THE MANITOBA
Professional Engineer
February, 1995

Early Beginnings 1920 - 1921

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

On the occasion of the 75th anniversary of the Association, the writer has endeavoured to provide a brief outline of some of the initial beginnings with a few other comments on that period. Information was taken from the minutes of the early council meetings, and from the 25th anniversary book, a short but very interesting history of the Association, 1920 - 1945. I would recommend this book to anyone interested in the formation of, and membership in, not only the Association, but also of the Dominion Council of Professional Engineers (1936) (now known as the Canadian Council of Professional Engineers).

Pre-Association Years

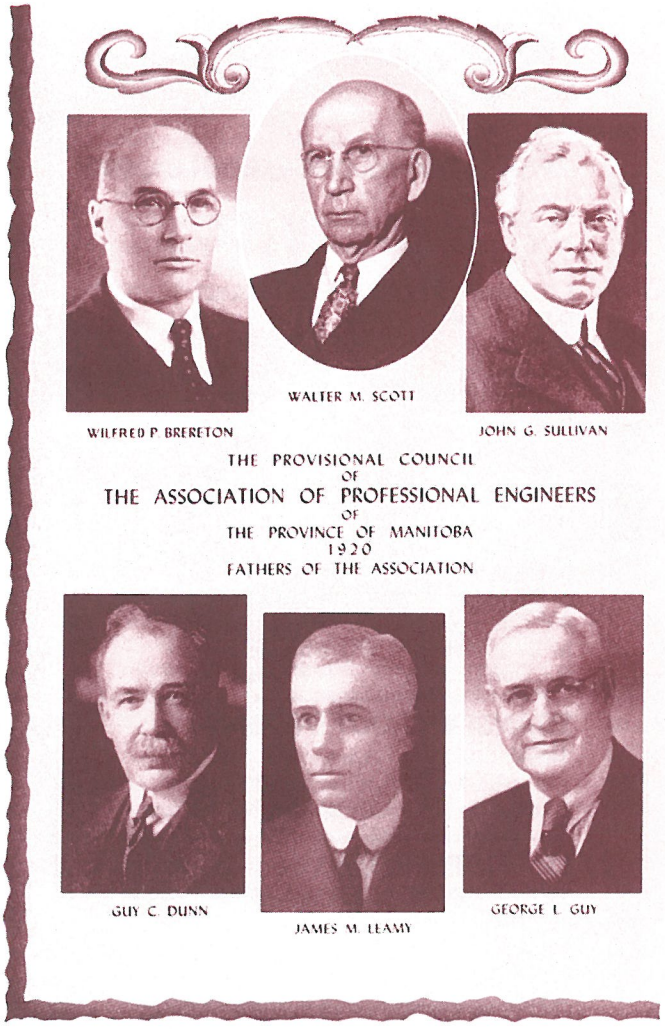
Prior to 1920, there were no provincial professional associations with the powers of registration and administration. An act respecting the practice of Civil Engineering had been passed in 1896 in Manitoba. It restricted the practice of engineering to the members of the Canadian Society of Civil Engineers (CSCE). Quebec had a similar act passed in 1898. However, with no administrative machinery within these acts, there could be little or no enforcement; hence, they fell into disuse. The CSCE was founded in 1887 and, later, was to become the Engineering Institute of Canada (EIC).

A note of interest is that the Manitoba Branch of the CSCE held its first annual dinner meeting in December, 1908 at the Royal Alexander Hotel. A copy of the menu – a sumptuous repast of flounder, sweetbreads, and wild duck – is on file at the Association office. Undoubtedly, many of the members of this branch of the national organization were later to become the first registered engineers of the Province of Manitoba.

Creation of the Association

The need for a governing body respecting the profession of engineering became apparent during the increased development in Winnipeg and throughout the Province preceding and following World War 1. Regulations were lax and persons wholly-unqualified were in responsible positions with respect to design and construction. Members of the Engineering Institute of Canada were aware of these situations, and the Manitoba and Saskatchewan branches of the EIC had committees studying the need and form of legislation for proper regulation of the profession. Resolutions were sent to headquarters of the EIC in Montreal from a number of the Provinces and the final outcome was a direction to the EIC Council for it to approach the Federal Government for national legislation respecting the profession. In turn, the Federal Government advised that they did not possess such powers until there were enabling acts on the statues of each of the provinces wishing to have a regulated engineering profession.

Information on a model act was received and, following a presentation to the Manitoba Legislature by a group of engineers, an Act respecting the engineering profession was passed on March 27, 1920. In that same year, Alberta, British Columbia, Nova Scotia and New Brunswick also passed provincial acts creating their professional engineering associations. In Manitoba a Provisional Council of six members was created with the requirement to have a general meeting of the members within six months.



Provisional Council

With W.M. Scott as Chairman and G.L. Guy as Secretary, the Provisional Council dealt primarily with registration, and by September 25, 168 members had been registered.

First General Meeting

Six months to the day, on September 27th, the first general meeting was convened in the Engineering building of the University of Manitoba on the corner of Portage and Sherbrook at 8:15 p.m. with 71 members (42%) in attendance. The draft by-laws were presented, discussed and approved page by page, thus becoming the first by-laws of the association.

During this meeting the first election was held with a slate of 15 nominees from which 7 councillors were elected – three for one year and four for two years. Immediately following their election, a council meeting was held with the election of the first President M.A. Lyon, Vice-President J.L. LeGrand, and Secretary-Treasurer/ Registrar G.L. Guy. The first Council of the Association with a governing by-law was now in place, and the meeting adjourned at 12:15 a.m.

Continued on page 10

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Professional Engineer

February, 1995

Published by the Association of Professional Engineers of the Province of Manitoba
530-330 St. Mary Avenue
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R. Goeres
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V.J. Ilg
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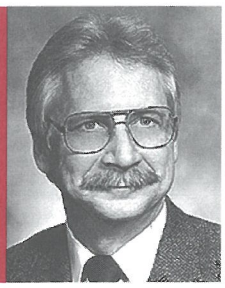
In Memoriam

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

R.H. Cook
J.A. Knowles
A.O. Schwartz

President's Message

D.G. Osman, P.Eng.



The Need for 20-20 Vision

Twenty-five years from now will engineering be the same as today? Obviously not! But what will it be like? What will be the profile of engineering after the baby boomers have all retired?

To have a sense of what the nature and characteristics of engineering will be in the year 2020, one must first anticipate what the needs of society will be. Some assumptions are needed to set the framework. Let's be optimistic. First, assume that in the next three decades there will be no wars. Neither will there be any diseases of devastating proportions. Once we have achieved stability through peace and health, the demands will be for engineers who are equipped and appropriately skilled to address the needs of society in order that there will be satisfaction with the quality of life.

What then will be some of the challenges of the day for the professional engineer? There will no doubt be changes in all sectors of engineering activity. Let's look at just one – transportation. The transportation of people and goods will be significantly different. The volumes to be accommodated will be proportionately higher. There will also be a need for a well-developed delivery system to serve many more communities over a much greater area. Near-zero-pollution vehicles will have to be commercially viable and available for both people and goods. These vehicles will involve the use of electric, battery, and hydrogen-cell technology. The larger transport mechanisms may be nuclear powered. Most certainly there will be systems of corridors for the vehicles to travel through the use of magnetic propulsion and with zero "rolling friction".

Aerodynamics will be crucial to enable these vehicles to travel with the necessary combination of speed and efficiency. All of the vehicles, whether for land, sea or air transportation will be developed making use of the very best systems of design and testing to maximize this feature. Without it, the energy requirements will be unmanageable.

"...today's professional engineers must look beyond their day-to-day activities, prepare for the future of engineering, and continue to be the leaders in society."

The materials being used will be foreign to anyone in today's world who is not already knowledgeable about recent developments. Materials which will be commonplace 25 years from now will be an improvement upon some of the advanced composite materials used today for the high-tech applications of aerospace and special civil, mechanical, and electrical systems. Plasma coatings will become as commonplace as our everyday paint applications. There will be new materials that will make Kevlar as commonplace as rayon, polyester and lycra are for today's textile industry. The vehicles will weigh only half as much as today, will last five times longer and be much safer. They will have sophisticated automated guidance systems with global positioning capabilities which will route and reroute the vehicles to optimize travel time, minimize fuel consumption or provide the least inconvenient routing option available. This will accommodate road construction, avoid traffic accidents or congestion, and bad weather.

The energy systems identified earlier (electric, battery, hydrogen-cell) will require an energy supply in order to energize, recharge the battery and produce the hydrogen for the cells. This energy will come from hydro-electric generation, clean air coal-fired steam generators or nuclear power plants, often with wind or solar co-generation. Improved conductors and transformers will be necessary to increase the efficiencies.

Will pneumatic tubes be a part of the transportation system? Absolutely. In much the same way they have been used in some retail business in the past, they will be used to convey a wide variety of goods.

The foregoing only scratches the surface of the challenges that are in store for engineering. The many aspects of agricultural, civil, electrical, mechanical, computer and environmental engineering, city planning, mining and other key areas will experience a similar change.

Whether the future unfolds as I have suggested or in some other manner, is not the issue at hand. The issue is that change is inevitable and this change will require engineering. Engineers must anticipate the needs and prepare themselves accordingly. One should not need 20/20 vision to anticipate that new methods and materials will have to be developed in order to predict, facilitate, accommodate and direct the future needs. There will be an onus which then falls upon all practising engineers, universities, business, and governments to ensure that society is cared for appropriately. The practicing engineer will need to keep himself or herself in a state of continuous self-improvement and technical competence. The universities must be prepared to produce engineers who are equipped to deal with the technical challenges of the future. Successful business will have anticipated the immediate needs, be able to foresee the future needs, and will have positioned themselves accordingly, whether they be in the manufacturing or service sectors.

My message is that today's professional engineers must look beyond their day-to-day activities, prepare for the future of engineering, and continue to be the leaders in society. We must all strive to ensure that we are continuously upgrading our technical skills in order to maintain our competence. The opportunity is there – seize the day. □

Mastering ISO 9000 in Quebec

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

In an article sub-titled "Another Step Toward Total Quality" in PLAN for August, 1994, Quebec's approach to adopting the standards in ISO 9000 are outlined.

