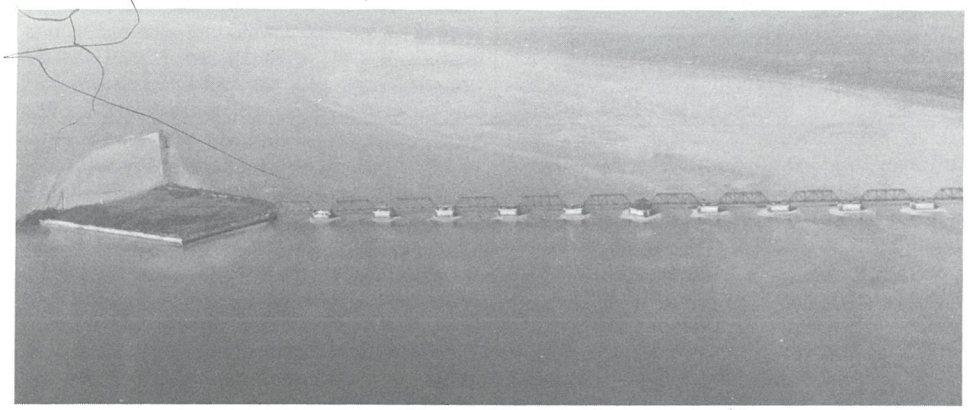
THE MANITOBA

Professional Engineer

August, 1989

PORT NELSON — CAUSEWAY TO EUROPE



Bridge and Terminal.

W.L. Dutton, P.Eng.

It started with a March meeting of the Engineering Institute of Canada Historical Section, with the Chairmanship of Gordon Plewes, P.Eng.; it ended with my trip to Port Nelson in June with three archeologists led by Mr. David McLeod. I am most appreciative of this experience which was made possible by the Historic Resources Branch of the Manitoba Culture, Heritage and Recreation and Manitoba Hydro. I hope you will enjoy my "report".—

* * *

As the four of us stood beside the little, narrow-gauge, saddle-tanked, engine, I could have sworn I heard the last conversation between the engineer and the fireman as they put No. 1 "to bed" in what would turn out to be the little engine's last run. They had just finished cleaning out the grates and had then moved the engine into the shed on the head of steam in the boiler. It was Bill, the engineer, who spoke first. Double-checking that his throttle was closed and that the brake was set, he eased himself off the wooden seat and stood up.

"Good bye, Old Girl", he said, affectionately wiping off the brass throttle with the waste that he always carried in his overall pocket. Turning to Joe, the fireman, he said, "Do you need any help draining the boiler tank?"

"No, thanks, Bill. I'll come back in the morning and do that. She'll have cooled down by then."

On the tiny deck, where Joe had stood so many times, shovelling coal into the little engine, Bill hesitated before turning to step down to the floor of the shed. "Good bye, Old Girl." he murmured again, and then turned quickly to leave — but not before Joe saw the tears welling up in his friend's eyes....

Every once in a while, if a man is fortunate enough, he will experience a "wave of history" sweeping over him. I always feel it when I visit the cemetery at Old St. Andrew's. The wave very nearly drowned me when I stepped onto the rock at the head of the portage past Recollet Falls on the French River. Standing beside No. 1, in the old townsite of Port Nelson, I felt the same sensation. Here was the history on which this nation has erected itself — not the far-off Wars of the Roses, or the Battle of Crecy, or even the gathering of the nobles at Runnymede — important as were all these events. Port Nelson is Canadian History and I treasured every moment I was down there.

Since most Canadians have never heard of Port Nelson, a bit of history may be in order. In 1908, the Liberals, under Sir Wilfred Laurier, decided that, if the West was to be "opened up", a seaport would be required on Hudson's Bay. A less-than-competent survey of the potential harbour at Churchill led to the conclusion that dredging would not be possible there so it was decided that a port should be built at the mouth of the Nelson. Clearing of the town-site began in 1912.

The shallowness of the Nelson led to the decision to build an artificial island about a mile out from the north shore. A quay was built upsteam from this island with the idea of directing the river's current so as to help reduce the dredging that would be required. The ocean-going ships would lie against this quay while loading the grain destined for Europe. Joining the island to the mainland was a causeway consisting of seventeen steel, through-truss, bridges, each spanning between their own small "islands". These latter were rock-filled timber cribs, as was the main island and the quay. However, it turned out that the last of these cribs was never filled so one can see the piles that actually support the bridges. It appears that the cribs were built in order to provide protection from the floating ice. (The exploratory work, at Hydro's proposed Conawapa site, was being held up by this year's late Spring and some thirty to forty feet of ice along the shores.) With the advantage of hind-sight, one wonders why simple piled bents were not used with appropriate fenders.

Construction continued during the first World War with a thousand men on the job in 1916. The war losses, in Europe, forced a slowing down of the work in '17 and '18. After the war, a reappraisal of the Churchill site led to the stopping of work at Port Nelson in favour of moving to our present northern seaport.

After some seventy years, the timber, in the causeway, is in a remarkably good state of preservation. With care, one can still walk the full length of the causeway on the "sidewalk" — three one-inch boards laid on the "ties". Only the two layers of 10 x 10's, on which the bearings of the bridges rest, are displaying distress from decay. Each truss has settled about six inches, with respect to the "island" between each span. No. 1 would have a roller-coaster ride if asked to chuff over the causeway today. The rails, for the narrow-gauge track, are still in position but a third rail was removed sometime in the past.

Like all townsites of that period, a rectangular grid was superimposed on the terrain, which, in this case, made little difference since it is so flat. A circular track was laid around the town but the men must have done plenty of walking when No. 1 was not going their way. Today, 1st Avenue East is a trail through the willows and Labrador Tea which one walks only in rubber boots — at least during the Spring thaw.

A lovely little stream drains through the east side of town. A dam, on this creek, provided a reservoir from which the water-tower drew its supply. The water-tower was immediately behind the "Engineer's residence" with the rail-line running between the tower

(continued on page 4)

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Farewell to Our Editor

This issue will be the last issue of our Editor Paul Gordon to put to press. As well as being a very loyal member of the Publication Committee Paul has been in charge of the layout for many of these issues and his services will be seriously missed.

He is leaving Manitoba Hydro for a position with Inter Provincial Pipelines Company, in Edmonton. Our best wishes in your new position Paul, and our sincere thanks from the committee for your very valued services. □

RESIGNATIONS — JUNE 30, 1989

Chercoe, R.G.
Clendenan, J.A.
Filippelli, L.M.
Franzmann, R.K.
King, L.J.
Kreml, J.A.
Lizotte, L.G.
Parry, E.E.
Rathke, A.P.
Richard, L.P.
Sommerauer, J.
Soneff, S.
Sutherland, I.M.

New Staff Member

Charlene Thompson.

Visitors to the Association office will noticed a new face at the reception Charlene Thompson joined our A.P.E.M. office staff on March 1, 1989, as our Receptionist/Secretary. Charlene is a graduate of Pierre Radisson Collegiate in St. Boniface and came to us after working for more than two years as the Receptionist/Secretary at Butler & Associates in Winnipeg.

Charlene is, indeed, an asset to the Association office and has assumed her responsibilities with ease and efficiency. Her excellent secretarial skills, willingness, pleasant manner and quiet sense of humour combine to make Charlene a welcome member of our team. □

MEMBERS DEREGISTERED JULY 1, 1989, FOR NON-PAYMENT OF FEES

Aidun, M.
Anspikian, K.
Baird, R.L.
Baker, S.P.
Bardswich, W.A.
Beach, G.P.
Bennett, C.P.
Bereza, A.G.
Bermel, L.A.
Black, J.B.
Bodnaruk, B.M.
Britton, S.M.
Caughlin, K.G.
Chan, G.M.
Chan, J.P.Y.
Corkery, V.M.
Davies, J.F.
Dinwoodie, M.D.
Doerksen, A.J.
Duckworth, T.
Eisses, A.C.
Ellis, F.E.
Florence, M.S.
Foley, Gerald J.
Friedman, B.H.
Fry, B.
Gadzella, G.M.G.
Garrity, Denis
Hall, M.F.I.
Hanson, G.O.
Harris, S.S.
Harvey-Clark, C.G.
Klemm, E.A.E.
Konecki, C.
Kung, A.
Lezynski, R.T.
Linney, E.T.
Livingston, T.G.
Loewen, R.C.
Lysack, V.
McDonald, B.P.
McDonald, M.R.
McLeod, R.D.
McTaggart, W.M.
MacIntyre, D.I.
Mackie, L.
Manswell, K.L.
Miller, T.G.
Morley, I.P.
Nocita, T.
Noskiewicz, T.M.
Omichinski, G.M.
Palmer, D.J.
Poliquin, J.D.
Porath, R.
Riesz, R.A.
Rist, C.B.
Roberts, Bob
Sachdev, A.K.
Shapiro, S.
Sharma, Y.P.
Simpson, D.R.
Somerville, K.L.
Sridhar, T.S.
Stecyk, J.R.
Steiman, M.I.
Swain, D.A.
Talbot, D.N.A.
Tay, H.C.
Taylor, I.A.
Thomassen, I.A.
Tulloch, J.R.
Wilson, J.A.
Zimmerman, R.R.

