THE MANITOBA
Professional Engineer
ASSOCIATION OF PROFESSIONAL ENGINEERS OF THE PROVINCE OF MANITOBA
February, 1992

Winnipeg's Water Supply – How Long Will It Last?

By: D. Sacher, P. Eng.

Each decade, the City of Winnipeg's Waterworks, Waste and Disposal Department conducts a comprehensive 50-year planning study of the regional water supply system to define water quantity and quality requirements. The current study, being undertaken by Wardrop Engineering Inc., will identify requirements to meet public demands until the year 2040. The project will ultimately define a detailed course of action to assure water requirements are adequately met until then.

The study is being undertaken in three phases, to provide opportunities for consultation with senior City policy levels and the public. Phase 1 of the study was completed in May of 1991. Activities undertaken in this phase consisted of:

- examining the strengths and weaknesses of the existing supply system;
- defining future water supply and quality requirements;
- assessing the ability of the existing system to meet these expectations;
- identifying possible ways to meet future supply needs and the required components;
- identifying the key planning issues.

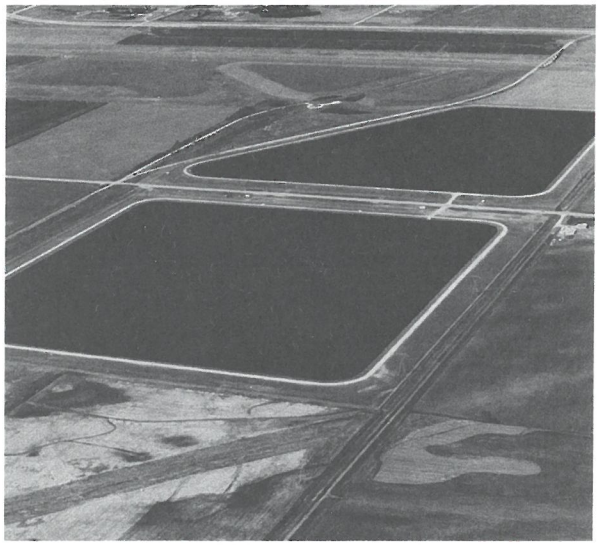
Phases 2 and 3 of the study will review the options established in Phase 1 and will elaborate on details of system improvements, further develop cost estimates, review the future financial framework of the utility, and recommend an implementation program.

Background

The water supply system for Winnipeg dates back to 1882, when a private company drew water from the Assiniboine River and pumped it into approximately 36 kilometres of cast iron mains. This supply, however, was of inferior quality and could not meet the demands of the growing community. In 1899, the City purchased the waterworks system, and began to use artesian wells, located northwest of the City, as its supply. However, it soon became evident that this supply would be exceeded by demand. After much investigation, the City and a number of municipalities formed the Greater Winnipeg Water District, and adopted a scheme whereby Shoal Lake would become the supply source.

The construction of the aqueduct began in 1913 and on March 29, 1919, Shoal Lake water first reached the City. Because of the isolation of Shoal Lake from human activity, water treatment was not required.

Today, however, the City is facing several challenges with respect to its water supply. The aqueduct requires repairs to extend its life, and water demand is projected to exceed the supply capacity by 1997. Proposed developments in the Shoal Lake watershed pose a threat to the existing water quality. Recent North American trends toward increased water quality regulation and stringency could eventually impose the need for water treatment. The study underway is expected to address these concerns.



The existing Deacon Reservoir. Plans for expansion to another two cells are underway. Pending environmental approval, construction is expected to start in 1992.

Supply/Demand

Two factors contribute to increasing demand for water: population growth, and per capita consumption growth.

Population projections to the year 2040, developed by the City of Winnipeg Planning Department, were used to project the potential impact of population growth on demand. This projected population growth would account for only a 10% increase in water demand by 2040.

Based on the statistical analysis of historic water consumption information since 1922, per capita water consumption is expected to increase by 50% by 2040. These projections presume unrestricted use of water, and do not reflect potential results of future water conservation programs.

Growing per capita demand, therefore, is the major factor contributing to the need to increase supplies. Assuming no increase in per capita water use, the present system has enough capacity to accommodate Winnipeg's projected population to 2040. Further investigation revealed that the residential sector is largely responsible for the growth in per capita consumption. Therefore, it has been concluded that the residential sector be targeted in a water conservation program. Conservation efforts can defer the need to provide supply system expansions, thereby deferring major capital expenditures. This in turn rewards consumers by avoiding large rate increases due to capital debt. A water conservation program will be developed in Phase 2 of the study, and could include public education programs, retrofitting of existing fixtures with water saving devices, revisions to the plumbing code, water-efficient landscaping, reduction of municipal water losses, and revisions to the rate structure.

Two near-term options have been developed which could defer large capital expenditures. These options would not meet demands to 2040, but are low in cost and could become functional parts of the long-term strategy.

The first of these near-term options is the construction of Cells 5 and 6 at Deacon Reservoir.

Continued on page 9

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ENGINEER-IN-TRAINING MEMBERSHIP NOVEMBER & DECEMBER, 1991

R.J. Babcock
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WITH DEEP REGRET THE ASSOCIATION RECORDS THE PASSING OF:

C.J. Love
M.E. Thompson

Engineers in the News

■ **Brien H. Kautz**, EIT, B.Sc. Electrical Engineering, 1991, University of Manitoba, has received the Four/Five Year Student Paper Award from the Instrument Society of America (ISA). His paper - "Measurement of Power System Harmonics Using Digital Sampling and Computer Analysis" was recognized for its depth of understanding and originality.

He is now a control systems engineer for Kilborn Manitoba Ltd., in Winnipeg, Manitoba.

■ Professor **Sami Rizkalla**, P. Eng., Department of Civil Engineering, has been appointed Director of the Structural Engineering and Construction Research and Development Facility at the University of Manitoba.

The facility is involved in a number of innovative projects relating to soil swelling and heaving, wind and earthquake stresses, and research on hydro transmission towers. □

John Vardon Memorial Scholarship

This is a scholarship program for studies in transportation engineering. An award of $1,250.00 is available to assist in the payment of tuition, fees, books and supplies for the 1992-1993 academic year.

Eligibility

1. Candidates shall submit evidence of acceptance, or probable acceptance, for study in a program in transportation engineering.
2. Candidates must be registered as full-time students in a transportation program at a Canadian University.
3. Candidates must be Canadian citizens.

