

The Manitoba Professional Engineer

June

bulletin 85

Manitoba Engineering Makes an Impact at NASA Langley Research Centre



Bristol Aerospace Wire Strike Protection System, mounted beneath nose of helicopter shears cable, in swing test at NASA Langley.

Cover story on page 14.



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Opinions expressed are not necessarily those held by the A.P.E.M. or the Council of the A.P.E.M.

Editorial

The Sons of Martha

If we cast our thoughts back to that happy day when we received our iron ring we might recall that a poem by Rudyard Kipling was part of the ritual—a poem all about the Sons of Martha and the Sons of Mary (that is to say, all about those who work to improve the lot of their fellow-beings and about their fellow-beings who are blissfully unaware of it); a poem about the underlying philosophy of the engineering profession.

We may not have listened very attentively at the time (our interest being focussed on the iron ring that was about to be placed on our finger) but eventually all of us have come to realize that the message in the poem had the ring of truth. Engineers do work to improve the lot of their fellow-man. And, at the risk of appearing immodest, we can admit that we have been spectacularly successful at it over the past 150 years. And that, of course, is why engineers are proud to wear the iron ring. It tells the world that the wearer is one of the Sons of Martha.

In 1987 the engineering profession will celebrate a centennial — 100 years of engineering in Canada. Of course, engineering in Canada did not start precisely in 1887. But that was when the engineers got themselves organized in a formal way, and that was when the Sons of Martha started to get a little (albeit very little) recognition from the Sons of Mary.

Since we are destined to be Sons of Martha and since the Centennial of the Engineering Profession is coming up, maybe the time has

(continued on page 4)

President's Message

Problems Require Decisions... Based on Training and Experience

By R. A. KANE, P.Eng.

From the very beginning of our formal entry into engineering we are given problems to solve, decisions must be made based upon our training and experience. In school the problems almost invariably have a well defined set of rules of analysis and only one correct answer.

Subsequently, our post-graduate training occurs under the watchful eye of a supervising engineer who also issues assignments which, while not as rigid in the analysis of right or wrong, the exactitude of the work is still fairly closely defined.

Somewhere along the way the training, work performance and character propel the engineer into levels of increased responsibility. The questions become more obscure and the correctness of the answers almost impossible to formally grade. The position very often is not so much selecting the correct answer as much as taking the least objectionable alternative. Associated with these sets of compromises comes the ever present danger of having to defend the choice to critics who have the clear advantage of studying the work with the 20/20 perspective of hindsight.

Rarely will anyone ever truly understand the circumstances compelling the decision-maker to do what was done. Furthermore, when looking back, the words "if I had it to do over again..." are often heard.

The tough part is that, with the enormous strides in technology, of super sophisticated computers and increased specialization, the next time almost never is the same as the last time; similar maybe, but different. ►

It is increasingly apparent that Professional Engineers who are compelled to make decisions are finding themselves on more tenuous grounds all the time. I hear talk of life and death decisions which I suppose happens in some design decisions, but quite honestly I believe that these decisions often are spelled out in codes so the decision-making process is minimal. Of more concern to the profession and its members is the cost implication.

Huge sums of money are spent each day by government, business and the public just to live. Involved at every step of the way is an engineering design which may cost more or less to produce, to run, to maintain. In the highly competitive marketplace, where often it is a winner-take-all-game being played, the designer is not afforded the luxury of error. One does not have to look very far to see the carnage that a bad business decision can leave. The capital costs required to implement a new manufacturing process, design concept, type of equipment, or whatever, have consequences. A decision to drop a safety control is desired because it cuts down on up front cost. But will the omission of that safety lead to a larger cost in the long run? We who are deemed to be the technological experts must apply all our knowledge and experience and make the deciding nod. If the decision is right the reward will probably be strictly internal. The great anomaly in this crap-shoot is that no one gets much credit for making the right decision, but be wrong and the consequences can be large.