NEW MEMBERS REGISTERED JUNE '89 and JULY '89

S.J.P. Bossenmaier
W.T. Burdz
D.D. Chavez
L.O. Cleven
J.R. Duguay
G. James Foley
Terry Gee
D.A. Hartloper
D.M. Holstead
B.G. Hughes
K.J. Hunter
A.S. Keddie
R.D. Kurth
B.W. Little
A.R. MacLean
G.L. MacLean
G.D. McDonald
R.D. McNair
N.N. McTavish
R.M. Mejia
T.F. Moryto
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D.S. Pich
D.G. Pokrant
R.J. Rice
S. Ritz
D.B. Rooks
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T.J. Schatkowsky
C.D. Steele
R.C. Suzuki
P.W. Tataryn
N.B. Thomas
N.H. Thoroughgood
P.A. Vrsnik
J.S. Williams
P.J. Willms
H.S. Zbigniewicz

ENGINEERING GRADUATES JUNE '89 and JULY '89

H.P. Carriere
B.D. Cooke
L.R. Frankum
N.P. Skulski
A.W. Turner
M.P. Wiebe

LICENCES ISSUED IN JUNE '89 and JULY '89

J.G. Agar (Alta.)
S.N. Agar (Sask.)
R.J. Allander (Col.)
B.S. Brown (B.C.)
J.C. Burford (Alta.)
M.K. Chakrabarti (Ont.)
W.K. Chan (Alta.)
C.C. Christianson (Alta.)
J.C. Clark (Ont.)
P.J. Cruikshank (Ont.)
A. Demitt (Alta.)
P.B. Elliott (Alta.)
H.F. Feldkamp (Sask.)
E. Gray (Nfld.)
T.C. Greenlaw (Wisc.)
H.M. Haydl (Ont.)
W.P. Hodkinson (Ont.)
F.K. Hucaluk (Ont.)
J.M. Hutton (Alta.)
R. Kaliandasani (Alta.)
R.J. Kavanagh (Alta.)
N.W. Kopp (Alta.)
R.B. Kroeker (Sask.)
G.R. Lavoie (Que.)
T.Y.A. Lee (Ont.)
N.A. Legatos (N.Y.)
W.H.W. Leung (Ont.)
R.P.T. Lyttle (B.C.)
S.G. MacDonald (Que.)
J.J. McMahon (Sask.)
E.C. McRoberts (Alta.)
W.G. Miller (Ont.)
E.Z. Nejat (Ont.)
J.M. Neukam (Kentucky)
L. Niekamp (Sask.)
M.Y. Qureshni (Ont.)
G.A. Roberts (Ont.)
J.M.R. Rosenthal (Ont.)
K.W. Rosiak (Que.)
J.B. Sawers (Alta.)
T. Shen (Ont.)
M.A. Tremblay (Sask.)
S. Tudor-Savin (Ont.)
E.F. Vickers (Ont.)
J.J. White (Sask.)
R. Wilson (Ont.)

CANNOT LOCATE

Ashby, W.B.
Kroeker, D.G.
Lion, J.R.
McCann, T.J.
Quinn, C.M.
Storry, J.R.
Winstanley, F.J.
Zbitnoff, G.W.

President's Message

G.E. Laliberte, P.Eng.

The IMAGE of the Engineer....

This year as your President and previous years as a member of the Canadian Engineering Accreditation Board have given me many opportunities to attend national meetings and the annual general meetings of sister associations. It has struck me that it is a very rare meeting at which the question of the image of the engineering profession does not come up. Certainly, the discussions arising from the Task Force Report on the Future of Engineering paid considerable attention to this issue. For me, however, the meeting which concerned itself the most with the public perception of the profession and, for that matter, with the regard which engineers themselves have for engineering was the recent annual general meeting of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) in Jasper.

At the Alberta meeting, a report on The Future Role of APEGGA was tabled. The report was the result of an ambitious year-long study undertaken to assess attitudes of the Alberta members towards their profession and to assist the Association in setting its directions for the future. The report was presented in a plenary session as the leadoff item at the annual business meeting. It signalled a clear and unmistakeable message from the many members who had responded to the call for feedback and from those attending the meeting that engineers are concerned about the image of their profession.

There is a feeling among the Alberta membership that the work of engineers is not appreciated by the general public. "The invisible profession — that's what we are!" one member was heard to lament. "People do not realize the extent to which engineering affects their daily lives," another complained. Sitting there listening to the concerns being voiced by members and reinforced by others, it was tempting to speculate on the extent to which the credo of the engineer as articulated on the Sons of Martha doctrine had been taken too literally by engineers. Have we moulded our profession too unquestioningly around the concept of service and duty without sufficient attention to conscience and visibility?

One Alberta member offered the refreshing and comforting view that perhaps the image of engineers is really not as bad as we often claim. He challenged engineers everywhere to get out and talk about their profession — to take every opportunity to publicize it — to stop moaning and groaning and to start selling. I am sure there was some sympathy for the point of view that we tend to exaggerate the problem. I believe, however, that the vast majority of engineers are concerned and even uncertain whether such efforts will produce results.

Another concern that was raised was the impact which the anti-technology element in society has on the profession. One member mentioned a public statement by one such person to the effect that engineers are the people who brought us Three Mile Island, the Teton Dam and the poor-quality American car. A CBC commentator remarked recently, "we are just beginning to realize the damage that can be caused by technology". There was a general concurrence at the meeting that, because of the anti-establishment appeal of such statements, it would take a great deal in a public relations effort to counteract the damage that such statements can create.

The Alberta meeting expressed some consensus that career counselling aimed at high school students may be too late to attract them into a challenging and rewarding career in engineering. There was general acceptance of the proposition that, by then, many students have made up their minds and are, in most cases, not influenced easily into changing it. Of particular concern, in the Alberta environment, was a proposal being considered by Alberta politicians to allow, in the Grade ten curriculum, a general science course in lieu of the classical and traditional science course which leads to Grade eleven physics and chemistry. The meeting was concerned that this apparently well intentioned proposal would trap many unsuspecting students into an academic preparation which would preclude a career in engineering or science. I mention this concern here because I think it illustrates the importance of publicizing our profession and the importance of the engineering to the public and to the politicians which represent them.

This message has drawn heavily on the Alberta experience because it is fresh in my mind but also because it presents, in my view, some fine examples of the concerns that I hear across this country in the profession. I have also heard similar expressions many times from our own membership in Manitoba. In Saskatchewan, a series of membership meetings was held around the province to determine what members expected from the association. The story was the same there — a concern about the regard of the public for engineers and of engineers for their own identity.

It was encouraging, at the Alberta meeting, to witness the adoption of one of the study recommendations to request the Association's Council to commit $300,000 toward public relations. The governance of APEGGA does not bind its Council to carry out the recommendation. A strong signal has been sent, however, to the APEGGA Council and, in my opinion, it would be wise to take the message seriously.

Closer to home, our own association's Public Relations Committee recently brought a series of recommendations before Council for authorization to produce pamphlets, brochures, posters, a logo and a podium sign aimed at projecting a positive image of the profession for students, career counsellors, the media, the membership and the general public. Council approved the recommendations, recognizing them as a step in the right direction. In my view, the Public Relations Committee is to be complimented on its initiative. □

October 15-22 Announced Hi-Technology Week for '89

Some 35,000 key technical and managerial decision-makers from high technology manufacturing companies, research and development institutions and government will participate in High Technology Week activities across Canada this October. Minister of State (Science and Technology), Dr. William C. Winegard, recently announced that October 15-22, 1989 would be the fourth annual High Technology Week in Canada.

Numerous activities will be held in Winnipeg. The NRC's Canadian Institute of Industrial Technology is planning a variety of events. CIIT's objectives are:

1) To focus attention on the importance of science and technology to Canada's future.
2) To generate interest among young people to science and technology, including consideration of future career choices.
3) To gain exposure for participating partners and CIIT.

Some of these events include booths, exhibits, tours panel discussions and seminars.

The APEM R&D Committee, in conjunction with the Technology Committee of the Canadian Manufacturers Association (Manitoba), the U. of M. and N.R.C. are sponsoring a morning seminar on October 17, 1989 about the general topic of "Advanced Industrial Applications". Speakers have been confirmed from the National Research Council (Materials Research Division), Dow Corning Corporation, Boeing of Canada Ltd., Bristol Aerospace Ltd. and the University of Manitoba. □

PORT NELSON

(continued from page 1)

and the residence. No. 1 would have been a regular visitor as it filled its tank. With the long, cold, winters in that part of the world, there must have been major problems in ensuring an adequate supply of water from the creek; as well as in preventing the water-tower from freezing.