For application forms please write to:

D.I. Allingham, P. Eng.
Manager,
Transportation Engineering
Totten Sims Hubicki Associates (1991) Ltd.
1500 Hopkins Street,
Whitby, Ontario
L1N 2C3
Tel: (416) 668-9363

Completed applications must be received by April 3rd, 1992. □

NEW MEMBERS REGISTERED NOVEMBER & DECEMBER, 1991

R.D. Altarui
D.R. Duester
A.D. Hiebert
R.A. Jeria
J.K.R. MacEwan
D.A. Paley
B.L. Townes

LICENCES ISSUED IN NOVEMBER & DECEMBER, 1991

J.A. Axelson (Minn.)
G. Bavington (Ont.)
G.R. Blair (Alta.)
W.W.N. Chan (Alta.)
R.G. Coleman (Alta.)
J.I. Daniels (Sask.)
P.F. da Silva (Ont.)
S.H. Gebler (Illinois)
D.J. Goodwill (Ont.)
J.T.K. Ha (Ont.)
E. Heinmaa (Ont.)
R. Kaliandasani (Alta.)
R.J. Kavanagh (Alta.)
V.W.F. Lessoway (Alta.)
R.C. Loewen (Sask.)
M.S.W. Mak (Ont.)
P.K. Mehta (Ont.)
D.E. Morency (Sask.)
J.R. Morris (Ont.)
H.J. Neumann (B.C.)
R.G. Patching (Alta.)
D.C. Pollock (Alta.)
B.G. Robb (Sask.)
F.G. Robb (Sask.)
H.R. Rudolf (Sask.)
K.D. Shore (Ont.)
R.S. Starling (Ont.)
D.L. Steeves (Alta.)
T.J. Zitkus (Que.)

WE HAVE LOST CONTACT. MAY WE HAVE AN ADDRESS?

T.P. Cates
W.P. Clement
C.E. Lamont
C.D. Murray
T.S. Paige
P. Po
B.S. Ram
J.M. Stacey
G.J.P. Tencha
P.A. Vrsnik

RESIGNATIONS DECEMBER 31, 1991

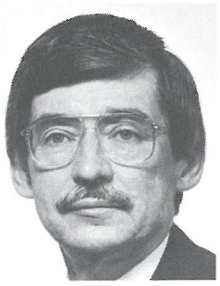
E.F. Bell
J.A. Bell
J.E. Burkell
E.W. Butterworth
K. Cassidy
K.C. Chan
H. Dansereau
S. Donison
A.H. Duffield
L.J. Eibner
R.M. Farish
D.F. Fox
W.L. Garvin
S.N. Gautam
J.A. Geib
A.R. Gibbs
R.D. Gilbert
N.C. Halden
G.S. Halter
H. Hessner
P.E.B. Hill-Carroll
D.A. Jones
A. Koropatnick
K.J. Longfield
R.S. Lopez
E. McCullins
A.J. McFarland
J.H. McGuirk
G.G. Marshall
G.S. Martin
B.E. Maxfield
L. Middleton
A.E. Minaker
R.N. Murarka
P.S. Ne Ville
L.A. O'Morrow
C.B. Pawlychka
W.E. Payne
C.R. Pike
C. Ravindran
L. Sernyk
D.P. Smal
D.G. Stanbra
M.G. Stoner
W.D. Stothert
M. Szeto
M.Z. Tarnawecky
G.O. Thorsteinson
S.B. Topley
L.M. Ubell
J.R. Waite
O. Wegner
K.R. White
T.W. Zulkoski

TRANSFERS OUT

M.H. Congdon
P.A. Klassen
J.N. McLeod
D.S. Montgomery
V.S.C. Shih
D.B. Wilson

President's Message

N.P. Feschuk, P.Eng.



Continuing competence is an issue that is of concern to both the profession and the public. In order to protect the public interest, the Association has a responsibility to ensure that its members maintain their competence. The Association must be in a position to demonstrate to the public the members' continuing competence. This puts an onus on the Association, not the member, to demonstrate continuing competence. Members may feel that the onus is on the individual member, but the fact is that the Association is responsible to the public for the regulation of engineering in the province.

The Association, for a number of years, has had a voluntary reporting program on continuing education. The participation of members in this reporting program has been very low. Recently, the reporting program has been dropped while other sister associations have begun to initiate their own similar reporting programs. The voluntary reporting program has to be reintroduced and members encouraged to report. This voluntary program has to be followed by a mandatory reporting program with those not reporting assessed a fee. The mandatory reporting programs should be followed by a mandatory requirement, say a minimum of 10 hours, of continuing education per year. This should be introduced over the next five years.

The Association, in bringing in the mandatory continuing education program, should act as a facilitator, bringing programs and courses to the attention of the members. It should work with the learned societies and universities and encourage them to have representation on the Association's Professional Development Committee.

" In order to protect the public interest, the Association has a responsibility to ensure that its members maintain their competence."

One argument I hear about continuing education for the profession is that there are not many engineering courses readily available. Continuing education does not have to be limited to pure engineering courses. Eligible continuing education activities include courses, seminars, and conferences on labour relations, business, the environment, economics, and other arts subjects as well as pure engineering subjects. One of our problems, as engineers, in considering continuing education is that we tend to make the spectrum of eligible courses too narrow. Engineering is a broad-based profession which touches all facets of the human experience.

As a member of the Admissions Review Board, it is apparent to me that many of our recent engineering graduates are finding employment with firms that do not have any professional engineers on staff. On applying for registration, the applicant finds that it is difficult, if not impossible, to register because there is no professional engineer on the employer's staff to provide a reference. The Association has an opportunity, in these circumstances, to ensure that professional engineers are utilized by industry by accommodating these potential professional engineers by instituting "the log of experience program" that the Council approved a number of years ago, and/or instituting a mentor program. This should be done immediately, since the Association has a responsibility, to the public, to ensure that engineering is conducted in accordance with the minimum requirements of the Association, as well as an obligation to the intent of the Engineering Profession Act.

Council has recently adopted a policy on sustainable development. One of the provisions is that members, in their respective work environments, are encouraged to provide leadership in the development of codes of practice in support of the goals of sustainable development.

I would like to thank the Research and Development Committee, and in particular E.F. Glass, P. Eng. and J.T. Atchison, P. Eng., for the enormous amount of effort and patience they exhibited in preparing the Association's policy on sustainable development. □

Letter to the Editor –

Shame On Us

Dear Editor:

I am very disturbed by the attitudes encountered by several local high school students who recently attempted to learn more about the engineering profession. This story is a sad example of the conflicting images that are often projected by this profession. Let me explain.

Recently, a local high school had a "career shadowing" day where each grade 12 student was required to spend a day or two in a real life working environment in the career of their choice. This was to be accomplished by tagging along with and observing a person who worked in that field through a typical day. Each student was responsible for finding a location in their field of interest and making their own arrangements. Our students were interested in a career in engineering and began calling local companies.

Our company was the 15th location called. Many locations said, "We'll get back to you in a couple of days." Only two responded and then with a "no". What hospitality! What a welcome mat to throw out to prospective engineers! We complain about lack of interest in science and technology, in the engineering profession, and then refuse kids the time to show them what it's all about. We complain about our "lack of status", yet neglect the simple little things that can improve our image. We must pay some price, exert some effort, do something in order to generate interest.

It has been well discussed that the future strength (read wealth or standard of living) of our country is dependent on these people. In an ever more competitive world, they are the ones who are expected to support the lifestyles of the retiring babyboomers. If we don't have time for them, they will continue to move away from technical careers and our standard of living will continue to drop.