Engineers like many decision-makers are increasingly concerning themselves with the consequences of the decisions they are asked to

render. Opportunities abound for aggressive flexible individuals. It may at times seem somewhat frustrating, kind of like how Jacques Plante describes his career as an NHL goalie; he said "how would you like to have a job where every-time you make a mistake someone turns on a red light to have 18,000 people boo you?" This may seem like the bane of all professionals. No one cheers when a goalie makes a routine save, the forward accepts or gives a routine pass, the defenceman breaks up a routine rush, but let them miss and the whole building comes down. Our job is much the same, however, just as with the hockey team who does routine things right the ultimate reward is theirs. Hesitate in taking one of the options available and the result will be unfavourable, the taking of an indefensible option yields more frustrations, failure to execute the decision rendered and the whole thing falls apart.

As the cliché says, "it's a great life if you don't weaken."

Congratulations

Alexander Burachynsky, who passed the professional practice examination on the Act, By-laws and Code of Ethics when he enrolled as an Engineering Graduate, decided that when he applied for registration he would voluntarily take the examination again. He did and achieved a mark of 100%.

EDITORIAL (continued from page 2)

come to tell the world something about our accomplishments and our contributions. What better occasion will we ever have to tell the Sons of Mary what the Sons of Martha have done for them. MEPA

Council Meeting

April 8th, 1985

Roger Kane presided over the April 8 Council meeting attended by John Fulton of Thompson, Ted Speers, Bud Christie, Len Bateman, Ted Clarke, Garland Laliberte, Bob Foster and Gwen Kalansky.

The agenda was approved, as were the minutes of the Council meeting that began at 2:30 on March 11. After a few questions Council approved the licences, engineering graduates, transfers, registrations and reinstatements, and the accounts.

As a result of services rendered in the past Bob McKibbin was appointed Chairman of the Annual General Meeting Committee with John Miller and Bruce Menlove added to the Committee for the same reason.

Council also appointed an Ad Hoc Committee to 'develop definitive guidelines regarding the use of the seal,' with Bill Newton as Chair-

man, and committee members Ted Speers, John Fulton, Bob Petri and Les Oakes.

A letter from Professor Cahoon requesting an award for mechanical engineering was referred to the Awards Committee.

Ted Speers reported on the forthcoming Premier's Design Awards and Council gave approval to participation and funding.

Council approved, with amendments, the Minutes of the special Council meeting of March 11, 1985, commencing at 1:00 p.m. and spent considerable time discussing the agenda item that arose from those minutes — the publication, or otherwise, of what had transpired at the meeting. With one abstention Council approved the publication in the Bulletin of a notice, the wording of which was approved by Council.

The meeting adjourned at 8:15 p.m.

May 13th, 1985

By B. B. Brown, P.Eng.

President Roger Kane presided over the Council Meeting. Ten members were in attendance. The Minutes of the April 8th, 1985 Council Meeting were reviewed and accepted with minor changes. Five

licences, one transfer and five registrations were reviewed and approved.

A great deal of time was spent reviewing the licences and registrations.

The Council then reviewed a presentation by Mr. Scouten, representing the Practice and Ethics Committee. Their position is that a statement made by Mr. Bateman regarding his position in the Manitoba Hydro incident and reviewed by the P & E Committee, be published in the Bulletin. Council decided to table the motion put forward approving the recommendation of the P & E Committee until all parties involved had an opportunity to digest the material.

Council then moved on to Accounts of the Association. They were accepted as stated.

There was a review of the Executive Committee Minutes of April 25th, 1985. The topics discussed included the Terms of Reference for the Safety in Engineering Practice Committee, the retirement function in honour of Mrs. Loreen Dunklee, Ad Hoc Committee on the Stamping of Shop Drawings, A.P.E.M. Annual Meeting, the Dauphin Bridge and Medical Gas Piping.

The final draft for Safety in Engineering Practice Committee was reviewed and some adjustments were made to the document before the amended draft was accepted. Mr. Frank Roberts was appointed Chairman of the Committee.

Professor R.A. Johnson submitted a final draft of Admission Standards, prepared by the Admissions Review Board. Some amendments were made. Only section 3 was left to be considered at the next Council Meeting.

Mrs. Dunklee's retirement function was discussed and final arrangements were being completed. The Association is extremely grateful to Mrs. Loreen Dunklee for her dedicated efforts through the years.

