N. Kempan, P.Eng.

A career as a structural engineer was a natural choice for Kathy Pratt, one of APEM's new councillors.

Her father was an architect, and she met many architects and engineers through her family, so it seems the desire to build was acquired early in life. Fortunately for us, Kathy took the engineering route through university, graduating as a civil engineer from the University of Manitoba in 1981. Kathy was employed by Crosier Kilgour and Partners before, and following, graduation. Later, she joined UMA Engineering, and is currently Chief Structural Engineer. In this capacity, she is responsible for the design of structural steel, concrete, and foundations. Other aspects of her professional life involve insurance investigations and project management for Centra Gas Manitoba Inc. during their expansion into rural Manitoba.

Kathy's involvement with APEM didn't begin with her election as councillor. She is a charter member of WEAC, and liaison councillor for the Safety in Engineering and Consulting Engineers' committees. She is a member of the Canadian Institute of Steel Construction and the Canadian Institute of Management. Her professional life isn't bounded by our province: she is also licensed in Ontario and Alberta.

When asked about her ambitions as APEM councillor, it's obvious she has a clear vision of what she'd like to accomplish in her two-year term. She thinks that the changes facing the profession must be approached with clarity and forethought. Creation of a professional development policy, proposed implementation of certificates of authorization for group practice, and relations with the Manitoba Association of Architects and with the Technicians and Technologists are all issues she sees as requiring dedicated planning on the part of the Association.

Kathy's extensive professional life is balanced by her commitment to her family. She took time off to be with her children when they were small, and now has the challenge of raising two active boys, aged nine and eleven, as a single parent. Quite understandably, she doesn't have time for hobbies after the demands of profession and family are met.

We're glad Kathy decided to run for Council, and we know she'll make a valuable contribution to our Association. Welcome, Kathy! □



Councillor Kathy Pratt

The Engineering Endowment Fund Advisory Committee

By: M.T.M. Caners, P.Eng.

The Engineering Endowment Fund Advisory Committee (EEFAC) is an advisory committee to the Dean of Engineering. Its purpose is to invite and review applications for grants from the Engineering Endowment Fund, to recommend those projects that it considers worthy of support, and to review the terms of reference of the committee and recommend revisions to the Dean. Jason Martino, P.Eng., and Michelle Caners, P.Eng., have recently accepted co-chair positions for the EEFAC. Both Jason, who is employed by Atomic Energy of Canada, and Michelle, from Manitoba Hydro, have been members of this committee since 1994. The committee's decisions and proposed changes are reported by the chairs to Dean Don Shields, P.Eng., whose staff carries out the administrative work. The Dean approves the recommendations and forwards them to the Engineering Faculty Council for information.

The Engineering Faculty Council presented John Adam, the previous Chair of the EEFAC, with a clock and a note of thanks for his three years of service on the Committee. The committee will greatly miss his excellent guidance and insight.

The committee consists of 13 members drawn from engineering academic and support staff, undergraduate and graduate students, and alumni. It has been a year of many changes for the committee with long-standing members completing their terms and many new members joining us. We welcome newly appointed academic staff members Dr. Emery Lajtai, P.Eng., of the Department of Civil and Geological Engineering, Dr. Bill Muir, P.Eng., of the Department of Biosystems Engineering, and Dr. Steve Onyshko, P.Eng., of the Department of Electrical and Computer Engineering. We also welcome Roger Ballance, P.Eng., from Manitoba Telecom Services, support staff member Pat Fedirchuk, and undergraduate students Kathryn Harris and Vanessa Wheelright. The participation has been very lively and effective from all members of this committee.

1996 DISBURSEMENTS

ALL DEPARTMENTS

Development of Multimedia Education Classroom
Computer Funding for the Library
Portable Projection Equipment for Classrooms
Ethernet Enhancement to Engineering's Computer Network
Western Engineering Conference & Competition
Congress of Canadian Engineering Students Delegation
Student Workshops (Marketing, Fundraising, etc.)
Wireless Interactive Television for Telelearning and Telepresence

SUB-TOTAL ..... $ 65,960

CIVIL AND GEOLOGICAL ENGINEERING

Canadian Geotechnical Conference participation (St. John's, Newfoundland)
Great Northern Concrete Toboggan Race Team (Carleton University, Ottawa)
ASCE Steel Bridge Building Competition/Conference
Underground Excavation & Tunneling Field Trips
Staff computer upgrade training

SUB-TOTAL ..... $ 5,425

MECHANICAL AND INDUSTRIAL ENGINEERING

Cascade Digital Control of a Pneumatically Powered Actuator
UMSAE Formula Design Competition Project
UMSAE Aero Design Competition Project
Laboratory Simulation Project

SUB-TOTAL ..... $ 15,200

ELECTRICAL AND COMPUTER ENGINEERING

IEEE Student Service Lab Computer Upgrade

SUB-TOTAL ..... $ 2,000

OUTREACH

Engineering Newsletter
UMES Outreach Program (Manitoba schools)
Aboriginal Youth in Mathematics and Engineering
Access Program for Women in Science & Engineering
Expanding of Employment Candidates Resumes on the Internet
Engineering Scholarships

SUB-TOTAL ..... $ 33,200

TOTAL ..... $ 121,785



Back row (left to right): Pat Fedirchuk, Roger Ballance, Paulette Blouin, Giovanni Militano, Dr. Emery Lajtai, Dr. Bill Muir. Front row (left to right): Vanessa Wheelwright, Jon Greenberg, Jason Martino, Michelle Caners, Irene Mikawoz. Missing: Dr. Doug Strong, Dr. Steve Onyshko, Kathryn Harris.