Our experience was worthwhile, and eye-opening to the kids. After the experience, the students had a better understanding of why engineers need to develop knowledge of human behavior, communication, negotiations, history, etc.. They saw that this profession is much more than simply technical problems. They began to understand why holistic approaches are required.

Regards,
A. Toews, P. Eng.

Six CCPE National Scholarships Available

The following CCPE National Awards Program scholarships are available in 1992:

- three North American Life scholarships of $7,500 each for engineers returning to university for further study or research in an engineering-related field.
- two Meloche Monnex scholarships, in the amount of $5,000 each, for engineers returning to university for further study or research in a field other than engineering, to enhance their performance in the engineering profession.
- one Encon Endowment, in the amount of $5,000, for a professional engineer wishing to pursue studies in engineering failure analysis.

To be eligible for the programs, you must:

- be registered as a full member of one of the provincial/territorial professional engineering associations; and
- have been accepted for post-graduate study by a recognized university.

The deadline for all applications is May 1st, 1992.

For further information and an application form, please apply to:

Lorelei Scott
National Scholarship Program
Canadian Council of Professional Engineers
401-116 Albert Street
Ottawa, Ontario K1P 5G3
Tel: (613) 232-2474 Fax: (613) 230-5759

P.Eng. + Work = P.E.

By: J. Lucas, P. Eng., P.E.

As the Canada-U.S. Free Trade Agreement gradually comes into effect, we are becoming more and more aware of the basic similarities and differences between our two countries.

One difference, specific to our profession, is the route by which one becomes a registered professional engineer (P.Eng./P.E.).

In our Province, a graduate of an accredited university (Canadian or U.S.) is required to obtain two years of practical experience under the guidance of a professional engineer. After this period, APEM requires the P.Eng. applicant to write our open-book Professional Practice Examination. If passed, a P.Eng. registration is usually granted by Council.

Out-of-province and American engineers are typically accepted by our Association on the basis of their P.Eng. or P.E. status, and are granted APEM registration or temporary licences to practice in Manitoba upon completion of the Professional Practice Examination.

The situation is similar, but a bit more involved, south of the border.

In the U.S., two sets of examinations are typically required - by anyone, including graduates of U.S.-accredited engineering programmes - to achieve P.E. status.

The first step is the engineer-in-training exam-ination, also known as the Intern Engineer and the Fundamentals of Engineering exam. This exam may be written upon graduation.

If an applicant has significant engineering experience in the opinion of the State's Board of Registration, the EIT exam may be waived. It is up to the State Board of Examiners to determine whether it wants an applicant to write the initial exam, or will excuse the poor soul on the basis of extensive experience (or advanced age). (I was exempted from the Fundamentals examination by virtue of being 40-something).

The second examination is the Professional Engineer exam, which may be written after a minimum of four years of appropriate work experience. This exam is not waived, even if the applicant has extensive engineering experience.

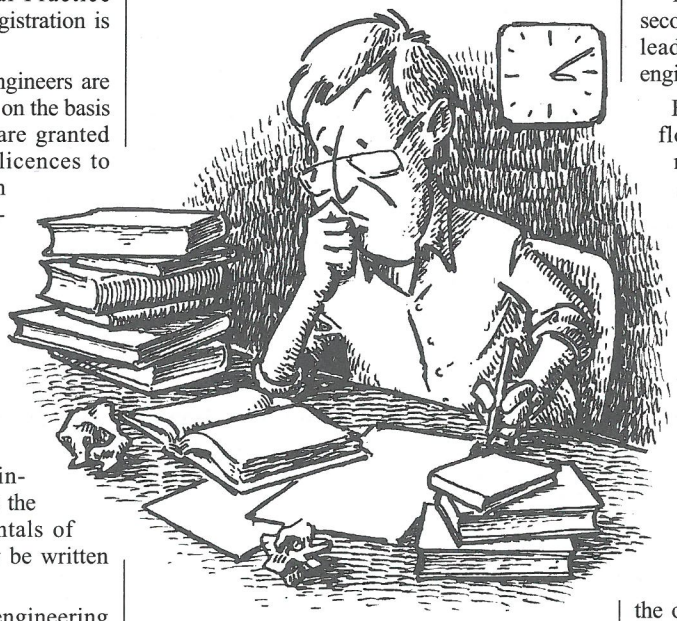
All but a few states use the National Council of Examiners of Engineering and Surveying (NCEES) examination which, if passed, will be honored by the other states using the same exams.

The exam is written twice a year, and on the same date throughout the U.S.

The P.E. examination field is well supported by organizations which cater to EIT and P.E. exam applicants. Books, tapes, historical exams and other materials are readily available - for a price, of course! - for applicants wishing to "brush up" on all of the mysteries so soon forgotten after graduation. Information on these organizations is generally provided by the State Board of Registration on request.

The kind efforts of the Minnesota Board of Registration and APEM have permitted Manitoba applicants, in the past, to write the 8-hour P.E. exam in our own Association's offices.

The P.E. exams have a 60% minimum passing grade, and are historically passed by 52% of writers. This would indicate that the exam is a serious and wide-ranging test of engineering principles and applications. The mechanical exams (all exams are discipline-specific) cover all aspects of the engineering field, including economics, heat transfer, power cycles, machine design, mechanics and combustion.



The depth of the questions will seriously challenge a new graduate, so an alumnus of some experience will have to work doubly hard to achieve a passing grade.

I've been told that the average amount of studying for the P.E. Exam varies between 100 and 200 hours.

Considering the low pass rate, I thought it would be better to apply myself and put in over 400 hours, reliving the wondrous world of rotational velocities, life-cycle costing and Reynolds numbers.

Being an open-book exam, I gathered as much reference material as I could squeeze into two briefcases. And, of course, in typical open-book fashion, if you don't know the questions you aren't about to find the answers in any of the 27 volumes stacked up around your feet!

Writing the most demanding exam of my life under the ever-vigilant eye of Mr. Bill Mackenzie was not a day ever to be forgotten!

The two four-hour sessions began with a presentation of ten problems extracted, I believe, from a list of questions rejected as too difficult by the MENSA society. Of the ten improbable, the tearful writer is to select the four most appropriate to knowledge, training and/or experience.

It broke down to one question I understood, two for which I knew most of the words, and o which began like my favourite Twilight Zo episode. The other six questions appeared to be in a Latin/Sanskrit dialect. (I knew I should have spent more time on languages!)

One hour is allotted for each question. This seems like a long time, but actually peels away rapidly when your whole career depends on this single day!

Thirty minutes after starting the exam, one of the vigilant clock-watchers tells you that four hours are up and it's time for lunch, which immediately is straight out of a Steven King novel, complete with sweating and shaking hands, constricted throat and blurred vision!

The one-hour lunch break is over in 17 or 18 seconds, and the next 4 out of 10 MENSA rejects lead into the world of aerodynamics and jet-engine cycles.

