THE MANITOBA
Professional Engineer
October, 1993
APEM

APEM

ASSOCIATION OF PROFESSIONAL ENGINEERS OF MANITOBA

74th ANNUAL GENERAL MEETING

SATURDAY, OCTOBER 23, 1993
HOLIDAY INN CROWNE PLAZA

AGENDA

8:30 a.m. **Breakfast Meeting**
Speaker: Dr. Gilles Leclerc, Project Engineer, Space Technology Section, Canadian Space Agency
Topic: Initiatives, Challenges & Opportunities Space Technology in Canada

8:30 a.m.- 10:00 a.m. **Registration**

10:00 a.m. **Official Opening – President Carl E. Anderson, P.Eng.**
Notice of Meeting
Introduction of Councillors and Guests
Minutes of the Annual General Meeting of October 30, 1992
Declaration of Councillors Elected
Auditor's Report
Appointment of Auditors
1993-94 Budget
Nominating Committee Appointments
By-Law Amendments
Reports from Committee Chairpersons
Greetings from CCPE and other Associations
Induction of the 1993-94 President

6:30 p.m. **Dinner and Cabaret Nite**
Carleton Club - 280 Fort Street
(Free parking in Trizec Parkade)
Presentation of APEM Awards
Featuring: "The Magic of Brian Glow"

(Bring this Agenda to the Meeting)

Outstanding Service Awards

The Outstanding Service Award recognizes outstanding service rendered to, or on behalf of, the Association of Professional Engineers of the Province of Manitoba by a member of the Association.

Council is pleased to announce that K.A. (Ken) Buhr and R.C. (Rudy) Isaak have been selected to receive the Outstanding Service Award at the 1993 Annual Meeting dinner and "Cabaret Nite". The two recipients have served on many committees of the APEM and both are Past-Presidents of the APEM and ACEM (Association of Consulting Engineers of Manitoba). K.A. Buhr has recently completed a three-year term as CCPE Director.



K.A. (Ken) Buhr, P.Eng.

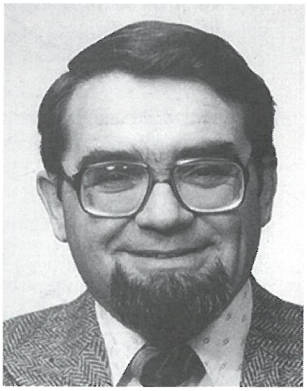


R.C. (Rudy) Isaak, P.Eng.

Honorary Life Membership

Life Membership, Honoris Causa, is granted by unanimous decision of Council to a member who has, in the opinion of Council, rendered meritorious service to the Association; who is no longer practising on a full-time basis as a Professional Engineer; who has preferably been continuously a member for not less that 35 years; and who has attained the age of 65.

Council is pleased to announce that K.M. (Ken) Jardine is the 1993 recipient of the Honorary Life Membership. Ken has served on many committees and is a Past-President. His most recent major accomplishment for the APEM is completion of the Admission Review Manual which has been in progress for a number of years. Mr. Jardine will receive his award at the 1993 Annual Meeting dinner. □



K.M. (Ken) Jardine, P. Eng.

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(204) 942-6481 Fax (204) 942-3718

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

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

Introducing Linda Hazelwood

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

Linda Hazelwood is APEM's newest staff member. Linda started work with APEM in April, 1993 and her main involvement is with the Investigation Committee. She also works with the Sustainable Development, R&D and Safety Committees, as well as other Ad Hoc Committees.

Linda comes to us from England, where she and her husband built their careers and raised a son. Linda worked in the Head Office of General Accident Life Assurance for 14 years, finishing her career there as Marketing Officer. She is currently an Associate Member of the Institute of Marketing.

In her spare time, Linda enjoys reading and swimming. After arriving in Canada only six months ago, we're hoping that the Hazelwoods are enjoying their new life in Winnipeg, heavy rains and all. One can only wonder: has anyone told them about Winnipeg winters, yet? □



APEM's newest staffer, Linda Hazelwood.

LICENCES ISSUED IN JULY & AUGUST, 1993

S. Basappa (AB)
J. Goldschmied (AB)
C.J. Kemp (BC)
P.S. King (AB)
R.R. Lunt (MA)
M.C. O'Krancy (SK)
J.D. Osborne (SK)
M.P. Patel (ON)
B.F. Roberts (ON)
G.S. Rahil (SC)
R.L. San Giacomo (NY)
W.T. Vaughan (BC)
G.R. Zajiczek (AB)

ENGINEER-IN-TRAINING MEMBERSHIP JULY & AUGUST, 1993

K.R. Berry
S.M. Bias
G.P. Burgess
D.A. Coleman
S.M. Conod
P.A. Damnjanovic
W.G. Dang
E.R. Fidgeon
M.P. L'Arrivee
A.P. Lehman
P.G. leMaistre
T.W.Y. Ma
H.D. Maxwell
T.M. Miles
B.G. Milne
D. Pellegrino
S. Seremet
D.I.B. Stewart
P. Stumpf
G.K. Swedlo
J.A.N. Valdivia
A.L.N. Yap
C.W. Yaschyshyn
C. Zhou

NEW MEMBERS REGISTERED JULY & AUGUST, 1993

F. Amjadi
G. Bistyak
J.D. Close
R.H. Cook
D.M. D'Amour
D.G. Davies
J.R.C. Doering
P.B. Elliott
R.H. Gervais
J.P. Hansen
G.A. Harasym
I.R.A. Harrington
A. Jindal
M. Kapila
R.D. King
B. Kovacs
D. Lin
T.C.A. Loat
S.M. Peterson
G.K. Piasta
E.G. Plett
N.A. Prefontaine
D. Rajamani
S.A. Rana
K.P. Ratzlaff
D.R. Redford
W.T. Schellekens
N.D. Smith
B.E. Stewart
A.D. Wasnea
H.G. Wiber

MEMBER DEREGISTERED JULY, 1993 FOR NON-PAYMENT OF FEES

E.J. Faraci

Iron Ring Fall Ceremony

There will be an iron ring ceremony for Camp #8 on Tuesday, November 9, 1993, commencing at 8:00 p.m. in the Tartan Room, 2nd Floor of Pembina Hall, University of Manitoba Campus.

For additional information, please contact Dave Sexton, P.Eng., Camp Secretary at 945-7488.

Those wishing to be obligated should contact Mr. Sexton as soon as possible.

WITH DEEP REGRET THE ASSOCIATION RECORDS THE PASSING OF:

J.W. Meagher* R.J. Wright

** We did not learn of Mr. Meagher's passing until July 22, 1993. By this time, the August issue of the MPE had been published and in it, Mr. Meagher's name appeared in the list of de-registered members. The Association sincerely regrets this occurrence.*



WE HAVE LOST CONTACT. MAY WE HAVE AN ADDRESS?

M.L. Brownstone
P.J. Healy
G. Maretzki

President's Message

C.E. Anderson, P.Eng.



Book-Ends

In my first President's Message I discussed the **Long Range Planning** process that APEM has initiated and what we planned to achieve. Subsequent messages dealt with concerns regarding **Annual Dues**; the **1993 Annual General Meeting**; and **Women in Engineering**. In this, my final President's Message, I'd like to book-end the series by again addressing the Long Range Plan with a brief review of what Council, the Committees and Staff have achieved over the past year. The key Action Plans that were identified in the 1992-93 updated Long Range Plan were:

- Develop terms of reference for Council.
- Develop position descriptions for staff.
- Establish a comprehensive admissions policy.
- Implement an integrated office computer system.
- Develop a financial policy and financial management system.
- Re-evaluate the purpose and requirements of committees and develop terms of reference as required.
- Increase the use made of APEM participation by CCPE.
- Registration of geoscientists.
- Resolve the issues regarding the proposed Engineering Technology Act.
- Improve enforcement procedures.
- Establish a chapter system.
- Establish a policy on self-interest activities.
- Improve the profile of APEM among the membership.

The majority of the Action Plans have been addressed in the 1992-93 term and most will continue into the 1993-94 term and beyond as they evolve and new issues related to each are identified.

In brief, the major achievements related to the above-noted Action Plans have been:

- Position Descriptions have been developed for all staff.
- The Committee established for the development of a revised Admissions Policy has submitted a draft to Council for review and finalization.
- A consultant's report and specification for an integrated office computer system has been completed and computerization of APEM's offices will begin in the 1993-94 term. A high priority is the establishment of a management information system for better financial controls.
- The first draft of a revised Engineering Profession Act, which includes the criteria for registration of Geoscientists, has been completed and is under review by APEM's legal counsel.
- An open dialogue has continued with MANSCETT.
- Formalization of the linkage between the Association and the chapters at Thompson and in the Westman area is well underway and liaison has been established with the Portage La Prairie Engineering Group.
- Initial work has begun on the issues of self-interest activities and APEM's profile with the membership.

Your new Council for 1993-94 will meet shortly after the 1993 Annual General Meeting to review the Long Range Plan; assess the achievements; establish priorities for the coming year; and revise the Plan and the Action Plans, as applicable. I look forward, in my role as Past-President, to continuing to assist in facilitating the Planning Process.

In closing, I'd like to thank Staff and Council for their assistance and for standing-in for me on numerous occasions while I globe-trotted in my business.

For me, it's been an **Eye-Opener** of a year. The complexities of **Self-Governance** have provided, and will continue to provide, many challenges, as the Association continues to work towards meeting its mandate as set forth in our **Mission Statement**. □

To serve and protect the public interest by governing and advancing the practice of engineering in accordance with the Engineering Profession Act of Manitoba.

Letter to the Editor

I was pleased to see that the Association has dropped the Residency Requirement for Membership. It has always been my contention that provincial barriers have, in some instances, been more onerous than international barriers.

When the Associations of British Columbia and Ontario dropped their barriers, I had hoped that all Canadian provinces would follow the trend.

I am pleased to see that Manitoba has.

D.E.M. Allen, C.M., P.Eng.

Engineers in the News

Garland Laliberte, Dean, Faculty of Engineering, University of Manitoba has been elected President-Elect of the Canadian Council of Professional Engineers. □

Canadian Engineering Memorial Foundation Thanks Manitoba Engineers for Donations

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

The Canadian Engineering Memorial Foundation wishes to thank the members of APEM for their generous contributions to date.

So far, APEM members have donated over $9,500 (almost $3 per member) to this very worthwhile cause.

The Foundation was established in 1989, following the deaths of 14 women - including 12 engineering students - by a gunman at Ecole Polytechnique.

The Foundation's goal is to establish a $1 million endowment fund. To date, over $725,000 has been raised. The interest income from this money has been used to establish three scholarships, one prize and one award: a $5,000 scholarship for a female student entering each of first year of engineering studies, fourth year of engineering studies and post-graduate engineering studies; a $10,000 Engineering Students Project Award; and a corporate award for a company demonstrating leadership in the promotion of women engineers. (Manitoba's own Wardrop Engineering was the first recipient of this latter award in 1992.)

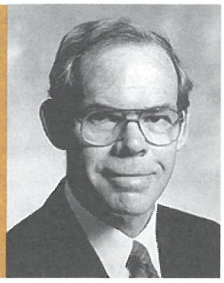
The Foundation would like to offer more scholarships and awards. This will only be possible with the receipt of additional donations.

APEM strongly endorses the objectives of the Foundation, and encourages your support.

Please send your contributions to:
Canadian Engineering Memorial Foundation
401-116 Albert Street
Ottawa, Ontario K1P 5G3

The Foundation is registered as a charitable organization, and will issue receipts, upon request, for all donations of $25 or more. □

CCPE President's Message



Dr. Robert E. Burridge, P.Eng.

Engineering Education: How are We Doing?

A parable:

A motorist made a left turn into oncoming traffic and smashed into another car. The irate driver of the second car yelled, "Why didn't you signal?" Without hesitation, the first motorist replied, "Why, I always turn here."

Change is the catchword of our time. Far-sighted organizations, be they businesses, governments or public institutions, have always planned for change. But in recent times, and particularly since the onset of the present economic recession in the late eighties, change has become a necessity for viability, even survival for many organizations. Ugly terms like down-sizing, restructuring, and lean-and-mean dominate the pages of business articles and government reports. Seminars abound on how to manage change.

We have come to accept that the economic turmoil we are experiencing - and "we" includes every citizen of our country - is not just another trough in the business cycle, but a fundamental shift in the nature of economic activity. Many of the activities which have ceased and the positions removed will not return with better times. There will be new and different enterprises requiring people with new and different skills, training and education. Particular and general knowledge and flexibility will be required at most levels of organizations, and the competitive business environment for many will be international. If our standard of living is to be sustained, we must be as competitive in the new economic world as we were in the diminishing resource-based economy of our past.