Our goal is to provide support for initiatives that promote excellence and innovation in the Faculty of Engineering. The Engineering Endowment Fund Advisory Committee is pleased to acknowledge the 1996 projects which have been supported by the fund.

One very inspiring project supported by the Engineering Endowment Fund is the development of a multi-media distance education classroom in Room 337 Engineering. It will provide interactive video conferencing (Ph.D. examinations, etc.), sharing of courses with other educational institutions, distance education to isolated communities, professional development courses, and it will serve as a demonstration and training facility for the Faculty of Engineering staff. It will provide a venue for testing the new learning technologies and provide engineering staff the opportunity to

Cont'd on page 12

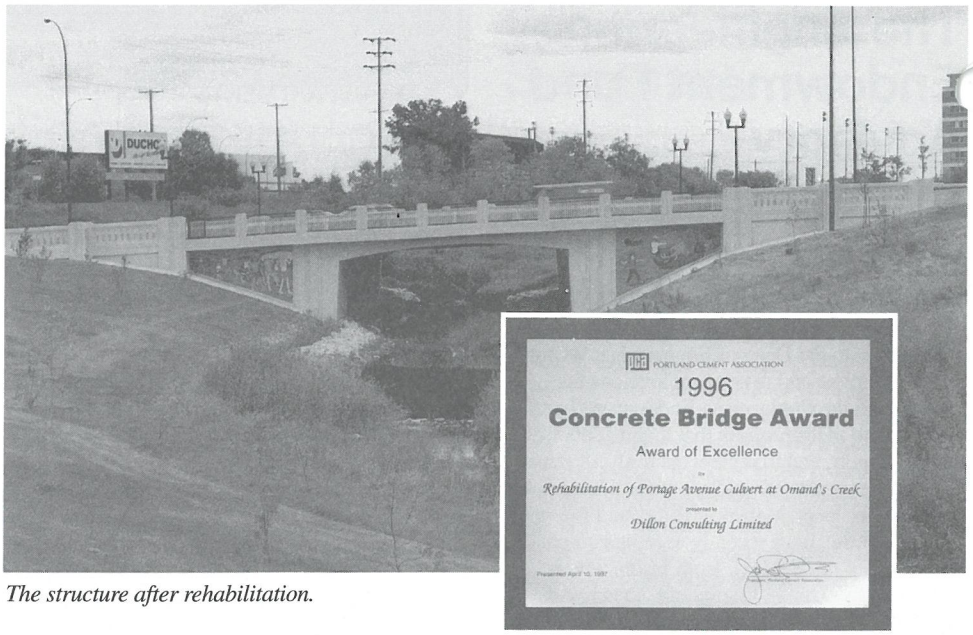
Winnipeg Bridge Rehabilitation Project Wins Award of Excellence

By: S. Rihal, P.Eng.

The Rehabilitation of the Portage Avenue Culvert at Omand's Creek was recently named one of nine winners of the 1996 Portland Cement Association Fifth Biennial Bridge Awards Competition.

The $2.5 million project, engineered by Dillon Consulting Ltd. for the City of Winnipeg, involved the rehabilitation of a deteriorating, single-span reinforced-concrete arch culvert carrying a very busy section of Portage Avenue across the environmentally sensitive Omand's Creek (just east of Polo Park). The character and detailing of the existing structure, built in 1936, were retained in the reconstructed bridge. Its span was not changed, but its length and the width of the roadway were increased.

The public was closely involved in developing criteria for the instream work, aesthetics and traffic control during construction. Colourful murals were painted on the wingwalls to enhance the appearance of the structure. □



The structure after rehabilitation.



Bill Ebenspanger, P.Eng. (City of Winnipeg) and Sital Rihal, P.Eng. (Dillon Consulting Ltd.) attended the ACI Convention in Seattle, WA to receive the award.

Women In Engineering

Words For Everyone *(Part 2)*

By: M.S. O'Laughlin, P.Eng.

This is the second in a series of articles presenting options for gender-inclusive language in both business and casual communication. The first article, presented in the August, 1996 issue of The Manitoba Professional Engineer, discussed the use of gender-inclusive language as a tool for including the whole audience. A list of gender-neutral terms for occupations was presented.

The following list presents words used to describe the "Human Family". The list shows that numerous options are available for replacing terms like "man" and "father" in common words and phrases. The phrases listed provide proof that gender-inclusive language is possible without the awkwardness that is sometimes encountered by replacing "man" with "person" or "people" in every case.

It is clear that the transition to gender-inclusive language will not be an instant one and that it will take awareness and effort by all of us to include both genders in our discussions. Once again, the intention of this article is to heighten awareness of language and to provide some options for replacing some traditionally used terms with more-inclusive terms. □

The Human Family

brotherhood	kinship, comradeship, community
common man	average person, common person
countryman	compatriot
early man	prehistoric people, early people
fatherland	homeland, country of origin
fellow man	colleague
fellowship	friendship, camaraderie
forefathers	ancestors, progenitors
fraternal organization	club, society
Frenchmen, Englishmen	the French, the English
man, mankind	humanity, humankind, humans
modern man	people today, modern society
mother tongue	first language
rise of man	rise of civilization
thinking man	thinker, intellectual, thinking person
working woman, working man	taxpayer, wage earner

Reference: Ontario Women's Directorate, "Words That Count Women ~~Out~~/In", 2nd Edition, 1993.
Note: M.S. O'Laughlin is a member of APEM's Women in Engineering Advisory Committee (WEAC).

University News

By: B. Stimpson, P.Eng.