The "Engineer's residence" was a huge building so we concluded that more than the MacLachlans lived there. A look into one of the main-floor rooms showed two "pin-ups" pasted on a wall. They were both "flappers" — not today's scantilly-garbed "playmates". We concluded that some bachelor occupied that particular room, or it may have been one of the draughting offices. This building was wired for electricity.

After examining the water-tower, I turned toward the east as the map informed us that the Marconi Wireless Station was across the valley. I could scarely believe my eyes. Someone had a magnificent hunting lodge there. Then I realized that the one window, that I could see, had no glass in it. We made our way down and across the creek and up to the building. It had been shingled, on roof and sides, with cedar shingles and is still in a remarkable state of preservation. The concrete floor is still in an excellent state as befits the floor of the power-house. The two single-cylinder Diesels, each driving a generator, took me back to the power-house in the Birtle of my youth. Someone has attempded to roll the fly-wheels, from one of the machines, out of the building but only managed to reach the doorway. All of the brass and copper has long-since been stolen, of course.

Time prevented a search for the base of the antenna-tower. An aerial photograph, taken in 1923 when the operation was finally abandoned, shows a single, guyed, mast. Without a grain-elevator for comparison purposes, I estimate that the mast would have been about 300 feet tall. Presumably they would have driven piles for the anchorages of the guys. The electricity, for the Engineer's residence, would likely have been generated there, although there was another electrical plant on the site which serviced — what? The laundry? The billiard hall? The mess halls? The dormitories? The hospital?

At the east end of the town was the post of the North-West Mounted Police. The main building has vanished but a chap, from Gillam, has turned the warehouse building into his trapper's cabin. The log stable now houses his snowmobiles and other equipment. He has three 45-gallon drums in his cabin which are filled, from the creek, with a small engine and pump. Talk about pioneer living! It made our stay a very pleasant one, as did the helicopters that took us "in" and "out".

On my final day, a Bell 204 took us up Nelson about four miles — to Seal Creek, opposite the down-stream end of Gillam's Island. This was where Captain Miles Macdonnell, and the first party of Selkirk Settlers (some seventy men), spent their first winter. With the help of a metal-detector, two hand-wrought nails were found as well as two pieces of barrel-hooping. We had found the site of one of the two buildings that were erected in the Fall of 1812. More Canadian history! My companions were able to tell me that those hardy Scots spent the winter building the boats in which they rowed up the Nelson the following summer. I was sorry when our pilot started murmuring about having to get back to Gillam as another big fire (in the vicinity of Cross Lake) had been reported on his radio and he would likely have to go and help fight it — a task that he did not seem to relish as he had had a "long Spring" fighting the fires around Cowan a few weeks earlier.

I flew back to Henday with him and spent the night at Limestone. Yes, I managed to have a tour of the site and appreciated this glimpse of History in the making. □

The Association of Consulting Engineers of Manitoba

by A.J. Poetker, P.Eng.,
Past President, A.C.E.M.

The Association of Consulting Engineers of Manitoba (ACEM) is a voluntary organization of consulting engineers, working together for the beneift of member firms, for the engineering profession as a whole and for the clientele or public that are served by the member firms. A member organization of the 65 year-old Association of Consulting Engineers of Canada (ACEC), the ACEM was incorporated in 1978. From its Articles of Incorporation, its purpose is summarized as follows:

1. To promote high professional standards in the consulting engineering profession.
2. To foster cordial relations and the interchange of professional experience and information among consulting engineers.
3. To promote good business relations between consulting engineers and their clients.
4. To maintain contact with ACEC, its other member organizations across Canada, and other related professional organizations both within and outside Canada.
5. To operate in liaison with the Association of Professional Engineers of Manitoba.

The ACEM has 40 member firms with a combined staff of between 800 and 900; approximately 25 to 30% of staff are registered professional engineers. Membership is contingent on the firm being beneficially owned in Canada and being managed by professional engineers resident in Canada. The Association is governed by an eight-member Board of Directors, elected from the membership at its Annual General Meeting. Administration is provided by an Executive Director. The Board elects its officers and appoints Chairpersons of its various Committees. Committees maintain liaison with the client sector, eg., the Provincial and Federal Governments, Manitoba Hydro, The City of Winnipeg, and serve in such other capacities as may be determined by the Board. Though individual consulting engineers serve in many capacities with the APEM, the ACEM has special interests in several areas of activity of the APEM: the Consulting Engineers Committee, the Ad Hoc Committee on Group Practice, and the Ad Hoc Committee on Engineering Inspection and Supervision.

The ACEM considers their interests and objectives to be very much in keeping with that of the APEM. Firstly, consulting engineers are professional engineers and are much involved in promoting the objectives of the APEM. Secondly, the maintenance of high quality professional standards and workmanship is as much in the interests of good business as it is in the interests of the public. And the maintenance of a strong and vibrant consulting industry ensures the public of the availability of competent professional engineering services at a price that is fair to both parties. Thirdly, the availability of a full range of consulting engineering services and the assistance in consultant selection through its published directory enables the client sector to make informed choices of competent consulting engineers for specific tasks.

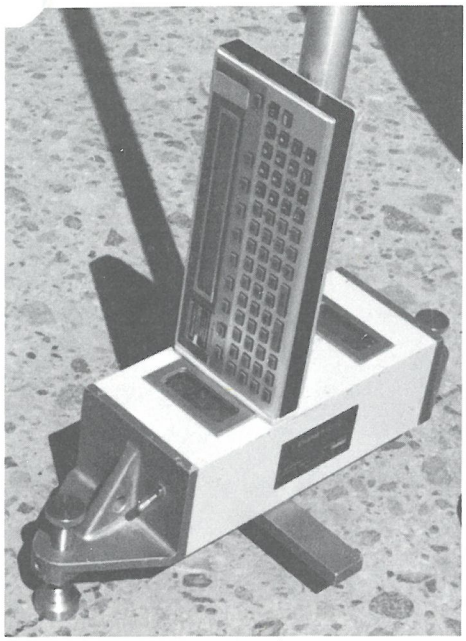
Engineering consulting organizations wage a constant battle against a tendency in the client sector to select consultants on the basis of price with little regard to professional ability. They believe strongly that selection of a consulting engineer should be by ability and that price should then be negotiated on a basis that is fair to both parties. Many Professional Engineering Associations support this belief vigorously. The public is ill-served by engineering services at a low price followed by the business necessity to make the service fit the price. This principle applies equally to employee engineers as to consultants since the costs of engineering for both are time related.

In pursuit of its business development objectives, the ACEM believes that the use of consulting engineers in lieu of in-house engineers by government and industry should always be seriously considered in the undertaking of their projects; the wide choice of services in various fields of engineering, the ability to mobilize a large force on demand with no need to disband the same on project completion, and the vigorous competition based on the principles of competence and quality at a fair rate of compensation serves to ensure the public of best value for their engineering expenditures.

The ACEM values its relationship with the APEM. We believe our objectives to be in complete harmony with those of our Professional Association. The business interests of its member firms can only be properly served if we uphold the interests of the public in all of our endeavours. □

The Golden Car & Road Riding Comfort

D.A. Ennis, P.Eng.



The dipstick profiler.

A Manitoba Professional Engineer, Walter G. Rooke, is responsible for the development a special application of a unique survey ce that now serves as an international ndard for the measure of riding comfort of roads.

Mr. Rooke graduated from the University of Manitoba, Civil Engineering, in 1962 and has spent 12 years as paving specialist with the Canadian Portland Cement Association. In 1984 he formed his own company, W.G. Rooke & Associates Ltd., consulting in pavement design and placement, with special emphasis on the definition and measurement of surface tolerances for floors, bridge decks and pavements.

A major component of modern pavement management systems is the International Roughness Index, or IRI, the new standard rating of riding comfort. The IRI is calculated by a computer program that simulates a car travelling at speed. The engineer inputs accurate road profile data and the program outputs how a car would react to the many slope changes in the profile. The program simulates the reaction of a wheel — a "quarter-car" — complete with mass, shock absorber, spring and tire, all moving at 80 kmh along the profile. The program is nicknamed "the Golden Car" since it never wears out or changes over time.

Rather than employ the tedious rod and level survey work previously required to get necessary surface profile data (vertical accy of at least 0.5 mm at 250-350 mm interval), Rooke worked to develop an existing floor tolerance device — the Dipstick Profiler — for this IRI application.

Mr. Rooke realized that the adaptation of the Dipstick to make use of the IRI program, would give highway engineers a more rapid, portable and accurate field technique for both quality assurance testing and road roughness meter calibration using the IRI.