Mr. W. Mackenzie commented

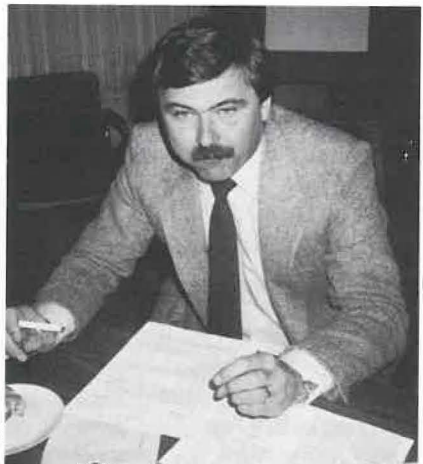
briefly to Council on the Ad Hoc Committee for the Stamping of Shop Drawings. A concern forwarded to the committee was who should be responsible to stamp shop drawings. Both the consultants and the fabricators felt the other party should be stamping drawings. The consensus is that much discussion and objective thought will have to go into this problem before presented to Council. The list of individuals on this committee was ratified by Council.

Medical Gas Piping was next discussed. The building code does not specifically address medical gas piping. The concern is that presently there is no section in the building code that insists these systems be designed by Engineers.

The Chairman of the University Liaison Committee has resigned. Pat Karras-Spangelo was named the Chairman.

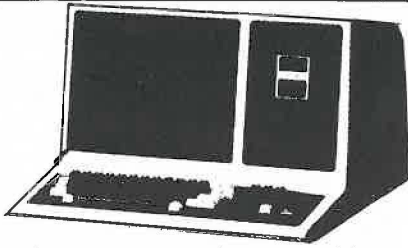
Finally the By-law 45 Fund of A.P.E.M. was transferred to the Bank of Montreal Branch in Eaton Place.

The meeting finally adjourned at 9:20 p.m., six hours after commencing.



Bulletin Reporter Craig Nelson.

Computer Benefits



By J. W. Bogan, P.Eng.

There are several ways that you, as an engineer might be able to use a computer. There are the obvious tasks such as spreadsheets and word processing which would normally be done by hand, which by using a computer may save a few dollars or some time. In these cases the savings would be marginal.

The real advantage of a computer lies in its ability to perform functions which you would like to do, but cannot. These jobs might include making significant reductions in the weight of a structure by considering several options, being able to produce estimates at three times your existing rate or by doubling your productivity. Clearly, the rate of return on computerization would be significant and gains could be realized immediately.

Recognizing that your funds are probably limited, you wouldn't want to hire more people to write programs or pay more than \$5,000.00 for the hardware. However, you should also recognize that there are limits. Programming can be a difficult task and is best left to programmers. Programmers will be pleased to leave engineering to engineers. You should not underestimate the amount of work required to come up with a decent program.

Considering your budget limitations, don't expect full design features on the screen, rotating and

zooming with drafting accuracy and automatic structural design to be available. Programs for this are available, but they have not advanced to the point where they are fast enough or easy enough to use to make them valuable.

The most useful applications include quotations and budgets. A spreadsheet program with data base retrieval capabilities can be used to organize materials and labour, evaluate alternatives and provide a fast print-out. You will have to spend time to learn the package, but the returns are immediate once past the learning stage.

Word processing can aid in preparing your own reports; take this one for example. How many times have you had to change what you think is the final typewritten copy which someone has laboured over. With a word processor you can easily make changes and make it perfect. It's easy to do paperwork when you don't have to backspace and lift off an incorrectly typed letter. If you don't type, it would be worthwhile to learn. Those who believe in the two finger hunt-and-peck method soon discover it is not an efficient method for using a newly acquired computer. Your attention will be diverted to finding the correct key rather than what the information it is being used for. Experienced users can type faster than they can write and the word processor allows changes to be easily made. Copies can then be quickly produced.

The computer can be made to play a real part in an engineer's life without getting too fancy.

Members' Comments on Survey Form Indicate Professional Development is a Lively Topic

By John Bachmann, P.Eng.