Presentation to University of Manitoba President's Task Force

The University of Manitoba is at a crossroads. At a time of rapidly changing circumstances, it is seeking, under the leadership of President Emoke J.E. Szathmáry, to develop a new vision and a strategic plan to guide the University into the future. In late 1996, a Task Force comprising representatives from different sectors of the University was struck. Its terms of reference are to develop a vision for the University, to identify the principles that should guide planning decisions and actions to be taken, to receive written submissions, to invite commentaries, and to hold private and public hearings. The Task Force Report is to be completed by December 19, 1997 with implementation on July 1, 1998.

The Association of Professional Engineers of Manitoba, the Faculty of Engineering, and the Engineering Student Society developed separate submissions for the Task Force, and were invited to make individual presentations. APEM's presenters were President Malcolm Symonds, Vice-President Peter Washchyshyn, and Executive Director Dave Ennis. Dean Don Shields and Associate Dean Doug Ruth represented the Faculty. Senior Stick Gerry Drouin led the Engineering Student Society in its contributions.

The Task Force was presented with information demonstrating that engineering is a pivotal profession in the Manitoba economy, and that the Faculty of Engineering at the University of Manitoba is successfully fulfilling its role as the primary source of human resources for the profession. Sixty three percent of the professional engineers in Manitoba are graduands of the Faculty. However, the Faculty will not be able to maintain high standards without immediate action. Detailed analysis of data collected by the National Committee of Deans of Engineering and Applied Science (NCDEAS) shows that Engineering at the University of Manitoba is among the three most poorly funded engineering schools in the country (there are 33 engineering schools in Canada). Also, the facilities are obsolete in an engineering sense and in some instances, non-functional. The Faculty's submission included the following recommendations:

- To raise the student/staff ratios to at least the national average, academic staff numbers must be increased to 89 from the present 61.
- To enable the hiring of the required academic staff, to restore support staff (levels) to accreditation standards, to adequately support teaching and research activities, and to meet the national average funding level per student, the Faculty's budget must be increased from the present $8,810,000 to $15,070,000.
- In order to provide the teaching and research infrastructure required by a 21st-century engineering school, it is necessary to renovate the Engineering buildings and completely replace obsolete equipment, at an estimated cost of $32,000,000.

Other News

Professor Iona M. Ciric, Department of Electrical and Computer Engineering, has been elected a Fellow of The Institute of Electronic Engineers (IEEE). This is the highest honour to which an IEEE member may be elected.

Professor Sandy Thornton-Trump, Department of Mechanical and Industrial Engineering, received the 1997 SAE Faculty Advisor Award.

The Faculty of Engineering has been successfully awarded the following funds to enhance teaching facilities in the Faculty: Multi-Media Distance Education Classroom ($170,000, Federal Government), and the Learning Technology Centre ($100,000, University Incentive Fund).

The Engineering Endowment Fund continues to grow and is playing an increasingly significant role in the Faculty of Engineering as other funds are cut year by year. The Engineering Endowment Fund Committee, comprising academic and support staff, engineering alumni, and students, made a number of recommendations to Dean Shields for a total of $121,785 in disbursements from the fund for 1996-97. (Please see article on page 5). All were approved. □

1997 U of M Faculty of Engineering Careers Reception

By: M. Baril, EIT

On January 30th, 1997, the University of Manitoba Engineering Society (UMES), in conjunction with the Faculty of Engineering and the Industry Liaison Office (ILO), held its first Student/Industry Careers Reception in recent years. The event was to provide students access to industry, to promote their strengths and interests, and provide industry an opportunity to inform the students of their company's qualifications for employees. APEM had a booth to educate students about the profession, the EIT program, and to answer any questions about APEM's role in their future as practising engineers. The event was a success for all those who attended.

The goal of the organizers was to have 35 companies and 100 students attend the event. The first 115 printed tickets were sold in about two hours, and an additional 86 tickets, limited by the size of the reception hall, were promptly printed and sold. Each student paid $5.00 to cover the cost of the room and food. The interest among the students, approximately 1400 under-graduate and 300 post-graduate, was unexpected, and not only limited to graduating or post-graduate students. The total number of companies present was 38, including one each from Ottawa and Chicago.

Due to the event's success, organizers are looking to double the participation in next year's event to 75 companies and 400 students, possibly combining with the Faculty of Agriculture and other interested faculties in coming years.

I would hope that we, in industry, would take the opportunity to participate in upcoming receptions, to benefit both our companies and those students who will one day be colleagues. □

Ed Note:Special thanks to Mario Scerbo, EIT and Carol Roberts, P.Eng. for staffing the APEM booth.

Maglev – The Wheelless Race

Source: Le Train Magnétique Accéléré, LaRecherche, Sept.1996, translated by V.L. Dutton, P.Eng.(Ret.)

Japan and Germany have been in the magnetic-levitation game for many years – the Japanese since 1962. The objective of the Japanese was to develop a system of land-transport that would allow people to travel between Osaka and Tokyo – a distance of 500 km – in one hour.

Because of the earthquake problem in Japan, the designers decided that their maglev train had to clear the rails (if that is the appropriate terminology) by 100 mm. This forced them to turn to supraconducting electro-magnets. These, in turn, have to be cooled to -269° C by an on-board refrigeration system involving liquid helium.

The tests that the Japanese are now running are on a portion of line 18.4 km long.

The Germans, not having to deal with earthquakes, use conventional electromagnets that lift the carriages only 20 mm above the rail. This means that their trains do not have to carry the refrigerating systems required by the Japanese trains. Nor will they attain the velocity of the Japanese trains; the Germans have settled for 400 km/hr.