With Wally working as a consultant to the American manufacturer, the Dipstick was adapted for the IRI application. While the concept of the Golden Car simulation was developed by the World Bank, it was the ingenuity of Mr. Rooke that developed a field technique that made the IRI a practical standard around the world. Two Dipstick Profilers are now measuring Manitoba's roads and bridges.

A common use now of the Dipstick, with its IRI simulation program, is to calibrate high-speed road roughness meters used for road network inventory measurements. By measuring about ten 320 metre long test sections of road with the Dipstick, the IRI of each section can be calculated, on-site if necessary, by the on-board computer.

Readings from the high-speed network roughness rating vehicles are then compared to these sections of known roughness and a calibration equation calculated. In this way the roughness of Manitoba's roads can be compared to roads anywhere else in the world or within the province from year to year.

Dipsticks are now walking roads and calibrating road roughness meters in Indonesia, Burma, Spain, Finland, China, Korea and New Zealand as well as in six Canadian provinces and nearly half the American states.

The Dipstick will also play an active role in test site profiling for the 20-year research study of pavement performance under the SHRP and C-SHRP programs. It is interesting to note that Manitoba's deputy minister of highways, Boris Hryhorczuk, P.Eng., is the only Canadian representative on the Washington-based board overseeing the SHRP program. A parallel Canadian program, known as C-SHRP, is coordinated by the Roads & Transportation Association of Canada, RTAC.

What was the original role of the Dipstick? Its original application was the precise profiling of commercial and industrial concrete floors, including the so-called "superflat" warehouse floors, ten of which have been built under Mr. Rooke's direction, two of them in Winnipeg.

With a different program in computer memory, the Dipstick not only plots the traditional surface profile but it also calculates the industry standard for rating a surface's flatness and levelness. It uses the F-Number system recently adopted by the American Concrete Institute, ASTM and soon, the Canadian Standards Association, as a superior way to define and measure surface tolerances.

The City of Winnipeg's Bridge Branch has used the F-Number Flatness rating generated by the Dipstick on its new bridge decks constructed over the past three years. The city is leading a trend towards better definition and field measurement of tolerances on riding surfaces. Other agencies have applied Dipstick ratings to concrete floors in hospitals, shopping centres and elsewhere, to city streets, skating rinks, highways, and even airport runways through the use of the F-Number system the IRI ride simulation or a combination of both. □

NOTICE

An ommision occurred in the recent Annual General Meeting Notice dated July 3rd.

W.M.A. McDonald's name was omitted from the list of members of Council whose term of office expires at the upcoming Annual General Meeting.

Manitoba Engineers Inducted

Dean Edmund Kuffel, D.Sc., Ph.D., F.C.A.E., F.I.E.E.E., P.Eng., formerly Dean of Engineering the University of Manitoba, and Mr. William Hurst, C.M., F.C.A.E., F.A.S.C.E., P.Eng., Consulting Engineer and formerly City Engineer and Commissioner of Works and Operations for the City of Winnipeg, were formally inducted into fellowship of the Canadian Academy of Engineering in Toronto on May 24th, 1989. The citation for both Dean Kuffel and Mr. Hurst stated that "in recognition of your achievements and your outstanding contribution to the advancement of engineering, and to the economic and social progress in Canada, you have been selected by the current members to become a fellow of our Academy".

The Canadian Academy of Engineering is a sister society which includes the National Academy of Engineering in the USA, the Fellowship of Engineering in the UK, and the Swedish Academy of Engineering Sciences.

The membership of the Canadian Academy is limited to 250 members, and no more than forty may be elected each year. The present number of fellows stands at 100. □

CCRB Student Competition For Innovation In Construction

by E.E. Lach, P.Eng.

Award winners in the first Canadian Construction Research Board (CCRB), Manitoba Chapter "Student Competition for Innovation in Construction" were all undergraduate or post graduate students at the University of Manitoba, Department of Civil Engineering.

The deadline for submissions for the 1989 Competition was May 1st, 1989.

The presentations of the Cash Awards and Certificates were made at the First Annual Dinner which was held at the Winnipeg Chamber of Commerce on May 31st, 1989. CCRB Student Competition Committee Chairperson Paul V. Schmalz and Committee member Dr. Jim Graham made the presentations to the following competitors:

$1,000 AWARD

Mr. Derek Daniel Belsham

"EVALUATION OF METHODS TO QUANTIFY DEGRADATION OF A FILLED GRP COMPOSITE IN CORROSIVE ENVIRONMENTS"

—for his collaborative efforts in trying to establish a better methodology for determining the degradation characteristics of a construction material.

$500 AWARDS

Mr. James M. Oswell

"CONSTRUCTION OF ISOLATION SHAFTS ON A CREEPING HILLSIDE"

—for his reporting on the construction and economics of isolation shafts for the oil and gas industry.

Mr. Derek John Walker

"CREEP BEHAVIOR OF LATERALLY LOADED PILES IN PERMAFROST"

—for his investigations in a northern construction problem which will lead to a better understanding of the response of the permafrost to the loading by piles and thereby result in improved foundations and pile design criteria.

$250 AWARDS

Mssrs. Jerry D. Kohut and Robert Altarui

"MOMENT ROTATION BEHAVIOR OF DOUBLE WEB ANGLE CONNECTIONS"

—for their well written submission on the potential savings and safety in the steel construction industry due to a different approach to the analysis of this type of beam to the column connection which considers the moment transfer of the simple connection.

Mr. Daniel J. Dankewich

"PROPOSAL FOR THE EVALUATION OF RUTTING OF BITUMINOUS PAVEMENT LIFTS ON THE CITY OF WINNIPEG THROUGHFARES"

—for the submission of a different approach to the determination of an empirical method of determining the most appropriate construction methods and mix designs.

Student Competitors and Committee Members. (From left): David Harris (Committee), Daniel Dankelwich, Jim Graham (Committee), Derek Belsham, Robert Altarui, James Oswell, Edgar Lach (Committee), Derek Walker, Paul Schmalz (Committee). Missing: Jerry Kohut.

The 1989 Judging Panel was representative of the various segments of the construction industry and included Mr. Brian Akins, P.Eng., (Winnipeg Construction Association), Mr. Bill McKay, P.Eng., (Consultant), Mr. Roger Clarke, P.Eng., (National Research Council) and Mr. Don Osman, P.Eng., (Manitoba Research Council).

Dinner tickets this year were limited to CCRB Manitoba Chapter members and guests.

The prize fund for the Competition is the result of free will donations by the local construction industry which includes contractors, subcontractors, architects, consulting engineers and building owners/managers. This year just over $3,500 was received from 48 firms or individuals.

Those in attendance also heard interesting and timely messages from the following speakers:

Brian Akins, P.Eng., Member, Canadian Construction Research Board, "A Mandate for Technological Support to the Construction Industry".

Gervin Greasley, Executive Director, Winnipeg Construction Association, "Challenges of the Construction Industry".

Roger Clarke, P.Eng., Provincial Coordinator, NRC-IRAP, "R and D and the Need for Innovation".

The Canadian Construction Research Board was established by the National Research Council with a mandate to priorize construction research which involves the tasks of identifying industry needs and stimulating research activities in those areas. Another aspect is to ensure that there is a technology network from the source of the technology to the user.

The Manitoba Chapter is working on a number of initiatives in carrying out its mandate for technological support to the construction industry. However, the "Student Competition for Innovation in Construction" does provide a very unique opportunity for collaboration between the student, the construction industry and the university or college, and their staffs, in bringing science and technology into the construction industry in Canada.

The Committee for the 1990 competition has already noted a number of improvements to the Competition Guidelines including liaison with University and College, staff and students, and asking the construction industry to participate by submitting topics and research projects and to offer to collaborate on these projects or as requested by student competitors. In the construction industry even the smallest step forward in research and development today could be a very worthwhile achievement when viewed from five or ten years down the road. □

AN AGRICULTURAL ENGINEER RECEIVES ASSOCIATES AWARD FROM THE U. OF M.

Mr. David Huminicki, P.Eng., received the 1989 Associates Award for part-time study in the Master of Business Administration program at the University of Manitoba achieving the highest awards grade point average in his courses. David works for Manitoba Department of Agriculture in the Farm Business Section and specializes in grain handling, grain drying systems, seed cleaning plants and computer applications. □

Royal Bank Award to Engineer

The pioneer of the National Building Code and the National Fire Code, Dr. Robert F. Legget, is to be the 1989 recipient of the Royal Bank Award. Dr. Legget is the second engineer to be named, the first being the late Dr. C.J. Mackenzie in 1968.

The Royal Bank Award was set up by the Royal Bank in 1967 to commemorate Canada's centennial and to recognize publically the work of individuals which has benefited humanity and the community at large. The Award consists of a gold medal and a prize of $100,000.