Almost half the members who responded to the Professional Development Committee's 1984 survey felt strongly enough about the topic or the survey to volunteer some remarks on the last page of the questionnaire. These comments ranged in length from one-line notes of encouragement to a 900-word, typed dissertation complete with a discussion of the semantic nuances separating the term "skills" from the term "knowledge". There were also a few replies that got downright nasty! But more on that later....

Certain concerns were mentioned repeatedly by responding members. The nine most common of these were as follows:

1. *It is not possible (or at least extremely difficult) to set meaningful standards due to the tremendous diversity of work being done by engineers.* Some respondents stated that their area of specialization was so esoteric that they themselves would be the only ones in the province qualified to set standards. Others voiced concerns regarding the impact of mandated upgrading requirements on the many members operating at management levels who are only indirectly (if at all) involved in "engineering" work in the classical, technical sense.

2. *A PD program, if implemented, must be voluntary, not mandatory.* There was considerable support for the setting of PD **guidelines** but strong opposition to **compulsory standards**. This opposi-

tion was based either on practical considerations such as those identified in point one above or on philosophical grounds (there were several references to Big Brother and "1984" in this group of responses).

3. *There is a need for (continued) co-sponsorship of programs on topics of general interest, such as microcomputers and engineering law, with academic institutions such as the University of Manitoba.* While generally opposing any moves towards mandated standards, many respondents felt that the Association would be providing a valuable service if it could facilitate the offering of general interest programs specifically targeted at engineers.

4. *Any PD program, but especially one that is mandatory, must provide activities accessible to engineers situated outside of Winnipeg.* Suggested solutions to this very real problem included the development of correspondence programs or the holding of seminars and workshops in some of the larger centres such as Thompson.

5. *Professional development is the responsibility of the individual engineer and should not be a concern of the Association.* Many of those supporting this view stated that engineers who do not keep up with advances in their respective fields will be rejected by the marketplace, making any monitoring of PD activity by the Association redundant.

6. *More non-technical training is required in the engineering undergraduate program.* Although a number of respondents made comments to this effect, there did not seem to be much agreement as to what non-technical topics should be covered. Some cautioned that more non-technical material could only be introduced into the curriculum by de-emphasizing technical courses — a result which they found unacceptable.

7. *There is a need for evening and weekend continuing education programming for engineers.* Many members said that it is difficult for them, especially those who are self-employed or working in small businesses, to take time off during business hours to attend PD activities.

8. *Leave technical upgrading to the technical societies.* Many of these societies have active PD programs for their members. It was suggested that the Association publicize some of these offerings and perhaps co-sponsor particular programs with some societies.

9. *Employers will not adequately support PD activities until standards are set by the Association.* These responses most likely came from engineers who have received little or no support from their employers (fortunately a small minority of the membership according to the responses to question 11 on the survey).

In addition to these most common responses, there were many other comments and suggestions too numerous to detail completely here. But a few deserve highlighting.

A handful of respondents would concede to the implementation of a PD program **only** if the alternative was some **imminent** form of

government control. One member summed up his opposition by paraphrasing a recent prime minister to the effect that "the Association has no place in the Board Rooms of the nation."

The nasty responses? Well, a small number of members were not in the least impressed with the wording of the questionnaire. One member lamented that "a person of intellect (could not be found) to write the survey." Another remarked that "this very poor questionnaire should not be allowed to impede the very desirable goal of professional upgrading."

The Professional Development Committee would like to thank all of those who took the extra time to forward their comments. We assure you that your thoughts will be considered as the committee moves to put a program into place.

New Members

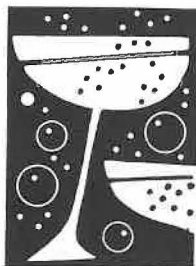
P. Beesley; G. J. Gouw; H. M. Huang; V. S. Krishnan; L. S. Kryski; J. T. Linnen; W. L. Lozinski; S. G. Woodman; D. B. Davidson; J. L. McLean; N. L. Peters; J. M. Roll; D. J. Seargeant; B. J. Platzer; J. R. Potvin; B. H. Allen; S. Balakrishnan; A. S. Khan; M. G. Khan; G. B. Murray; C. P. Chung; D. J. A. Murdoch; G. O. Ouellette; M. Z. El-Gamel; J. E. Elias; J. M. B. Laroche; L. A. Bermel; Y. D. Sharma; J. D. West; J. B. Froese; I.A.F. Hall; D. E. Berry; S. J. Chromy; A. R. Miltimore; G. I. Neave; P. A. Reimer; K. Anspikian; K. F. Chow; R. M. Diduch; D. W. Heath; J. R. B. Johnston; W. G. Krahn; P. J. McShane; D. W. Harvey; W. R. Wiesner; T. C. Algeo; D. W. Corkal; K. Li; M. R. Taylor; R. M. Zulkoski.