Last May, the German government authorised a 280 km line between Berlin and Hamburg that should be ready for service in 2005. It is estimated that the Transrapid will carry 12,000,000 passengers per year, thus freeing the other trainlines for the carrying of freight. □

Council Reports

Tuesday, March 11, 1997

By: A.N. Kempan, P.Eng.

AT WHICH COUNCIL DISCUSSES EITs, ARCHITECTS AND MANDATORY PROFESSIONAL DEVELOPMENT

Chair Mal Symonds, as is his habit, opened the meeting on a positive note by commenting on the great success of Engineering Week. A motion of thanks was floated with special mention to Councillor Thomson, Richard Bernhardt, and the Thompson, Manitoba Chapter.

After adoption of the agenda and other routine items, Council turned to an item from Director of Admissions Shirley Matile. She reported that many EITs are lax in filing engineering experience progress reports. Also, the Experience Review Board recommended, and Council approved, that EITs operating under a special "grandfathering" provision (for those who had obtained at least 18 months' approved experience prior to December, 1994) who had not filed reports by December, 1996, be required to obtain the professional service and professional development credits required of other "grandfathered" EITs prior to registration.

The APEM agreement with the Manitoba Association of Architects has been passed by MAA Council. In turn, APEM Council approved the agreement unanimously, and the exercise will end with a vote by the membership of APEM. This will happen on April 23, 1997.

Every meeting has its own dynamics, and to this point it appeared that everyone would be home early. The next item changed that. The Professional Development Committee had asked for a meeting with Council, so Council prepared by engaging in extensive discussion. The Professional Development Committee's proposal for the mandatory reporting of professional development had been turned down at the Annual General Meeting, so the committee was in a quandary as to how to proceed and wanted direction from Council. Most Councillors had definite opinions on the subject.

So Messrs Bruce, Turanli, and Jorowski of the Professional Development Committee seated themselves at the table, and the discussion began in earnest. Council assured them that they were in agreement with their objectives and that the issue was how to implement the plan. Part of the reason for the Professional Development Committee's rebuff at the AGM, it was felt, was a lack of communication with the membership. To remedy this problem, the Professional Development Committee asked to publish a series of articles in the MPE.

The Professional Development Committee also raised other issues which it felt were important to the process. They thought that with the implementation of mandatory professional development, there might be a requirement for two categories of membership: practising and non-practising.

Other major issues were:

1) What constitutes acceptable PD? Engineering practice itself, courses, membership in organizations, publishing, patents? APEGGA provided a model for this as they propose to award points for those activities.
2) How often is information reported?
3) What level of auditing and enforcement should the APEM perform?
4) What other committees should be partners?

The Professional Development Committee left the meeting reassured that Council was on side, but it was clear that there is much work ahead to develop a full-blown program.

Former President and current CCPE Director Doug Chapman reported to Council on the happenings at the Canadian Council of Professional Engineers. The major piece of news was the departure of President Daniel Vereault. The CCPE will not hire another president for six months while the Board of Directors charts the future course of the organization.

We had a very special visitor at Council on March 11. Councillor Olischefski brought three-month-old baby Ryan to the meeting. All councillors went out of their way to say hello to this young man. Ryan was a perfect gentleman throughout the long proceedings. I think this is a great example of how family-friendly our Association can be.

Tuesday, April 8,1997

By: W.G. McKay, P.Eng. (Ret.)

AT WHICH COUNCIL REVIEWS THE ISSUES SURROUNDING, AND PROGRESS ON, APEM'S MANDATORY PROFESSIONAL DEVELOPMENT PROGRAM

Council convened at 12:30 p.m. on the day the city "re-opened" after the big blizzard, with Councillors M. Symonds, R.Britton, C. Roberts, K.Olischefski, D. Kramble, P. Washchyshyn and K. Pratt arriving at various times. On one occasion, it was through the use of a speaker phone, with Councillor D. Spangelo, that the quorum was maintained.

Mandatory Professional Development Program (MPDP)

This was the major item of discussion for the Council meeting. The sub-committee of the Professional Development Committee had developed a list of critical issues which Council reviewed in considerable detail. One of the issues, a proposal for two membership categories, "practising" and "non-practising", for professional development purposes, was resolved by Council's decision that there be only one category: "practising".

In the field of professional development programs, APEGGA and PEO have made considerable progress. For the sub-committee's guidance, it was decided that the APEGGA program proposal should be adapted for APEM.

The sub-committee also presented a time-table, in which MPDP is projected to be presented to the general membership in early fall, with approval to be sought at the Annual General Meeting in October. The Council realizes that the program is ambitious, but will support its progress. All of the above was reviewed with members of the sub-committee, chaired by B.Bruce, who were in attendance at the Council meeting, and to whom the President expressed the Council's appreciation for the progress to date. It was noted that the program is being structured to operate under the new Act now before the Legislature, which will not require the Association's disciplinary process in order to invoke sanctions for non-compliance.

It was noted that MPDP is a program provided by APEM so that the members may be assisted with their individual professional development. The overall objective is to establish a level of continuing competence on behalf of the individual engineer which in turn should lead to the assurance to the public of the skill and the expertise of the profession.

Other Items

A special meeting of the membership is scheduled for April 23 to discuss the Memorandum of the Agreement between the Manitoba Architectural Association and APEM. President Symonds urged councillors to lend their support by their attendance at this meeting.

CCPE is reviewing the structure and role of the Board of Directors, particularly regarding the governance of its operations. D. Chapman, APEM representative at CCPE, presented a draft letter, setting forth the areas of concern to APEM. Council supported the letter, which will be forwarded to CCPE. D. Chapman also presented a draft he had prepared on comments made on the review of the Canadian Engineering Accreditation Board by the CCPE committee. His draft was supported, in particular by Councillor R. Britton, a member of the engineering faculty, and approved for submission to CCPE.