Dr. Legget, an engineer, geologist, historian and author who lives in Ottawa, was the Founding Director of the Building Research Division of the National Research Council. Under his guidance from 1947, the Building Research Division (now known as the Institute for Research in Construction) grew to a staff of 250, with an international reputation for the quality of its research.

Before taking over as Director of the Building Research Centre, Dr. Legget was already well known in the engineering profession for his contribution to the discipline of engineering and geology. His textbook, "Geology and Engineering" was the first of its kind. Published originally fifty years ago in 1939 and now in its third edition, it is still in use worldwide.

Since retirement in 1969, Dr. Legget has researched and written about Canadian engineering projects of the past. His books have included "Rideau Waterway", a history of the building of the Rideau Canal; "Railways of Canada"; and "The Ottawa River Canals". He is a regular contributor as a historical columnist to "Canadian Consulting Engineer" and this year celebrates 70 years as a contributor to "Railway Magazine", published in Britain.

In retirement, Dr. Legget also continues to be active in the engineering world and in 1987-88 was the Founding President of the Canadian Academy of Engineering, an elite group of engineers dedicated to furthering excellence in the profession.

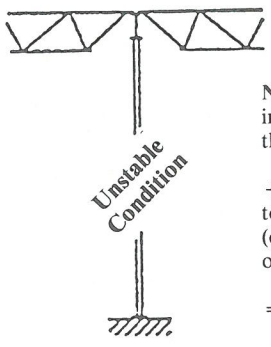
Dr. Legget was born in Liverpool in 1904, studied at that city's university, graduating with first class honours in engineering geology in 1925.

He began his career in engineering construction and design. In 1936 he became Assistant Lecturer at Queen's University and in 1938 transferred to the University of Toronto to become Associate Professor.

The Royal Bank Selection Committee in announcing the award said "Dr. Legget's career has been characterized by vision, a sense of the importance of the work he was involved in, and an awareness of its long term, practical benefits. Dr. Legget has been a key figure in developing and adding to the body of knowledge which ensures the safety and soundness of structures across the country". □

Attention: Engineers Responsible For Structural Design and General Review During Construction

IF YOU SEE THE UNBRACED CONDITION ILLUSTRATED BELOW, A STRUCTURAL INVESTIGATION IS RECOMMENDED.



No web stiffener in the girder at the column

+ no lateral support to girder bottom (compression) flange or top of column

= unstable condition.

A structural collapse in Burnaby, B.C. early in 1988 involved the failure of a cantilever girder and open web steel joist floor design commonly known as the "Gerber System". The report on the collapse states, "The beam was greatly under-designed. The beam-column assembly lacked essential lateral supports". *Engineering Dimensions* (Nov/Dec 1988) has reported and reviewed this incident. It has been decided that further comment is appropriate. (***Editors Note:*** Also see December 1988 *Manitoba Professional Engineer).*

The "Gerber System" consists of a row of columns spaced approximately 30 to 45 feet apart with girders placed over the tops of two adjacent columns and cantilevering past them to support "drop-in" girder sections simply supported at the end of the cantilevers. This system is commonly used for roofs in single storey buildings and is safe and economical when lateral support is provided. Adequate support at the column/-girder interface is particularly important (see sketch).

The Canadian Institute of Steel Construction has recently published a comprehensive book, "Roof Framing with Cantilever (Gerber) Girders & Open Web Steel Joists". This publication (36 pages), for structural engineers, architects, contractors, owner-builders, and building officials, is available at no charge by contacting: Canadian Institute of Steel Construction, 201 Consumers Road, Suite 300, Willowdale, Ontario M2J 4G8, Telephone (416) 491-4552. □

New Rural Bridge Program Announced!

Bridge building throughout rural Manitoba will receive a half-million-dollar boost, thanks to a new program unveiled by Transportation Minister Albert Driedger.

"The Rural Municipal Bridge Assistance Program," said Driedger, "will work with communities in providing much-needed upgrading of the rural transportation network."

Under the program, Highways and Transportation will pay 50 percent of the costs of new rural bridges between $25,000 and $200,000. For bridges costing over $200,000, the department will bear 50 percent of the costs up to $200,000 and 75 percent of the remaining costs.

In taking into account the requirements of farmers and others who haul agricultural products, all eligible bridges must accommodate maximum loads permitted on provincial roads. Minimum bridge roadway width has been set at seven metres, which is wider than most current municipal bridges.

"As well," said Driedger, "in order to serve the maximum number of communities, the department's share of the cost will be limited to the design and construction of the bridges, and will not include such items as bridge approaches and property acquisitions."

The funding for the initial year of the program is expected to be used largely for preliminary work on design and engineering although some construction may take place.

All bridges will be designed by professional engineers, and all projects will be publicly tendered.

Crossings over the Red, Assiniboine, Winnipeg and Saskatchewan Rivers, which are already well served by the Provincial Trunk and Provincial Road system, are not eligible for this program.

"Improving Manitoba's rural transportation network," said Driedger, "will improve the flow of goods and services in and out of dozens of rural municipalities." □

With Deep Regret
The Association Records
the Passing Of:

A.B. Dory
H. G. Hess
J. M. Roll

Hooks, Slices and Other Kinematic Phenomena

by Cindy Kohuska, P.Eng.

Garland Laliberte presents Landon Cup to Rob Borody.

June has come and gone and with it our Annual Golf Tournament. This year the gala event took place at the Pine Ridge Golf Club on June 28th, 1989. 116 golfers teed off starting at 9:30 a.m. For nine hours the engineers swarmed over the fairways on the rolling terrain at Birds Hill. Then, just as the first raindrops began to fall, the final foursome joined the happy throng in the bar and dinner and awards got underway.

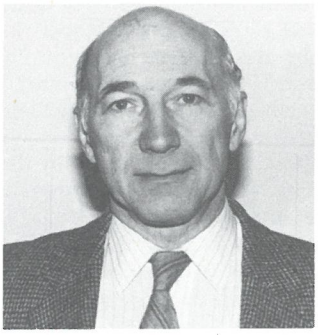
Two major trophies are presented every year at our Golf Tournament. The Landon Cup is presented to the Low Gross Winner. It was presented for competition to our Association in 1965 in honor of the 80th birthday of Charlie Landon, a distinguished Registrar of the Association from 1934 to 1960 and President in 1961. This year the winner was Rod Borody with a gross score of 87. Rod was closely followed by Nat Fenton (88), Carl Birston (89), Ken Meek (90), Lance Vigfusson (91), Steve Topley (91), Ron Payne (91), Jim Terris (91), Boris Hryhorczuk (92) and Keith Miller (92).

The Sullivan Cup is presented to the Low Net Winner. It was donated in 1938 by John G. Sullivan, P.Eng., a member of the Provisional Council of the Association in 1920 and the first engineer to be awarded an honorary degree by the University of Manitoba. This year the winner of first prize for Low Net was Welland Williams, a guest at the tournament with a net score of 65. However, the name on the trophy must be a member of APEM. This honour went to Gord Smith, who was tied with Ian McKinnon and Larry Bielus, and was awarded the trophy on a countback. Their net score was 68. Other close runners up included John Zandstra (70), Bob Wiebe (70), Bob Stefanick (71), Terry Kjartanson (72) and Fred Kemp and Guy Cooper with 73's.

Prizes were awarded for the longest drive, closest-to-the-hole, and high-hidden-hole. These were won by George Pratt, Don Mulder and John Tuck respectively. Tracey Murray got a special prize for having the most number of 10's on her score card — would you believe six? Gary Tencha had the dubious honour of "winning" the most-honest-golfer award. Two door prizes were given: a putter donated by Supercrete and a golf bag donated by CBR Cement Canada Ltd. These were won by Norm Veyatt and Ken Meek.

The sports committee wants special thanks to go out to our sponsors and donators of prizes. These included Wardrop Engineering, National Testing Laboratories Ltd., B.A. Construction Ltd., Solmundson Engineering Group, UMA Engineering Ltd., Reid Crowther & Partners Ltd., Federal Pioneer, Supercrete and CBR Cement Canada Ltd. □

Award for Teaching Excellence



G.E. (Grant) Sims, P.Eng.

Dr. G.E. (Grant) Sims, P.Eng. of the Department of Mechanical Engineering, Faculty of Engineering University of Manitoba, has been awarded the Dr. and Mrs. H.H. Saunderson Award for teaching excellence. To be eligible for this award, one must be nominated by the students. Dr. Sims has won this award for the second time in nineteen years. He is known as a "friend of students". One engineering student observed, "I am amazed at his dedication to the University as well as his students". Described as "energetic and enthusiastic" in class, he is also a regular attendee at functions that students organize outside the class.