Forty-two minutes later, an angel of mercy floats into the room and saves the tattered remnants of your life by telling you that your sentence is done and you are free to join the world of the living.

You pack up your 27 volumes of collected engineer-ing works, your steam and psychrometric charts and your broken pencils and dreams, and you leave to face the world, a drained and empty vessel.

Three months is the typical waiti period for results, and with the rig approach and study can result in the wondrous news that you have joined 52% of the latest P.E. examinees. Without doubt a most gifted, talented, lyrical and joyful group if ever a group should exist.

When the dust settles and reality returns to the oversized cranium, the world falls back into proportion: heating and cooling loads are the same in Manitoba as in Minnesota, ULC is shortened to UL, and life goes on.

But don't let anyone tell you that signing P.E. after your name is only a formality.

P.E., exactly like P.Eng., should be a source of personal pride and stand for the extra effort we have all volunteered for the strength of our profession.

People ask if the exams make sense for Manitoba. I may be the wrong person to suggest that they should be mandatory, but I know I am more knowledgeable for having gone through this exercise. And isn't that where we all want to be?□

Planning to Become a P.E.?

Are you planning to become registered with one of the U.S. State Boards? If so, while you will have to make the appropriate arrangements with the Board of the State in which you wish to practise, we would be pleased to assist you by invigilating your examination(s) at the APEM offices.

Carl E. Anderson - New Vice-President

: B.A. Dobran, P. Eng.

Carl Anderson, APEM's new Vice-President, obtained his B.Sc. in Geological Engineering from the University of Manitoba in 1961, and has been a member of APEM since 1962. Mr. Anderson was President of the Association of Consulting Engineers of Manitoba (ACEM) in 1989-90, and was Vice-President, District 4, Canadian Institute of Mining and Metallurgy (CIM) in 1986-88.

Mr. Anderson started his engineering career thirty years ago with UMA, and is currently Director of Planning and Development for the Manitoba and Northwestern Ontario Region for UMA Engineering Ltd. He is also Senior Advisor and Project Manager for projects related to his field, primarily in the environmental and transportation areas, both domestically and overseas. Typical undertakings have included the development and design of tailings and waste-stream management projects for the mining industry. Much of this work was done in Northern Manitoba. Some major overseas projects took him to Costa Rica (Canal Seco Project); to St. Vincent and the Grenadines (hydrogeological and preliminary geotechnical evaluation related to the Water Resources Study, as well as water supply improvements for Kingstown, St. Vincent); Tanzania (Lower River Water Supply System Project); and Thailand (Northern Natural Resources Survey).

A.P.E.M. Vice-President Carl Anderson.

In 1992, newly-elected Vice-President Anderson would like to assist in working towards refining APEM's admissions standards and criteria. He would also like to see increased involvement, through the chapter system, of rural and northern-based engineers in this province.

A major goal of our newly-elected Vice-President is to assist in the establishment of a long-range planning process for the Association. □

1989 Canadian Engineering Memorial Foundation Presents

The First National Scholarship Awards

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

On November 7, 1991, the 1989 Canadian Engineering Memorial Foundation honoured two outstanding scholars - Sarah L. Westcott and Katherine E. Preston, the first recipients of the national awards. The scholarships, worth $5,000 each, were established by the 1989 Canadian Engineering Memorial Foundation to recognize and encourage promising Canadian women to pursue and continue careers in engineering. The Foundation is led by a group of prominent members of Canada's engineering community in memory of the 14 women engineering students slain at Ecole Polytechnique on December 6, 1989. The Foundation currently acknowledges an exceptional student in her first year and one in her last year of study in an undergraduate engineering program in a Canadian university. Selection of the recipients was based on academic standing and community leadership.

Sarah L. Westcott, a native of Saskatoon, graduated from the Evan Hardy Collegiate Institute and has just joined the Faculty of Applied Science at Queen's University. Sarah enters the engineering program having achieved 100 per cent in Chemistry, Physics, Geometry, Algebra and Calculus at the high school level. Additional scholastic achievements include the University of Toronto Book Prize, Governor General's Bronze Medal, Saskatoon Board of Education Proficiency Award, and the Vern Dallin General Proficiency Award from Evan Hardy Collegiate. Sarah has also been active in extracurricular activities such as editing the school newspaper, organizing events for the outdoor educational club, serving as production manager for the school's literary magazine, and acting as a volunteer for the Northern Saskatchewan Children's Festival. During the summer of 1991, Sarah was accepted into and attended the prestigious SHAD Valley program at the Manitoba campus. SHAD Valley, a program of the Canadian Centre for Creative Technology, introduces high school students to scientific, technological, and entrepreneurial subjects, to keep them involved in science and technology by introducing them to a number of challenges.

Ms Westcott currently plans to specialize in one of the more theoretical branches of engineering, either engineering physics or engineering mathematics.

Katherine E. Preston, a native of Ottawa and a graduate of Lisgar Collegiate Institute, is in her final year of the engineering chemistry program at Queen's University. Katherine will graduate in April 1992 in the field of environmental chemistry. Scholastic achievements include the William Wallace Near Scholarship, Dean's Award from Queen's University, and Class Medal in Logic and the Philosophy of Science, to name just a few. Before entering the Faculty of Engineering at Queen's, Katherine studied International Politics and Philosophy for one year at the University of St. Andrews in Scotland. Katherine has been an active participant in many extracurricular activities including the Engineering Chemistry Student Council, Science Formal Art Committee, Queen's varsity rowing team, and the Girl Guides of Canada. In addition, she has found the time to teach swimming and sailing, participate in numerous student committees and carry out volunteer work in Egypt. Ms Preston is a member of the Canadian Wildlife Federation.

Katherine plans to pursue a Ph.D. in Atmospheric Chemistry to gain expertise on the topics of Global Warming, Ozone Holes and other manifestations of air pollution. □

Letter to the Editor - Sexism in the MPE!

The recent "Manitoba Professional Engineer" contained numerous photographs of men, but none were described as handsome, good looking or charming. Then on Page 15 is Sylvia Reid, APEM's new receptionist whose highlighted ability is "charming".

How about an issue of the Manitoba Professional Engineer with every photograph of a man having a caption including personality describing words - it would help give the men a feel for the use of such language.

Yours truly,
Robert McDowall, P. Eng.

Important Reminder

Annual Fees

Fee invoices have been mailed to all members. Members are again reminded that receipt of fees in the Association office after February 29th, 1992 will incur a late payment administration fee of $45.00. If fees are mailed prior to February 29th and received after February 29th, the late payment fee will apply.

Also, be reminded that if all fees owing are not received in the Association office before July 1st, 1992, your name will be removed from the register and you will then be prohibited, by law, from practising engineering in Manitoba.

Engineering Management Seminar a Success

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

As part of the APEM commitment to professional development, engineers were invited to attend a seminar on management at the Viscount Inn on November 21, 1991. The seminar was designed to offer various viewpoints and concepts in managing people and business.