With the general business of the meeting more or less completed, and with the quorum depleted by some departures, the meeting adjourned at 5:00 p.m. □

Professional Development

ISO 9000 – Local Impact, Global Benefit

By: B. Jorowski, P. Eng.

On March 12, 1997, Brian McGillivary, Senior Manager, Management Services, Business Development Bank, gave an informative presentation on ISO 9000 at a breakfast meeting organized by the Professional Development Committee. The presentation focused on the various components of the ISO 9000 models, the process for embarking on an ISO quality assurance program and the benefits of participating in such a program.

The speaker referred to ISO 9000 as a Quality Management System. More specifically, it is a set of quality systems, standards and guidelines which certify the consistency of the way a company does business. This includes the way the company designs its products or services, purchases its materials, produces and inspects its products, administers and documents its operations, reviews its contracts, and performs other processes important to ensuring quality.

The process for ISO 9000 registration involves several steps. The company must first examine its processes and compare them with the ISO 9000 model. The company then determines which processes it must change and implements the new processes. Finally, it must develop and submit a quality manual, documenting its quality systems, and pass an on-site registration audit.

The speaker outlined many potential benefits of participating in the program. Companies that conform to the ISO 9000 standard are internationally recognized as being committed to consistency and quality in the way that they do business. This may allow the company to effectively pursue new markets, or charge a premium for its products or services. In fact, some companies and government bodies are already insisting that their suppliers be ISO compliant. A company should also expect more efficient business operations.

According to a Surrey University report on the Mechanical Engineering Sector, these benefits show up in the bottom line. This report indicated that, as a group, companies which were ISO compliant had two to three times higher profit margins, two times greater return on investment, and, on average, 40% higher sales per employee than non-participating companies.

Over 165,000 organizations in over 100 countries have become registered and this number is growing quickly. This includes over 10,000 North American companies. Companies wishing to thrive in the emerging global economy must consider every possible competitive advantage. ISO 9000 appears to be worthy of consideration. □



Brian McGillivary, Senior Manager, Management Services, Business Development Bank, addresses breakfast meeting on ISO 9000.

Mandatory Professional Development is Coming!

Cont'd from page 1

2) It could implement a practice review program and select a number of members each year whose practices would be assessed to verify continued competency,
3) It could implement a mandatory professional development program whereby each member would be required to undertake a minimum amount of professional development activity each year,
4) It could implement a program which involves both 2) and 3).

Regardless of which option is selected, the member would ultimately be responsible for remaining competent within his or her scope of practice. APEM should not assume this responsibility. However, APEM should play a role in actively promoting and facilitating continuing competence.

Until now, most APEM members have taken the steps necessary to maintain their competency. However, the environment in which engineers work is changing. Governments, and the public they represent, have increasing expectations regarding self-regulating bodies. They require evidence that the engineering profession is taking reasonable steps to maintain competency and is worthy of self-regulation. For example, the Law Reform Commission has recommended to the Manitoba Government that, to protect the public, practice standards should be enforced.

In addition, many other engineering associations in Canada (Ontario, Alberta, B.C., Quebec, New Brunswick) and in the United States have implemented or are considering some form of continuing competency programs. If we wish to remain part of a self-regulating body and have a professional status which is transferable to other jurisdictions, we must consider some form of continuing competency program.

The professional engineering associations in B.C. and in Quebec have implemented practice review programs. Although one could argue that a practice review program would be more effective for ensuring continuing competency than a mandatory professional development program, it would be more expensive to implement. Such a program would also likely be viewed as intrusive by those engineers who were selected each year.

The professional engineering associations in Alberta and Ontario are considering mandatory professional development programs. Although such programs would not ensure competency, they would demonstrate some measure of due diligence on behalf of the Association. In addition, a mandatory PD program can be designed so that it is not prohibitively expensive for either the engineer or the Association.

The APEM Mandatory Professional Development Program will likely contain the following components:

1) Guidelines for defining a member's scope of practice and for planning a PD program, including a list of PD activity categories and corresponding PDH (Professional Development Hour) ratings.
2) Annual member declaration of his or her scope of practice and of PDHs obtained in each of the PD activity categories. Members would be required to obtain a specific number of PDHs each year and keep records of PD activities.
3) Some auditing of members' PD programs based on a random sample using a specified risk model. In the event of an audit, the member would be required to submit his or her PD activity records to a group of peers. This group would verify that the program was satisfactory.
4) Enforcement. In the event of an unsatisfactory program, the auditing group would work with the member to take corrective action. If this failed, the case would be referred to the appropriate APEM committee to review the member's practice and determine whether disciplinary action was required.

This Mandatory PD Program will be consistent with PD programs being considered in Ontario and Alberta as well as with CCPE National Guidelines. It will also be similar to the National Council of Examiners for Engineering and Surveying (NCEES) Continuing Professional Competency requirements being proposed for and implemented by engineering associations in the United States. This consistency will likely be important for the mobility of APEM members across Canada and the U.S.

Please e-mail any questions or comments regarding mandatory professional development to Bob Bruce, Chair, Professional Development Committee at bbruce@nr.gov.mb.ca. □

The R&D Committee LIFE-CYCLE OF AN IDEA Series

Invention: In Quest of the Bright Idea – By Roy Mayer

(Stoddart Publishing, Toronto, 1995, 239 pages, $20.95)

A Book Review by D.M. McCartney, P.Eng.