The courses taught by Dr. Sims are in energy and engineering, particularly heat transfer and thermodynamics. As a researcher, his areas of interest include hydrodynamics, heat transfer in two phase (gas-liquid or vapour-liquid) flows, and boiling phenomenon. He graduated from the University of Manitoba and then went on to the United Kingdom where he graduated with Masters and Doctorial Degrees from the University of Birmingham and the University of London. He has been registered with the Association of Professional Engineers of Manitoba since 1967. □

Council Reports

JUNE 5, 1989

by D. Jayas, P.Eng.

AT WHICH COUNCIL CONSIDERS THE STATUS REPORT ON TECHNOLOGISTS.

Applications, Financial Statements: G.E. Laliberte, P.Eng., presided over the June 5, 1989 meeting which began at 3:30 p.m. in the Association Board Room. Applications for engineering graduates, transfers, registrations, and licences and Financial Statements were approved after short discussion and clarifications on Financial Statements. Appointments of additional members to the Public Relations Committee, Board of Examiners and Salary Research Committee were approved.

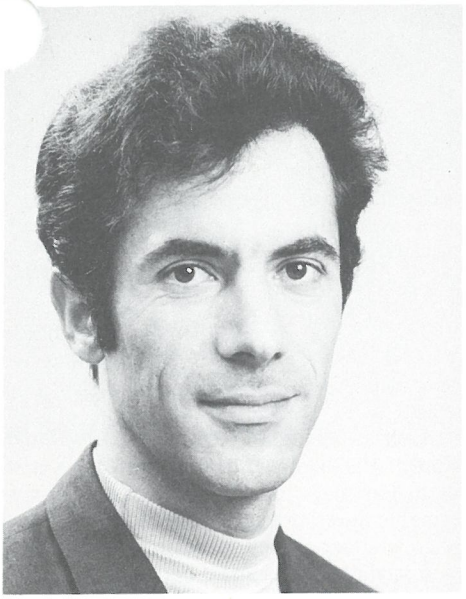
ACEM Request for Representation on the APEM Consulting Engineers Committee: After a lengthy discussion, the Council approved the consideration, on an annual basis, for a member of the ACEM Board of Directors to be appointed to Consulting Engineers Committee. Changes in the Terms of Reference of the Consulting Engineers Committee will be prepared by the Committee for ratification by Council.

Appointment of the CCPE Director: Dr. G.E. Laliberte, P.Eng., was appointed APEM's Director to CCPE for next two years. The Council considered the report from Mr. E.W.J. Clarke, P.Eng., current APEM Director on the CCPE. On the matter of continuing education, the Council will prepare a more forceful and succinct support statement when invited by the special committee set up under the Future of Engineering Action Plan.

Terms of Reference of the Ad Hoc Committee on Engineering Inspection and Supervision: After review and minor changes, the Council approved the Draft Terms of Reference of the Ad Hoc Committee on Engineering Inspection and Supervision. The Council also approved a representative from ACEM on this Ad Hoc Committee. The ACEM will be requested to supply a list of three candidates suitable for service on this committee. The Council will make the final appointment from this list.

Status Report on Technologists: The Council was informed that MANSCETT has advanced its proposed Act to the three caucuses of the legislature for consideration and, they hope, support. Council believes that it would be a serious mistake if the proposed legislation was passed as it could lead to the regulation of aspects of engineering work by two organizations. It would also cause confusion in the minds of the public and courts and anyone else having any involvement with Technologists and engineers. The Ad Hoc Committee on Technologists of APEM is willing to discuss with MANSCETT their concerns but MANSCETT does not seem to be interested. The

Applied Electromagnetics Chair



Dr. L. Shafai, P.Eng.

Natural Sciences and Engineering Research Council of Canada (NSERC) and two Winnipeg-based companies have teamed up to assist the University of Manitoba to build on its existing strengths in electromagnetics and improve its collaboration with local industry. Dr. L. Shafai, a professor at the University, has been appointed to the new research chair position. A highly-productive researcher known internationally for his work in the area of antenna design, Dr. Shafai will centre his research on the modelling of electromagnetic radiation in the presence of material bodies. Research in this area has a range of civil and military applications that encompass the hazards of electromagnetic radiation, specialized radars, guided systems and telemetry. The investigations will also be of special relevance to companies which design and manufacture integrated circuits and which incorporate other sensitive electronics in their products. Two supporting personnel, a research associate and a technologist, will be hired to complete the team.

The University of Manitoba has placed a high priority on developing its applied research capability. The chair expertise complements the needs of other disciplines in the Department of Electrical Engineering, including the industrial research chairs that NSERC has helped establish in power systems and communications. The new chair will also give a strong boost to postgraduate and undergraduate training, and to local industry. Over a five-year period NSERC will contribute $855,000 and industry and government will contribute $430,000. Collaborators in this project are Bristol Aerospace Ltd., Spiroll Kipp Kelly (1984) Inc., and the Province of Manitoba □

Committee With A Difference

by D.A. Ennis, P.Eng.

Council has recently made provision for the formation of a committee with somewhat different task. It is unique in two respects. Firstly, it is the only one that does not report directly to Council. Secondly, while it is an advisory committee, it provides its advice directly to permanent staff.

It is called the Enforcement Advisory Committee. Its purpose is to advise the staff on the interpretation of the scope of activities that legally come within the definition of practice of engineering as set forth in the Engineering Profession Act.

The objective is to be able to establish a policy in enforcement matters on such questions as:

1. At what point does the crossing of a water course become a bridge that requires an engineering design? It is obviously somewhere in between the 300 millimetre culvert and the 12 metre span intended to support vehicular traffic, but where is the line?
2. Where does one draw the line between the legal responsibilities of the electrical contractor and the electrical engineer?
3. How does one draw the line between a computer scientist and a computer engineer?
4. What is a software engineer? How does one draw the line between a software engineer and a computer scientist or mathematician?
5. At what point does a shop drawing become an engineering drawing and where does the engineering responsibility lie for an "off the shelf" component that is part of a supplier's submission.

If you feel you have a contribution to provide to these sorts of deliberations, and can spare the time, please give me a call to talk about it. Before you do however, take some time to study the definition of the practice of engineering in the Act, especially the section beginning with "..... without restricting the gernerality of the foregoing .....". □

ANNUAL MEETING NOTICE REMINDER

Mark Friday, October 27th on your calendar. The Annual Meeting, Awards Banquet & Dance will all take place at the Holiday Inn Downtown. □

Council will submit its concerns with the proposed legislation to the three caucuses. □

JULY 10, 1989

AT WHICH COUNCIL CONSIDERS FEES, BUDGET & NEW APEM SCHOLARSHIPS.

Applications: After applications for various types of membership and licence have been screened by the staff, the Board of Examiners and the Admissions Review Board, they are presented to Council for final review and approval. Since 1920, Council has had the responsibility of formally approving all applications. At this meeting, Council considered and approved a number of applications and then proceeded on to consider other matters on a lengthy 20 item agenda.

Association Fee Schedule: One of the major items considered was the 1990 Association Fee Schedule. The proposed fee schedule had been prepared by the General Manager and reviewed by the Executive Committee. After consideration, the 1990 fee schedule was approved by Council. It provides for an increase in membership fees of $10.00 per year. In addition, a Practice and Ethics Committee assessment of $10.00 per member will also be assessed in 1990.

1989/90 Association Budget: Council considered the proposed budget for the coming year. It had been prepared by the General Manager and reviewed by the Executive Committee. After agreeing on a number of changes, Council approved a budget which provides for a small surplus during the coming fiscal year. The Association's fiscal year ends on July 31st.

1989 APEM Awards: George Pratt, Chairman of the Awards Committee, attended the meeting and presented his committee's recommendations for 1989 APEM Awards. After discussion, Council approved the Awards Committee nominations for the APEM Merit Award, the APEM Outstanding Service Award, an Honorary Life Membership and the APEM Certificate of Engineering Achievement. These awards will be presented at the Awards Banquet at the upcoming Annual General Meeting on October 27th.

APEM Entrance Scholarships: Dan Prowse, Chairman of the Public Relations Committee, spoke to the recommendation of his Committee that the Association make provision for entrance scholarships into engineering. After discussion, Council approved the necessary funds for providing three $500 scholarships annually to be awarded to high school students for entrance into the University of Manitoba Engineering Program.

Consideration of a number of other items was deferred and the meeting adjourned at 9:30 p.m. □

Sustainable Development

by S. McKendry-Smith and J. Ferguson

A luncheon panel discussion on "Sustainable Development — Technical Opportunities & Economic Development" was sponsored by the APEM, R & D Committee and the Biomass Energy Institute on June 14th, 1989 at the Canadian Institute of Industrial Technology in Winnipeg. Guest speakers, Mr. Allen Scarth, a Winnipeg lawyer and Chairman of the Board, Fort Whyte Nature Centre, Ted Speers, P.Eng., Industrial Chemist and Chairman of the Board, Biomass Energy Institute, and Mr. Dennis Wallace, Assistant Deputy Minister, Department of Western Economic Diversification presented their views on the concept of sustainable development with Bob Hamlin, P.Eng., Chairman, APEM, R & D Committee moderating the panel discussion.