What are the implications for engineering education, and what are the processes by which changes are effected?

The Canadian Engineering Accreditation Board (CEAB) of the CCPE is the body charged by the engineering profession in Canada with developing minimum criteria for undergraduate degree programs, and, through a process of direct investigation, with assessing the programs vis-a-vis those criteria. The criteria are designed to ensure that engineering graduates are prepared with an education satisfying the academic requirements for professional engineering registration throughout Canada. Through the CEAB, the essential academic elements in the formation of a Canadian professional engineer are specified by the profession. As a matter of interest, the 1992 Annual Report of the CEAB lists 160 programs currently accredited in 61 different disciplines at 33 post-secondary institutions.

The criteria have evolved very substantially since the Board was established in 1965, but the fundamental curricular elements remain the same - Mathematics, Basic Sciences, Engineering Science, Design and Complementary Studies. Assessments emphasize the program environment and the quality of the educational experience. Our accreditation process is highly regarded in Canada and internationally. Yet, at this time of great change in the social and commercial environment in which professional engineers practice, thoughtful engineers and educators may have concerns and questions.

Are the fundamental curriculum components of an engineering education presently specified appropriate for the profession in the future?

Does the 3-1/2 years specified in the minimum curriculum content criteria allow sufficient room for creative people in our engineering faculties to experiment with and develop new initiatives?

> **"I am concerned that the incremental changes which have served us well in the past may be inadequate to the shifts we are now experiencing."**

Should we expect more instruction in such areas as communications, management, public policy, macroeconomics and finance? If so, what are the trade-offs?

Do the present curriculum content, teaching methodologies and faculty preparation lend themselves to the development of leadership and teamwork skills and sufficient exposure to engineering practice?

How do we include more effectively in engineering education a vital awareness and understanding of the society which we serve and the impact of engineering on it?

To what extent should a familiarity with foreign languages and cultures be included in an engineering education?

Should public welfare and safety and essential concepts of sustainable development and environmental protection receive greater emphasis?

In summary, what are the absolutely fundamental components of an engineering education? What are the additional important components, and what are the responsibilities of undergraduate programs, graduate programs and the practising profession in the education of a professional engineer?

Our Accreditation Board continues to examine these and other issues. In his comments in the 1992 CEAB Report, the Chair of the Board observed that "the changing environment of the engineering professional makes it mandatory that the CEAB be constantly alert to the changing educational needs of the profession". He also refers to revisions that "will be important in allowing a greater degree of flexibility in programs and will encourage a greater degree of innovation."

I am concerned that the incremental changes which have served us well in the past may be inadequate to the shifts we are now experiencing. Perhaps it is time for a "zero-based" examination of engineering education, taking into account the ideas contained in the CCPE/NCDEAS (National Committee of Deans in Engineering and Applied Science) report on the Future of Engineering Education in Canada and the fundamental issues discussed earlier in this article.

Given the final record of the CEAB and the quality of our Engineering Faculties, and with the concern and support of the profession, we are not in immediate danger of turning left into the traffic without signalling because we have always done it that way; but we must continue to look around us and ahead, and anticipate the needs and opportunities of a changing world. □

A Dangerous Business

By: D.R. St. George, P.Eng.

In one of my first agricultural engineering courses at university, the class was shown a very graphic film depicting farm machinery accidents. Overall, the film left the class with an appreciation for the hazardous practices that farmers sometimes use. Unfortunately, things haven't changed much since I viewed that film in 1981. Currently, farming is considered to be the most hazardous occupation in North America. The accidental death rate for farmers is 20% higher than the national average. In Manitoba, between 1985 and 1992, 49 persons were killed while pursuing activities related to farming: an average of six per year. The average number of fatalities for all other industries in Manitoba combined is 10 fatalities per year.

Certain aspects of the farm safety issue rest with the designers and manufacturers of farm equipment and systems. However, a large percentage of the farm safety issue rests with the farmer. First, farm equipment and systems must be designed to minimize potential hazards, tested to meet existing safety standards and marketed with proper safety features (shields, marking and instructions). These aspects are regulated by the manufacturing industry, standards groups and the legal profession. The weakest link in the chain is the farmer, who is not regulated to any degree. To reduce the chance of an accident, farm equipment or systems must be maintained and operated in a safe manner. This is achieved by adequate training, good physical condition and a positive mental attitude. In general, these aspects of the farm safety issue are not dealt with by existing labour legislation.

Based on the weak link in the farm safety chain, Manitoba Hydro initiated a program to

Continued on page 17

The Engineering-Awareness Project

By: L. Wurtak

"When I was young, I thought engineers drove trains, but now I have a better idea of the kinds of jobs engineers do. They solve problems and design things."

This statement is a reflection of one student's experience from participating in the Engineering-Awareness Project. This initiative was a co-operative effort of APEM, the Fort Garry School Division, and the University of Manitoba's Faculty of Engineering, Mini-University, and Institute for Technological Development.

The purpose of the project was to enhance both student and teacher understanding of the application of science and the inter-relationships among science, technology, and society. The project design provided male and female students and teachers with an opportunity to develop an awareness of how engineering affects their everyday lives, and to view and participate in demonstrations of equipment and instruments used by engineers.

The project contained both a teacher and a student component. The teacher component was funded by APEM. One teacher from each of 11 elementary schools participated in a morning "Science, Technology, and Society" (STS) workshop conducted by Larry Verstraete, science leader from the Fort Garry School Division. During the afternoon the teachers and 66 selected students participated in the Engineering- Awareness Project at the Faculty of Engineering.

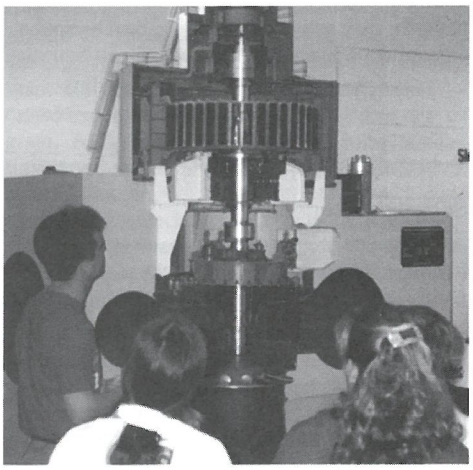
Part I - The Teacher Component

What is STS? Why incorporate STS into the elementary science program? How can it be done?

The teachers explored STS during the morning of the Engineering-Awareness Project, with presenter Larry Verstraete. Three questions were asked: using newspaper articles, debates, role-play and lots of discussion, teachers grappled with an STS issue. In brief, here are some of the main points covered in the morning.

What is STS? Science, Technology, and Society means bridging the gap between science in the classroom and science outside the classroom. STS links scientific concepts and principles to their applications and issues in everyday life.

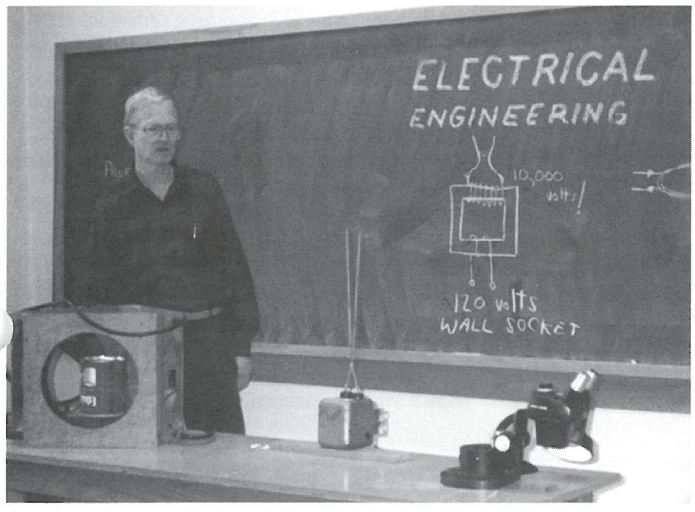
Why incorporate STS into the science program? By making STS links, science becomes real for students. It encourages students to become science-literate citizens of the future.



How can it be done? Bringing the "real" world into the classroom, making conscious links between everyday experiences and the scientific concepts covered in the curriculum... these are the methods of STS. One approach emphasized in the morning used issues in newspapers as one way of making STS connections; but there are other ways - as many different ways as there are teachers.

Part II - The Student and Teacher Component

On June 1, 1993, 66 selected elementary school students (Gr. 4,5,6) and 12 teachers attended the University of Manitoba Faculty of Engineering for a half-day program. Participants had the opportunity to work with an engineering professor and a graduate student at each station, where equipment and instruments used by engineers were demonstrated. The following is a description of several demonstrations:



Electrical Machines Lab - a micro-chip was exposed and a magnified view of the chip displayed. A tin-can motor was demonstrated to illustrate an induction motor using a rotating magnetic field.

Geological Engineering Lab - students volunteered to pull out load cells to compare their muscle strengths. Others used the same device to determine how much they weighed. Students then tested two rock samples for compressive strength.

Structures Lab - a model using sand (for snow) and water (for wind) was used to show snow drift formation around buildings. The students learned that the proper orientation of buildings relative to other fixed structures and to the direction of the prevailing wind can minimize the effects of snow drifts.

After visiting the stations, students and teachers attended a de-briefing session with Dean Laliberte. During the session, four students (two girls and two boys) were awarded scholarships to attend the University of Manitoba Mini-University Engineering Camp in the summer holidays.

Post-project meetings were conducted as a follow-up to the Engineering-Awareness Project. During these informal meetings, students had the opportunity to reflect upon their engineering experiences. Heightened awareness of engineering was indicated by such statements as: "I never knew you had to think about where to put a farmhouse or barn. Now I know that engineers solve problems"; and "At first, I thought that engineering was just about machines; but when I finished the field trip, I realized that engineering was much more."

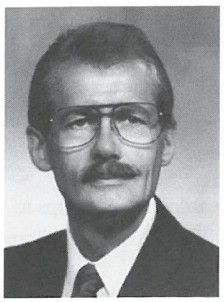


Although the project entailed a one-day program, the impact of the project needs to be appreciated from a broader perspective. Science and technology are transforming the way we live. By the year 2000, it will be a dramatically different world. The task at hand is to make the youth of today more aware of science and technology, to help them understand the changes taking place, and to prepare them for the challenges of tomorrow. The Engineering- Awareness Project attempts to heighten science and technology awareness and stimulate interest and excitement in science... "I think you've got me interested in engineering. It was really neat to see everything being used to create new and better stuff for us to use later on."

The teacher component of the project would not have been possible without the financial support of APEM. The Fort Garry School Division looks forward to continued partnerships with APEM, the Faculty of Engineering, Mini-University and Children's Camps, and the Institute for Technological Development, in promoting an awareness of science and technology. □

Leslie Wurtak is the Co-ordinator of Programs for the Fort Garry School Division. She developed and organized the Engineering- Awareness Project.

Executive Director's Report



D.A. Ennis

The Executive Director is responsible for four general areas of the Association's activities apart from those of the Boards and Committees. The activities of the committees are covered elsewhere in this issue.

Registrar

The primary responsibilities of the office of the Registrar are divided into three broad areas: processing admission to the profession, maintaining a record of the status of members, and providing administrative support to the disciplinary process.

In the area of admissions, the Association is very ably and diligently served by the Director of Admissions, Shirley Matile, P. Eng.

As to the records of membership in the Association, while there has been a slight increase in the overall membership, seven fewer engineers were entitled to practice engineering at the year end. There has been very little change in that figure since 1990. However, the number of members in the non-practising categories has increased by 22%.

The changes in membership for the year were:

Membership on July 31, 1992			3,375
Plus	- registrations	114	
	- transfers-in	31	
	- reinstatements	8	
			153
Less	- resignations	45	
	- transfers-out	4	
	- written-off (June 30)	55	
	- deceased	11	
			115
Membership on July 31, 1993			3,413

It is comprised of the following categories:

Full Members	2,724
Non-Practising and Non-Resident Members	666
Life Members	23
Total	3,413

Additionally, 168 Temporary Licences to practise engineering were issued to non-resident engineers, including 21 from the USA. Most of those licences were renewals.

The elimination of residency in Manitoba as a requirement for registration will probably lead to a decrease in the number of Temporary Licences as out-of-province engineers opt for registration.

There was an improvement in the ratio of persons registering as Engineers-in-Training relative to first-time registrations as Professional Engineers (0.56 vs 0.37). The increase is attributable to the initiative of the University Liaison Committee and the Director of Admissions in establishing contact with the students at the University of Manitoba.

The disciplinary process involves the activities of the Investigation Committee and the Discipline Committee. The Investigation Committee has been very active. Fortunately, the Discipline Committee was not required to hold any hearings.