What possessed Roy Mayer, a successful advertising executive located in Ottawa, to give up his career and lose almost everything he owned, including his dignity? At 45 years old, he had it all, but he couldn't get those minnows out of his mind. At the age of sixteen, Mayer had seen a large school of bright green minnows and he had never forgotten the experience. Twenty-eight years later, while fishing with a buddy, he thought, why not colour live bait fish bright green like those he saw as a boy? That day, the adverse reaction ("hee hee") of his fishing buddy cemented his resolve. He was going to be an inventor. So the adventure begins – and I do mean adventure! Mayer's writing style is close to that of a good suspense novel. This style makes the book entertaining as well as informative.

Mayer's first-hand account of the creative process offers a rare glimpse into what motivates an inventor. Along the way, he introduces the reader to many of the individuals who helped and hindered the creative process. A whole chapter of the book, entitled *Inventors Hear the Darndest Things*, is dedicated to the cynics he encountered along the way. On the positive side, one of those who helped Mayer was Elaine Thompson, a biological chemical specialist located in Winnipeg. She gave him some initial chemical formulations that led to his technical breakthrough. Mayer praises Thompson: "There are indeed some gems like Elaine around. It's just finding them when you need them". "Be patient," he insists, "they're out there...somewhere."

With the scientific clues given by Elaine, where would the inventor go? You guessed it – down. Down into his basement, that is. There, with the help of his brothers-in-law, he built a lab. Mayer, the mad scientist, spent two years developing the successful formulation. By his accounts it was a frustrating and rewarding experience. His lowest point, however, did not occur in the lab.

Eight years after becoming an inventor, Mayer was out of money and no clients remained from his consulting practice. Desperate for money, he spent a year at odd jobs, just to make the mortgage payments. The jobs ranged from a file clerk to a mall Santa Claus. At one point he collected unemployment insurance. "I'd always been proud of being able to support the underprivileged in society," he confesses, but"...now the shoe was on the other foot."

Thirty-eight years after his first encounter with those coloured minnows, after nine years as an inventor, and after investing $150,000 of his own money, the high point finally came. His invention, *Color Z Bait*, won the prestigious Breakthrough Ideas Contest put on each year by Success magazine. The grand prize: a $1,000,000 advertising contract.

I highly recommend this book to all those with at least one creative bone in their bodies. You will laugh and you may even shed a tear. Many of his retrospective moments will hit close to home. It is an exceptional account of one person's struggle with the Life Cycle of an Idea. □

In our next article in the Life Cycle of an Idea Series, we will be featuring Retro-specs building testing systems and their quest for a simple device to help with the inspection of building air barriers. If you know of others who should be featured in this series, please contact any member of the R&D Committee.

Daryl McCartney is an Assistant Professor and Environmental Engineer at the University of Manitoba.

Students and Engineers – An Evening Together

Cont'd from page 1

housing and a window manufacturer are now exporting directly to Kobe, Japan, to assist in the reconstruction of the city following its earthquake.

All of this current change in information and technology is rather difficult for the older person to accept, but such changes should not be difficult for engineering graduates who are well aware of the new systems, methods and technologies. Their challenge is to turn the fear of change into the acceptance of new opportunities. As an example of these new opportunities, Premier Filmon mentioned that the cancellation of the Crow Rate forced Manitoba companies to upgrade their basic products here, proving that such operations can be done here rather than in other parts of Canada. He feels that we are the right people in the right place at the right time. He is very optimistic about the future, and he believes that the young engineer's future looks great.

Mr. Kramble thanked the Premier for his encouraging message on the role of the new engineer in a changing world. He presented him with a gift which will involve a do-it-yourself project (a playhouse kit for his granddaughters) requiring a direct, hands-on approach with no supervision. A successful gathering of student engineers with senior engineers was concluded. □

President's Message

Cont'd from page 3

that is taking the form of questions and answers relating to the issues. In addition, we wish to set up a joint board for the discussion and resolution of mutual items of interest or dispute.

In much the same way as with CTTAM, the recently negotiated and ratified MOU with the MAA is vitally important to the public of Manitoba and to members of both Associations. Strategically, we wish to support this initiative and establish a joint board on mutual interest and conflict resolution. In this way both our mandate from the government and our vision will be satisfied.

The strategic intention to complete the review of the APEM organization (ORAP) and to implement the revised structure is important because it will allow for better communication and control within the Association and it will also allow the various contingent groups (such as the Council and APEM staff) to function more efficiently. This should result in the better flow of information and more timely actions across the board.

Finally, but certainly not least, there was much discussion on the subject of professional development. There was a renewed commitment to ensure that a justifiable and pertinent program for mandatory professional development is developed for implementation as soon as possible. Our Professional Development Committee is developing a program based on the CCPE Guideline and the recently-adopted APEGGA program. It is also reviewing the U.S. NCEES model, and the model that was recently presented to, and rejected by, the PEO membership. (APEGGA, the first Association in Canada to adopt a Mandatory Professional Development Program, will begin implementation this year.) Based on our own experience last year, and APEGGA's recent experience, we have recognized the importance of communication to the membership. It is vitally important that we focus on this issue to avoid unnecessary and wasteful debate and delay and achieve our goal of approval of a mandatory professional development program at our Annual General Meeting in October. Our strategic direction and short-term actions are committed to professional development in support of the protection of the public.

Finally, reflecting on our new Vision, it is the intention of the APEM to be the leader of the technological community in Manitoba. This is not a search for power or prestige. It is, however, an acknowledgment that we are the largest technical group with the most influence and diversity. It falls to us, in the absence of any other clear leader, to take the initiative and lead the technical community as a member of a team that has as its objective to better serve the people of Manitoba and to actively participate in the economic growth of our community. The fulfillment of the strategic-plan initiatives and actions will take us forward to this goal. □

Tetra Society Seeks Volunteers

By: D.G. Osman, P.Eng.