A call for change in the world's economic structure came as a result of the report by the World Commission on Environment and Development, otherwise known as the Bruntland Commission after its chairman, Norwegian Prime Minister Mrs. Gro Harlem Bruntland. The Commission was established by the United Nations in 1983 as an independent body assigned to look at critical environment and development problems and propose better ways for the world community to address them. In 1987 the Commission published its report, "Our Common Future" which called for a new era of economic growth based on the concept of sustainable development.

Sustainable development, as proposed in the report is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The principles of sustainable development are to be built into the programs of the United Nations and have been fully endorsed by Canada. An International Centre for Sustainable Development has been proposed to be established in Winnipeg by the Federal government. The mission of the Centre would be to promote the application of environmental sustainable development within and between the public and the private sectors.

Allen Scarth in his presentation spoke of the influence that the changing environment has on the work of engineers. He said it was "necessary to take into account reducing energy and resource supplies, increasing limitations on emissions, fluctuating global temperatures and other effects on the environment when considering the development of a project". "Engineers must learn to look forward and build for the future world" he said, "they can no longer make their plans based on extrapolations based on data from the past".

One method of determining the viability of a project, leaving sustainable development in mind is the "Scarth Scale". The system produces a rating or assessment which is a function of the sustainability of the components of a development expressed in years. In Mr. Scarth's example the system would indicate at what point in time a particular component of a Brazilian rainforest agriculture project is no longer sustainable. In the example shown, most components of the project are sustainable for 25 years or more, based on reasonable projections. It was found however, that when you strip the forest from the forest floor, the soil becomes fragile. Within seven years the soil is unable to support agriculture. Mr. Scarth feels that if this graphic representation had been available to the financers of this project, the project probably would not have been started.

Mr. Speers noted in his presentation that the Bruntland Report identifies a safe and sustainable energy source as being crucial to sustainable development. He said "such an energy source is not available at this time and that alternate sources of energy must be found". The primary source of energy, the sun, and secondary sources, water, air, oil and biomass are naturally occurring sources of energy. "We should pursue these energy sources if sustainable development is to be achieved" noted Speers. One possibility proposed by Mr. Speers was a nation-wide system of solar collectors and a distribution network to deliver solar heated fluid to population centres. Very efficient inexpensive solar collectors are within our technologicial capabilities as are distribution systems for the hot fluid.

Of the secondary energy sources, Mr. Speers says biomass is of primary concern. It is renewable and is the basis of all life on earth. He said that "biomass must be maintained, and threats to it such as acid rain, pollution, waste products, incineration, pesticides, and noxious chemicals need to be controlled. We have the technological capability to control these threats, but unless there is a change in the political climate, there will be no incentive to act. Reforestation and preservation of existing forests must be undertaken. We must seek out alternate, environmentally sound methods of fertilization and pest control" said Mr. Speers.

Mr. Dennis Wallace was the final speaker of the seminar. Mr. Wallace outlined how the Western Economic Diversification Fund supports sustainable development, and how industry is beginning to take an interest in the environment. "Environmental protection is built into the Western Diversification Fund" said Mr. Wallace. All organizations and companies which apply for funding are required to show that their proposed projects are planned with sustainable development in mind.

The Western Diversification Fund has helped support several groups with are directly concerned with environmental issues. A group which provides technical advice on how to preserve soil quality in western Canada receives funding as does a company developing environmentally sound, non-chemical-based pesticides. The fund supports waterfowl conservation and a native heritage park in the South Saskatchewan River va... "These projects remind us of our ties to nature, and ultimately our dependence on it", said Mr. Wallace. The Forks Development in downtown Winnipeg is also supported in part by the fund. This development is designed to attract people to live in the core area, thus reducing urban spread. Other projects receiving support include a method of shipping higher quality coal from western Canada to the east, to reduce SO_2 output and "Globe 90", an environmental conference in Vancouver in 1990. The fund continues to seek out new sustainable projects in the West.

A short discussion ensued at the conclusion of the seminar, dealing with the Canadian Aerospace industry, and its role in sustainable development. A question was raised as to whether money spent on space exploration might be better spent here on earth, solving our environmental problems. In response, it was felt that while we are not going to find the solution to earth's problems in space, a small amount of the money spent on space exploration has allowed us to more easily monitor the environment on earth. Space exploration has shown us how small and fragile our planet is. Through satellite photography, we can see the effects ... deforestation and subsequent desertificat... Space technology may provide the means ... the earliest possible detection of environmental damage. □

Quality Assurance Management Courses

by M. Sinha, P.Eng.

In the interest of all those professional engineers or engineering managers who have not had any educational exposure to the ever-demanding and expanding field of knowledge on quality assurance, or the overall methodologies for management of quality and productivity, Quality Assurance Management (QAM) courses at the University of Manitoba, Continuing Education Division are highly recommended.

Following are brief course descriptions:

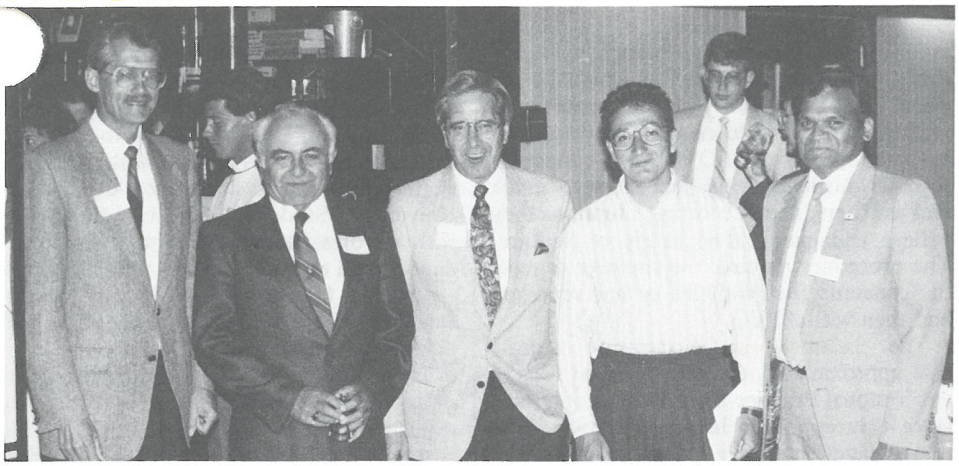
Quality Assurance Planning: This course will be held in the September-December Term. Lectures begin with an overview of the general historical, conceptual, human and managerial background of quality assurance with everyday experience to show how precious little is being done in most organizations to understand and tackle the deteriorating competitive position and, w... "quality improvement" is the only answ...

Quality Control: Principles and P... cedures: This course is offered in the January-April Term and focuses on the utilization of statistical techniques for quality improvement, and emphasizes the impor-

(continued on page 12)

WESTMAN NEWS—

by Dick Menon, P.Eng.



Dave Ennis, Tom Kowalchuk, Garland Laliberte, Peter Sparanese and Dick Menon.

A supper meeting of the West-Man Engineers was held on May 25, 1989. It was a year ago that the Engineers had decided to form a Chapter and hold supper meetings periodically. The executive and, no doubt, our guests have been pleased by the turnout for the supper meetings. Highlights of the business meeting were: the "State-of-the-Association" address by the President of APEM, Garland Laliberte, and the "Truesteel Affair — A Case Study..." by Dave Ennis, the Act Administration Officer for the

Ken Colcomb promoting the fishing derby.

APEM.

The supper was followed on June 10 by the last event of the year — an annual family picnic. This year the event was combined with a "fishing derby"! About a dozen people took part in the fish derby which was a tremendous success thanks to the organizational skills of Ken Colcomb. Although fish were not 'biting' that day, fun was had by all. This was followed by a family picnic with about 25 people in attendance.

The executive will be meeting in the fall to plan events for the next year. If you have any suggestions, please call me (726-6092) or any of the executive. □

ENGINEERS AND THE GREAT PERFORMER

Since 1948, engineers have been relying on their association plan for low-cost life in-ance protection. Over the past 40 years, North American Life plan — known as the Great Performer — has grown significantly and is now considered one of the most attractive membership benefits.

The Plan enjoys a well deserved reputation for excellent value and first-class service. Advertising and direct mail promotions have built considerable benefit awareness among our members. However, after reviewing the plan's history, and going over the questions most frequently asked by our members, we found a number of facts and statistics that would be of interest to both participating members and those now considering joining. For example:

DID YOU KNOW...

...It is Canada's largest association life plan.

...It is endorsed by the Canadian Council of Professional Engineers and designed for the members of the twelve engineering associations that constitute the Council.