**OH CANADA
AS SEEN BY A
MANITOBA PROFESSIONION**



New Member Reception



The Association's new member reception was held at the Wildewood Club on April 18, 1985, a spring day that foretold fine Manitoba summer days to come. President Roger Kane officially greeted 29 new members, introducing them to the Registrar, the A.P.E.M. office staff, and the Council members present. Roger presented a brief dissertation on the workings of the Association. He stressed that Association involvement by new members, whether Committee work or other, should be given serious consideration. Mrs. Loreen Dunklee furthered this by "inviting" a number of new members to join several Association Committees. The reception was visibly successful; those present enjoyed not only savoury appetizers but varied and pleasant conversations as well.

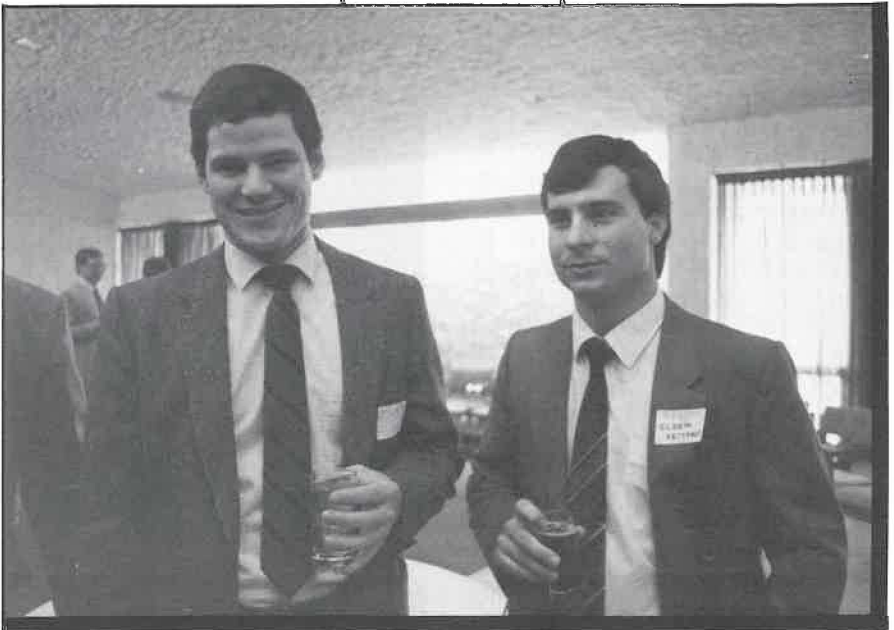
K.J.H.



Councillor Garland Laliberte and new member Blaine Murray at the recent New Member Reception.



New Members.....



Cover Story: **Wire Strike Protection System**

Every year a few dozen helicopters around the world are destroyed, often with fatal consequences, by colliding with mechanical, electrical and communications cables. The aerospace industry and armed forces, and in particular the U.S. Army, have expended millions in search of a solution to this problem.

In response to this need, Bristol Aerospace of Winnipeg developed its Wire Strike Protection System (WSPS). The system is designed to provide the helicopter with a significant degree of protection against impact damage from horizontally strung mechanical, electrical transmission and communications wires and cables.

The WSPS consists of an upper cutter assembly, lower cutter

assembly and a windshield deflector which serves to strengthen the cockpit structure and guide cables into the upper cutter. The system is maintenance free and has no moving parts. It is light weight and easily installed.