There were two types of presentation offered. Along with individual presenters, there was a panel representing construction contractors, private and public owners, and the Association of Consulting Engineers of Manitoba. This panel discussed the roles and expectations of one another during the typical phases of contracting and construction.

Al Bischoff, Team Motivator

The day got underway shortly after nine o'clock with the sixty plus participants making their way to the seminar in relatively good time despite the snowy weather. Al Bischoff, P. Eng., Manager of the Rebar and Steel Services Centre of Dominion Bridge, led off the morning with a presentation on the motivation of people in tough times. He began with a brief history of his company from its inception through the current recession. One of Mr. Bischoff's main thrusts was the issue of people's willingness and ability to adapt to change. He stressed the fundamental need for management and industry, as well as individuals, to adapt to economic and philosophical changes in their environments in order to succeed in the future. He illustrated his points with very entertaining and thought-provoking quotes and animations from a variety of well-respected sources, including the cartoon, Herman.

Mr. Bischoff also indicated the importance and necessity of keeping staff motivated and involved in slow business cycles, when people may get bored or depressed. He referred to various means of encouraging and praising employees, friends and even family members. He reinforced some of these concepts by outlining his company's philosophy towards servicing customers (making them feel important and treating them so). Mr. Bischoff explained how praise can motivate people to succeed and to take interest in their jobs whether times are good or bad. He offered examples of other companies and countries that have led the way in motivation and adaptability, and how their philosophies have changed the nature of people and business in their worlds.

Barb Dixon, Inter-cultural Educator

His talk wound down with an emphasis on positive reinforcement and the need for individuals to begin with positive changes in their own philosophies and lives.

After a summary of his management essentials, Mr. Bischoff entertained questions from the floor on topics such as total quality management, union influences on management initiatives, layoffs, free trade and management consultants.

Mr. Bischoff's presentation was educational and positive, and many engineers could perhaps use management principles such as these to improve their own performances in the future.

Following Mr. Bischoff's presentation and a coffee break, the construction panel took the stage to offer various viewpoints on the construction contracting process.

First to speak was Mr. Ed Dolhun, P. Eng., of the Novamet Development Corporation. Mr. Dolhun represented a private owner who may seek out the services of a consultant to transform his concepts into a project. Mr. Dolhun's approach was refreshing and humorous, and his characterization of the entire construction contracting process, from conception to completion, was enlightening, to say the least! He offered painfully true, and sometimes enhanced, impressions of the sequence of a construction project, from owner's idea to consultant's plans to contractor's execution. The audience appreciated the levity as well as the subtle points raised in Mr. Dolhun's remarks. His was a perspective that consulting engineers and contracting engineers alike can, hopefully, appreciate.

Speaking secondly for the panel was Mr. Rod McRae, P. Eng., Commissioner of Works and Operations for the City of Winnipeg. Mr. McRae offered the approach of the public-sector client. He explained the requirements of such a public-sector owner as the City of Winnipeg and why these requirements may dictate how a tender process is initiated and executed through a consultant. Because of the public interest involved in city projects, he said, such projects are rather sensitive to social and environmental issues. Mr. McRae then indicated that the city has technical and legal expectations and criteria to govern its selection of consultants and contractors as well. His presentation was brief and informative.

Representing the heavy-construction industry was Mr. Ron Watson, P. Eng., Vice-President of the Manitoba Heavy Construction Association. Mr. Watson commented on the expectations of contractors in the construction/contracting process. He explained how problems may be avoided or minimized during construction by various means, and he offered advice to those in the owner's role as well as the consultant's role.

Mr. Watson promoted understanding between the three parties of the process, while stressing the needs of contractors. He emphasized communication throughout the tendering, awarding, execution and acceptance of construction projects. His presentation represented a very practical side of the contract process.

Taking the role of a structural contractor was Mr. Paul Schmalz of P.C.L. Constructors Prairie

Panelists Bud Christie, Paul Schmalz, Ed Dolhun, Rod McRae and Ron Watson.

Inc. Mr. Schmalz addressed the expectations of consultants slightly differently. He made suggestions, offering alternatives to consultants before and during contract tender and execution. These alternatives included a material change, a method alternative and a scheduling modification. He made practical suggestions concerning field decisions and the assignment of priorities on a project. Mr. Schmalz also indicated to consultants the need for communication between all interested parties in order to streamline and improve tendering and executing contracts. His presentation was another practical lesson to many less-experienced engineers who may have been in attendance, and his advice was duly noted and appreciated by all.

Concluding the brief presentations of the panel was Mr. Bud Christie, P. Eng., representing the panel minority, the consulting engineer. Mr. Christie is currently President of the Association of Consulting Engineers of Manitoba. Although he may have felt slightly out-represented and outnumbered, Mr. Christie represented the

Steve Russell, Management Consultant

consultants and their interests quite well. His comments focused on what makes a project "good" or "bad". He outlined the life-cycle of a typical project, identifying factors that cause successes and failures. He, as did the previous presenters, stressed the importance of understanding and communication between the parties involved in a project. Mr. Christie illustrated how a consultant might be selected by an owner to design and manage a project from outset to completion. He also made the suggestion that contractors be included in phases requiring practical information exchange, such as the pre-design and tendering phases, in order to promote good relations as well as equitable tendering procedures.

Immediately following the panel's comments, a question-and-answer period gave the panelists and the audience an opportunity to discuss many of the issues and concerns raised. Numerous opinions and remarks were offered by both panel members and audience alike.

Such professional development seminars allow engineers from all sectors of business to exchange information and ideas for the benefit, not only of business, but of the profession, as well.

Thanks to these participants and presenters, this exchange was educational and enlightening. □

Managing Diversity

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

At the Professional Development Seminar, lunch was enjoyed beside the pool at the Viscount Gort. It was a most enjoyable experience. Then, although the staff had a microphone in place, our after-luncheon speaker, Ms. Barbara Dixon, chose to have us return to our "class room". We were to learn why, soon: she made extensive use of the over-head projector to illustrate her fascinating talk.

Ms. Dixon manages the Centre for Intercultural Development which is part of Red River Community College. The product of a mixed marriage (Jewish/Protestant), Ms. Dixon was exposed to inter-cultural problems from her earliest days. With this background, it was perhaps inevitable that, after studying psychology at Dalhousie, she should devote herself to the many problems that develop because of Canada's increasingly diverse society.

To set the stage for her hour-long talk, Ms. Dixon quoted from Managing Workforce 2000 by Jamieson and O'Mara: "Diversity is creating unparalleled workplace challenges. In addition to ethnic and gender differences, employees have vastly differing skills and educational levels, ages, physical abilities, cultural backgrounds, lifestyles, values and needs ...The changing composition of the workplace is creating new challenges for the management of work, workers and the workplace. How can managers and organizations become flexible enough to accommodate these differences and use diversity as a springboard to excellence and high achievement?"