Four possible paths exist for the firm attempting to up-grade to ISO 9000. The first is through one of the four universities, and one technical college, that conduct courses on the subject. A second path is through "independent consultants", names of whom may be obtained from the Quebec Association for Quality but there is no evaluation of such courses available. A third route is to use the trainers available through one of three governmental ministries or the Quebec Centre for Industrial Research. The fourth choice is to use one of the organizations or firms that have been accredited for this purpose by the Canadian Standards Council. Telephone numbers are given for all of these "paths".

The firm that chooses to investigate the feasibility of adopting ISO 9000 standards may start with an evaluation session that takes from 4 to 7 hours and is conducted in groups numbering up to twenty participants. It is pointed out that a company addressing this problem should have a team take this session: such a team should consist of the firm's manager, the president of the Board, the chief engineer, the superintendent, the president of the union, and several key employees. Such a team would then be able to evaluate the changes that the firm would have to make if ISO 9000 is to be adopted.

For the firm that proposes to continue, a second "course", of from two to five days duration "according to the level of knowledge of the coordinator" then follows. In these sessions, the instructor presents the "twenty requirements" of ISO 9000 in detail.

The article concludes with some examples of what a firm should anticipate as it works toward qualification under ISO 9000. □



The Changing Educational Paradigm

By: G. Ouellette, P.Eng.

Each year the APEM Council and the APEM University Liaison Committee meet with the Dean and Department Heads of the Faculty of Engineering to discuss issues of mutual interest and concerns.

The 1994 dinner meeting was held on November 30 at the University of Manitoba, St. John's College. The MC for the evening was Elliott Garfinkel, Chairman of the University Liaison Committee.

Elliott Garfinkel initiated the after-dinner program by introducing Don Osman, APEM President. Don offered greetings from APEM. During his brief address, he alluded to the University's Plan 2000 which is recommending that the Engineering Library be amalgamated with the Science Library. The President stated that members of the Association will be encouraged to support the Engineering Faculty's opposition to this recommendation.

Dean Don Shields offered greetings from the Faculty. In a departure from previous meetings, University staff other than teaching staff, as well as a number of engineering students, were in attendance. They were introduced by the Dean and recognition was given to the important role of these individuals.

Prior to the meeting, it was decided by the University Liaison Committee that the topic for discussion would be "breaking the engineering educational paradigms". It's a catchy 90's title but what does it mean? The task of presenting such an esoteric subject matter was left to Russell Radford, Ph.D., Associate Director of the University's Faculty of Management MBA Program. The choice of speaker could not have been more appropriate. Russell Radford is a civil engineering graduate from Royal Military College, Australia. He possesses an MBA degree in Operations Management, Ottago University, New Zealand, and a doctorate in Operations Management, Harvard Business School. He is currently a member of the task force researching the integration of engineering and management programs. With his varied background, he was eminently qualified to speak on the chosen topic.

The word paradigm is synonymous with patter, precedent or prototype. Russell Radford offered his insight on the typical engineering graduate from the present engineering programs. In general, engineers tend to think in terms of structures and not in terms of people (or users) of the structures. Also, engineers are problem-solvers and not decision-makers. By its very nature, engineering education must focus on "technical" engineering, but more emphasis is needed on "social" engineering. The "social" aspect of engineering considers the needs of the users and the general public. Engineers must be more aware of policy, politics and decision-making issues because they often override the technical aspects of engineering projects. The media is more apt to report on engineering failures than engineering successes. The essence of Dr. Radford's talk was that a social engineering education will better prepare engineers to respond, defend and justify the technical and social merits of their labours.

According to Dr. Radford, engineering education programs must change. Changes are needed in order to produce better, more well-rounded engineering graduates. Firstly, admission quotas must be eliminated; quotas deny people the chance to work at what they like to do. Secondly, the behavior of engineering faculties must change. In the past, more so than in the present, faculties tended to perpetrate the notion of engineers as iconoclasts; engineers must be team members – there is no room for non-conformists. Thirdly, the length of the engineering program must be increased; there simply isn't enough time in four years to teach what must be taught. The core of engineering basics is increasing and thus more time is needed to teach the basics. Finally, industry does not take the time to train and develop young engineers. Industry should be involved in developing course content, to minimize the need to train the graduates as they enter the work force. Education is a life-long process and it's every engineer's responsibility and duty to continually upgrade his or her skills.

A discussion was held following the speech and even the iconoclasts and cynics in attendance agreed that engineering education must change with the times. However, there was no consensus on what the changes should be. The evening ended with the realization that no problems were solved and no decisions were made. □

Cedula Profesional

V.L. Dutton, P.Eng.

All professional engineers, or companies employing engineers, who wish to do engineering work in Mexico, must have a valid licence or "Cedula Profesional". A pamphlet, in which immigration requirements for foreign workers in Mexico are outlined, is available for consultation in the Association Office. □

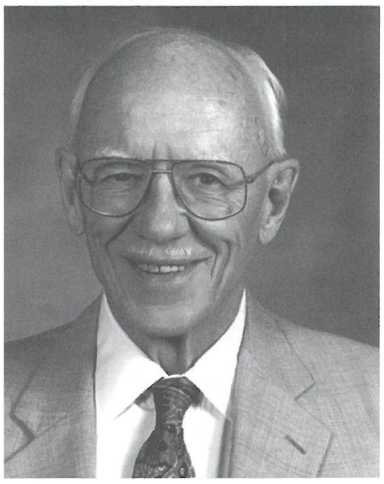
Bateman Wins National Recognition

On November 10, 1994, the Canadian Council of Professional Engineers (CCPE) announced the winners of the 1994 Canadian Engineers' Awards.

Since 1972, through its prestigious National Awards Program, the Canadian Council of Professional Engineers has been encouraging and recognizing excellence in engineering and community service to promote a better understanding of the role of the Professional Engineer in Canada.

Leonard A. Bateman, P.Eng., of Winnipeg, received the Gold Medal Award for 1994. Mr. Bateman's distinguished career has included active leadership in various professional bodies. He has served as President of the Association of Professional Engineers of Manitoba and President of the Canadian Electrical Association.

Established in 1936, the Canadian Council of Professional Engineers is the Federation of the provincial and territorial authorities that license and oversee 156,000 professional engineers across Canada. □



Leonard A. Bateman, P.Eng.

Letter to the Editor

It was a great honor to learn that Council had conferred on me the Honorary Life Membership Award. As I had already headed south for the winter, I was not present at the awards banquet, but the framed certificate was presented to me by our Registrar in the Association office.

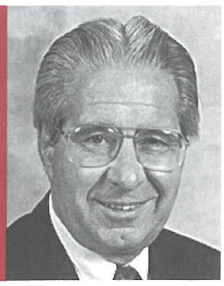
I wish to thank all my associates and the staff for the many excellent years that I enjoyed as a member living in Winnipeg. I am touched and honored that you would remember me.

There is something very special about the APEM (and IEEE I might add) membership. Although there are differences in viewpoint, there was never the destructive competitiveness that I see elsewhere. I thank God that he made us all equal but unique, and I count it good fortune to be one of the few selected to become an APEM member.

Sincerely,

John W.J. Lewis, P.Eng.

CCPE President's Message



Dr. Garland E. Laliberte, P.Eng.

The Scope of Engineering Practice

The year 1995 marks, for several jurisdictions in Canada, 75 years of self-governance for the engineering profession. One implication of self-governance is that there must be a scope of practice within which the self-governance takes place. The scope of engineering practice in Canada has been delimited by a definition of engineering included in the act governing engineering practice in each of the twelve provincial and territorial jurisdictions. The definitions are similar, but not identical, in each jurisdiction.

This circumstance led the Canadian Council of Professional Engineers (CCPE), in 1989, to assign to its Committee on Professional Issues the task of coming up with a model definition of engineering. This was done primarily with a view to promoting uniformity of the scope of engineering practice in Canada. It also had the goal, however, of bringing outdated definitions, some of which had not been changed since 1920, in line with the contemporary realities of engineering practice.

The CCPE Committee on Professional Issues contemplated two approaches in developing a model definition. The first would have been directed towards developing a comprehensive definition. It would have listed all the works, systems and processes which were regarded as falling within the scope of engineering practice. This approach would have led to a "laundry list" of areas of engineering activity. The "laundry list" could have been accompanied, at the option of the jurisdictional authority, by a listing of engineering disciplines. This approach was given serious consideration. It was eventually abandoned, however, primarily because it was expected that, as engineering practice evolved into new areas of activity, this so-called exhaustive definition would quickly have become outdated.

The second approach envisioned a more generic definition, one which would set out in more fundamental terms what constitutes engineering practice. This approach would produce what was termed an expansive definition. It was considered to be better able to withstand the test of time. It was this approach that eventually led to a definition which was recommended by the CCPE Committee on Professional Issues, and adopted by the CCPE Board of Directors, in 1991.

This model definition of engineering embodies three fundamental tenets. First, for any activity to fall within the scope of engineering practice, some action, such as planning, designing, composing, evaluating, advising, reporting, directing or supervising, or the management of such an action, must occur. Second, that action must require the application of engineering principles. And third, the action must concern the safeguarding of life, health, property, economic interests, the public welfare, or the environment. For an activity to fall within the scope of engineering practice, all three of these tenets must be operative.

Implementation of the model definition in the legislation governing engineering practice in several provinces and territories has encountered difficulty as a result of interventions by natural scientists in Canada. The natural scientists claimed that the scope of engineering practice that would be permitted by the model definition would infringe on their areas of work. They argued that, if the legislation were to be adhered to rigidly, natural scientists could, in fact, be prevented from working.

During discussions with the natural scientists, it became clear to the CCPE representatives that, in setting out the scope of engineering practice, the CCPE might have unwittingly circumscribed, in the model definition of engineering, some areas of activity which can be competently undertaken by natural scientists. The concept of overlapping scopes was accepted by representatives of the CCPE and the natural scientists. What was needed was a solution which would reflect this agreement.

The solution seemed to be an exemption to be incorporated in legislation as a companion clause to the model definition. The exemption clause would state, in effect, that nothing in the legislation is intended to prevent a natural scientist or someone under the direct supervision of a natural scientist from practising natural science. The exception clause would go on to describe natural science as "any act (including management) requiring the application of scientific principles, competently performed".