The system capability has been successfully demonstrated during tests conducted by the Canadian Military, the U.S. Army and the Applied Technology Laboratory at the NASA Langley Research Center.

Recent field incident reports have also demonstrated the effectiveness of the WSPS. On many occasions the Bristol WSPS has already proved to save men and equipment.

The WSPS is FAA certified for many civilian helicopters and is also in use on military helicopters around the world.

Licencees

G. S-W Cheung (Ont.); R. A. Donally (Ont.); G. V. H. Francis (Ont.); D. A. Houston (Alta.); G. S. Iverson (Ont.); B. R. Pluhator (Sask.); C. S. Seaby (Ont.); Y. W. Sokolyk (Ont.); D. L. Sutter (Maine); Y. Sze (Ont.); G. J. Gibson (Alta.); R. J. Maynard (Alta.); T. Shen (Ont.); P. F. Ast (Ont.); G. C. Bellamy (Ont.); S. W. Hagemoen (B.C.); P. Kozicki (Ont.); S. L. Lackey (Alta.); R. B. Ling (Ont.); S. G. MacDonald (Que.); D. Pristach (Ont.); D. W. Zilinski (Alta.); N. M. Engleman (Que.); R. E. Pelkey (Alta.); H. R. Rudolf (Sask.); P. G. Stipanitz (Ont.); D. P. Allison (Ont.); R. A. Baynit (Ont.); R. C. Bremer (Michigan); J. C. Burford (Alta.); S. H. Gebler (Illinois); J. G. Gole (Alta.); H. J. Hettlinga (B.C.); W. E. Large (Ont.); W. L. Miller (Alta.); E. F. Vickers (Ont.); C. Fung (Ont.); H. M. Ragetlie (Ont.); L. M. Sargent (Iowa); T. J.

Varkony (Ont.); R. J. Belasky (Ont.); G. L. Colborne (Sask.); P. J. Cruikshank (Ont.); G. R. Lavoie (Que.); N. L. Leipziger (Ont.); J. A. Patra (Alta.); Z. L. Szeliski (Que.)



Studios Reporter Jerry Bogan.

Bilingualism

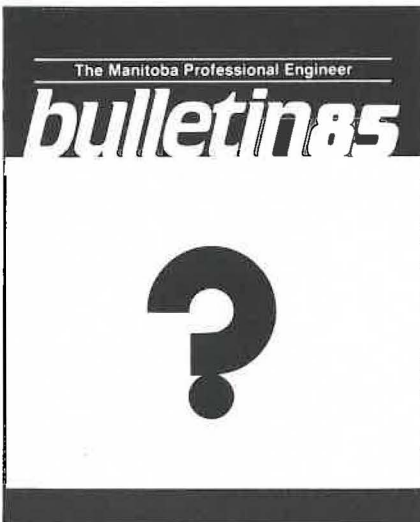
An in-depth consumer study commissioned to determine the need for a regular inventory or audit program dealing specifically with Colombian imports, processed or unprocessed, cycled or recycled, revealed a potential shortage, so a commission was set up to deal with the possible shortage and to recommend solutions, and input was invited from interested consumers.

A spokesperson for the commission was quoted as saying a framework for annualizing would be established which would prioritize the data base, or even prioritize the equivalent, the results of which would be studied and analyzed and a flow chart would be produced. A sub committee was set up to establish guidelines, and the Vice-Chairman was quoted as saying that the members had definitive expertise for the work involved, although he would not estimate or guesstimate how many person-hours might be incurred in setting guidelines.

The Chairperson indicated she was very excited about the innovative program, was anxious to access the data but would not speculate on the results. One impartial observer, a consumer of the import in question, said he hoped the scope of the study would not get out of hand and that the results would not be in the realm of obsolescence by the time they were available, and he pointed out that an acute shortage could occur before the commission had come to grips with the problem.

It was felt that the socio-political impact will interface with the macro-economic performance in establishing the methodology criteria. Systems variability analysis will assess the environmental and health aspects of the concept. A suggestion that the matter be privatized was diarized and then tabled.

Translation: Put coffee on the grocery list.



Covers

The Bulletin Committee would be pleased to receive pictures and accompanying texts for possible use in future issues.