A local chapter of the Tetra Society of North America has been formed by members of the APEM. We have been in operation for a few months and are starting to realize the benefits of this undertaking. Clients are now presenting us with challenges which need our attention and technical abilities. There will be a need for engineers and other technical people to solve or mitigate the obstacles which face these clients.

History

The Tetra Society was started in 1992 by Vancouver City Councillor Sam Sullivan, who is a quadriplegic. Sam personally experienced the need for a community-based group to put people with technological skills together with people with disabilities. Today, there are chapters in most of the provinces in Canada and many of the states in the United States. I first heard of the Tetra Society when I attended the PEO Annual General Meeting as Vice-President and saw the merit of the work being done to help those people who were challenged. Having developed a close friendship with Steven Fletcher since mid-January a year ago when he had his accident, I found myself wanting to establish a chapter of the Tetra Society in Manitoba. It was fortuitous that Ray Scouten, P.Eng., had become aware of the Society and had come to the same conclusion. As a result of communications with Dave Ennis, P.Eng., we had our first meeting at the APEM offices on September 4, 1996.

What are we asking of the APEM?

We sought and received the support of the Council to help facilitate the process of establishing the first chapter of the Tetra Society in Manitoba. APEM provides meeting facilities.

Why should members of the APEM be involved?

There has always been a recognized need for the individual members of the APEM to be involved in the societal needs of our communities. There are awards which are presented by the provincial Associations and the CCPE which recognize the efforts of fellow professionals for their involvement in the community. APEM would be recognized as the Founding Association and would be seen to be contributing to the well-being of our fellow citizens who are experiencing needs which we are not. It would probably provide much good will and greatly enhance the public image of the profession.

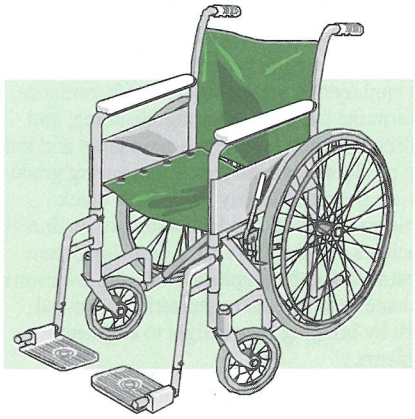
What are some of the accomplishments in other Chapters?

Some comments from the people who have experienced the involvement of the volunteers of the Tetra Society are:

"I want to thank Tetra for making my life easier, safer and more enjoyable."

"Tetra is performing miracles..."

"Tetra works so well in a small community where it's neighbour helping neighbour."



"I'm really impressed with Tetra. I think it's wonderful people give so freely of their time."

"Tetra has made a huge difference in my life. I can't thank everyone enough."

"I can't thank everyone at Tetra enough for the time they have taken to help me be able to spin wool again. Your patience and support have been wonderful."

"Without Tetra I would not be able to successfully complete my architecture course. Thanks so much."

Some of the projects completed in other provinces are:

- Adapted snowmobile seat allows exploration of the wilderness
- Hand brace makes drawing possible
- No-spill cup quenches thirst
- Twin stroller gives mother freedom

In Manitoba we have the following projects before us:

- a generic device for elevating beds
- a dog sled for a paraplegic
- a cross-country ski device for a paraplegic
- an amplification device to enable a quadriplegic to provide lessons in canoeing
- a device to hold a chair beside a car while moving from the car to the chair
- a portable device to enable a paraplegic to use a bath tub while traveling
- a device to support a musical instrument for a child with cerebral palsy.

We need your help to help others. Other associations have taken their place at the table to help in the process including the Canadian Paraplegic Association, the Occupational Therapists, Manitoba Rehabilitation, CTTAM, etc. Please contact Ray Scouten at 488-0115 and let us know that you care and are willing to help. □

APEGN Recommends Inspection of Robb Engineering Open-Web Steel Joists

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

The Association of Professional Engineers and Geoscientists of Newfoundland (APEGN) has recently conducted an investigation into the causes of roof collapses where open-web steel joists (OWSJ) were used. According to information obtained by them, there is a possible structural problem with open web steel joists manufactured by Robb Engineering, Amherst, Nova Scotia, during the period from 1970 to 1985. The Newfoundland Association has notified all building owners of this potential concern, based on a list supplied by Robb Engineering of joist projects. The APEGN has also notified other engineering associations across Canada of these concerns. The notice is a result of a partial roof collapse in 1987 at the Village Mall in St. John's, Newfoundland, which caused considerable damage and required extensive repairs. An investigation was initiated after another roof collapse at a building in an industrial park during the winter of 1994/95. Subsequent to the initial investigation, two other buildings were identified to have potential structural problems, particularly if subjected to high snow build-up loadings. APEGN recommended that a structural engineer be engaged to carry out an inspection as soon as possible where these joists were used, to ensure the safety of occupants and other users. It is believed that the problems are related to the use of a particular OWSJ welding and fabrication process for buildings constructed between 1970 and 1985.

A joist investigation checklist was prepared and distributed to structural engineers in a proposal call for inspection of provincial government buildings, including schools. The list includes checking the joists for cracks in the web-to-chord joints along the top and bottom chords, localized buckling of the top chord, cracked web members, weld quality, roof decking separating from the top chord, and bearing length, to name a few. It was also recommended that all buildings be inspected on a regular basis, at least once every ten years, and when renovations or changes in occupancy have occurred that may have changed the intensity or distribution of loadings. It is also important to note that owners should be vigilant regarding snow and occupant loading of their structures.