This approach seems to be reasonable and it received the support of the CCPE Board of Directors in November 1994. The exemption is currently being considered by the natural scientists. It has been ratified by a number of their national organizations. We believe that the matter has now been laid to rest and that all those who were alerted to the concerns of the natural scientists can be informed that a solution has been reached. □

Meet Your New Councillor –

Ms. Bonnie Thomson

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

Bonnie Thomson is the newest member of the APEM Council. At present, Ms. Thomson manages an office for National Refractories & Minerals. The Manitoba office of National Refractories supplies, installs, and services refractory material for mainly the copper/nickel, foundry, pulp and paper, and steel industries in western Canada.

Ms. Thomson is a registered nurse by education and has been employed in the intensive care units and recovery room at Mississauga Hospital, the intensive care and coronary care units at University Hospital in London, Ontario and, since moving to Winnipeg, the intensive care unit at Grace Hospital. As her husband's office expanded, Ms. Thomson became more interested in the business world and slowly found that she was spending more time at the office than at the hospital. She has been gradually upgrading her business skills over the past few years and has now permanently given up the world of medicine for the world of typewriters, faxes, computers and customers.

Ms. Thomson served as President of the Mississauga Registered Nurses' Association for two years. Since moving to Winnipeg 17 years ago she has been actively involved with the local community club, served as treasurer for John Taylor Collegiate Music Association, and has been involved in Girl Guides of Canada for almost 10 years as a Brownie and Guide leader and as a district, division, and deputy area Commissioner. She has a keen interest in young people and greatly enjoys being involved with them. She enjoys playing bridge, travelling, and fishing at Caddy Lake and hopes to live long enough to see another Jets hockey game.

Ms. Thomson and her husband Peter have two children: Suzanne, who just started her career at radio station CFOB in Fort Francis, Ontario; and Jeffrey, who just entered pre-journalism at the University of Winnipeg.

Ms. Thomson hopes to bring to Council a unique perspective of the public's expectations of the profession of engineering. She hopes that as the lay member of Council, she will possibly see things from a different light and ask questions and express concerns that the average citizen has. She also hopes to be able to take back to the public some of the awareness and concern she has already witnessed for the safety of the public in the practice of engineering. □



Councillor Bonnie Thomson

Discipline Committee Report

Respecting a Discipline Hearing Into Charges Against F. D. Wolfrom, P. Eng.

PANEL:

R. E. Scouten, P. Eng., Chairman

G. A. Morris, P. Eng.

W. R. McQuade, P. Eng.

D. N. Spangelo, P. Eng.

Counsel for the Investigation Committee – Paul Walsh, Q. C.

Counsel for the Respondent – Gordon A. MacKinnon

Counsel for the Discipline Committee – Brian J. Meronek

On November 15, 1994, a panel of the Discipline Committee conducted a hearing into charges made by the Investigation Committee.

The charges read as follows:

> "That Frederick Daniel Wolfrom, P. Eng. while registered as a professional engineer in the Province of Manitoba, did commit acts of negligence in the practice of engineering and conduct in the practice of engineering which were detrimental to the public interest contrary to the provisions of The Engineering Profession Act of the Province of Manitoba in that he, in or about the month of July, 1991, in the City of Winnipeg, assumed professional responsibility for the design of the structural aspects of a building at 200 Lowson Crescent in the City of Winnipeg and did affix his professional engineer's seal to the drawings related to the construction thereof, which design failed to meet the standard or standards that can reasonably be expected of a professional engineer of average skill and ability in that the foundation system for the air-supported structure did not make responsible provision for compliance with the applicable Codes and Standards."

Counsel for the Investigation Committee introduced into evidence the following agreed statement of facts:

Statement of Facts

1. Frederick Daniel Wolfrom, P. Eng. is a Professional Engineer registered as such pursuant to The Engineering Profession Act and By-laws and regulations in force pursuant thereto.
2. The Investigation Committee of the Association concluded an investigation into the practice of engineering by the Respondent Wolfrom with respect to the structural engineering aspect of The Winnipeg Golf Dome, 200 Lowson Crescent, Winnipeg, Manitoba and prepared the charge dated February 7, 1994.
3. The Respondent Wolfrom was the Professional Engineer responsible for the said Golf Dome at 200 Lowson Crescent, Winnipeg, Manitoba.
4. The pile and grade beam foundation system design as prepared by the Respondent Wolfrom as contained on Drawing S-1 Foundation Plan and Section sealed, signed and dated by the Respondent Wolfrom on the 30th day of July, 1991.
5. This foundation system as designed by the Respondent Wolfrom was used for the construction of a foundation system at the Golf Dome at 200 Lowson Crescent, Winnipeg, Manitoba.
6. The load calculations by the Respondent Wolfrom are the handwritten calculations (10 pages) undated but attached to a letter dated April 30, 1993, from the Respondent Wolfrom to the Association.
7. The loads calculated by the Respondent Wolfrom for design purposes were 955 lbs./ft vertical and 424 lbs./ft horizontal. These design loads were used for the pile and grade beam system shown on Drawing S-1 referred to herein.
8. The loads as calculated by the Respondent Wolfrom are an incorrect interpretation of the loadings on the foundation system at the said project; and without limiting the generality of the foregoing particularly as specified by CSA S 367-M81. The maximum loadings on the foundation system as calculated by the Respondent Wolfrom are in the range of 45% to 60% less than the actual maximum design loads specified in the CSA Standard.
9. Even if the foundation system had been constructed exactly as designed by the Respondent Wolfrom the foundation system could not accommodate the loads without suffering structural damage.
10. Reliance of passive resistance of adjacent soils to resist horizontal loads for the shallow grade beam designed by the Respondent Wolfrom would not be recommended by a competent geotechnical engineer.
11. In consequence the above facts constitute acts of negligence in the practice of engineering and conduct in the practice of engineering detrimental to the public interests contrary to the provisions of The Engineering Profession Act of the Province of Manitoba.
12. The Respondent Wolfrom affixed his professional engineers seal to his drawings relating to the construction of the said project.
13. The foundation system for the air supported structure did not make responsible provision for compliance with applicable codes and standards.

As well, various photos, drawings and load calculations were introduced into evidence.

The Respondent's counsel stated that Mr. Wolfrom did not contest the charge or the facts of the case and he did not make any submissions in response to the charge.

Upon a consideration of the evidence, the panel unanimously found the Respondent to be guilty of the charge as set out herein.

After hearing submissions from Counsel for the Investigation Committee and Counsel for the Respondent with respect to penalty, the panel unanimously imposed the following penalties:

1. Censure of the Respondent.
2. A fine of $10,000.00 to be paid within 18 months. The terms of payment are to be arranged between the Respondent and the Registrar.
3. A recommendation that the Respondent write the Association's Professional Practice Examination.
4. Publication of the findings of the Discipline Committee in the official publication of the Association.

It was duly noted that the Respondent cooperated fully in the proceedings of the Discipline Committee.

Submitted on behalf of the Discipline Committee.

Dated the 24th day of November, 1994.

R. E. Scouten, P. Eng.
Chair of the Discipline Committee □

Letter to the Editor

This letter was sent to the Editor-in-Chief, Globe and Mail, November 17, 1994.

Dear Sir:

What's with your headline writers and journalists? Is your headline writers' creativity so constrained that they must consistently forsake balance in preference to catchiness in their headlines? Must your journalists regularly force negative comment into stories reporting technological developments of which we should be proud?

As evidence of this creative cop-out and this journalistic bias, I offer two pieces describing engineering projects, both appearing in the November 15 issue of your paper. One, entitled "Ho hum opener for Eurotunnel passengers", describes, as "boring", the without-incident inaugural passenger run of trains using the Eurotunnel.

The second, entitled "Hibernia project inches forward", in a weak attempt at satire, describes the impressive winching of the 120,000-tonne concrete base for the Hibernia platform as "a move about as exciting as watching ice form".

Engineering...it underpins our economy and our way of life. Give it a break!

Garland E. Laliberte, P.Eng.,
President,
Canadian Council of Professional Engineers, Ottawa

Developing the U of M Hydraulics Laboratory Facilities

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

The University of Manitoba hydraulics laboratory will soon undergo a major refit and modernization. The new laboratory will be known as the "Hydraulics Research and Testing Facility". Funding for this initiative has been secured from the Natural Sciences and Engineering Research Council (NSERC) Canada (under their joint University-Industry collaborative program), Manitoba Hydro, and the University of Manitoba.

The existing hydraulics laboratory was built in 1967 for the primary purpose of supporting undergraduate and graduate teaching. Since the facilities in the hydraulics laboratory are unique to the Province of Manitoba, they have also been used for hydraulic research. However, the research-oriented use of the lab has declined as the current facilities cannot meet the needs of modern hydraulic research. The plan to develop the existing facilities includes the installation of a constant-head tank, the construction of a new variable-slope flume, the installation of a random-wave flume, and the purchase of state-of-the-art electronic instrumentation.

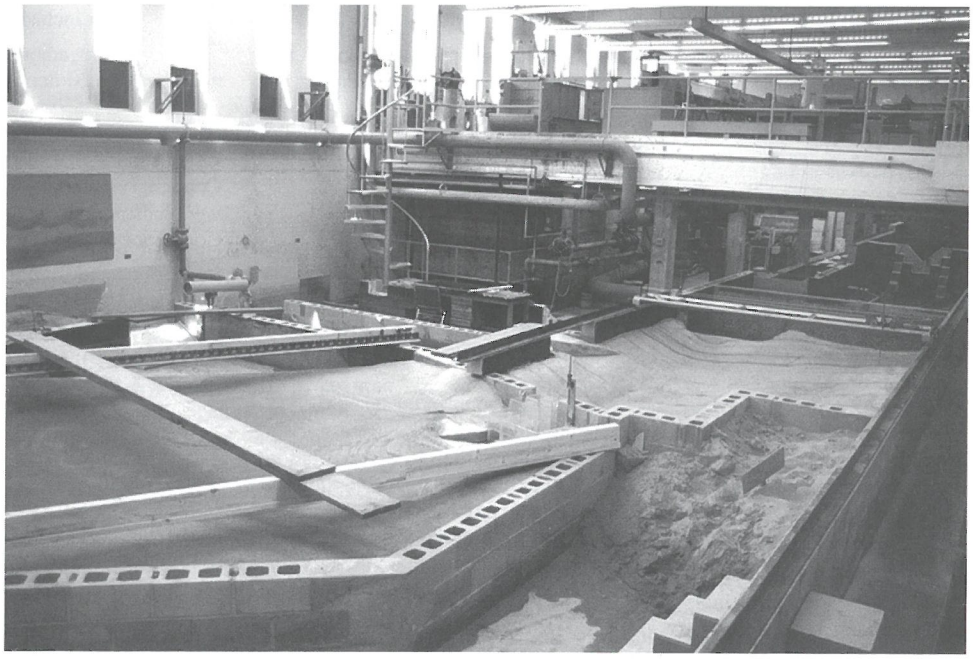
The constant-head tank will provide an extremely stable discharge of water throughout the laboratory and allow numerous projects to be conducted simultaneously without influencing one another. The 25 m^3 head tank will receive flow from two vertical turbine pumps and distribute water throughout the lab via 400 mm-diameter PVC piping. The head tank will provide a discharge of up to 0.5 m^3/s. Discharge through the system will be accurately computed using a combination of an electromagnetic discharge meter (manufactured by MSR in Edmonton, AB) and two volumetric tanks equipped with electronic water level sensors.