There was one disciplinary hearing. The matter was heard by the Council because it had been initiated prior to the implementation of the revised disciplinary By-Law in November, 1991.

Secretary-Treasurer

As Secretary, I report that the business of Council has been duly recorded and that the required notices have been sent to the membership.

Council has been obliged to deal with some very fundamental issues and appeals concerning admission to the profession and membership in the Association. It is also in the process of ruling on an appeal of the dismissal of a complaint by the Investigation Committee.

Of a less fundamental nature there have been the issues of premises for the Association, proposals from the Canadian Council of Professional Engineers and actions on the Long Range Plan including the formalization of a Chapter system to recognize support and encourage greater participation in the affairs of APEM by the groups of members outside the City of Winnipeg. Progress on this objective is expected by the Annual General Meeting.

As treasurer, I report that the Association continues in a sound financial position. Income was greater than anticipated and expenditures were lower than expected. While some of the anticipated expenditures were not incurred during the year it is recognized that they were only deferred. Accordingly funds are being established to accommodate these requirements. The most notable requirement being that for a computer system for the Association office.

Another matter relative to the finances of the Association is one of whether to purchase rather than rent premises as has been the practice. A feasibility study is underway and, depending upon the conclusions, the membership may be asked to comment on a proposal at the Annual General Meeting or at a Special Meeting.

Enforcement of the Act

Enforcement activities are directed at preventing contravention of both the practice and title provisions of The Engineering Profession Act.

Continued on page 14

Director of Admissions' Report



S.M. Matile

Between August 1, 1992 and July 31, 1993, we received 456 applications. Of these, 64 were referred to the Board of Examiners for academic assessments, 11 were referred to the Admissions Review Board for work experience assessments, 64 became Engineer-in-Training (EIT) members, 31 transferred in from other provinces, 168 were granted temporary licences to practise engineering in Manitoba, 102 were registered for the first time, eight were re-instated to membership and 12 became non-resident registered members (more about this, later!)

In September, Council adopted CCPE's recommendation that the Association's work experience requirement be increased to three years in 1994 and four years in 1996.

In September, also, Council held its first admissions-appeal hearing. The hearing, which was a day-long affair involving Council, three lawyers, a member of the Board of Examiners, myself and the appellant, followed countless hours of assessment and re-assessment, meetings, legal consultation and hearing preparation. Following a further half-day's deliberation, Council reduced by one the number of examinations assigned by the Board of Examiners. (The appellant later filed a claim against APEM with the Manitoba Human Rights Commission. This issue has yet to be resolved.)

In November, an action plan was prepared for the implementation of the four-year engineering-work-experience requirement. In November, also, By-Law revisions were approved by the membership to remove the requirement that applicants for EIT membership be employed, to establish a de-registration fee for reinstatement applicants who had not resigned in good standing, and to provide for the pro-rating of annual dues for all classes of applicant.

In December, Council decided to pro-rate the annual dues of all applicants on a semi-annual basis, and Council held its second admissions-appeal hearing. This hearing was the culmination of 2 1/2 years of almost weekly information exchange, discussion and legal consultation. It, also, lasted all day, and involved Council, the Chair of the Board of Examiners, two lawyers (both ours), myself, the appellant, and two members who were serving as witnesses for the appellant. A further half-day spent by Council and legal counsel resulted in no change to the Association's original decision.

Continued on page 15

Sustainable Development Task-Force



Members:
D.A. Farlinger
D.R. Grimes
E.H. Klassen
R.O. Lambert
D.M. McCartney
S.L. McLeod
Dr. J.A. Oleszkiewicz
D. Shefford
R.D. Sopuck

J.T. Atchison, Chair

Background

In January, 1992, Council created a Policy Document identifying the urgent need for all members of the Association to increase their awareness of Sustainable Development practices. To assist in achieving this awareness, they also created a task-force to set out a number of actions which members of the Association might be encouraged to undertake.

The Chair of the task-force (J.T. Atchison, P.Eng.), with the considerable assistance of the late Ted Glass, invited senior engineers and practitioners from a general cross-section of disciplines and industries in Manitoba. The group has met monthly since September 1992 and deliberated with great dedication on the subject of creating Sustainable Development Awareness education programs for Professional Engineers.

The Strategy

The teaching of the components of environment, economics, and social concerns, which make up the subject of Sustainable Development, will be presented to four groupings of engineers:

1. Engineering students and educators
2. Engineers-in-training
3. Senior Professional Engineers
4. Engineering managers

The delivery of Sustainable Development programs will, in the long-term, be the responsibility of existing "standing committees" (after the task-force has firmly established a format).

Where possible, existing Educational Institutions will be used to deliver the actual teaching.

Progress to Date

As an introductory step to the APEM SD Awareness program, a three-lecture series was presented in Winnipeg in the Spring of 1993. The three lectures were:

1. "SD Public Policy and Engineering", by Hon. Gary Filmon, P.Eng.
2. "Challenge of SD in Corporations", by Jack MacLeod, P.Eng.
3. "Business Directions for SD", by Ken McCready, P.Eng.

In recognition of the supremely important role that the Engineering Faculty can play in communicating Sustainable Development concepts to present and future engineering students, the task-force has had extensive discussions on the subject with the Dean of Engineering and the Heads of Engineering Departments at the University of Manitoba. These discussions are on-going and are expected to have to broaden into other faculties to fully exploit the necessary resources to establish a comprehensive SD Awareness program. Although it is clear that there are many time- and schedule- restraints, the task-force is hopeful that the Faculty will further contribute in establishing a teaching program that will give every engineering graduate an in-depth awareness of Sustainable Development philosophy and practices.

To avoid confusion and "to-keep-it-simple", the task-force has chosen to develop only one program to cover all other groups of engineers. The program content, which is presently under review, will be a continuation of the subjects of the Spring '93 program but with greater use of "Case Studies" which clearly bring out the applications of Sustainable Development in the work place.

Because attendance at the last two lectures was abysmal, the task- force is examining alternative methods of communicating SD Awareness to all APEM members other than through special lecture meetings. The fact that many engineers are already engaged, to some degree, with sustainable-development issues suggests that the APEM SD Awareness program must strive to provide a new and innovative approach if member interest is to be achieved.

In carrying out its mandate, the task-force has met with other institutions, operating in the field of Sustainable Development, to consider areas of possible co-operation. Special mention is made of the 'International Institute of Sustainable Development' (IISD), which has provided literature as well as the participation of a staff member on the task-force. Special mention is also made of the 'Manitoba Round Table for Sustainable Development', which has donated literature as well as the able services of a staff member.

Many Provincial Professional Engineering Associations as well as the CCPE are developing SD programs, and the task-force is attempting to keep informed of their activities to use in a Manitoba Program if they are suitable.

A very interesting organization on SD was created in 1992 to promote, co-ordinate, and represent the engineer's role in Sustainable Development as part of the overall United Nations Conference on Environment and Development (UNCED). The organization is called "WORLD ENGINEERING PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT" (WEPSD).

WEPSD offers as a VISION STATEMENT, the following:

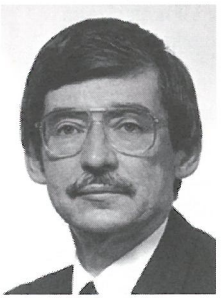
"Engineers will translate the dreams of humanity, traditional knowledge, and the concepts of science into action through creative application of technology to achieve sustainable development. The ethics, education and practices of the engineering profession will shape a sustainable future for all generations. To achieve this vision, the leadership of the world engineering community will join together in an integrated partnership to actively engage with all disciplines and decision-makers to provide advice, leadership, and facilitation for our shared and sustainable world."

The then-Secretary-General of UNCED (Maurice F. Strong) said of it,

"The WEPSD means that governments, industry, and all those making decisions and taking actions that will affect the environment, will have the benefit of an experienced, committed group of engineers throughout the world."

Many conferences are being promoted under the leadership of this USA-initiated organization, and the task-force intends to maintain a close interest as a possible source of innovative material to bring to APEM members. □

Nominating Committee



Members:
E.W.J. Clarke
D.R. Grimes
J.G. Hildebrandt
F.R. Kaita
D.J. Kramble
Wm.M.A. McDonald
D.G. Osman

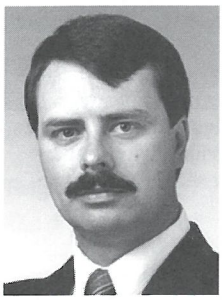
N.P. Feschuk, Chair

The Nominating Committee is responsible for nominating a slate of candidates for election to Council. The committee compiled a list of 24 possible candidates. From this list, the committee nominated seven candidates to fill four Council positions.

Under the By-Laws of the Association, there may still be additional candidates nominated by the membership.

I would like to express my thanks for the work and input of the committee members and the assistance and guidance of Dave Ennis and Joan McKinley. In particular, my thanks go to all those members who were approached by the committee, for their concern and consideration with respect to allowing their names to stand for nomination to Council. □

Ad Hoc Committee on the Use of the Engineering Seal



Members:
A. Ball
M. Bulman
K. Franklin
P. Janzen
R. Kennedy

K.R. Drysdale, Chair

At the APEM Executive Committee Meeting on January 5, 1993, the Association's Council agreed to establish a task group with the following mandate:

1. To the review the Association's document "Guidelines on the Ethical Use of the Engineering Seal", and provide recommendations to Council on any revisions that may be considered necessary.
2. To consider the CCPE Proposal for the use of the electronic seal and make appropriate comments to Council.

The task group was to fulfill its mandate and provide recommendations to Council prior to the July, 1993 Council meeting.

The committee membership represented a broad cross-section of the profession which included representatives from:
- Consultants
- Regulatory Agencies
- Manufacturers
- Utilities

The first meeting of the task group was convened in the Association's offices on March 22, 1993. Undaunted by the task at hand, and the compressed schedule requested by Council, the committee members agreed to first focus on providing recommendations concerning the CCPE Electronic Seal Proposal, and second complete a review and revision of the Guidelines on the Ethical Use of the Seal document.

On April 20, 1993, the task group issued a recommendation to APEM to not actively participate in the next stage of the development for the use of the electronic seal in accordance with the CCPE proposal. This recommendation was based on an examination of the issue related to practical need, and the potential advantages and disadvantages of implementing such a system.

On June 25, 1993, the task group submitted to APEM a substantially revised new Guidelines Document on the Ethical Use of the Engineering Seal.

The task group considered numerous current issues with regard to the use of the seal which included current practices, revised By-Laws, new technological development and the reality of providing engineering services today.

Many new practical guidelines and applications have been included in the proposed documents including:
- As-Constructed Drawings
- Drawing Revisions
- Back-Dated Seals
- Applications of Stamp
- The Sealing Process

The original guidelines document was used as a basis for the development of the new document. The proposed document is currently being considered by the Association for revisions and final submission to the membership at large. □

Ad Hoc Committee on Technologists



Members:
W.D. Christie
E.W.J. Clarke
N.P. Feschuk
C.L. Stewart
J.A. Thomson

Wm.M.A. McDonald, Chair

The Ad Hoc Committee on Technologists met once during the year in order to review the current status of relations with the technologists both in Manitoba and in other provincial jurisdictions.

The joint APEM/MANSCETT Committee has reached an agreement on a working document entitled "A Summary of APEM/MANSCETT Points of Agreement and Disagreement". This document has been tabled before the APEM Council and the MANSCETT Board of Directors, and approval of these two bodies has been received to proceed on that basis.

Two members of the APEM Board of Examiners have agreed to evaluate the MANSCETT Registration procedures relative to academic qualifications and required experience. They have been observing the MANSCETT Panel of Examiners and Registration Board and are expected to report to the Ad Hoc Committee shortly.

I would like to acknowledge the work of the committee, Professor A.M. Clayton, P.Eng. and A.D. Gerrard, P.Eng. of the Board of Examiners, and the staff who so ably assisted our work during the year. □

Joint Committee of Engineers and Geoscientists



Members:
R. Band
W.C. Brisbin
I. Ferguson
S.M. Matile

C.E. Anderson, Chair

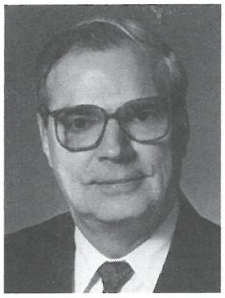
For several years, now, there has been growing interest in professional registration of geoscientists in Canada. In British Columbia, Alberta, Northwest Territories and Newfoundland, revised Engineering Profession Acts now include geoscientists. In other provincial and territorial jurisdictions, similar revisions are taking place. In Manitoba, this matter is being addressed by the Joint Committee of Engineers and Geoscientists.