Then, with slides and audience participation, she led us through a learning experience in aspects of life that could not have failed to produce change in the minds of all who were listening to her. As managers of greater or lesser ability, Ms. Dixon left us with the following lines: "As Canadians, we like to believe that our nation is founded on the principles of justice, fairness and equality. In the past, we have made the assumption that equality means treating everyone the same. Professional organizations have perpetuated this concept in their policies and practices. However, in fact, this sameness has created systemic barriers for those who are not the same as the mainstream Canadian. So, folks - what can we do? What impact can we have to make change? I have seen many conferences meet, focus, debate, summarize and then leave. What about the good ideas - the things that leap out? What about the follow-up that is necessary to make sessions like this really have an impact? I would urge you not to let them wither and die, but to create out of your learnings a vehicle to make a statement and a commitment to pursue areas that you feel are worthwhile changing. Diversity is our reality. We need to make it our strength." □

A Study of Quality

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

While some of the participants in the Professional Development Seminar may have thought that the after-luncheon address by Ms. Dixon was to be the high-light of the afternoon, the talk by Mr. Steve Russell proved to be another thought-provoking hour. Steve is "one of us", having done his under-graduate degree at the Royal Military College followed by a Master's in Business Administration here at the University of Manitoba. His talk was on, and about, the International Quality Study recently completed by his firm, Ernst & Young, in conjunction with the American Quality Foundation and many firms in Germany, Japan, the United States, and Canada (which included some here in Manitoba, we were told).

The improvement of quality, in all its applications to a firm's business, is the "fundamental business strategy of the 1990's." However, until now, "there has been no global benchmark for quality progress, no inventory or assessment of emerging quality practices, no way to link practices and results, nor any basis for establishing which practices work best within and across industries, countries, and cultures." The study, just completed by Ernst & Young, addresses this problem.

Each participant was given a copy of the "Top-Line Findings" - a 52-page report in which the results of the E&Y survey are presented, in the form of bar-graphs and pie-charts, for the four countries. A major part of Mr. Russell's presentation was to show us similar slides and to discuss their implications.

To give you a feel for the nature of this study, some of the questions asked of the respondents were:

How often do you use process cycle-time analysis to improve business processes?

What percentage of all employees is involved, to some measurable extent, in various quality-related teams?

How important is the quality performance of the business as a criterion for compensating senior management?

Most engineers develop an ability to evaluate the finished product being produced by their firm, but judging the quality of the management being carried out by themselves and others in their management team is a much harder task. A thorough study of this report should yield handsome dividends. □

Council Reports

November 18, 1991 *By: J. Lucas, P. Eng.*

AT WHICH NEW COUNCILLORS AND APEM BECOME ACQUAINTED.

The 1:00 p.m. meeting began with a full house of returning and new Council members. Also attending were lay members Ms. Gail Fyfe and Mr. Mel Cornell.

Financial statements were reviewed and explained by Mr. Dave Ennis.

The method of processing new licences, EIT's, transfers, registrations and reinstatements was explained to Council by Ms. Shirley Matile.

Mr. Dave Ennis gave an overview of the Closkey Commission findings of the Station Square structural failure in Burnaby, B.C. Council felt the need to take specific action in light of the Commission's report. Messrs. Anderson and Harrison volunteered to serve as a sub-committee to review the information prior to presentation to the membership.

Appointment of Councillors to various positions was delayed until the December Council meeting.

Ms. Shirley Matile reported on a request for lower fees for assessments of a number of applicants from a single firm. After a lengthy discussion, council agreed that "group" fees could not be granted due to the fact that all applicants are reviewed on an individual basis.

Mr. Ken Buhr, Manitoba's CCPE Director joined the meeting and presented his verbal report on activities of the Canadian Council of Professional Engineers (CCPE), which is a federation of 12 Canadian Engineering organizations. Ken's main points:

1. The importance of the continuation of Associations' self-government as opposed to coming under the control of the Provincial governments.
2. CCPE award to Mr. Bill McKay, P. Eng.
3. Limited mobility and transferability of Engineers between provinces and Canada/USA.
4. Participation by Geoscientists in the affairs of CCPE.
5. Development of CCPE strategic plan listing gains and goals. Cost implications are now being prepared.
6. Draft report on the Future of Engineering Education in Canada.

Mr. John McDougall of CCPE Executive will be attending December 1991 APEM meeting to discuss councillors' questions and concerns.

Ms. Shirley Matile reviewed Canadian Engineering Qualifications Board (CEQB) position and activities for Council. CEQB has requested that one member from APEM be put forward to fill a vacant position on the board. Notification of appointment will be forthcoming.

Ms. Shirley Matile led a discussion on the reinstatement to membership of Geoscientists, who were once, but are no longer, registered by this Association as P. Eng.'s. Legal review of this item was requested by Council.

Nominating Committee appointments were Doug Chapman and Cathy Stewart. Side item noted was the misplacement of the minutes of the Business Meeting during the Annual General Meeting.

The selection of Liaison Councillors was reserved for the December Council meeting. A number of members expressed interest in various appointments.

President Feschuk reviewed issues currently before, and items which will be coming before, Council in the near future. □

December 9, 1991 *By: W.B. Mackenzie, P. Eng.*

AT WHICH COUNCIL CONSIDERS A WEEKEND RETREAT AND ELECTS A VICE-PRESIDENT

On December 9, 1991 at its regular monthly meeting, Council :

1) elected a Vice-President;
2) talked about "A Weekend Retreat";
3) was advised on the results of a prosecution under the provisions of The Engineering Profession Act;
4) authorized the Publication Committee to include a "Positions Wanted" column in The Manitoba Professional Engineer; and
5) was visited by a member of the CCPE Executive Committee who provided a report on current and ongoing initiatives of CCPE.

1) Councillor Carl Anderson, a geological engineer employed by UMA Engineering, was elected Vice-President by acclamation. Council also appointed Doug Chapman, an electrical engineer with Manitoba Hydro, to the Executive Committee.

2) Council discussed the need for a "weekend retreat" to discuss long-range plans for the Association and to attempt to come up with a workable plan to implement long-range goals. Mr. Ennis presented a rough budget for this, indicating that such a session would cost the Association approximately $8750. Although the meetings could easily be held in the Association Boardroom, Council nevertheless agreed in principle to hold the meeting elsewhere and incur the resulting expense.

3) Neither The Winnipeg Police Department or the RCMP will investigate, nor will the Attorney General's Department prosecute people who break the law by violating the provisions of The Engineering Profession Act. The responsibility to investigate, gather evidence, produce witnesses and press charges is the responsibility of the Association - at the Association's expense! The Association's procedures and activities to prevent, investigate and charge violaters are called, in Association parlance, "Act Enforcement", and are currently handled by our Executive Director.