The A.P.E.M. Tour, Carman — June 6, 1985

By Bruce Bird

They say you drive for dough and putt for show. Well, there wasn't much dough, but that didn't deter Sean Kavanagh from taking low gross honours (78) at the Annual A.P.E.M. Golf Classic — held this year on the beautiful 18 hole layout at Carman. Sean's name will be inscribed on the Landon Trophy alongside other illustrious low gross winners of the past. One stroke back, in second place, was Frank Duma with Lorne Holden only two strokes away in third place.

In the low net class, Merv Robinson and Neil Harden tied at 68. Merv was awarded first place on a count-back and was awarded the Sullivan Cup. Second place was shared by Tony Bork, Bruce McPhail and Bob Harris, all tied at 69.

Even Jack Nicklaus would have been tested to match the longest drive of the day — claimed by Edgar Rivalin. Bill Mackenzie was only a couple of yards short of Edgar's drive (on his second shot). Don Mulder and Manfred Samp displayed their talents with closest to

the hole shots on the front and back nine, respectively.

Francis Wayne had low gross honours on the front nine and Howard Procyshyn overcame his frustrations and ended up with low gross on the back nine.

While nursing a cool drink and digesting a hearty steak dinner, Carl Wiebe was heard to remark that Mary Queen of Scots was beheaded by the English. The Scots then retaliated by inventing the bagpipes, curling and the game of golf, thus frustrating the world ever since. Mike Coyne, victimized by the wrath of the Scots, but not to be discouraged, was awarded the Most Honest Golfer prize. The fairways at Carman Golf Club may never be the same.

Many of the "golfers" blamed their high scores on the wind — which blew relentlessly in their faces almost every hole. (The writer recalls at least two holes where a tailwind was encountered.)

The good people at the Carman Golf Club were friendly hosts which was much appreciated by the golfers and the sports committee. The Sports Committee extend a very large "thank you" to all those who donated gifts and prize money for this event.

The next A.P.E.M. sporting event will be the Annual Bonspiel.

Note: A navy cardigan with a Clear Lake Tamarack insignia was left at Carman and may be claimed at the A.P.E.M. office.

Annual Fees

Please pay your membership fee by June 30th so that your name will not be removed from the register.





Sports Committee Chairman Tony Bork congratulates Landon Cup Winner Sean Kavanagh.



Low Net Winner Merv Robinson gets a handshake and the Sullivan Trophy from Tony Bork.

Publications Received

The Association office is in receipt of two publications prepared by A.P.E.G.G.A. entitled "A Guide to Selecting a Consultant" and "Consultant Fees for General Engineering Assignments".


These two publications basically cover the same areas of consulting engineering practice as the A.P.E.M. publication "Guide for the Engagement of Consulting Professional Engineering Services".

The Consulting Engineers Committee of the A.P.E.M. has recommended to Council that the two A.P.E.G.G.A. publications be received as information and be available in the Association's library for review by interested members. The Consulting Engineers Committee has further suggested to Council that, at this time, there is no requirement to update the A.P.E.M. publication "Guide for the Engagement of Consulting Professional Engineering Services".


*Submitted by
A.P.E.M. Consulting
Engineers Committee*

Engineering Graduates

D. M. Egan; M. H. Mogan; M. L. Zahn; G. W. Ferguson; J. F. Horbay; J. G. Bramer; W. C. Gilrairie; C. N. Kohuska; P. M. Schueler; E. Y. Ahn; J. A. Kreml.



The
essence
of
professionalism
in
engineering
is
embodied
in the
**Engineering
Code of
Ethics**



We regret to record the passing of E. J. Conway, P.Eng., George Schultz, P.Eng. and A. S. Shechter, P.Eng.

**The purpose of this Association
is to protect the public of
Manitoba.**

LOREEN DUNKLEE

—down through the years....



Loreen Dunklee is retiring at the end of July after 30 years of dedication to our Association. She is off to Victoria to enjoy the mild winters and to pursue some well earned leisure activities.

GOOD LUCK, LOREEN!



The Association was established in 1920 to protect the public of Manitoba. Its purpose is not now and never was to look after the interests of its members.