The Joint Committee was initiated by APEM Council in December, 1991, in response to a formal request from the sub-committee for Professional Registration of Geoscientists in Manitoba (SPRGM). SPRGM was implemented by the Geoscience Council of Canada and represents the geoscience community in Manitoba. The request by SPRGM was for APEM to provide professional registration for the approximately 350 geoscientists practising in Manitoba, under a revised Engineering (and Geoscience) Profession(s) Act. The mandate of the Joint Committee was to identify all issues to be addressed by the geoscience community and by APEM in providing such registration, and to develop courses of action to resolve these issues.

During the past year the Joint Committee has made significant progress. We have dealt with the definition of geoscience, and with all required changes to the Engineering Profession Act to include geoscientists. These changes have been incorporated into the proposed revised Act (1993), which is now under review.

Additional matters that have been dealt with by the Joint Committee include recommended provisions for grandfathering of geoscientists (initial criteria for registration), and recommendations for the treatment of geoscientists already registered as P.Eng.'s. Still to be addressed are admission requirements for geoscientists (educational and work experience), changes to the Association By-Laws that may be required by the inclusion of geoscientists in the Association, membership of geoscientists on Association committees, and administrative questions. □

Investigation Committee



D.R. Grimes, Chair

Members:
N.C. Burgess
D.E. Cross
F.M. Fowler
R.P. Hoemsen
R.C. Isaak
R.A. Johnson
E.I. Lexier
A.M. Lohse
Wm.M.A. McDonald
J.R. McDougall
I.H. McKay

The disciplinary process involves the investigation of complaints or concerns and where necessary, the holding of a formal hearing. The Investigation Committee conducts the investigations under the authority of By-Law 43 which became effective in November of 1991. It also has the authority to issue a formal recorded caution or, with the written consent of the member, to formulate a charge and register a conviction. These powers have enabled the committee to be more effective than the former Practice and Ethics Committee. Penalties more severe than formal cautions are reviewed with a designated representative of the Discipline Committee prior to being proposed to the member about whom the complaint was received.

Full committee meetings are held monthly. There have been innumerable sub-committee meetings. Over the year the committee has dealt with 14 files carried over from August 1992, as well as an additional 28 new files. There are 12 files active at the time of writing this report.

Space limitations do not permit a detailed description of the files acted on by the committee. A brief overview is as follows:

TYPES OF COMPLAINTS:

- Nine complaints were brought by members of the public, relating to residential buildings.
- Two investigations were undertaken as a result of structural failures.
- Five complaints resulted from instances where an engineer was concerned with the actions of a fellow engineer.
- Four investigations were undertaken on the basis of information from public agencies with authority to approve plans for buildings.

DISPOSITIONS:

- Two members' registrations were suspended for 30 days for practice detrimental to the public interest.
- One member's registration was suspended for seven days for unprofessional conduct.
- One member was fined $3,700 for misconduct and unprofessional conduct.
- Four members received formal cautions or reprimands.
- Two members received informal cautions.
- Twenty-two complaints were dismissed, six of which were considered to be commercial matters or beyond the jurisdiction of the Association.
- An appeal has been filed with Council over the dismissal of one of the complaints.

For those readers interested in mathematics, the numbers are not all additive as some files include more than one of the above points.

The committee was also consulted by a member on an issue of proper professional conduct. Advice was provided and the matter reported to Council.

The committee also provided Council with interpretations of the Code of Ethics on two occasions, in response to enquiries made by members of the Association.

Many of the complaints received involved questionable business practices by a small number of our members who deal directly with the public, usually on residential building inspections. The committee is of the opinion that the public would be better served if purchasers, vendors, real estate agents and some members in that area of practice were more informed as to expectations and preferred procedures relating to Residential Building Inspections. In this connection it recommended to Council that a task group be formed, and submitted draft Terms of Reference for a task group on Engineering Services for Single Family Residential Buildings. It is understood that Council has approved the recommendation and is in the process of establishing a Task Group.

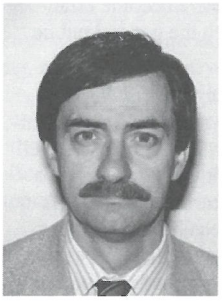
The committee has again recommended to Council that it approve a levy of $5.00 per member for 1993-94 to replenish the reserve for the Discipline By-Law Fund. This Fund is used to pay for professional services.

As reported in the 1992 Committee Report, the committee asked for and received approval to engage professional services on a part-time basis, to supplement those services already available from the Association office. In this connection Charlie Bouskill has been providing staff assistance on a part-time basis since late 1992, facilitating the work of the committee which has acted on 30 files in the past 12 months, approximately twice as many as in the previous 12 months.

As you will appreciate, the work of the committee requires a heavy time commitment by its members, each of whom has served the profession well. This year we reluctantly received the resignations of Charlie Bouskill, Dick Russell and Walter Saltzberg after many years of hard work and faithful commitment. Charlie Bouskill resigned to accept the above noted appointment. We also welcomed Neil Burgess, Dave Cross and Ray Hoemsen as new members. We were sorry that Heather Kitchen left the Association staff in mid-February as she had provided excellent support to the committee, often beyond the normal call of duty. Linda Hazelwood was welcomed in late April to provide secretarial assistance to the committee.

Staff support is provided enthusiastically. Some meetings are still held before and after business hours and during annual vacations. Nevertheless, Heather Kitchen, Linda Hazelwood, Dave Ennis and Charlie Bouskill were always available for support. It is appreciated. □

Salary Research Committee



E.G. Parker, Chair

Members:
B.G. Bettess
W. Czyrnyj
L.R. Ferchoff
B.F. Klaponski
L.J. Kuczek
S.J. Ormiston
C.L. Stewart

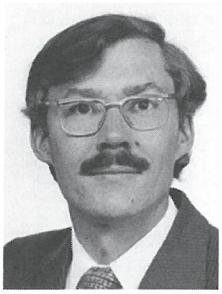
To satisfy our objective of providing salary information for use by the public and Association members, the Salary Research Committee conducted its annual employee and employer salary surveys this spring. The results were published and distributed with the July mailing of the Manitoba Professional Engineer.

Changes in this year's survey included an increase in the number of employers surveyed, the same salary data requested from consultant and corporate employers, and the reporting of salaries on an annual basis. For the year ending March 31st, 1993, the average salary increase was 3.1% and the mean overall salary for members was $56,256. One significant finding was that, for the second year, over one-third of the Association members received no increase or decrease in salary. This group is split evenly between public and private employers.

Our research also provides profile information on the Association membership, not only with respect to salary, but also with respect to field of employment, size of employer, job function, experience level, employee benefits, and education level.

Many thanks to the committee members for their efforts this year and to Dave Ennis for his continued support. A special thank you to Joan McKinley for her assistance in keeping the minutes and supporting our survey distribution and report preparation. □

Public Awareness Committee



Members:
W.H. Brant
M. deWiele
R.J. Eden
R.P. Hoemsen
C. Jorheim
J.T. Linnen
C.A. Nieuwenburg
R.G. Payne
C.S. Roberts

D.C.H. Prowse, Chair

The Festival of Engineering, the Manitoba Schools Science Symposium and the Careers Symposium have become established opportunities to reach the general public and students.

As part of Festival of Engineering 93, a Career Information Evening was held at the University of Manitoba in March, 1993. It was well attended by those considering engineering as a career, as well as by engineering students. (A similar evening had also been held in October, 1992.) A display in St. Vital Mall and speakers in the schools were other contributions to the Festival.

The Museum of Man and Nature Schools Program hosted several "World In Motion" presentations by engineers to classes of elementary school students. The Fort Garry School Division Engineering Awareness Project which allows elementary school teachers and students to be introduced to engineering at the University of Manitoba, was again supported by APEM.

Three Mini-University summer camp prizes and one $500 entrance scholarship to the Faculty of Engineering at the University of Manitoba were awarded after ten engineers judged 110 projects at the Manitoba Schools Science symposium.

Carol Roberts, who was featured in a front page Free Press article on women in engineering, has established a Women's Network that provides an informal forum for interested engineers. She and other engineers have been active speakers promoting engineering as a career through the "Innovators In The Schools" program, which is now being managed by the Museum of Man and Nature.

Several engineers spoke at the provincial Careers Symposium and assisted with the prize-winning Faculty of Engineering booth.

APEM has published a new pamphlet aimed at high school students, which provides a brief description of several engineering disciplines. This pamphlet joins other recently developed pamphlets and a selection of videos available at the APEM office for engineers speaking to groups. Another pamphlet, "Professional Engineering in Manitoba," describing the role of APEM in regulating the profession, is intended for mature audiences.

Plans are underway for an "Ask An Engineer" capability on the Manitoba Department of Education Electronic Bulletin Board so that teachers and students can communicate with participating professionals. Arrangements are also being made for several engineers to speak at the Special Area Group Meetings of Manitoba Teachers in October 1993.

If you wish to volunteer for any public awareness activities, please be sure to complete your "Can You Spare a Few Minutes?" form (a blue sheet sent out in the June mailing), and send it to the APEM office. □

Building Envelope Sub-Committee of the Safety in Engineering Practice Committee



Members:
S. Cohlmeyer
G. Darrach
T.C. Gibbs
D. Goyer
B.W. Gulay
P.R. Janzen
F.A. Kemp
R. Ramdwar
D.N. Stones

M.J. Frye, Chair

The Building Envelope Sub-Committee of the Safety in Engineering Practice Committee was formed in March, 1992 to examine and report on safety concerns relative to building envelopes.

The sub-committee met on a monthly basis to discuss all aspects of the issue. In December, 1992, the sub-committee began the task of preparing a draft report. The draft report summarized the discussion and recommendations relative to:

a) educational issues;
b) contractual issues;
c) design and maintenance issues; and
d) supervision and inspectional issues.

The preparation of the draft report has been completed, and the sub-committee has reviewed and reached consensus on the discussion and recommendations that are included in each section of the draft report.

A final report is currently being prepared. It is expected that the report will be submitted to the Safety in Engineering Practice Committee by late fall, 1993. This will conclude the work of the sub-committee. □

University Liaison Committee



Members:
R. Beaudoin
A. Burachynsky
P.A. Dalkie
E. Garfinkel
I.R. Mikawoz
G.O. Ouellette
A.H. Permut
S.H. Rizkalla
Dr. A. Trupp
R.J. Waddell

R.J. Partridge, Chair

We have had another eventful year as we endeavour to continually improve in our efforts to provide liaison between our Association and any issues pertaining to engineering at the University of Manitoba.

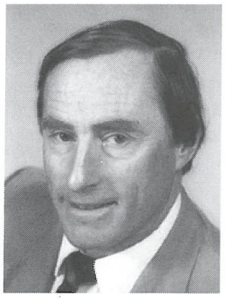
At our annual meeting between Council, Faculty and this committee we dealt with two issues of mutual concern. One topic was the supply and demand pressures and the need to attract more highly qualified individuals to the profession. The other topic was a look at many of the issues surrounding the need for continuing education. Through the format of presentations followed by discussions, many positive suggestions were provided.

Assistance was provided to the engineering students again this year in arranging for practising engineers to make presentations at "Careers in Engineering - Meet the Professionals". These opportunities to hear presentations in various disciplines were very much appreciated by the students, thanks to the efforts of the organizers and speakers.

The work of this committee was also incorporated into the Association's presentation of the Provincial Government's University Education Review Commission, urging continued support and improvement of the engineering program at the University of Manitoba.

Throughout the year we also assisted in the University's Career Symposium booth, the Student and Professional Mentor program and the APEM Student Night Dinner. I thank the committee members, Shirley Matile, and staff members for their help towards another successful year. □

Research and Development Committee



Members:
J. Begin
D.J. Fedirchuk
E.E. Lach
D.M. McCartney
D.G. Osman
M. Paryniuk
E.L.J. Rosinger
E.A. Speers
D.R. Strang
J.B. Thorsteinsson

R.J. Hamlin, Chair

The Research and Development (R&D) Committee has been a very active committee over the last year. Ted Glass was a member and contributed many ideas and much discussion. He will be sadly missed.

The R&D Committee has focused on organizing luncheon talks that are of interest to as wide an audience as possible. The luncheon talks are all video-taped and kept on file for later viewing by members, particularly those from out-of-town.

The luncheon topics over the past year have been:

- "Ground Water" by Larry Whitney
- "The Licensing Process under the Environment Act" by Larry Strachan
- "New Approaches in Civil Structural Evaluation" by Dr. Erling Nyborg
- "Solidification of Alloys in Microgravity Environment" by Dr. Kedar Tandon and
- "Biomedical Advances - Engineering Support" by Dr. Carl Pinsky.