In this connection, Mr. Ennis advised Council that the activities of one Lilian McMahon, a foundation contractor, had been investigated. Ms. McMahon was neither a Professional Engineer nor a graduate engineer. The Association pressed charges in court for illegally:

a) engaging in the practice of engineering;
b) purporting to be an engineer;
c) advertising in a manner to imply she was a professional engineer; and
d) assuming, verbally, the title of "P.Eng."

Although evidence had been gathered and witnesses had agreed to testify, Mr. Ennis advised Council that he had agreed to a plea bargain arrangement whereby the Association would drop three of the four charges and Ms. McMahon would plead guilty to practising engineering illegally and sign a statement that she would not do so in the future.

The costs incurred by the Association were approximately $14,000. Ms. McMahon was fined $400.

A field of activity which is rife with people doing illegal engineering design work and illegally offering engineering advice to the public is the foundation repair business. The Association has a responsibility to protect the public against these activities. The McMahon case could have been, if properly publicized, a means of advising the public and foundation contractors that the Association is protecting the public interest in this particular field of engineering.

Council was advised of the Executive Committee's decision to publicize this matter by including an article relating to it in The Manitoba Professional Engineer.

4) After consideration of a request by the Publication Committee, Council authorized the Committee to include a "Jobs Wanted" Column in future issues of the MPE. Presumably, details of this procedure will be published in the MPE.

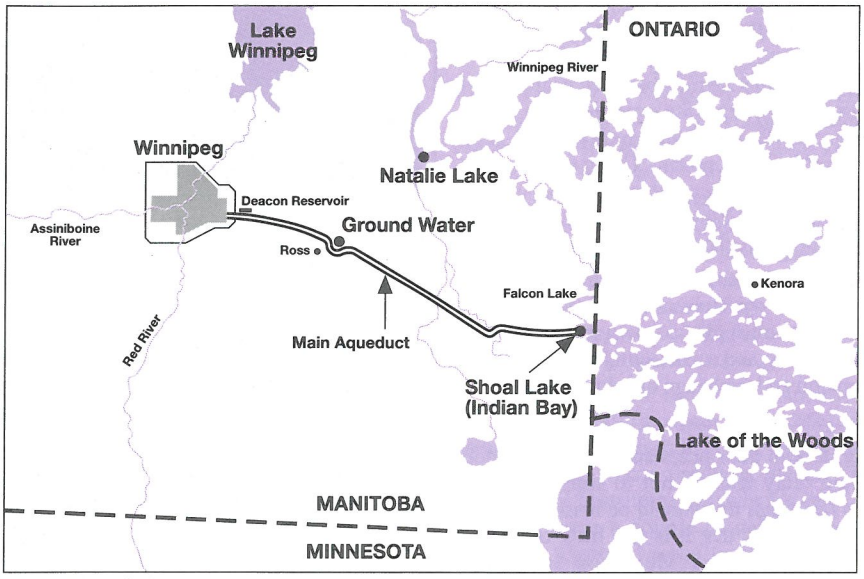
5) Mr. John McDougall, an Alberta P. Eng. who is a member of the CCPE Executive Committee, outlined current initiatives and programs of CCPE. Any member who wishes information on any CCPE matter should contact Ken Buhr, the APEM Director on the CCPE Board of Directors (Telephone 477-6650).

In this last Council meeting of 1991, the new perspectives and involvement of the newly-elected councillors bode well for APEM in 1992. □

Winnipeg's Water Supply

Continued from page 1

nis would provide more than 30 days storage, and would defer the need for a supplemental supply by about two years. The additional storage would make it possible to supply extra water during high-summer-demand periods when demands exceed the capacity of the aqueduct, and would provide additional water for the annual aqueduct shutdown period, which is required to undertake aqueduct rehabilitation works.



Locations of alternative sources of additional water supply.

The other near-term option is use of a groundwater supply. The subject aquifer is located on the eastern edge of the Sandilands Provincial Forest near Ross, Manitoba. Preliminary estimates, which will be verified in Phase 2 of the study, indicate that 30 megalitres per day (MLD) could be safely withdrawn. This would increase the current supply capacity by 8%.

The additional supply would result in less dependence on Deacon Reservoir during the high-summer-demand period, which in turn would result in more water in storage at Deacon prior to the fall aqueduct shutdown. Also, it would provide a second supply of water during the aqueduct shutdown (the other supply being from Deacon Reservoir).

The far-term options would provide water to the end of the study period (2040). These options involve developing a new supply system from Shoal Lake, Natalie Lake, or the Assiniboine River. These options are large in scale, high in cost, and require lengthy lead time to plan, design and construct.

Shoal Lake would provide the most similar water quality compared with other options. However, complex negotiations would be quired to increase the permitted withdrawal ate. Demand projections indicate that by 2040 Winnipeg's water requirements will be 515 MLD. (Currently the City has a licence to withdraw 455 MLD.)

Natalie Lake is located along the Winnipeg River near Pinawa. Again, regulatory approval would be necessary to withdraw the required 130 MLD flow. Treatment of the water would be required, as the raw water does not meet the Canadian Drinking Water Guidelines for colour, suspended solids or iron.

The intake for the Assiniboine River option would be located at Headingley. The water would be treated and supplied to the west end of the city's distribution system. This is a major difference from the other options, where the water would be blended at Deacon. The additional 130 MLD flow is 50% of the river's low flow. This withdrawal would require regulatory approval, and treatment of the water would be required. However, transmission costs would be relatively lower due to the proximity of the source to Winnipeg.

Water Quality

According to current water quality guidelines, no treatment is required for our existing water supply (except for chlorination). However, this is likely to change in the future. Firstly, there are pressures for development in the Shoal Lake watershed. Cottage development proposals, mining proposals and recreation activity could result in a deterioration of water quality. The City views a watershed management plan as necessary to ensure the ongoing high quality of our water source. There are many jurisdictions involved in the watershed: Manitoba, Ontario, Federal, International, and the City. This will make preparation of a rational and enforceable watershed plan a complex issue. However, the City supports this as an important step in protecting water quality.

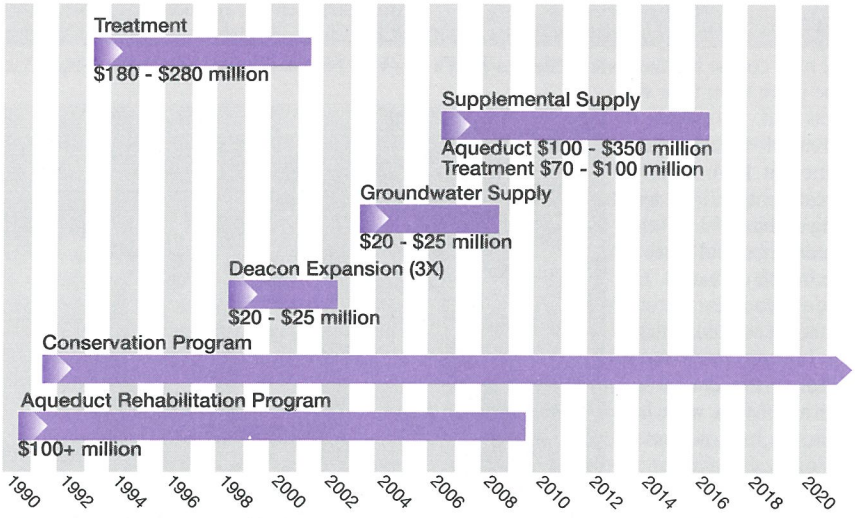
Secondly, trends in North America are toward more stringent regulation of water quality. Currently, regulations do not exist in Manitoba. However, the Canadian Drinking Water Guidelines are endorsed by the Province, and compliance can be specified under the Public Health Act as a condition for obtaining a water system license. As well, a Canadian Safe Drinking Water Act is proposed under the federal Green Plan. In the United States, the criteria under the Safe Drinking Water Act are more stringent in many aspects than the Canadian criteria, and proposed amendments to the Act are even more stringent.