...As a member or an employee of our association, an engineer in training or a student engineer, you are eligible to apply for coverage and to retain that coverage.

...Suspended members are entitled to keep their coverage while they await reinstatement of membership. Terminated members may keep their coverage until the policy anniversary following their termination, then either convert to an individual policy or let it lapse.

...The Great Performer now covers over 45,000 members who hold more than $9.25 billion of insurance.

...It "stands on its own". That means that all premiums collected are credited to the plan and once expenses, claims and reserves have been covered, the surplus, if any, is passed on to the members through benefit improvements.

...Assisted by The Alexander Consulting Group, a committee, made up of representatives of participating engineering associations, monitors the plan's performance and reviews recommendations for plan improvements.

...Increased participation has enabled North American Life, the plan underwriter, to reduce the cost of insurance by as much as 88% since 1948.

...Not only has the cost of insurance come down over the years (while the cost of everything else has gone up), but additional benefits such as the free Personal Accident insurance and the Insurance Continuation feature have enhanced the plan, giving members even greater value for their money.

...The free Personal Accident insurance provides additional protection in the event of accidental death, paralysis, or other major impairment. The usual exclusions, including voluntary involvement in a criminal offence, apply to this benefit. (Remember, in Canada, driving with a blood alcohol level above the legal limit is a criminal offence.)

...Unlike most other group term life insurance plans which terminate at retirement, your policy through its Insurance Continuation Benefit provides a reduced amount of paid-up life insurance at age 75.

...It offers high protection at very low cost. For example, a 30 year old non-smoker can get $240,000 of term life coverage plus $80,000 of personal accident insurance for only $160 a year, that's less than 44 cents a day!

...In addition to providing low-cost protection, the Member Term Life insurance can be used as collateral for a loan or to help secure a mortgage.

...Once insured, your coverage remains in force even if your health deteriorates. So buying as much protection as you can afford, while you are in good health, makes sense.

...With the cost of living always on the rise, hundreds of insured members are applying to transfer their coverage from Decreasing to Level Term insurance. Since 60 is the age limit for applications, most members seem to think the sooner they move to a level term plan the better.

...Non-smoker benefits are offered. To continue to qualify for these benefits, the non-smoker status must be maintained. Out of the over 45,000 members currently insured, 82% are non-smokers, while out of the 22,500 spouses covered, 72% are non-smokers.

...Changing life-styles have had a significant impact on the demand for spouse insurance. In the past six years, the protection purchased by engineering on their spouses almost tripled.

...With inflation and the high standard of living enjoyed today by most professionals, the Decreasing Term benefit has lost its appeal. Engineers concerned with future protection, now choose the Level Term benefit. In the last six years, participation under the Level Term plan has more than quadrupled.

These are some of the points we thought might be of interest to our readers. For further information, or for a free brochure describing The Great Performer, contact your North American Life representative, your local North American Life branch or call Toll Free — 1-800-668-0195. □

News from other Associations

by D.A. Ennis, P.Eng.

In Newfoundland the Association has begun to focus on the Hybernia Project. It has conducted a survey of major employers to determine industry positions and another survey of the membership to determine the level of interest and knowledge of the project. The Association received 454 replies from the membership, a rate of return of 34%. Almost 80% were somewhat to very much interested in employment on the project. At the same time, the survey indicated that only 10% of responding members are or will be directly employed on Hybernia in their present job.

In New Brunswick, the Association reports that a Women in Engineering Chair will be established at the University of New Brunswick, Fredericton, under the sponsorship of NSERC and Northern Telecom, which will each contribute $50,000 a year in support of the chair for five years.

At the same time in Ontario APEO has established a Women in Engineering Advisory Committee to "... act as Council's advisor on subjects of specific concern to women engineers and relating to women in engineering, ..." APEO has also adopted a formal whistle blowing procedure to guide and assist engineers reporting situations they believe endanger public safety or welfare. The procedure requires the engineer to raise the concerns first with his or her superiors and then with APEO.

The Saskatchewan Association reports that approximately 60 candidates sat for the Professional Practice Exam in May and that, since its inception on January 1st, 1987, 12% of the candidates have failed the exam. The exams are held twice a year. One of the requirements for eligibility to write is that the applicant be enrolled as an Engineer-In-Training prior to the registration deadline for the exam.

In Alberta, APEGGA reports that the Association has identified image enhancement among its members and the public as a priority, and that at its recent annual mee in Jasper it has budgeted $300,000 for Pub Relations. At the branch level, in Fort McMurray and Lethbridge, an Annual Buddy Day has been organized with first year engineering students at the local College and University. Students team up one-on-one with a Professional spending part of working day with an engineer in their field of interest — usually followed by a successful social function attended by members and participating students.

The B.C. Association reports that, because of an increase in the number of enquiries and appeals and the Station Square enquiry, legal costs stood at $150,000 in April. The APEBC Council, in response to a request from the investigation committee adopted a motion stating that it "Interprets that a charge laid under a sub-section of the Code of Ethics be considered in isolation, without reference to the conditions explained in the general statement of that section or in the general preamble of the Code of Ethics". □

— Coming Events —

14th World Energy Congress, Montreal, September 17-22nd. This is the first world conference to be held in Canada. Contact Mr. P.G. Campbell, Chairman of the Marketing Committee 416-222-7690 or Ms. Cherrett, Ontario Hydro — Toronto 416-592-2116.

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International Conference — Municipal Code Administration Building Safety and the Computer. Sponsored by the Manitoba Building Officials Association Inc. September 24-28th, Holiday Inn downtown Winnipeg, contact Manitoba Building Officials Association 945-3510 — C. Maximilian.

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Dam Safety Seminar, sponsored by Canadian Association of Dam Safety Officials, September 26-29th in Edmonton, Alberta, contact B.J. Hundall, Edmonton — 403-422-1356.

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Seminar Roofs that Work, sponsored by the Institute for Research in Construction, Winnipeg, October 5th, contact E. Lach, P.Eng., 956-0980.

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Seminar Creep Behavior of Frozen Soil and Ice — October 26-27, University of Manitoba, contact Professor L. Domaschuck, Civil Engineering, 474-9254.

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Canadian Institute of Mining & Metallurgy — "Mining & Energy Challenges", Calgary October 25-27th, contact I.R. Murhead, Calgary 403-298-4655, Fax 403-298-4125 or C.E. Anderson, UMA Engineering 284-0580.

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Call for Papers for 1990 Canadian Public Works Conference, to be held in Winnipeg, May 22-25th, 1990. Theme, "Public Works for the 21st Century The Future is Now". Deadline for abstracts November 1, 1989, contact B. MacBride, P.Eng., 986-4434 or Fax 224-0032 Winnipeg.

NOTE: Additional information on most of these events is on file at APEM office until the date of the event. □

CCPE Annual Meeting

1989 Annual Meeting of the constituent associations of CCPE was held in Saint John, New Brunswick this past May. Apart from the presentation of awards to Glenn Morris and Walter Saltzberg, as reported in our last issue, there were some other matters on the agenda that maybe of interest to Manitoba engineers.

Two of the matters considered were raised by the Manitoba Association. The first arose because presently a formal mechanism does not exist for the exchange of information between constituent associations concerning the enforcement of Professional Engineering Acts or regarding discipline of registered engineers or licensees. As a result, a draft protocol was introduced that would require all subscribing Associations to investigate all complaints regarding alleged offences occurring within their territory, and in the event sanctions are imposed, to publish a report and communicate to other Associations. The Board of Directors did not endorse the draft. However, the meeting agreed that the protocol would be distributed to all Associations for ratification and/or comment and that a study group would compile the results and recirculate the information to the Associations for a decision.

The second matter arose from a resolution put forward by APEM that CCPE take positive steps toward the establishment national program for the accreditatio Continuing Education and Professio Development offerings. The resolution, however, was not carried.

On a matter of democracy, a resolution was sponsored by APEGGA that would provide for an amendment of the By-Laws to allow Registered Professional Geologists and Geophysicists to be eligible to serve on the Board of CCPE. As a result, a report on a proposal to amend the By-Laws will be considered at the semi-annual meeting in November.

On a matter of finances, it was reported that CCPE has completed arrangements for an affinity credit card program through Master Card. The program will be offered to all members of participation Associations. It is anticipated that revenues generated from this program will be used to offset assessments paid by the Associations. □

Quality Assurance Courses

(continued from page 10)

tance of statistically-based knowledge in planning and controlling each process in a production system.

A certificate is awarded by the University to each participant who successfully completes this program. The educational gram in quality assurance management dorsed by the Manitoba Section of the American Society for Quality Control (ASQC). For more information contact: Program Coordinator, Joe Paolucci, (204) 474-8033 at University of Manitoba, or call toll free in Manitoba 1-800-432-1960. □