A tour of the Energy and Environment Research Center Facility at the University of North Dakota was organized, but had to be cancelled for lack of interest.

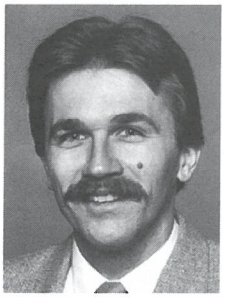
Some of the topics that are being considered for next year's luncheon meetings are:

- Engineering and Value-Added Processing
- Remote Meter Reading
- Remediation of Contaminated Soil
- Engineering and Control of Zebra Mussels
- Advances in Mining/Tunneling Equipment
- ISO 9000 Environmental Management
- Demand-Side Management

The cost of running the luncheon meeting has been a concern and has been reviewed to ensure that the meeting luncheon fees cover all costs except the costs of printing notices, the increased time by Dave Ennis and staff in helping to organize the meeting, and the costs of the committee organization lunches. The benefit to APEM and to the public is that the engineering community is kept up-to- date on future trends and technologies that will be changing the way in which we work and report engineering practices and activities.

I would like to thank all the committee members for their contributions over the past year and, in particular, Dave Ennis, Linda Hazelwood and Dr. Eva Rosinger and Don Osman, who have continued to participate even though they are both Council members as well. □

Professional Development Committee



Members:
R.J. Bruce
M.D. Cornell
V.L. Dutton
R.C. Gupta
K.J.T. Kjartanson
S.S. Rihal
W.D.A. Rose
S.L. Ursel

D.J. Kramble, Chair

The Professional Development (PD) Committee is perhaps best known for its breakfast meetings on topics of general interest to engineers and its seminars for both new and practising engineers. However, a lot of work goes on behind the scenes. This committee is also responsible for reporting to Council on matters which relate to professional development and continuing competence.

This past year we have developed reports (soon to be submitted) on:

Mandatory PD Monitoring:

This report addresses the subject of reporting of PD activities as a condition for registration.

Mandatory Concepts Seminar:

This report addresses whether this seminar should be made a prerequisite for registration for EIT's.

We have also organized the following activities:

Breakfast Meetings:

"Total Quality Management" with Daniel Moceri;
"The Engineer's Role as Expert Witness" with Richard Swystun;
"Engineering Failures: What Can We Learn?" with Ken Carper.

Seminars:

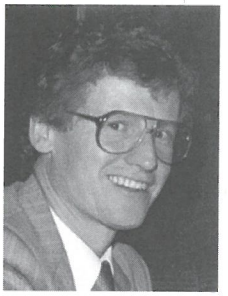
Concepts in Professionalism (cancelled)

In the coming year we will be:

- continuing the breakfast-meeting lecture series
- providing a concepts-in-professionalism seminar
- providing an engineering-management seminar
- reporting to Council on monitoring of professional-development activities of members
- reporting to Council on the subject of a mandatory concepts-in-professionalism seminar

I have only recently been elected Chair of this committee, so please reserve all credit for its dedicated members. □

Legislation Committee



Members:
G.S. Cooper
D.W. Gunter
W.C. Harrison
J.S. Hicks
J.G. Hildebrandt
E.E. Lach
D. Spangelo

B.D. MacBride, Chair

The committee met seven times over the year. This year saw the completion by the committee of a major review of the Engineering Profession Act to include group practice licensing, geoscientists, a new definition for engineering, a revised Code of Ethics section, changes in qualifications, gender neutrality and numerous other changes. This was a huge task, and the efforts and patience of committee members is appreciated.

Council accepted a recommendation to approve the new Act in principle. It is now in the hands of APEM's solicitor for legal advice. Subsequently, it will be sent back to Council and then will be available for comment by members and other interest groups. At that point, a final Act will be processed through the Provincial Government which has jurisdiction and control over any changes.

Thanks to staff for their guidance and input on this project.

The next big job for the committee will be to rewrite the By-Laws to be consistent with the revised Act. Since it may be some time before a new Act is in place, the committee will also have to keep updating the current By-Laws as the needs arise. □

Safety In Engineering Practice Committee



Members:
D.E. Cross
A.O. Dyregrov
M.J. Frye
R.E. Gottfred
B.W. Gulay
J.V. Weiszmann
L.P. Williams

F.A. Roberts, Chair

To live in safety is what each one of us seeks in our own lives, our family's lives, and our places of work or recreation.

For the user of a facility, safety is achieved when it is an issue that doesn't even require thought - when people can quietly enjoy a building or device without fear of harm.

This end is achieved only by engineers who can anticipate problems and provide solutions before trouble actually surfaces. Obviously, this requires great care and vigilance on the part of the engineer.

The Safety in Engineering Practice Committee considers the issues brought before it as to where the information can contribute to the ability of engineers to improve the safety of their designs. When we determine that there are problems, the information is disseminated to the membership.

Building Envelope

An example of information which we hope will be of broad benefit to engineers involved in building design is the report of the Building Envelope Sub-Committee. The sub-committee has laboured long and hard through countless meetings since early last year to provide recommendations on engineering practice as it relates to design and construction of the building envelope. We hope to make the report available to members in the near future. The building envelope serves as the front line in withstanding the elements of our severe climate and its deterioration can readily result in failures threatening both occupants and passers-by. The occurrences of this type of failure seem to be continually on the increase.

Certification of Existing Buildings

The committee considered a concern expressed by an individual member regarding requests for the certification of the safety of existing buildings. The committee published a warning to engineers who might be requested to perform these functions that they must have very clear agreements with their clients and a thorough knowledge of potential hazardous materials which may be found in buildings, since building materials and fixtures commonly used a number of years ago contained hazardous materials such as PCBs or asbestos.

Pedestrian Bridge

A member wrote to the committee pointing out his concern for the safety of a pedestrian bridge over a waterway. After considering the issue, the committee, through Council, recommended that the municipality owning the bridge retain appropriate services to determine its safety and undertake appropriate action.

Life Safety Systems

The committee is represented on the Life Safety Systems Committee of the City of Winnipeg. This has helped us to become informed on these issues, and recommendations will be forthcoming.

BLEVE

Mr. B.G. Lawlor, P.Eng. presented a video showing graphically the hazards of boiling liquid expanding vapour explosions (BLEVE) which might occur in propane-storage tanks or other similar flammable liquids in high-pressure storage. Although design and installation of such facilities are covered in detail in the National Fire Code, the video made us aware of the horrific results of such a storage vessel involved in a fire. With the proliferation of propane storage vessels across the Province, designers and planning authorities should be well aware that flame fronts extending hundreds or thousands of feet could result if a storage vessel were involved in a BLEVE. The committee thanks Mr. Lawlor for presenting the video and background information to us.

Ground Snow Loads

The committee considered reports that ground snow loads referenced in the National Building Code and Manitoba Building Code differ substantially from previous issues. This matter was referred to the committee of the National Building Code for further study on climactic data.

Electronic Sealing

Two years ago the committee looked into the matter of electronic sealing of documents and concerns that this could result in document tampering and a resultant compromise of public safety. A CCPE publication outlines the use of new technology in electronic sealing of documents. Please contact the Registrar or the committee for a copy.

Acts Review

Presently, the full committee is reviewing the engineering safety aspects of the Gas and Oil Burner Act, the Steam and Pressure Plants Act, the Amusements Act, the Elevator Act, the Buildings and Mobile Homes Act, the Power Engineers Act, the Electricians Act and the Fire Preventions Act. This review was requested by the Assistant Deputy Minister of Labour, in preparation for a review of the Acts by the Minister. Though there has been little time provided for us to conduct this review, the committee has worked through the summer to provide an appropriate response.

As always, I invite any of our Association members who may become aware of potentially unsafe engineering practice to pass on such information to the committee or to the Registrar. Enquiries or submissions will be dealt with in confidence where requested.

The committee extends its sincere thanks to Dave Ennis and Linda Hazelwood for their tireless efforts during the year; and I wish to extend my personal thanks to every member of the committee and sub-committees for their diligent service and helpful input. □

Awards Committee



Members:
L.R. Ferchoff
F.R. Kaita
Wm.M.A. McDonald
W.G. McKay
W.E. Muir
D.G. Osman
A.H. Permut
D.C.H. Prowse

N.P. Feschuk, Chair

The Awards Committee is responsible for all matters relating to awards of the Association and CCPE.

Nominating forms were sent out to the membership, soliciting potential candidates for CCPE and APEM awards.

The committee has recommended the nomination of two members for two CCPE awards and two members for two APEM awards. The committee will be meeting again in the fall to nominate award winners for two other 1993 APEM awards to be presented in early 1994 during Engineering Week.

I would like to take this opportunity to encourage the membership to nominate candidates for both APEM and CPPE awards. The committee recognizes that within the APEM there are excellent candidates; however, the committee has difficulty in gathering necessary information on the candidates to prepare a presentation that will adequately represent the candidate. Your assistance in this area would be greatly appreciated.

I would like to express my thanks to the committee members and Joan McKinley for their work in recommending an excellent slate of candidates for the 1993 awards. □

Publication Committee



Members:
A.E. Ball
B.A.K. Danielson
B.A. Dobran
V.L. Dutton
L.Y. Ganetsky
C.P. Gray
D.S. Jayas
J. Lucas
W.G. McKay
H.S. Zbigniewicz

J.W. Bogan, Chair

The Publication Committee continues to pursue its goal of producing a bi-monthly publication which it hopes will be informative, interesting and, to some degree, entertaining to the membership. The committee attempts to keep all members informed of the workings of Council, committees, current events of interest to the engineering profession throughout the province and association activities.

During the last year, the Publication Committee has welcomed a new member, Calvin Gray. I'd like to thank all committee members for their continuing contributions throughout the past year. The committee also welcomes the coverage received from our correspondents in Brandon and Thompson and would like to thank those who have made submissions or covered events on our behalf during the last year.

Of particular interest this year, the Publication Committee has instituted a "Position Wanted" entry for unemployed engineers.

The Publication Committee attempts to concentrate on Manitoba interests and events as much as possible. The membership is welcome to express its views on issues of concern and the committee encourages anyone so inclined to volunteer, and participate.

The Publication Committee extends its appreciation to the association staff for their efforts, especially Donna Bilodeau. Donna co-ordinates most of the work the membership sees before it and she delivers a gentle nudge every so often to remind the chair when he has fallen behind. □

Board of Examiners



Members:
K.M. Adam
C.D. Anderson
D.T. Anderson
E. Bridges
J.R. Cahoon
D.G. Chapman
A.M. Clayton
A.D. Gerrard
R.P.S. Han
D.S. Jayas
G.H. Matthews
R.W. Menzies
E.L.J. Rosinger
D.W. Ruth
M. Yunik

F.R. Kaita, Chair

The Board of Examiners assesses the academic qualifications of applicants who are graduates of programs not accredited by the Canadian Engineering Accreditation Board (CEAB), to determine the academic eligibility of such applicants for registration. The Board may require an applicant to pass assigned examinations in order to academically qualify for acceptance into the profession.

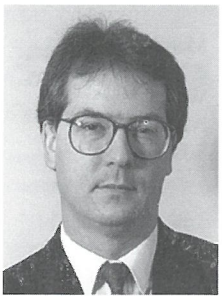
During the past year, the Board received an unusually large number of requests for assessments and re-assessments. The Board assessed 64 new applicants, re-assessed 36 and administered 51 examinations. Of the new applicants, 49 were assigned examinations (seven qualifying, 14 confirmatory and 28 examination programs), and 15 were qualified. Of the 36 applicants re-assessed, 10 were considered qualified based on successful completion of the assigned examinations, four were assessed additional examinations, and 22 were reviewed for various requests, including changes in the numbers of assigned examinations and course substitutions. Thirty-six candidates registered for 51 examinations, and 29 passes were recorded. Also, the Board participated in a hearing on the application for Registration of a candidate.

The Manual Review Sub-Committee, under the leadership of Doug Chapman, completed the Board's June 1993 Manual on Policy, Guidelines and Procedures. The implementations of the June 1993 manual and the 1992 CCPE Examination Syllabus were approved by the APEM Council in June, 1993.

During the year we thanked Gail Fyfe (Liaison Councillor) and Art Sparling for their valuable contributions to the Board, and we welcomed Eva Rosinger (Liaison Councillor), Ken Adam and Graham Matthews to the Board. Ray Han will be on a year's sabbatical from the university and will rejoin the Board in July 1994. We extend our congratulations to Doug Chapman who will be leaving the Board in October, 1993 to become the President of APEM.