A new, 17-m-long, variable-slope (0 to +5%) flume, which will be manufactured using aluminum, glass, and steel, will be installed on the mezzanine level of the hydraulics laboratory. An independent (i.e., floor-mounted) gantry will be used to traverse the length of the flume to precisely measure water or bed surface elevations. The flume will be equipped with an inflow head tank, a head gate, and a tail gate. The flume will be invaluable for hydraulic model studies and for graduate and undergraduate teaching laboratories: e.g., demonstrating hydraulic jumps.

A random wave flume, 34 m long, 2 m wide, and 1.5 m deep, will be built on the lower level of the hydraulics laboratory. It will be used for coastal engineering and to develop instrumentation for sediment transport related research. Random waves will be mechanically generated by a servo-hydraulic piston-type waveboard, designed with the assistance of the Coastal Engineering Research Laboratory (NRC) in Ottawa.

Electronic instrumentation will round out the development of the hydraulics laboratory. Pacific anti-aliase analog filters, and PCs equipped with high speed Keithley-Metrabyte data acquisition cards will be used for data logging. Data will be archived on a Pinnacle Micro read/write optical hard-drive. Three-component SonTek acoustic current meters will be used to obtain "point" measurements of fluid velocity. Water levels will be measured using capacitance gauges and acoustic-level sensors.

The new facility will benefit the University by providing a modern facility in which to train graduate students and to conduct both fundamental and applied hydraulic research. Manitoba Hydro and other local industry will benefit by having access to a modern facility that will be capable of meeting their engineering and research needs. It is anticipated that the new facility will be a focal point for hydraulic research in the Province and provide a forum for the exchange of ideas and technology between the University and local industry. Modifications to the existing 650 sq. m. facility are scheduled to begin in January, 1995. The new facility will be managed with the assistance of a Board of Advisors, with members from both industry and government. For further information, please contact Dr. J.C. Doering, P.Eng., in the Department of Civil and Geological Engineering at the University of Manitoba (Phone: 474-6942/Fax: 261-9534). □



Double Recognition for Memorial Foundation

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

On November 10, 1994, the Canadian Engineering Memorial Foundation received double recognition at the semi-annual meeting of the Canadian Council of Professional Engineers (CCPE) in Ottawa.

First, the dedicated, hard-working Chair of the Foundation, Claudette MacKay-Lassonde, P.Eng. received well-deserved recognition from the engineering profession in Canada in the form of the CCPE Meritorious Award for Professional Service. (Congratulations, Claudette!)

Then the Memorial Foundation presented its three 1994 scholarships.

Launched under the stewardship of the CCPE early in 1990, the Foundation is a fully constituted Foundation which seeks to increase the opportunity for young people – particularly women – to prepare for and receive training and an education in engineering.

One of the Foundation's initiatives is the annual awarding of a $5,000 scholarship to each of three female engineering students: one in the first year of an engineering program, one in the final undergraduate year of an engineering program, and one in graduate studies.

The 1994 recipients were: Dyoni Smith of Cambridge, Ontario, who recently started her studies in biological engineering at the University of Guelph; Johanne Heald of Nepean, Ontario, who is in her final undergraduate year of aerospace engineering at the University of Toronto; and Nancy Paris-Seeley, P.Eng., of North Vancouver, British Columbia, who is pursuing a Masters degree in mechanical engineering with an emphasis on biomedical applications at the University of British Columbia.

December 6, 1994 marked the fifth anniversary of the tragic event which led to the creation of the 1989 Canadian Engineering Memorial Foundation. □

Council Reports

November 21, 1994

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

AT WHICH COUNCIL PREPARES FOR THE NEW REQUIREMENTS OF REGISTRATION

The first meeting of the new Council opened with President Don Osman presiding and with newly-elected members S. Ursel, R. Britton, and P. Washchyshyn attending their first meeting. Ms. B. Thomson, the new lay member of Council, was also attending her first meeting.

The routine items of finance and registration were reviewed in detail for the information of the new members. In this review it was pointed out that the Association is unique in that it has three year-ends: financial – July 31; Council term – October; and length of membership and dues payment – December 31.

The election of the Vice-President and the Executive Member, the appointments to the Nomination Committee, and the appointment of Councillors
to act as liaison members of committees, were all discussed. Some were finalized, others deferred to the December meeting to enable the new Councillors to become better acquainted with the positions and their new fellow Councillors.

Experience Review Board

Over the past year the Experience Review Board came into operation. It is the duty of this Board to examine the work experience record of persons applying for registration. The draft copy of the procedures manual and operations guidelines was presented to Council for review and approval. This same Board will also be reviewing the experience of those who are registered in the EIT Program. Inasmuch as the EIT program, after January 1, will require four years of work experience, with the applicant's record to be reviewed twice per year, there will be a great deal of committee activity. In addition, there will also be a three-hour, closed-book examination on professional practice which is to be passed before an applicant may be registered.

This 60-page document is probably the first major work to set forth the policies and guidelines of registration in the Association. It marks a major change in procedure: where previously matters of qualification and work experience were a staff responsibility, now the experience review will be by a committee of practising members.

Continuing Education

There was considerable discussion on continuing education and competency in relation to the maintenance of an engineer's status of registration. While continuing education in itself does not assure competency, it was felt that there should be a record of continuing education on each member's file – primarily a record of professional development over the years. The matter of mandatory recording of this information was examined from a legal viewpoint. After much debate, Council made the decision to refer the matter of reporting of continuing professional development activities to the Legislative Committee for inclusion in the Act.

The meeting adjourned at 5:15 p.m.: a good introduction to the new members of a 20-item agenda meeting. □

December 12, 1994

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

AT WHICH COUNCIL PREPARES FOR 1995

Council met on December 12, 1994, at 12:30 p.m. to consider the regular business of the Association. The 17-item agenda was somewhat smaller than usual, which councillors regarded as a small Yuletide offering.

The first items were routine in nature. Council adopted an agenda, approved minutes from the previous meeting, and dealt with business arising from the minutes. A request from Council was forwarded to the Legislation Committee concerning the mandatory reporting of members' professional development activities. Councillor Britton raised a concern about the suitability of facilities for the recently held APEM/Faculty of Engineering Dinner Meeting.

Council reviewed financial statements for October 1994. The Association maintained a healthy financial situation. Council asked Mr. Ennis to report on several minor items for the next Council meeting.

Next, Council reviewed a report from the Registration Board. Thirty-nine Engineers-In-Training were enrolled, and 14 engineers were registered. There was one Re-instatement, four Licensees, and four Transferees. The report from the Registration Board is normally received by Council as information only, as the Registration Board formally reviews applicants' credentials beforehand.

The minutes from the last Executive Committee Meeting were received by Council. Items regarding National Engineering Week, the 1995 APEM General Meeting, the CCPE Annual Meeting, and the premises search were discussed by Council. Concerning new premises, Council engaged the services of a realtor to evaluate properties for the APEM.

Council held elections to fill vacant positions of President-Elect and Executive Member of Council. The net result was no candidates were willing to fill the first position but Councillor Permut was elected as Executive Member of Council. Another election for President-Elect will take place at the next Council meeting.

Council considered the election of Councillors to act as liaison to established committees and boards. These members are responsible for bringing Council's viewpoints to those bodies and vice-versa. Most councillors who were liaison previously, agreed to maintain their postings. Eighteen Liaison Councillor positions were filled.

The schedule and time of meetings of Council was reviewed and amended. Council will now meet on the second Tuesday of the month rather than Monday; but the usual 12:30 p.m. time was maintained.

Copies of the Manitoba Law Reform Commission Report were distributed to Council. This document is very important to the future of our Association and to other professional and occupational groups in Manitoba. At issue is the manner in which we govern ourselves. If the Manitoba Legislature acts on the recommendations contained in the report, APEM will be changed significantly. This issue should be noted by all members.

Council agreed to review the Long Range Plan on January 24, 1995, at the Industrial Technology Centre.

The end was in sight as Council made recommendations for three APEM engineering awards and changed the terms of reference for two others to make them more inclusive. The meeting ended with spirited discussion of waste-water treatment lagoons. It appears a member of the public has been raising a stink over lagoons and making public remarks that could be interpreted as defamatory to Professional Engineers.

At 4:30 the meeting adjourned and Council trudged off into the winter gloom wishing each other season's greetings! □



Manitoba Selected for First SAE TREC Meeting – February 1996

By: K.F.Olischefski, P.Eng.

The Manitoba Section of the Society of Automotive Engineers (SAE) and Tourism Winnipeg cooperatively pursued and successfully won an international competition to host the first SAE Testing and Research Engineering Conference (TREC). Local commitment to the conference bid was demonstrated through letters of support from industry, endorsement letters from all three levels of government, and overwhelming effort by SAE's Manitoba Section. SAE is a network of more than 60,000 engineers, technical professionals, business executives, educators and students from more than 90 countries that acts as a forum for exchanging ideas with the goal of advancing mobility systems engineering.

This conference is the first of its kind in that it is an amalgamation of the former Subzero Engineering Conditions Conference and the Seventh International Pacific Conference. The conference will address all atmospheric conditions which engineers must consider in designing for land, sea, and air mobility including high temperature, low temperature, high humidity, and high altitude conditions.

Arrangements will be made for Manitoba's large Student Section of SAE to participate in the conference in order to provide our future engineers with exposure to the professional practice of engineering.