To date, Robb Engineering has not accepted any responsibility for the roof collapses and, in fact, has taken the position that these collapses were caused by other factors.

APEGN has further advised that those who wish to keep up-to-date on developments in Newfoundland may wish to check news reports in The Evening Telegram on the World Wide Web at http://www.eveningtelegram.com. □

Why Hire an Engineering Graduate?

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

"Why hire an engineering graduate?" That may be the thought some employers have when considering the filling of a technical position within their company.

Firstly, engineering graduates' salaries are, as a rule, comparable to technologists' salaries at entry-level positions. Secondly, engineering graduates bring with them more hands-on training than ever before, thanks in large part to an adapting university curriculum, such as the Co-op Program at the University of Manitoba. With rapidly advancing technology, the tasks of drafting, detailing, designing and analysis are being done by fewer and fewer people and may perhaps one day be done by the same person. The question is whether that technical position will be filled by an engineer. We will only know in time whether present engineering graduates can (with guidance) perform the tasks of designing, detailing, and drafting and therefore be more versatile and long-term productive employees. Engineering graduates are generally highly motivated, quick learners with a solid understanding of engineering principles and therefore are a good long-term investment for the employer. As well, engineering graduates can give an organization technical depth by bringing new insight to engineering problems.

With all these positive attributes, an employer may feel that an engineering graduate would not want to do work that is routine or repetitive. With the relatively high numbers of engineering graduates looking for work, I would think most engineering graduates would find it preferable to be under-employed rather than being unemployed. Besides, what employer wouldn't want an employee who is ambitious enough to move on to greater responsibilities?

Having non-engineers employed in technical positions that could otherwise be filled by engineering graduates takes away valuable experience from tomorrow's engineers. This, I believe, will undermine the leadership role and authority that the engineering profession has worked hard to establish. I believe today's engineers have a moral responsibility to hire engineering graduates for entry-level positions, at the very least, so engineers of the future can nurture and develop their talents. If we short-change tomorrow's engineers by not giving them the opportunity to develop their own skills, we will depreciate the stature of the engineering profession. □

Will it be Necessary to Hang Up the Portable Telephone?

An excerpt translated by V.L. Dutton, P.Eng. (Ret.) from an article by Pierre Rossion, published in Science et Vie, October, 1996

The radiation emitted by mobile telephones may be harmful to your health. Recent, but contradictory, studies are dividing the scientific world. Faced with this dispute, several countries have started important research programs.

While cellular telephones are experiencing a popularity without precedence in France (more than 1.5 million subscribers) and on a planetary scale (85 million subscribers), certain scientists are beginning to have serious doubts about their safety. These doubts are justified since the ultra-short waves emitted by these telephones are of very high frequency, of the order of 2 Ghz (1 Ghz = 1 billion hertz), in the vicinity of those of microwave-ovens. The only difference, and it is an important one, concerns the power of the radiation: 300-700 watts for ovens versus 2 watts maximum for portables. However, the ovens are equipped with metallic shielding developed to prevent harmful rays from escaping to the exterior. On the other hand, portables radiate into the surrounding space, as well as into their points of contact with the skull.

Considering that it takes only ten minutes to cook a chicken in a microwave oven, it was logical that the researchers should become interested in knowing whether the making or receiving of calls could, eventually, harm the cells and membranes in the brain, even if the thermal effect is very weak.

To verify this, researchers have tested the waves emitted by portables on human cells in culture and on laboratory animals. The first conclusions of the researchers have been contradictory. For some, the radiation was noxious. It caused the DNA (dioxyriboneucleic acid) to break into pieces. It was also responsible for cancers of the skin and brain, Alzheimer's syndrome, cataracts, nervous system disorders, headaches, and insomnia. For other cells the radiation was inoffensive.

It is noted, in passing, that most of the favourable studies have been financed by the manufacturers of portable telephones.

Bernard Veyret, director of research at CNRS and researcher at the Ecole National Superiéur for chemistry and physics in Bordeaux (ENSCPB), who is reserved about the effect of portables, estimates that it will take five years for unimpeachable biological results. As for epidemiological studies, which take longer to initiate, they will require at least ten years.

Faced with so many uncertainties, the European Commission is going to demand that the laboratories of the Community start a program of research for the coming five years. The United States has started many research projects, spread out over five years, for which the budget has risen to $25,000,000. These two programs concentrate



on the biological effects in vitro and in vivo of micro-waves from portable telephones. Concerning epidemiology, Denmark will soon start a study at the national level. It will consist of determining if the users of mobile telephones are more subject to brain tumours.

Until these studies are completed, the debate about the safety of cellular phones is likely to carry on. □

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experiment with distance-education techniques. This room will be a "Show Classroom" to illustrate to capital-funding authorities what is needed in new renovations and technology for an ideal, modern classroom. This is essential, if the Faculty of Engineering is to maintain high-quality, diversified programs.

Proposals may come from staff, students, and alumni who are contributors to the Engineering Endowment Fund. Application forms together with instructions for entering the 1997 Engineering Endowment Fund Competition are available in the Dean's Office. The disposable investment income for 1997 from the Engineering Endowment Fund will be about $130,000 to $140,000. The deadline to submit your proposals is mid-November, 1997.

Thanks to the generous contributions of alumni, students, and faculty staff, the Faculty of Engineering has been able to support many innovative and exciting activities. However, since the total amount requested for 1996 was $223,000, the Engineering Endowment Fund was not able to support all worthy proposals. The Engineering Endowment Fund is allocated 70% of earnings (interest, etc.) of the funds donated to the Engineering Capital Fund. If you would like the satisfaction of knowing that you are helping to give back to the Faculty, 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. □