I wish to extend my personal thanks to all members of the Board for their time and efforts. We all join in expressing our sincere thanks to APEM staff members Dave Ennis, Shirley Matile and Joan McKinley for their valuable and capable assistance. Special thanks to Joan McKinley for her assistance in organizing the meetings, being the source of information at meetings and keeping the minutes. □

Sports Committee



Members:
D.G. Bell
K.W. Charleson
K. Miller
M.D. Vanderpont

J.F. Lavergne, Chair

The Sports Committee maintained the two traditional events this year.

The number of members entered in the 14th annual Manitoba Marathon was the same as last year with a total of 15 runners braving the 26.2-mile (42.2-kilometre) relay on a warm, sunny (believe it or not) Sunday morning in June. The committee was hoping for five or six teams (perhaps next year). If nothing else, it's a great way to get in shape and an even better way to promote the profession. Two of the three teams actually won silver medals in their respective categories, with one finishing 12th overall. Special thanks to Shirley Matile who opened her home to the runners for a delicious potluck dinner. Her hospitality was greatly appreciated.

Not wanting to break with tradition, the curling bonspiel was again held at the Granite and featured a slate of only 16 rinks. This year the rink of Tom Molinski, Bruce Elliott, John McNichol and Stuart Innes took to the podium with top honours. Again, a "closest-to-the-button" competition was held with proceeds being donated to charity. Special thanks to Bill Saunders for his skills as drawmaster and to Kirby McRae for his musical talents on the bagpipes.

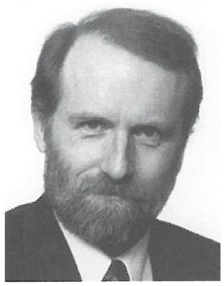
This year's golf tournament was again held at Selkirk Golf and Country Club. The 120 or so golfers enjoyed themselves with a few holes of golf, a "cold one" or two and a fabulous steak dinner. By the day's end, defending champion Rob Borody and Bruce Elliott were even at 78. They netted their names on the Landon Cup by shooting the lowest score, and Ron Payne took top honours for low gross.

A special thanks to all the members and their corporate affiliates for the unsolicited prizes donated for these two events.

The Sports Committee is always looking for new members who have ideas for new events and suggestions on how to improve our traditional

Continued on page 15

Admissions Review Board



D.G. Chapman, *Chair*

Members:
C.R. Bouskill
W.D. Christie
N.P. Feschuk
S.H. Rizkalla
D.I. Waldman

The role of the Admissions Review Board (ARB) is to review and make recommendations with respect to the work experience of applicants for registration. Only those cases where the nature, amount or quality of the experience are in question are considered by the Board. The Board works closely with the Director of Admissions.

After review of an applicant's work experience, the Board may recommend registration without further experience being required; it may request the applicant to obtain more experience; or it may interview the applicant to gain a better understanding of the experience obtained.

During the 1992-93 term, to the end of August, the ARB met six times and considered 11 cases. Two applicants were considered to have sufficient experience; six applicants were required to obtain additional experience or to provide more information; and three interviews were held, with two of the applicants later being judged as having sufficient experience. The Board also provided recommendations to Council: in favour of agreement to the CCPE's proposal on Inter-Association mobility (where a professional engineer with a clean discipline record and at least 10 years of experience could transfer to another provincial association with a minimum of formalities); on the implementation of a four-year experience requirement before registration; and on the restructuring of the admissions process (to simplify the appeals process and to shift the responsibility for the review of work experience obtained by applicants from the Director of Admissions to Committees of Council).

I would like to thank the members of the Board; Shirley Matile, Director of Admissions; Dave Ennis, Executive Director and Registrar; the volunteer APEM members who assisted the Board in reviews; and the APEM staff for their work this past year. □

Consulting Engineers Committee



***R.J. Houston,** Chair (Jan. 93-June 93)*

Members:
I.R. Dewar
H. Haak,
(Chair July 93-Dec. 93)
A.J. Kettler
J.O. Klein
W.J. McCulloch
R. Menon
D.G. Mulder
B.J. Rossen
T.L. Stratton
J.M. Symonds
E. Weiszmann
D. West

The committee has held six meetings since October, 1992. D.B. Whittaker resigned as committee chair in December, 1992. R.J. Houston agreed to chair the committee for the first six months of 1993, with H. Haak to be chair for the last six months of 1993. R. Morrison also resigned. New members to the committee are I. Dewar, W. McCulloch, D. Mulder and T. Stratton.

Appendix A of the Guide for the Engagement of a Consulting Engineer was revised to take into account the 1993 salary survey and was made available to the public.

Two members of this committee, Messrs. Rossen and McCulloch, sat on the MTA Liaison - Task Group.

Concern was expressed about the Guide and the procedure for selection of a consulting engineer. It was thought that additional emphasis was required on the wisdom and benefits of quality-based selection and a means to discourage clients and consultants from participating in unrealistic price competition. A sub-committee chaired by A.J. Kettler was set up to investigate this issue. Members serving on this committee are T.L. Stratton, H. Haak and R.J. Houston.

The committee also responded to the questionnaire - survey on self- interest.

Other items considered were:

- ownership of documents and/or design
- APEO request on quality in engineering
- Fiduciary responsibility and the consulting engineer
- Mandatory liability insurance and the Act
- Association of Manitoba Land Surveyors
- CCPE Proposal on inter-association mobility
- CCPE comments on the matter of the electronic seal

With new members on the committee, attendance and interest have improved. There are many issues for this committee to work on.

Sincere thanks are owed to all the APEM staff members and especially those who have been closely associated with the committee, Dave Ennis, Heather Kitchen and Linda Hazelwood. □

Executive Director's Report

Continued from page 6

A number of representations seeking voluntary compliance were made to both persons and corporations. There were no prosecutions initiated.

The Attorney General does not prosecute or lay charges for contraventions of the Acts of the self-governing professions. The onus is on the professions, therefore, both to take the actions and absorb the costs - which can become very significant. Cognizant of this and recognizing the need to dedicate increased resources to the enforcement function, Council is currently considering a proposal to establish a committee to increase awareness of the requirements of the Act, to increase activity through participation by Association members in seeking voluntary compliance and to target the use of resources for the most effect.

A 1992 request to have the RCMP investigate a case of alleged fraud concerning the unauthorized use of the seal was pursued. However, because of the death of the Professional Engineer whose testimony would have been essential to the case, the matter was terminated.

"The Office"

There are (at last count) 33 separate Boards, Committees, Task Groups and Action Plan Teams, in addition to Council and various Sub-Committees, which draw upon the resources of the APEM staff and office facilities. Accommodating their needs while tending to business (all without a computer system) is often a daunting task. Were it not for the dedication and effectiveness of Shirley Matile, Joan McKinley, Elaine Ryan, Donna Bilodeau, Heather Kitchen (who left us in February), Sylvia Reid and Linda Hazelwood (who joined us in May), the level of service to the public and the membership could not be maintained. To each of them I express my sincere appreciation.

In closing, I point out that the profession is proposing a significant change in requiring 48 months of engineering work experience for registration, and emphasize that there is much work to be done over the next year to implement that and the other admissions-related changes. □

Discipline Committee



Members:
K.A. Buhr
N.P. Feschuk
R.A. Kane
D.M. Kilgour
B. King
W.R. McQuade
Dr. G.A. Morris
J.M. Symonds

***R.E. Scouten**, Chair*

Since its appointment in January, 1992, the Discipline Committee has had no charges brought before it. While this might seem to infer that the Association is overly tolerant or that the members are free of wrong-doing, this is far from the truth. The fact is that the Association's obligation to protect the public has been well tended to by the Investigation Committee. This committee has ruled upon many complaints against our members.

For those who might be unclear on this subject, the Discipline By-Law that took effect on November 25, 1991, provides for two committees: the Investigation Committee and the Discipline Committee. The Investigation Committee is empowered to investigate a complaint and, when appropriate, lay charges, convict, and impose penalties. Written consent of the penalty by the charged member is a requirement. Procedures are informal.

If the member does not consent to the penalty or if the Investigation Committee deems it necessary, the charges are brought before the Discipline Committee. The charges are heard under formal procedures much as in a court of law where the Investigation Committee (the plaintiff) and the member (the defendant) are represented by legal counsel. The rules of evidence apply and transcripts are recorded. The Discipline Committee decides the case on the evidence presented by both parties. If a penalty is imposed, the member has the right of appeal to the Court of Queen's Bench.

The Discipline By-Law has proven to be an excellent workable formula for the fair and expeditious resolution of complaints in an informal way while providing for recourse to a quasi-judicial process when necessary. □

Annual General Meeting Committee



Members:
K.H. David
R.R. McKibbin
K. Puchall
B.R. St. Amant
E.A. Speers

***T.L. Holden**, Chair*

During the past year the committee has developed and directed activities related to the Annual General Meeting. The activities have covered a wide range, from program development and arrangements, through selection of guest speaker and topic for presentation, to budget and development of the format for the Annual General Meeting.

To the members of the committee and staff of APEM, the Chair owes a debt of gratitude for the enthusiasm, uncompromising debate and long hours of work. □

Sports Committee

Continued from page13

events. Interested parties are simply asked to contact any member of the committee.

My thanks to the Sports Committee members who all sacrificed their time and efforts to ensure that this year's events were all successful. A special thanks to both Bill Mackenzie and Harold Wilson who left our committee shortly after our curling bonspiel. Good luck to both of you. Your leadership and dedication were greatly appreciated. □

Director of Admissions' Report

Continued from page 6

In March, Council decided to allow non-residents of Manitoba to become members of APEM. (The Act requires only that transferees be living in Manitoba; so we've since been administering the process used for first-time registrants to all qualified Canadian citizens living out-of-province.) The new policy is conditional upon the removal of the current non-resident category of membership. (A By-Law change will be presented to the membership at the Annual General Meeting.)

In March, also, the Board of Examiners' subcommittee, chaired by Doug Chapman, completed the revision of its operations guidelines to accommodate the 1992 CCPE Syllabus of Examinations; and Council received legal advice that the Act may not allow the Association to require examinations of graduates of "recognized" programs based on transcript review. (Act changes to address this are being proposed, as is an interim definition of the word "recognized"!)

In June, the Ad Hoc Committee on Admission Standards presented its long-awaited Manual on Admissions to Council, and Council heard arguments from both sides of the "log-of-experience" issue.

In June, also, Council changed its decision regarding the four-year work-experience requirement. Now, the increase will take place in a single step, from two to four years, on January 1, 1995.

In July, Dave Ennis and I met with legal counsel to discuss improvements and proposed revisions to the Engineering Profession Act.

In August, Council agreed that an Experience Review Board should be established to review the engineering work experience of all applicants (instead of leaving this responsibility with a single person), and that a Registration Board should be established to approve all applications and serve as an appeal body.

It was in August that the CCPE Guideline for the Professional Practice Exam was adopted, and that Council addressed the abolition of the non-practising category of membership. Council decided that, the membership approving, (because a By-Law change will be required), a "retired" category of (non-practising) membership should be created, and a dues abatement/deferral policy developed for practising, unemployed members.

There remains much business yet to be finished. The Manual on Admissions has to be finalized; the Registration Board and Experience Review Board, envisioned in the Manual on Admissions, have to be established, their terms of reference developed and their operations manuals prepared; a procedures manual is required for the Admissions staff; the Professional Practice Exam has to be developed and implemented; the four-year work-experience requirement has to be addressed and information disseminated; and an EIT program has to be developed documented and publicized: all by December, 1994! In addition, a By-Law change has to be recommended regarding retired members; a dues-abatement policy has to be developed for members in financial distress; and proposals for Act revisions have to be finalized and presented to the membership. If anyone out there is interested in assisting us with any of these activities, please let me know!

I am extremely fortunate in having the competent and reliable support of Donna Bilodeau, Admissions Co-ordinator, who is constantly taking on additional responsibility; and Sylvia Reid, who tirelessly assists us with an ever-increasing number of tasks. Thank you, both, for your continued commitment and perseverance! □

COMMITTEE REPORTS COMMITTEE REPORTS COMMITTEE REPORTS COMMITTEE REPORTS

Ad Hoc Committee on Admission Standards



Members:
K.A. Buhr
D.A. Ennis
N.P. Feschuk
Wm.M.A. McDonald
S.M. Matile
W.R. Newton
E. Ryan

K.M. Jardine, Chair

The Ad Hoc Committee on Admission Standards has finally completed its task: a draft Manual of Admissions for the Association!

The draft was presented to Council after five long years of contemplation, deliberation and evaluation.