Anyone wanting more information on the conference or interested in assisting with the conference organization should contact Mr. Gary Edwards, Manager of Engineering, Temro Division of Budd Canada Inc., phone 452-2005. □

Promoting the Engineering Profession

By: C.S. Roberts, P.Eng.

Many people, including members of the profession, criticize engineers for having either a negative image, or no real public image at all. However, to wear out an old line, "If you are not part of the solution, you are part of the problem!".

Public awareness of engineering is not just for the benefit of enhanced reputation or remuneration, but part of our ethical responsibility. Without public familiarity with our profession, we run the risk of non-engineers being selected to perform engineering tasks that may put the public at risk.

Every member of the profession can be part of the promotional effort to enhance the public's knowledge about engineering. For example, we often find ourselves attempting to explain the differences between the various disciplines to our non-engineer friends. Many of us are asked to speak to a group or individual about engineering.

If we want to improve the image of the profession, we will take these tasks in a proud and professional manner, and use them as our personal opportunity to help improve the profile of our profession.

There are many resources available to help you to stimulate interest among the general population in the work that engineers do:

Brochures: The APEM Public Awareness (PA) Committee has recently developed a new leaflet, "Engineering: Creating the Future, Today!", which briefly describes nine common disciplines of engineering. A colour brochure entitled "Engineers, Creators of Tomorrow", suitable for general audiences and elementary students, and brochures for each of grades 7-9 and 10-12 students, have been available for some time now. Brochures will be sent to you promptly if you call the APEM office.

Videos: Various engineering, math and science promotion videotapes are available on loan from the APEM office, with play times from five minutes and up.

School Programs: If you have interest in promoting engineering in the schools, you can volunteer for the Innovators in the Schools program. They arrange school visits, job shadowing, and a hands-on engineering activity called "A World In Motion". You can indicate how often you will be available, and your preferred age group. They also provide resource material and training for new volunteers. For more information, or to volunteer, contact Betty Anne Kilbrei at 988-0699.

National Engineering Week: A subcommittee of the APEM PA Committee is organizing activities for the week of March 4-11, 1995, including newspaper advertising, a billboard, a mall booth, a student competition, a Speakers' Blitz in the schools, a Career Information Evening, and other activities. Engineers are needed as volunteers for these activities.

Employers of engineers can help by holding events during National Engineering Week (which we can help publicize), encouraging engineer employees to participate by giving them a few hours off with pay, or providing financial support in exchange for including their company logos in our newspaper advertising.

To participate in National Engineering Week, contact Dean Wieten, P.Eng. at 452-6776 or Dan Prowse, P.Eng. at 474-3982.

We all are concerned about the image of the profession. However, we are trained as problem-solvers: if we each do our part, together we can make a visible effort to solve this problem. □

Communication... Your Success Depends on it!

By: D. Kukelko, P.Eng.

Communication skills are an essential ingredient for success and enjoyment in both business and personal endeavors. By "communicate", we mean giving or receiving information, ideas or instructions. Toastmasters has found the best way to learn this skill. Plain and simple, people learn best through their own experiences. This is the learning opportunity Toastmasters provides you.

Through Toastmasters these dynamic results are achieved:

- Excellence in exchanging information by the spoken word.
- Skill in delivering messages with fervor, and with the proper use of language and gestures.
- Ability to think on your feet – to talk sensibly on a subject without prior notice.
- Confidence a person feels through the enjoyable experience of effectively communicating ideas and concepts to groups, large and small, with ease and conviction.
- Alertness to the communication of others – the fine- tuned listening ear. It is essential to be a good listener to be an effective communicator.
- Improved promotability by acquiring the qualities and skills of effective leadership.

We meet on Tuesdays at 5:30 p.m. 808-386 Broadway (Manulife Bldg).

You are invited to come and see Toastmasters in action. For further information contact Brian Schinkel, CMA at 474-5534 or David Kukelko, P.Eng. at 775-8440. □

Reminder

1995 APEM Golf Tournament



The 1995 APEM Golf Tournament will be held at Falcon Beach Golf Course in early June. Please contact a member of the Sports Committee, or the APEM office, if you would like to sponsor a hole this year.

Engineers to Recognize Excellence in Teaching

The Canadian Council of Professional Engineers (CCPE) is pleased to announce the creation of its "Faculty Teaching Award" which will recognize exemplary contributions to the teaching of the engineering profession in Canadian universities. The first award will be presented in 1995.

Nominations for the award will be submitted by groups of three people or more which include at least one student. "Student participation is an essential element to the credibility of this award," according to CCPE President Dr. Garland Laliberte, P.Eng. Dr. Laliberte, who was formerly Dean of Engineering at the University of Manitoba, was instrumental in the development of this award.

The Faculty Teaching Award is the latest addition to the "Canadian Engineers' Awards".

The deadline for the submission of nominations is March 31, 1995.

Nomination forms and information on the criteria for the Award are available through the APEM Office. □

Professional Development

Practical Dispute Resolution

By: G. Kibria, P.Eng.

At a seminar held on November 8, 1994, David Newman and Wells Peever presented three different processes of resolving outstanding problems and disputes: (1) Litigation; (2) Arbitration; and (3) Practical Dispute Resolution or Amicable Dispute Resolution (ADR). Mr. Newman explained various forms of ADR; for example, prevention, negotiation, mediation, and non-binding resolution. ADR fosters a non-hostile environment and cooperation among parties involved, and works well in most cases. Basic ingredients of ADR include: freedom not to agree; obligation to negotiate in good faith; no prevailing prejudice or significant power imbalance; and an on-going good relationship. The benefits include: (a) parties involved control the process; (b) hostility and anger are diffused; (c) confidentiality of the process and settlement terms is maintained; (d) project is allowed to continue; and (e) ADR is informal, inexpensive and less complex compared to litigation and arbitration.

Mr. Peever explained the litigation process in detail. He described the following hypothetical case involving an owner of a building, an engineer who designs the building, and a contractor who completes the building. (1) The owner files a lawsuit against the engineer. (2) The engineer hires a lawyer and educates him/her about various aspects of design. (3) The engineer explains to the lawyer about his/her role. (4) The lawyer prepares a Statement of Defence and possibly a Third-Party Claim against the contractor. (5) The lawyer conducts the Examination of Discovery with a considerable amount of assistance from the engineer. (6) The engineer hires an expert witness.

The people in charge of the litigation process, the judge and the lawyers, know little or nothing about engineering, design, or construction. Some key personnel of the parties involved spend significant time preparing evidence, educating their lawyers, and attending the hearings.

The entire litigation process is cumbersome, time-consuming, expensive and, ultimately, uncertain. An alternative to litigation is Alternative Dispute Resolution or Practical Dispute Resolution. This takes the process out of the courts and puts it into the hands of the experts who understand what the problem is all about. □

Early Beginnings 1920 - 1921

Continued from page 1

First Annual General Meeting – January 20, 1921

At this meeting with 61 members present, matters such as the amendments to by-laws were approved. The financial statement and the membership record as of December 31st, 1920, was considered. The highlights were: Revenue: $4,702.00. Expenses: $588.00 Balance $4,113.00 Fees: (dues) appear to be $25.00 per member with a $5.00 application fee. The staff costs were very limited, a secretary honorarium of $75.00 and the services of the accountant $10.00 The membership list indicated approximately 230 members approved or pending approval. As to an office location, some of the Council meetings were held in the now demolished Tribune Building.



At this first AGM, a scholarship of $150.00 was established, and it was suggested that the recipient be of either Canadian or British descent or a naturalized Canadian. The election of new councillors after 4 months was held: 175 ballots were received (76%), but 33 were ineligible.

G.B. McColl, P.Eng., who was also a land surveyor and President of the Manitoba Land Surveyors, asked that matters which were the cause of conflict between engineers and land surveyors be settled as amicably as possible by a committee of both Associations. It should be noted that it was often the practice for civil engineers to also be land surveyors, especially where the engineer was in a consulting practice dealing with municipal clients.

General Meeting of November 1, 1921

This meeting had been called to approve a draft Code of Ethics. A clause-by-clause approval followed, and, interestingly, the word "man" was changed to "person". Also of interest was a discussion about the style of print and format, but it was finally resolved by passing it on to Council. At the time, there were 269 members in good standing. Sixteen had been suspended for non-payment of fees, and 11 had been recommended for examination.

Closing the meeting was a resolution called "Grants" – stating that the Council may expend up to $500 annually for the reception and entertainment of important guests, the support of organizations, and meetings or conventions being held in the interest of the Association.

Early Members

G.B. McColl and S.E. McColl, both engineers and land surveyors, and E.P. Fetherstonhaugh, later Dean of Engineering, were the first three registered engineers of this Association. Many of the first members of the Association had similar family names – and many of those names are familiar names today. Clearly the tradition of engineering, and interest in the affairs of the Association, has passed from generation to generation in a number of instances.

The economy of 1920/21 was not particularly strong, the city having experienced the general strike of 1919.

The salaries for the most senior engineers of the Department of Good Roads at the time were in the range of $2,000 to $2,400 per year. According to Miss Frances McColl, a local historian and author, and daughter of G.B. McColl, her father, a practising engineer and land surveyor had a yearly income of approximately $2,400. Of the two brothers, her uncle, S.E. McColl, had acquired an automobile but, to the dismay of Frances and the other children, her father maintained a firm stand and continued to use public transportation – the street car – for work and pleasure. Off-setting the matter of income was the cost of living. A professional engineer could purchase the best black and blue serge suit for $32.50, a three-piece suite for his living room for $168 and an electric washer and wringer for $98.

Happy 75th Anniversary APEM. □

Involved, Totally Involved...

By: J. Lucas, P.Eng.

That's the impression left by our new Councillor Mr. Stuart Ursel, P.Eng.

I had the pleasure of spending a short amount of time with Councillor Ursel and came away with a very positive impression of an energetic, motivated and competent engineer. But over-riding everything was the feeling of the personal involvement that he applies to all aspects of his life.

It has been an interesting road for Winnipeg's own Stu Ursel, from Daniel McIntyre Collegiate to the Assistant Deputy Minister's office.



Councillor Stu Ursel, P.Eng.

Stu actually started work in the electrical field and still retains an active Electrician's licence. His working career began with Canadian Westinghouse and Winnipeg Hydro, performing substation construction and automation conversions. The construction of City Hall and the Public Safety Building was supported by Chief Electrician, Mr. Stu Ursel.

Having completed major Winnipeg construction projects, Stu moved to the position of District Property Manager. Then, in typical Ursel style, 21 years out of school, he returned to the University of Manitoba and obtained a mechanical engineering degree.

Back to the real world, Stu moved from manager, to director, to his present position as Assistant Deputy Minister (ADM), Property Management.

As ADM, Mr. Ursel is responsible for a staff of over 700 people, 8.5 million square feet of building area and a $70 million annual budget.

Stu has been instrumental in eliminating two levels of mid-management and introducing a Total Quality Management program to his department – all to promote individual responsibilities and improve service to the public.

A little bit busy? You ain't heard nothing yet, folks. Stu, with more than a little help from wife Elaine, has raised three boys (ages 32 to 36) who cover the world from Pine Falls to Afghanistan.

With a wife who teaches physical training at the Pan Am Pool, Stu admits to being kept on his toes to keep in shape. Weight training and daily three-mile runs help to maintain his obvious high energy level.

In his spare(?) time, Stuart has taken such courses as Facilitating, Astronomy, Political Science and Welding. (On your next visit, check out the desk-top paper-weight!)

With his typical hands-on, involved approach, Stuart has served time in many of the positions under his management. There are many great stories about his time spent as a custodian, an operating engineer, a security guard and a clerk-typist just to know and understand the position, people and problems in his Division. It is with obvious personal pride that Stu speaks so very highly of his staff and their performance.

Gentle humour comes easily to Stu. Stories of re-engineering the control system for the solar collectors at his holiday resort and complaints of not having a view of the desalination plant, but only of the pool, typify his awareness and involvement with people and his surroundings.

Obviously committed, completely involved, energetically restrained, educated and experienced are all terms that fall under the definition of Stu Ursel – but he describes himself simply as "lucky".

His memories fall easily to previous training foremen, fellow workers, staff and seemingly innumerable others that Stu feels have guided and supported his life and career.

Stu Ursel feels that this is the perfect time to start to give back some part of his bounty by serving as an APEM Council member. Although over 80% of APEM members didn't vote for Stu, 100% will be benefitting from the work of this very "lucky" man. □

NEWS RELEASE

CCPE/ENCON Scholarship Awards

Ottawa – October 5, 1994

The Canadian Council of Professional Engineers (CCPE) is pleased to announce Samuel W. Paranavitana, P.Eng., as the 1994 winner of the CCPE/ENCON Endowment – a scholarship having a value of $5000.

A member of Professional Engineers Ontario, Mr. Paranavitana is working toward a Master of Engineering at Memorial University of Newfoundland and will specialize in fatigue cracking in offshore steel structures. Mr. Paranavitana has a mechanical engineering degree from Trinity College in Sri Lanka.

The ENCON Endowment is awarded to an individual wishing to pursue graduate studies in the area of engineering failure investigation or of strength of materials. This area of engineering is concerned with the analysis of the various causes of materials failure, and the prevention of accidents which may result from them.

The ENCON Endowment is part of the CCPE National Scholarships. The CCPE National Scholarships will help foster excellence in the Canadian engineering profession by encouraging engineers to pursue advanced studies. The other scholarships offered through the program are the North American Life program which offers three scholarships of $7,500 to engineers returning to university for further study in an engineering-related field and two MELOCHE MONNEX awards of $5,000 each to provide assistance to engineers returning to university for further study in a field other than engineering.

Ottawa-based ENCON Insurance Managers Inc. is an insurance and risk management organization offering a wide range of specialty insurance products. ENCON has offered engineers professional liability insurance in Canada since 1969 and has enjoyed the sponsorship of both the Canadian Council of Professional Engineers and the Association of Consulting Engineers of Canada since that time. □

For Sale!



APEM Logo Golf Shirts and Sweatshirts

Several colours and sizes available

Golf Shirts $20.00 Sweatshirts $18.00 (incl. all taxes)

Contact Bruce Biglow, at UMA Engineering – 284-0580, or Donna Bilodeau at APEM – 942-6481 (or another Sports Committee Member) to place your order.

NEWS RELEASE

New Flyer to Invest $20 Million in Research

Winnipeg, Manitoba

New Flyer Industries Limited (NFIL) recently announced a $20 million research and development program. New Flyer President Jan den Oudsten said " NFIL in 1986 employed 175 Manitobans, today we employ over 600 and this year we will purchase over $40 million in products and services from Manitoba companies. Our successes in expanding markets and improving manufacturing efficiencies have been made possible by a $10 million loan guarantee from the province. Today, building on these successes, we are pleased to announce an investment of $20 million in research and development. This program of research will fuel our growth into the next century and will see the creation of up to 90 new jobs over the next three years. We are very grateful to Western Economic Diversification (WD) whose $5 million loan made a commitment of this magnitude possible for New Flyer."

At a recent news conference, Western Economic Diversification Minister, Lloyd Axworthy, announced that WD will provide a $5 million loan towards New Flyer's strategic product research program.

Mr. Axworthy said, "We are pleased to assist New Flyer to build on its reputation as an innovator and to put made-in-Manitoba technology front and centre on the world stage. Because the firm is working in cooperation with a B.C. and Alberta company to develop new alternate fuel models, this initiative also promises spin-off benefits across western Canada."

The Province of Manitoba, which is a long-term supporter of New Flyer Industries, having provided a $10 million loan guarantee to assist the corporation in expanding markets was represented by James Downey, Minister of Industry Trade and Tourism. Mr. Downey said,"New Flyer has had and will continue to have impressive success in the export market, thanks to new technology they are now employing. The government of Manitoba is pleased to have been able to help New Flyer maintain nearly 1,000 direct and indirect jobs while also creating new jobs as their success grew."

New Flyer President Jan den Oudsten said, "As the only North American bus manufacturer with an approved commercial low-floor unit, we intend to capture a significant portion of a growing market for more accessible public transportation. Our research into zero emission vehicles combined with our status as the only electric trolley bus manufacturer on the continent, will enable us to take advantage of the growing demand for urban transport that is convenient, affordable and environmentally responsible. Not only will success mean jobs at New Flyer, but our local suppliers will reap substantial benefits as well."

Among the projects will be research into expanded applications of the computer controlled, multiplex electrical systems developed by New Flyer Industries. This technology represents a major enhancement to urban transit buses and will significantly improve the marketability of NFIL's already successful, low floor transit buses. In addition, New Flyer Industries has begun work on high technology low emission and zero emission buses. The company will also implement a $300,000 ISO quality assurance program to establish itself as a leading edge competitor in the urban transit field.

New Flyer Industries Limited employs 623 staff at its Winnipeg plant. An additional 76 employees do final assembly at its facility in Grand Forks, North Dakota.

Western Economic Diversification Canada has responsibility for federal economic activities in western Canada, particularly those aimed at small and medium-sized enterprises developing new products, new markets, new technology and import replacements. The Department also assists strategic pan-western initiatives and acts as an advocate for the West.

Funding for this project was provided for in the February 1994 federal budget and is therefore built into the existing fiscal framework.

For more information, contact:

Laurie Nealin
A/Manager, Communications
Western Economic Diversification Canada
Winnipeg, Manitoba
(204) 983-3119

Gail Granger
Communications Coordinator
Manitoba Government
Winnipeg, Manitoba
(204) 945-3811

Rick Zebinski
Vice President Marketing & Sales
New Flyer Industries Limited
Winnipeg, Manitoba
(204) 224-1251

Letter to the Editor

Dear Editor:

Please allow me to express some concerns about the "Water Arch" being considered for the Engineering Museum site.

What control would there be over the "landing point" of the stream? The fountains at City Hall, Memorial Park, and the Library all spray well beyond their catchment pools on windy days.

We must consider the effect on citizens using the river, or the opposite bank. Will they be sprayed with muddy polluted river water? Consider also the fine mist of "overshoot", which could carry for some distance downwind. Or, would you use pure chlorinated water piped in from Shoal Lake? Neither one of these options seems to me to be very Water Wise, nor Power Smart!

Responsible practice would note that the ability to do something does not automatically require it to be done. Instead, I'm left with an image of little boys competing to show off how far they can pee!

Yours truly,
D.K. Newey, P.Eng. (Ret.)

The Professional Engineers Wives Association

Program 1995

Tuesday, February 28, 1995 – Chocolate Madness by Kathryn Howe at St. Albins Anglican Church, SW Rathgar & Osborne 7:30 p.m. Refreshments following

Tuesday, March 28, 1995 – Luncheon with Presentation by Massage Therapist from Moda Fini, Karen Angus, Niakway Country Club, 620 Niakwa Road

Tuesday, April 25, 1995 – Annual Meeting and Luncheon, Winnipeg Winter Club, 200 River Ave., Bridge at 10:00 a.m. Speaker: Dr. Jasper McKee, Luncheon Reception 12:15 p.m. Lunch 1:00 p.m. Transportation available to all events – contact Hannya Klimenko 231-0554.

Hope to see you all!

The Executive of the Professional Engineers' Wives Association for 1994-95 is as follows:

President: ..... Carol Klein
1st Vice President: ..... Judy Beattie
2nd Vice President: ..... Lynn Scott
Past President: ..... Mary-Ann Dickson
Treasurer: ..... Marusia Foster
Assistant Treasurer: ..... Brenda Andrews
Secretary: ..... Beverley Gulay
Membership: ..... Mary Matthews
Social Convenor: ..... Erma Hotchkiss
Program Convenor: ..... Hannya Klimenko
Telephone Convenor: ..... Lorraine MacLeod
Councillors: ..... Dolores Jardine
Dorothy Chant

What They Didn't Teach Me in Engineering School

By: Edmund Medley, P.Eng./P.Geo., PE, CEG

I left the University of British Columbia in 1978, long enough ago that I have only a hazy recollection of the courses, exams, assignments, and other hurdles I had to leap over to earn a degree in geological engineering. I remember little of what I was taught by them, but themselves I recall generally as kind folk, often too busy to explain the magic of Linear Algebra, or the weirdness of nth-disordered Partial Differential Equations. They were overworked and professorially remote, and when I asked "What good is this stuff anyhow?", some would chant the mantra: "You will find this background useful; You will find this background useful; You will find..." I suspected then that they were not telling the truth. Much of the useful background is now long forgotten because it was never usable to me. Background that would have been useful, such as 'Lessons in Professional Life', were rarely presented. Yet, even if there had been such courses, I probably would not have studied hard for them since there were just too many engineering problem sets and term papers to permit me to focus on a subject as fuzzy as 'Professional Life'. Besides, I was told what a fine education I was getting, so what else was there to learn? Eventually, though, I had to teach myself the lessons they never taught me, or that I never learned. I want to share some of them with you here.