The Manual of Admissions is a general document which establishes qualifications and requirements for registration. The draft, as presented to Council, contemplates a four-year work experience requirement; a structured engineer-in-training (EIT) program; a closed-book, invigilated Professional Practice Examination for registration; separate "examinations" for EIT membership and temporary licensure; and the review of all applications by a new board, rather than by a single staff member. It provides specifications for satisfactory engineering work experience (based on CCPE's National Guideline), and requires all applicants to provide references from Professional Engineers. It also introduces "good character" and "demonstrated professionalism" requirements for applicants.

This Manual is just the beginning. Once approved and adopted by Council, all of the new items contemplated in this Manual -including two new committees, a formal examination and a formal program for EIT members - will have to be developed.

I would like to thank all of the committee members- past and present- for the considerable time spent deliberating over the various issues. Your input was much appreciated. I would also like to thank Bill Mackenzie, who prepared the original document from which the committee created its Manual. □

COMMITTEE REPORTS COMMITTEE REPORTS COMMITTEE REPORTS COMMITTEE REPORTS

1300% Return on Research Dollars

By: J. Lucas, P.Eng.

An almost unknown, and consequently unused, research resource is available to industry which can leverage financial contributions by a factor of up to 13:1 while obtaining valuable and usable results, providing university support, educational opportunities, and a well-trained graduate-student base.

Conversations with Professor Digvir Jayas, Department of Agricultural Engineering, University of Manitoba, show how the system works in the case of the following research program.

Prince Rupert Grain Ltd., a B.C. firm, required research to be done in the area of grain sampling and grading and identification of foreign material in grain. This firm was put in contact with the Dept. of Agricultural Engineering at the University of Manitoba and it was determined that qualified and interested people were available to perform research in this area.

Once the client was connected with Professors Jayas and Bulley, the two parties evaluated the client's requirements and the financial input available. In this case, $15,000 per year for three years was available from the client to support the research program.

With the scope of work defined and the cash support in place, Professors Jayas and Bulley applied for grants from the Natural Sciences and Engineering Research Council of Canada (NSERC) and also from Agriculture Canada. The applications were accepted and each agency provided $15,000 in matching grants (per year for three years).

These leveraged funds allowed Professor Jayas to expand the research staff from one student (who would be supported by the client's $15,000 contribution) to four students - two Masters and two Ph.D. students who were supported by $10,000 per year University of Manitoba Graduate Fellowships.

The research program is headed by Professor Jayas and the four students have full use of the university facilities and equipment as well as technical and office support. Where the research moves out of the immediate areas of expertise of the team members, further support is available from members of other university faculties.

This example of Industry/University collaboration has produced dramatic leverages of the client's financial contribution. Assuming a 50% tax-break, the yearly $7,500 after-tax contribution has resulted in $65,000 per year of financial support along with the no-charge contributions of Professors Jayas and Bulley, technical and office staff, as well as the research equipment and facilities. The total value of this project input has been estimated at $98,000 per year, or a leverage of 13:1. Professor Jayas is quick to note that every research project will not produce usable results; but even a pessimistic 25% success rate will return high-value results to the industrial participants. It must be noted that each project participant is self-motivated to produce a successful thesis or research project.

NSERC's mandate is to support University research programs and maintain a supply of highly educated students. For appropriate research projects, other federal agencies such as Agriculture Canada have a similar matching grant program.

The industry-supported research projects provide thesis opportunities for Masters and Ph.D. students in areas driven by Canada's industries.

These same research programs allow our universities and professors to fulfill their mandates of providing research and training to the public and not merely sitting in "Ivory Towers", as may have become the popular impression.

This appears to be a win-only situation for the four players in this program - Industry, NSERC, Student and University (five for this project when Agriculture Canada is included) - and it is, but with some risk.

The grant support may not be available to every applicant; qualified students may not be available when required, so some delay may occur.

With these risks in mind, it must be agreed that the results of such a program would be far greater than what could be achieved by the basic client-financing above.

To access these programs, interested industry members should contact the Institute of Technological Development at the University of Manitoba, which in turn will match the research requirements with the appropriate faculty and professor. The client and professor will then evaluate the scope of work and together determine the project potential. It may not be the type of research supported by the program or it may be ideal for further support and funding; but the only way to evaluate the project potential is by working through the process with your university representatives. □

A Needed Change in Engineering Education?

By: J. Graham, P.Eng.

A recent issue of the Manitoba Professional Engineer (April 1993) contained three items on education for engineers: two by B.A. Dobran describing briefs presented by APEM and the Faculty of Engineering at the University of Manitoba to the University Education Review Commission, and the third by S.M. Matile outlining the performance of first-year engineering students in their university examinations. It is a truism that education is the future of engineering, as of any profession. This attention to educational matters is therefore welcome.

The items in the Manitoba Professional Engineer identify the continuing need for engineers, the requirement for additional university funding, and extensive efforts being made by the Faculty to improve both the breadth and the quality of its graduates. For example, in civil engineering, which I know best, the civil and geological engineering programs have recently been amalgamated in a new Department of Civil and Geological Engineering, an active co-operative education program is in place, many sections of the department have introduced new content and have active specialist training at the Master's level, and a new degree program has been proposed in environmental engineering.

However, as S.M. Matile reports, we also know that current failure rates in first year engineering at the university are very high. The current average of 4.7 years to complete a nominal four-year program suggests that the "fit" between high school and the university has been poorly designed. I have (admittedly anecdotal) evidence that high failure rates adversely influence our ability to attract a representative proportion of the ablest young men and women into engineering. The situation is not very different in other Canadian universities.

Policies that have been recently announced by the Manitoba Department of Education seem unlikely to lead to a better fit in the future. The teaching of maths and science is weak in Manitoba high schools, and is likely to become weaker if the current policy of "destreaming" is extended. Our schools emphasize other skills, and I accept that this does produce important social benefits. Nevertheless, other countries have stronger maths programs, and begin calculus much earlier. This can then be used to make their science courses more rigorous.

The responsibility for effecting improvement therefore seems to lie with us in the profession and the universities. I believe that the time has come when we must seriously question whether graduate engineers can be successfully produced in four years following high school.

Most other professions need pre-professional training at university level (for example,



medicine, law, pharmacy, dentistry, dental hygiene, architecture, medical rehabilitation, management, and, recently, education). Are we selling our profession short if we retain direct entry from the schools? Are we producing graduates with narrow skills, and not enough "civilized" engineers? As a profession, do we focus too much on modern technology, and not enough on the need to serve society? Are we still uncertain about the relationship between university education and in-work training? My experience elsewhere leads me to answer "Yes" to each of these questions.

What should be done? A suggestion which is beginning to receive attention in Canadian universities is to introduce a pre-professional year at university level before students enter engineering. The year could contain perhaps 80% of prescribed maths, science, and English courses, plus 20% of more-general studies. Following this pre-professional year, students would select themselves into engineering on the basis of their performance in university examinations. After the pre-professional year, a newly designed four-year program would allow the quality of the material in years two to four of our present programs to be improved.

Many of us in the university have considerable concern about "force-feeding" in our present programs, with six (sometimes seven) courses per term. (The rest of the university commonly has five, and even this is large in an international context.) Reduction to the university-wide average of five courses per term would permit more emphasis on quality of content rather than on quantity. There is no particular educational advantage in assigning excessively heavy work loads in engineering courses.

Dean Laliberte has rightly argued that the University of Manitoba cannot move alone towards a "1 + 4" year program in engineering. I hope this short article may stimulate further discussion and debate in Manitoba, leading to proposals that can be taken by APEM to CCPE for adoption by the Canadian Engineering Accreditation Board (CEAB). My travels tell me that other provinces are also concerned about the academic preparation of students entering engineering. We should attempt to focus this concern and move towards improvement.

Please discuss this suggestion with your colleagues, then let APEM Council and Dean Laliberte know your views. The Faculty is currently engaged in efforts to improve its first-year programming. However, my impression is that we may need to undertake radical revisions along the lines of the "1 + 4" suggestion, rather than the small though valuable improvements that typically come from evolutionary change. Designing a better mousetrap is not much help if we are trying to catch big fish. □

J. Graham is a Professor of Geotechnical Engineering in the Department of Civil and Geological Engineering at the University of Manitoba.

A Dangerous Business

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inform and educate the farm community about the dangers associated with farming and the methods for preventing farm accidents. The safety program, entitled Farm Safety Day, consists of a one-day exposition of farm safety displays set up in a local community centre. Local farm families are invited to attend the exposition and gather information on a variety of farm safety topics relating to electricity, machinery, chemicals, animals, and other miscellaneous topics. The expositions normally attract over 20 farm safety displays and an average attendance of over 400 people.

In summary, more initiatives such as Farm Safety Day are required to strengthen the weak link in farm safety and reduce the number of farm injuries and fatalities in Manitoba. □

Council Reports

June 29, 1993

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

AT WHICH COUNCIL CONSIDERS ADMISSIONS ISSUES

The June 29 Council meeting was a meeting about Admissions; and you will note that it is the Director of Admissions who, in the absence of a reporter with an impartial point of view, was recruited to prepare this report. I request your forgiveness, therefore, for any perceptible lack of objectivity in the following account of Council's deliberations.

Sadly, Council was only able to maintain a quorum for three hours, so many of the issues on the agenda could not be discussed. The discussion that did take place, however, was extremely fruitful. Council definitely made some headway that day! The first contentious item was the recommendation that Council revoke its decision to increase the minimum work experience requirement for registration to three years in 1994, then four years in 1996, and opt instead for a single-step increase to four years in 1995. Even though the three-year/four-year decision had been based on the national (CCPE) recommendation, Council unanimously concurred with the argument that the three-year step would serve no useful purpose and would comprise an administrative burden. It is now the decision of Council that the minimum engineering work experience requirement be increased from two years to four years, effective January 1, 1995. (Details, grandfathering requirements, etc. have yet to be developed - but will be published in the MPE as soon as they are!)

It is now the decision of Council that the minimum engineering work experience requirement be increased from two years to four years, effective January 1, 1995.

The next item, which warranted and received considerable attention, was the Association's new Manual of Admissions. This document - four years in the making, and still just a rough outline envisioning a number of processes and programs yet to be developed - was discussed at great length.

The new Admission Standards contemplate the four-year minimum work experience requirement; a new set of criteria for evaluating engineering work experience; a new professional practice examination; a new program for EIT members; a new Experience Review Board with terms of reference (not yet developed) significantly different from those of our current Admissions Review Board; a brand new Registration Board for approving applications and hearing Admissions appeals; and generally more stringent requirements for membership than are currently in place.

Those councillors present reviewed, in detail, the first four sections of the Admissions manual. During the review, they approved the section on academic qualification; they decided to set up a task force to look into developing a program for graduate engineers not working under the supervision of registered engineers, and to recommend changes to the Engineering Profession Act to accommodate such a program; and they decided that a new Experience Review Board should be established to review the engineering work experience of all applicants (a task currently performed by APEM staff).

At this point, the loss of a quorum being imminent, Council quickly moved to the new Board of Examiners' Operations manual and the 1992 CCPE Syllabus of Examinations, both of which it approved on an interim basis pending a detailed review at its next meeting.

Without a quorum, there remained little point in continuing. It was agreed that the review of the Admission Standards would continue at Council's next meeting; and consideration of the action plan for the new Professional Practice Examination was again deferred. Hopefully, more members of Council will be able to attend the August meeting, and be prepared for a full afternoon of deliberation. There is much work to be done in this area. □

August 9, 1993

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

AT WHICH COUNCIL ACHIEVES A MANUAL OF ADMISSIONS WITH ASSOCIATED BOARDS AND THEIR WORKINGS

With D. Osman, A. Permut, D. Chapman, R. Hoemsen, M. Symonds, P. Feschuk and M. Cornell present and giving a small margin over the quorum, Chair C. Anderson started into a 23-item agenda - rather lengthy. Shirley Matile acted on the vacationing Dave Ennis's behalf, and Joan McKinley acted as keeper of the action.

1. Finance.

With one month to go on the fiscal year, it was noted that revenues were carrying a larger-than-average surplus, which would be of considerable assistance to the installation of the computer system.

However, the Publication Committee has an over-run due to its 16-page issues, which will probably mean fewer issues of this size in the coming year.

Registrations, Transfers, Licences, etc.

These items come under the purview of Shirley Matile, Director of Admissions, and she advised that for the first time in her administration of this function, all applications appeared to be in good order requiring no further consideration by Council.

One item, relating to the payment of dues, when the deadline of July 1st draws near (dues can be paid anytime after the previous November), and after which de-registration takes place: it was recommended that registered mail be used by the staff in all notifications relating to payments and it was strongly recommended that members be advised to do likewise in making their submissions of dues.

2. Manual of Admissions.

This manual, the first compilation of all aspects of admission/registration, both from an academic as well as a work experience view point, is the result of much staff and committee time and effort. In the future, for those persons for whom registration presents some problems, this manual can assist in understanding the complexities of registration and may be available for an applicant's review. It will indeed be a very useful document to all those concerned with this aspect of the administration of the Act.