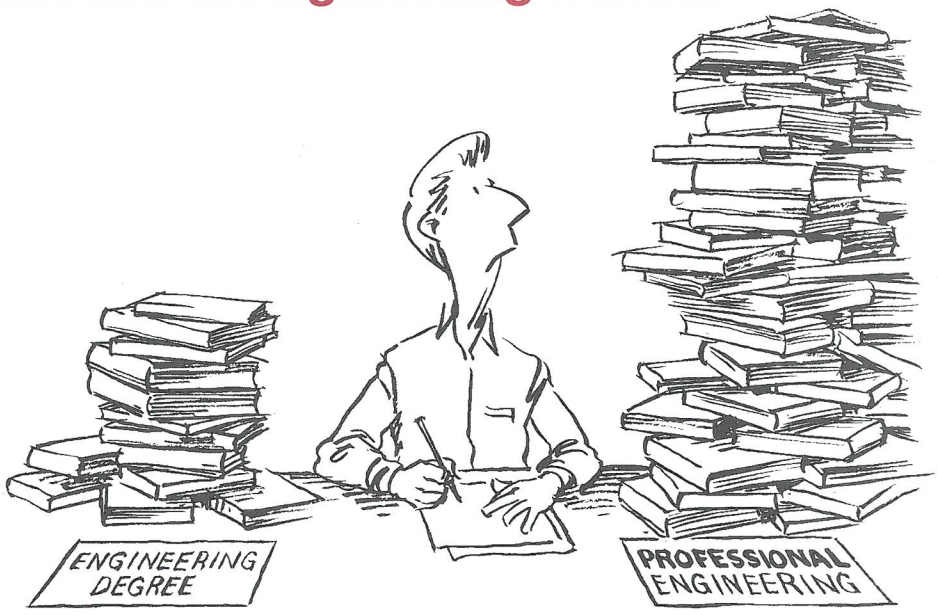
They told me that entropy was something like ds/dt, that it tended to increase and that it was an important process in physical chemistry, but they never warned me that chaos also threatens every engineering/geoscience consulting project.

They showed me how to draft unlikely projections of mechanical widgits, but not how to prepare a site plan clear enough for a draftsperson to easily redraw.

They insisted that I triple-integrate the imaginary component of some mutant killer Ninja equation, and yet I was never told that in the real world, reconciling a weekly expense report would be as challenging an exercise in math and even more relevant to my chequing account.

They said that Poisson, LaPlace, and Helmholtz were the names of important scientists whose Laws and Rules and strange symbols I must know in order to graduate, without also telling me that really important people have names like Smith-Bottomley, Fukuoshi, Arulandaham, or Rogoszoliewski, and they are important because they are living folk like supervisors, colleagues, support staff, and clients.

They told me that the consulting world was symbolized by the triad of Owner/Architect-Engineer/Contractor and that, as an engineer, I could draw a solid contractual line between myself and the Owner, but was connected to the Contractor only by dashes. As an independent exercise, it was left to me to learn the Owner/Engineer line was a leash on which the Owner could tug whenever the project ran behind schedule or ahead of budget (either way I had to work overtime); and that the feeble dashed line between me and the Contractor would not protect me from the burly jobsite superintendent, who could swear at me until I blushed or lost my temper.



They did warn me that, as a junior engineer, I could expect to travel a bit and possibly work long hours now and again. They got that part very wrong: I'm graying now and don't expect to stop travelling until I'm silver. The work weeks rarely shortened to 40 per, but the reward for hundreds of hours of unpaid overtime was not an A+, but a wounded marriage and a bewildering layoff.

They never told me that I should have learned some Spanish, Farsi, Melanesian Pidgin, or Clear Written English, as well as FORTRAN IV: I never needed the computer code but a smattering of the other languages would have come in useful later in my career.

They never warned me that, in order to continue to use a computer, I would no longer have to present a pack of punched cards to an impersonal room-size majesty, but would have to curse a screen (cursoring?) and struggle hand-to-keyboard with a vulgar (but personal) computer squatting on my desk.

They told us that we were the creme de la creme, that we were academically well-equipped and would, like creme, soon rise naturally to the top. Some of my classmates even believed they knew everything about everything, and that if we had not been taught 'Humility 101', or 'How to Write a Memo in 10 Minutes', or even 'The Importance of Listening', then there was not going to be a need for those skills in our careers. They really should have taught those courses, because it cost my employers big bucks to teach me later on.

They never taught us, despite the rest of the fun and frolic and Forty Beers of school life, the rules for the game of Chutes and Ladders. You may recall the game. No sooner did you get to the top of the Education Ladder, than you found yourself at the bottom of the Career Ladder and you did not effortlessly rise (a la creme), but you had to struggle up, rung by rung. Or, sadly, like some of my classmates, perhaps you landed on a Chute and discovered that you had graduated into the wrong profession, and had to start the game over again by enrolling into Business or Law School.

Continued on page 16

Professional Engineers Achieve Canada-Wide Mobility

During November, Canada's 156,000 professional engineers achieved Canada-wide mobility through an agreement which was signed by the twelve member associations of the Canadian Council of Professional Engineers.

"Canadian engineers needed to do this," said CCPE President Dr. Garland Laliberte, P.Eng., "The way the world does business is changing and globalization must begin at home."

With this agreement, a professional engineer who is a member in good standing (and has been for at least five years) with any of the ten provincial and two territorial regulatory associations will be recognized by all. This will facilitate the mobility of engineers and will allow the supply of talent and expertise to go where the demand is, with greater ease.

"Within a few years, Canadian professional engineers will have similar access to all of North America," adds Laliberte, referring to the NAFTA clause which stipulates that, within a set timeframe, professional engineers from Canada, the U.S. and Mexico must reach an agreement on mobility. □

Meet Your New Councillor –

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

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

If you ask a Manitoban where Rockglen is, you will likely encounter a blank stare – but this new Councillor of ours not only knows where Rockglen is but he has played ball there, too. (This pretty little town is south of Scout Lake and is an active centre for both Guiding and Scouting in that part of Saskatchewan. While you have your map out, Ron's hometown of Lang is between Milestone and Yellow Grass. Lang is where the father of a friend of Ron started Saskatchewan's Little League baseball in 1947: Ron played first base.)

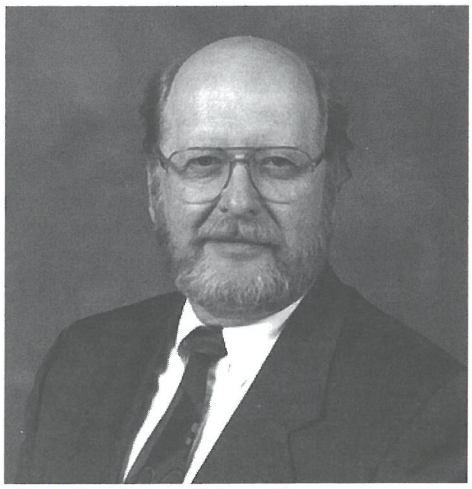
Ron is a dedicated baseballer as those students who have taken his Introduction to Agricultural and Food Engineering have learned. No, Ron didn't show me the baseball question that will be on this year's examination, but I learned that there is one on every final. Perhaps next year's report of the University Liaison Committee could include one of Ron's questions so we can all develop a feel for the clever thinking of this unique Professor.

It is Ron's devotion to sound engineering, and the teaching of it in an imaginative and original manner, that led to his candidacy as Councillor this year. I cannot do justice to his philosophy in the space allowed but, at a time when our profession is going through momentous changes, and when competence is becoming ever more important, we could not have elected this Councillor at a more auspicious time.

Ron is one of the seven professional engineers living in Sanford. I first met his wife, Dorothy, when she was a young mother in 1965. Now, in her turn, their daughter is a mother, a horticulturist, and a farmer's wife near Dugald. The Brittons are rightfully proud of their two grandchildren.

The Britton's recently-married son lives "just down the street" in Sanford where he is a graphic artist with Sanford's Tartan Graphics.

Having known Ron for many years, I could tell many more fascinating tales about this "piece of Saskatchewan Tumbleweed" Manitoba has been fortunate enough to have blow in from the west. However, I shall simply end by recording a quotation of Ron's that puts him in the same class with baseball's renowned Yogi Berra – "I'm a barn-builder, pure and simple." □



Councillor Dr. Ron Britton, P.Eng.

Inquest Report on B.C. Pool Death

By: D.A. Ennis, P.Eng.

As a result of the tragic drowning of Lorna Dawn Barr at the Saanich Commonwealth Pool in Victoria, B.C. in March 1994, a Coroner's Inquest was convened with respect to the problems in design and prevention of similar deaths.

A strong swimmer and highly qualified lifeguard, Lorna had been working in a wave pool removing some broken grating. Apparently, she came too close to a 10-inch water-intake pipe which recycled water to the water slide. She was unable to overcome the suction force of the intake which was calculated at 12260 kPa. Her body covered the intake and eventually caused the pump to cavitate and shut itself down. She floated free and was found by another staff member, but could not be resuscitated.

The Jury made 21 recommendations relating to the evidence given at the Inquest. Recommendations were directed to the Ministries of Health and Municipal Affairs, the Royal Life Saving Society, and the Workman's Compensation Board. Specific recommendations were made regarding the design approval of all suctions, and a special regulation for dry inspection of suctions and diffusers at the commissioning of new pools.

The complete text of the findings and recommendations of the inquest are available upon request from the APEM office. □



NEWS RELEASE

CCPE/North American Life Scholarship Awards

Ottawa – October 20, 1994

The Canadian Council of Professional Engineers (CCPE) is pleased to announce Nancy Burnham, P.Eng., Terrence M. Rothwell, P.Eng. and Shawn Searles, P.Eng., as the 1994 winners of the CCPE/North American Life Scholarships. These scholarships each have a value of $7,500.

Ms. Burnham, a design engineer, is a member of Professional Engineers Ontario (PEO). She is working toward a Doctorate in water resources engineering at the University of Guelph with research undertaken to investigate the contamination of ground water by leaching from septic systems. This research may lead to the improved health of the environment and consequently humans and animals.

Mr. Rothwell, also a member of PEO, is working toward a Master of Engineering at the University of Guelph. For 15 years Mr. Rothwell was President of A&E Engineering Ltd. He has also been sessional lecturer at the University of Guelph.

Mr. Searles, another member of PEO, is working toward his Ph.D. in transistor device physics and modelling at the University of British Columbia. He has been a member of the scientific staff of BNR and a teaching assistant at Carleton University.

The North American Life scholarship program offers scholarships to provide financial assistance to engineers returning to university for further study or research in an engineering related field. Since the inception of the program, more than $372,500 has been awarded to 84 winners.

The North American Life Scholarship Program is part of the CCPE National Scholarships. In 1994 the CCPE National Scholarships will help foster excellence in the Canadian engineering profession by encouraging engineers to pursue advanced studies. The other scholarships offered through the program are the Encon Endowment which provides assistance to individuals wishing to pursue studies in the area of engineering failure investigation and/or strength of materials and two Meloche Monnex awards of $5,000 each to provide assistance to engineers returning to university for further study in a field other than engineering. □

News From Other Associations

By: L.Y. Ganetsky, P.Eng.

Alberta

Electronics Hit the Road

Within a few years, Toronto area motorists will be able to drive on a new toll highway without ever reaching for their wallets. They won't even have to slow down on the 107, the first electronic toll highway in Canada, delegates at the International Road Federation Conference in Calgary heard.

The 70-kilometer stretch of road, to be completed by 1998, will pass north of Toronto and thus reduce the intense pressure on the 401. While toll roads are becoming increasingly common in an era of curtailed government spending, the 107 will be unlike anything Canadian motorists have seen.



When a commuter or commercial vehicle enters and leaves the highway an antenna above the roadway will scan a small transponder in the vehicle's windshield and thus record the time and distance traveled. At month's end, the vehicle owner will receive a bill for the distance traveled. The per kilometer rate will likely be higher during peak travel periods.

Tourists and other one time and infrequent users may not be charged, at least initially, But in the future, such transponders could be built into every license plate or new car in North America, allowing users to be tracked across borders, assuming it is cost effective to do so.

"There are already electronic toll highways in California and elsewhere, but they are not 100 percent electronic", said Allen Stretch, P.Eng., president of Canadian Highways International Corporation, an Ontario-based consortium that will build and operate the $928-million toll highway.

These new toll highways are just one example of using electronic advances to make roads safer and more efficient. Another is electronic systems that automatically weigh and inspect commercial trucks traveling at highway speeds. A third is integrated electronic monitoring of highway weather conditions.

These systems use road surface sensors, geographic information systems (GIS) and other devices to detect such conditions, roadside signs automatically warn motorists in explicit terms such as "Heavy snow at pass slow to 60 kph" or "Fog around bend".

In the near future, road warnings and other messages could be passed on to motorists via two-way, in-vehicle communications systems. These systems might also feature on-board navigation, in which electronic maps could inform drivers of traffic congestion ahead and offer alternate routes.

Where will the electronic highway ultimately lead? According to some analysts at the conference, North American motorists will someday drive on fully automated highways. Here, vehicles would be guided, in designated lanes, by the road and not by the driver. Much of the technology for an automated highway system already exists, and the U.S. Federal Highway Administration is planning a demonstration project for 1997. □

ATTENTION, EITs! ATTENTION P. ENGs!

The Professional Practice Seminar and Examination Are Coming!

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

The Association's first Professional Practice Seminar will be held in the spring of 1995.

The 18-hour Seminar will be offered in six, three-hour modules – occurring each Thursday evening, from 6:00 p.m. to 9:00 p.m., from May 4th to June 8th, 1995, at the University of Manitoba.

The first Professional Practice Examination will be written on Thursday, June 22, 1995 – also at the University of Manitoba.

The Seminar and Examination are now mandatory pre-requisites to registration as a professional engineer. They are also highly recommended professional development activities for registered professional engineers.

To be eligible to take the Seminar, EITs must have at least 12 months' engineering work experience, and must have been enrolled as EITs for at least six months.

Further information and a registration form will be included in your April, 1995 mailing. □

Mathematical Progression

By: J. Lucas, P.Eng.

While "surfing the net", I came across a copy of an article, "Access to Energy", on the Wichita State University Bulletin Board. It is copied here without comment but, perhaps, as a comment on the evolution of the math problem.

In 1960: "A logger sells a truckload of lumber for $100. His cost of production is 4/5 of this price. What is his profit?"

In 1970 (traditional math): "A logger sells a truckload of lumber for $100. His cost of production is 4/5 of this price; in other words, $80. What is his profit?"

In 1970 (new math): "A logger exchanges a set L of lumber for a set M of money. The cardinality of set M is 100, and each element is worth $1. Make 100 dots representing the elements of the set M. The set C of the costs of production contains 20 fewer points than set M. Represent the set C as a subset of M, and answer the following question: What is the cardinality of the set P of profits?"

In 1980: "A logger sells a truckload of wood for $100. His cost of production is $80, and his profit is $20. Your assignment: underline the number 20."

In 1990 (Outcome-Based Education): "By cutting down beautiful forest trees, a logger makes $20. What do you think of this way of making a living? (Topic for class participation: How did the forest birds and squirrels feel?). □

Pay Your Dues!

Dues invoices have been mailed to all members and EITs. Members are again reminded that receipt of dues in the Association office after February 28th, 1995 will incur a late payment administration fee of $50.00. If fees are mailed prior to February 28th and received after February 28th, the late payment fee will apply.

Members

Members are reminded that if all fees owing are not received in the Association office before July 1st, 1995, your name will be removed from the register and you will then be prohibited, by law, from practicing engineering in Manitoba.

EITs

EITs are reminded that if all dues and fees are not received in the Association office before July 1, 1995, your name will be removed from the roll of Engineers-in-Training. Should that occur it will be necessary for you to reinstate as an Engineer-in-Training. You will also be required to fulfill the 1995 requirements before becoming eligible for registration as a professional engineer. □

Harvey Vokey Receives DeGrace Award

Harvey Vokey of Dalesville, Quebec was awarded the Robert F. DeGrace Award by the Canadian Wood Council during its semi-annual meeting in Toronto on October 18, 1994.

This award recognizes the technical achievement of an individual who, with exceptional vision and perseverance, has furthered the use of wood as a construction material through work in research, product development, education, or codes and standards.

Vokey, a graduate agricultural engineer from McGill University, began his career in the forest products industry in 1958. While with the Council of Forest Industries of B.C. he was posted to the U.K. and Belgium to support the introduction of Canadian wood-frame construction methods to Europe. He spent 11 years with the Canadian Wood Council during which he became one of the industry's top codes and standards specialists and administered the nation-wide lumber testing program that re-evaluated the strength of Canadian lumber and improved the product's marketability in the U.S.

He finished his career at Forintek Canada Corp., the national wood products research institute, where he co-ordinated research activities in support of codes and standards work. He helped to establish design values for oriented strandboard which have allowed this product to enter new markets. In retirement he still serves on the Canadian Commission on Building and Fire Codes and represents the wood products industry in various functions.

The Canadian Wood Council is the national association of the Canadian wood products industry. It expands the market for wood products through its work in codes and standards and in communications with specifiers, code authorities, builders and educators. □



Harvey Vokey (right) receives the Robert F. DeGrace Award from Don Currie of Canadian Forest Products Ltd.

NEWS RELEASE

May 14-17, 1995 –
MANITOBA TO HOST NATIONAL CO-OP EDUCATION CONFERENCE

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. □

Coming Event

WORK ZONE SAFETY

Thursday, March 9, 1995
Sponsored by the Transportation Association of Canada (TAC).

Topics will include local legislation, traffic control & safety devices, SHRP products, human factors and the roadbuilder's perspective.

Contact: Mr. John Kizas, TAC, 2323 St. Laurent Boulevard, Ottawa, ON K1G 4K6. Phone: (613) 736-1350 Fax: (613) 736-1395. □

Jobs Wanted

I am looking for a position in Project/Program Management. My qualifications consist of Mechanical, Stationary and Marine Engineering expertise, 20 years experience, practical and theoretical skills, industrial and government know-how and bilingual abilities. With the contraction, change and competition in the marketplace, downsizing was inevitable at my former place of employment. Please call Marcel Hébert, P.Eng. at 885-5851 (Fax: 885-7526). □

What They Didn't Teach Me at Engineering School

Continued from page 13

They never told me that my five years of technical education were insufficient to last me the rest of my professional life, and that I would have to return to school in midlife to obtain graduate degrees if I was going to stay ahead of the Class of '93. And I was never told that despite completing scores of courses, I still would not be considered a professional engineer in the United States until I had submitted fat applications and endured several days of professional licence exams conducted in drafty ballrooms and armouries.

They told me that when I finished school I would be a professional, which I thought would put me on a par with the attorneys and doctors: I would be well-paid and much-respected in my community. They even arranged for me to receive a roughly faceted Iron Ring, during a moving ceremony called the Ritual of the Calling of an Engineer, which in Canada symbolizes the beginning of an engineer's professional career. Yet, I was not taught that professionalism would come as slowly as the shiny smoothness of my Iron Ring, and that I couldn't cram for it but had to learn it from patient mentors, demanding employers, burly construction supervisors, and giving colleagues.

So, there was a lot that they never taught me at engineering school. It is not their fault, really, since so few of them have worked as professionals in the real world. So, rather than beat up on them, I plan to join them as a fellow teacher. The 'Lessons in Professional Life' is a course that I may be able to teach those students who are listening. But I shall decline any suggestions that I teach anything to do with mutant killer Ninja equations. □

This essay is based on one of the same title, which won second prize in a competition sponsored by Professional Publication Inc., California. The author is grateful for the permission of PPI to submit a version of the original essay to the Manitoba Professional Engineer.

Edmund Medley P.Eng./P.Geo., PE, CEG, was born in England in 1948, emigrated to Canada in 1969, and has lived in the US since 1979. His professional career includes several years as a mineral exploration prospector in Canada, and much varied experience as a geological and geotechnical engineer in Canada, Hawaii, California, Papua New Guinea, the United Kingdom, and Iran. He currently lives with his wife in San Francisco. He won the Association of Engineering Geologists' 1992-1993 Marliave Scholar.