Arising from the compilation of this manual is a recommendation that would see the formation of a Registration Board and an Experience Review Board. Work experience, particularly of younger members commencing their careers, can sometimes be a difficult item to evaluate. The expertise of these Boards will be invaluable in this matter.

While the manual had previously received general approval, Council reviewed and/or approved various clauses which will assist in the completion of the document.

3. Associated aspects of registration.

Council has approved the CCPE guideline for the professional practice examination, and a sub-committee will be established to review these guidelines and prepare the procedures for implementation of a formal examination by APEM. All of this should lead to a uniformity on a national basis for this aspect of registration.

Council also approved the CCPE interim agreement on inter-association mobility, which will allow members of good standing and satisfactory experience to move from one association to another with a minimum of re-registration.

4. Non-Practicing Membership Category.

On first thought, one might consider how the Association could accommodate such a category and who would fit into it. This category is currently under clause 36 of the By-Laws and an accessory to this clause is what fee, or if any fee, should be applicable to this category.

In summary, Council dealt with the retired member aspect by deciding to

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Effective Communication – A Key to Success for Engineers

By: S.P.F. Fedyna, P.Eng.(AB) ATM

I faced the most intimidating audience of my professional career as an engineer in July of 1988.

A group of Vice-Presidents? A convention of overseas experts? My boss at appraisal time? No, far worse: a bus-load of junior-high- school students. A colleague conned me into taking over his tour of our refinery and, as hard as I tried to make our complex facility seem simple and interesting, I only got one question from the group: "Do you have a girlfriend?"

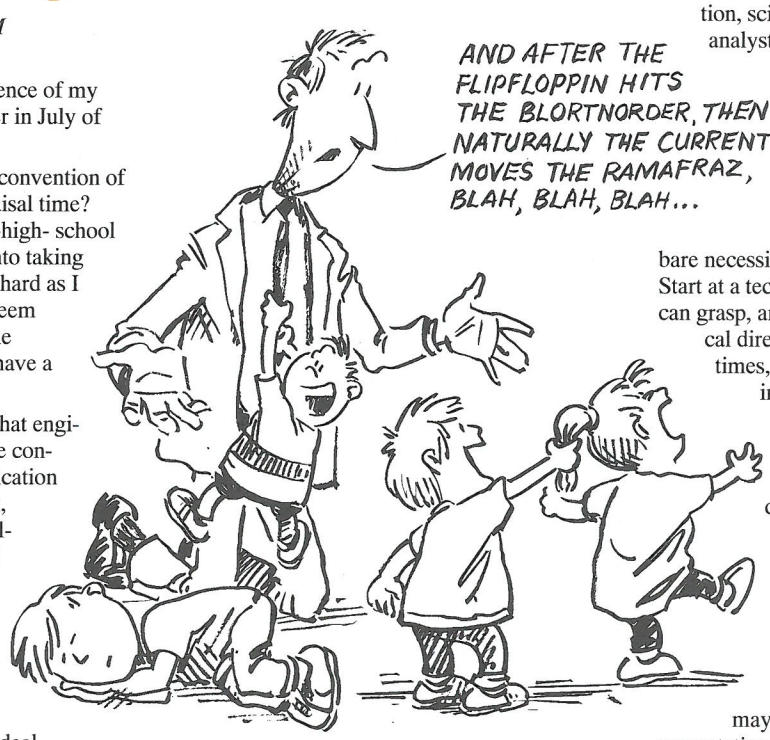
From this experience, I learned that engineers and scientific professionals are constantly challenged by new communication demands. Effective communication, whether one-on-one, one-to-a- small-group or one-to-thousands, is a vital skill for scientific professionals. Communication skills are necessary to accomplish tasks and to be successful in our changing, competitive world, yet they are difficult to develop because of the complex, technical subjects that we deal with. Furthermore, engineers are prone to some typical communication errors.

The importance of superb communication skills cannot be underestimated. Layoff pressures continue to grow in many companies. While technical competency is expected, communications competency may be the edge that sets you apart. After all, how can your company reward you or your colleagues recognize your achievements if they do not understand what you have done? It's tough!

Engineers and scientific professionals face the biggest communication challenges of any of the professions. Their subjects are very technical and their audiences are varied.

Since engineers specialize in work that is very technical and often unique, they develop an understanding of their areas that often exceeds that of their supervisors or closest colleagues. After spending hours unravelling extremely complex problems, they are faced with the challenge of explaining the answers clearly and succinctly to people who know much less about their technical challenges. It's tough!!

The audiences that engineers must communicate with vary from the technically adept to the technically illiterate. Researchers, technicians and colleagues all have high levels of technical understanding that have to be accommodated in effective communication. Management may or may not have technical competency in an area. Contractors, tradesmen and sales agents may have widely varying degrees of technical competency. The general public is an increasingly concerned, but sometimes scientifically illiterate, audience. Scientific professionals must deal with all of these different audiences without condescending or wasting time. Quite a challenge !!!



"The importance of superb communication skills cannot be underestimated."

Some Tips

1. Know your audience

The worst presentation I ever made was a project proposal for a waste-treatment facility. I presented fascinating, thought- provoking scenarios based on the intangible benefits of the proposed facility. I used colourful diagrams of the layout and interesting charts of the cost break-down. It was an interesting and informative 20-minute presentation to a group of busy executives who wanted a five-minute presentation on cost, net present value, return on capital employed and the construction time-table. I made a fundamental error of communication. Whether you are speaking to one or a thousand, KNOW YOUR AUDIENCE!

If your audience is used to overhead slides, give them the most crisp, professional slides you can manage. If your audience wants wall charts, roll out bright, informative wall charts. If your audience has five minutes, pack four minutes full of the most significant facts and figures. Ensure that your presentation, content and style are appropriate to the audience. Don't provide technical details to a high-school audience, and don't provide vague generalities to your management.

2. Stick to the point

Engineers and scientific professionals are often guilty of wandering from their subjects. Often, they know so much information in such great detail that they fear their audiences will lose a great deal if they do not understand the exact, precise connotation of their subject matter. In addition, scientific professionals tend to be superb analysts and logical thinkers, so they want to impress their audiences with the depth and breadth of their thinking abilities. The unfortunate truth is that most audiences are far less interested in technical presentations than the presenter.

Provide the audience with the bare necessities. Never exceed your allotted time. Start at a technical level that most of the audience can grasp, and proceed in an increasingly technical direction only as far as necessary. Sometimes, providing too much information only invites unneeded debate about trivial details.

Be aware that some members of your audience will try to demonstrate their own technical knowledge or superiority by asking you questions that are unnecessarily complex or that they already know the answer to. Interrupt politely, compliment them on their astute perception, and suggest that the answer is so complex that it may best be dealt with outside of your presentation.

Keep it simple, and your audience will be impressed by your concise understanding of the most important aspects of your area. Don't worry - if they need more details, they'll ask!!

3. Make it interesting

Even the most staid, business-like manager appreciates an interesting demonstration or a story that relates a technical concept in a personal way. Nobody forgets presentations when the speaker brings in a jar of drilling mud, a container of a reaction catalyst or a prototype of a new product.

Avoid reading speeches, unless it is to the media or in a situation where your word choice is crucial. Presentations made in a natural, conversational style tend to be more interesting than reading from a prepared script.

Anecdotes personalize a presentation and capture the audience's attention, as long as they are appropriate and relate to the subject manner. Humour keeps an audience awake. People learn more quickly and retain more information when they are enjoying themselves. However, even in small groups the boundaries of good taste should never be exceeded.

The key to making presentations interesting is to be willing to spend a little creative presentation time dramatizing your point without appearing corny, excessive or phony.

4. Acronyms and Jargon

Acronyms and jargon are actually necessary in some instances and are totally destructive in others. A well-site geologist who writes "Pulled Out Of Hole" a dozen times on his drilling report instead of POOH looks foolish. In a staff meeting

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Effective Communication

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an electrical engineer would not use Very Large Scale Integration Complementary Metal Oxide Silicon Dual Inline Package to describe the VLSI CMOS DIP she planned to design. If computer engineers didn't describe the installation of the Application Program-to-Program Communication Virtual Telecommunication Access Method System as "putting in the AVS", they might never get any work done.

Scientific professionals have their own acronyms and jargon that they use and understand, and they must use them or they will appear incompetent or condescending.

On the other hand, the general public has a degree of "technophobia"; they fear that they will not understand technical presentations, and they are looking for an opportunity to become alienated to technical speakers. When an engineer, geologist or geophysicist uses even one single technical term to a non-technical audience, they can turn off up to half of their listeners.

Keep the jargon and acronym usage of your presentations appropriate to the knowledge level of your listeners.

5. Be Sincere

One of the biggest mistakes that anyone can make when communicating is to come across as insincere. There is no need to put on a different personality when you are speaking to a group. Your persuasive ability is greatest when your audience trusts and believes you. Be yourself.

Sometimes, your own natural style will shine through only when you have had a lot of practice. Be willing to invest the time to develop your communication skills so that your natural enthusiasm is apparent.

Communicate and be Successful!

There are no absolutely correct ways to perform technical presentations; there are many different styles and techniques that can be used effectively. There are, however, some nearly certain ways to alienate or discourage your audience. Remember to stick to your point, use appropriate language and give the audience what it wants in an informative, interesting manner. Always be yourself and let your natural charm and knowledge of your subject shine!! □

Steve P.F. Fedyna is a registered Professional Engineer in the Province of Alberta. His background is in the design and management of oilfield facilities, and he currently works as a facilities engineer for Imperial Oil Limited. For the last six years, he has been a member of Toastmasters International, a non-profit organization dedicated to improving leadership and communication skills. He has presented public-speaking seminars to various professional groups and high school audiences.

August Council Meeting

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retain a "retired" category, whose members would use the title "P.Eng.(Ret)". For the student category (i.e. members who return to university), and for the unemployed category, it was resolved to use the B.C. Association approach for these categories which appears to set forth comparable circumstances and fee abatement programs that would apply to these two categories.

As a guide to Council, Shirley Matile had previously canvassed all associations on this non-practicing category and the results were of considerable use to the Council in their evaluations.

In conclusion, the writer detected a sense of accomplishment on matters of registration, examinations, work experience, etc. Certainly the business of the Association knows no holiday season, nor short agendas! With a non-contested motion of adjournment, the meeting ended at 5:30 p.m. It had been a long agenda and a rather lengthy day. □

ROSTER UPDATE/CHANGE OF ADDRESS NOTIFICATION

Full Name _____

New Address _____

City _____ Province _____

Postal Code _____ Country _____

Employer _____

Position/Title _____

Bus. Tel. _____ Date Effective _____

Mail to: A.P.E.M., 530-330 St. Mary Ave. Winnipeg, Manitoba R3C 3Z5 or FAX (204) 942-3718

Coming Events

PROJECT MANAGEMENT PRINCIPLES

October 25-26, 1993 in Winnipeg

Contact: Technical University of Nova Scotia
Telephone: (902)420-7797 or
toll free 1-800-565-0703
Fax: (902)423-9859

The Professional Engineer's Wives Association of Manitoba

PROGRAM 1993-1994

Contact: Hannya Klimenko
Telephone: 231-0554

Tuesday Oct.26/93	**Luncheon and Fashion Show** at St. Charles Country Club, 100 Country Club Road. "What's New in Fashion for winter, holidays, and cruise" by McPhee Workshop.
Tuesday Nov.23/93	**Luncheon and Tai-Chi** demonstration at Niakwa Country Club, 620 Niakwa Road. Unique exercise option for flexibility, strength and stress-reduction by Tai-Chi Manitoba instructors.
Tuesday Jan.25/94	**Luncheon** - Winnipeg Winter Club, 200 River Avenue Speaker: Dr. G. Pandy "Health, Nature, and our well-being".
Tuesday Feb.22/94	**SURPRISE!** Don't miss it! - to be announced.
Thursday March 24/94	**Wine and Cheese** with display and demonstration of floral arrangements by John Pollan from Canadian School of Floral Art at the Prince of Peace Lutheran Church 930 Winakwa (Windsor Park)
Tuesday April 26/94	**ANNUAL MEETING AND LUNCHEON** Niakwa Country Club, 620 Niakwa Road, Bridge at 10:00 a.m. Entertainment by Children's Choir. Luncheon Reception 12:15 p.m. Lunch 1:00 p.m.

Attention Curlers!

The next Annual APEM Curling Bonspiel will be held on Tuesday, January 11, 1994, at The Granite Curling Club. Details to follow. **Mark your calendars now!**