Assuming that at least one of these factors will trigger the need for water treatment, the probability is high that some form of treatment will be required in the near future.

As a result of the Phase 1 findings, a preliminary planning scenario was developed, as illustrated in the graph below.

Because water quality and use affect every Winnipegger, the City sees public consultation as a key element in the study process. The study raises issues which will require public support and understanding, including water conservation, water quality, pricing policies, and environmental impact of system expansion. For this reason, the City held an Open House on Phase 1 of the study on October 2 and 3, 1991. Phase 2 commenced after the public response to Phase 1 was weighed and integrated into the process.

It is expected that Phase 2 of the study will be completed in early summer of 1992, with completion of Phase 3 in late 1992. □



Time chart showing possible program options and implementation schedule that would assure ongoing supplies of water until 2040.

Catherine L. Stewart – New Councillor

By: W.B. Mackenzie, P. Eng.

One of the newly-elected members of Council is young and enthusiastic and has an open mind on matters which may be considered by Council. There is no indication that Cathy Stewart will be intimidated by older Council members. There is every indication that she will be a positive, contributing member of our decision- and policy-making body.

Cathy hails from Thompson and does not share the opinion that all Association activities should take place within the Perimeter. She has been a long-time member of the so-called "Thompson Chapter" of APEM, an active group of Thompson engineers who meet regularly to discuss engineering matters and Association matters.

Cathy was born in Winnipeg and took her schooling in Transcona. Subsequently she graduated with a Diploma in Chemical Technology from Red River Community College (1974) and obtained a Bachelors Degree in Chemical Engineering from the University of Ottawa (1985). In between and subsequently she has worked for Inco in Thompson in the chemical technology and engineering fields.

This background provides Cathy with perspectives which can only benefit Council and the Association. She intends to be a very pro-active Councillor.

Some viewpoints she has on Association initiatives which should be addressed are:

1. **Sustainable Development** – The Association must institute and administer a continuous program to apprise members that professional engineers must exercise every resource to work towards conditions which favour sustainable development. Cathy says engineers have an important and vital "Environmental Stewardship" role to play in connection with the nation's resources.
2. **Industry/Academic Community Co-operation** – our University Liaison Committee must play a strong pro-active role in promoting and encouraging close co-operation and exchange of information between the Faculty of Engineering and the industrial sector.
3. **Technology Transfer** – technical articles of interest to Manitoba engineers, could be included in The Manitoba Professional Engineer.
4. **Attracting and Retaining High Quality Women and Men to the Profession** – The Association should continue efforts that will build a positive image of the engineering profession and encourage young people to choose an engineering career. The "self-[illegible] interests" role of the Association needs to be carefully considered within the mandate of the Engineering Profession Act.

A.P.E.M. Councillor Cathy Stewart

Cathy Stewart is a concerned and dedicated professional. She will be a strong member of the APEM Council. □

Athletic Engineers Wanted

By: M.D. Vanderpont, P. Eng.

We know you're out there. Your Sports Committee is convinced that the reason we managed to recruit only a single Manitoba Marathon Relay Team last year was because the article in the publication was physically too small. So this time, to catch the attention of all you Gears out there who only skim this publication looking for your names in the reports from the Practice and Ethics Committee, I've got to try and fill at least half a page.

Last time out, four P. Eng.'s and one P. Eng.'s spouse donned the attractive (and very rare)

PROFESSIONAL ENGINEERS
OF MANITOBA

track top and relayed a sweaty wrist band around the 26.2 mile course in 3 hours something. That's only one more team than the architects had. Big deal. I mean, really! The lawyers took time out from reviewing investment options and watching reruns of LA Law and Street Legal and entered a whole bunch of teams. By the way, did you hear the one about it being so cold outside that a lawyer was seen standing on the corner of Portage and Main with his hands in his own pockets? My apologies, I digress.

The real reason for encouraging our members, who like to do a little running, to join their peers and form a Manitoba Marathon relay team is not to simply best the lawyers (although that should be reason enough). The real reason is that it is one heck of a lot of fun. The Manitoba Marathon is a great community event. It is in every way a family thing. You definitely do not have to be a great athlete. You don't even have to once have been a fair athlete. You just have to be able to navigate about 5 miles at something better than a slow shuffle. Mark your calendar for Sunday (Fathers Day) June 21st, 1992.

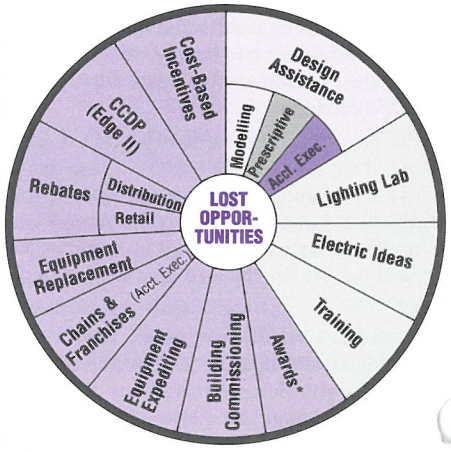
It is really easy to get involved. Just let your Sports Committee do the work. We will put together teams, process registrations and get you an exclusive Engineering track top. You will have fun, improve your health, write a cheque for about $28, show the flag and play the starring role in this unique Manitoba event.

If you want to be part of a P. Eng. relay team, need some encouragement or just want this whole thing clarified, please call Murray Vanderpont at 284-0580. □

Marathon Relay Team A.P.E.M.

Correction

Strategy for Capturing Commercial Lost Opportunities



** to be administered by professional organizations*

Reprinted from Page 10, December, 1991 MPE

News From Other Associations

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

Ontario

The roar of a rocket blasting off is the sound of raw power. In fact, the sound waves pack so much energy that if they throb with a certain pulsating beat, they can literally tear a rocket apart. The Pentagon and NASA have spent bundles to prevent this. But Ben T. Zinn, a professor of aerospace engineering at Georgia Institute of Technology, figured there ought to be a way to harness this power. His company, Sonotech Inc. in Atlanta, has developed a pulsed-combustion system that promises dramatic improvements in the performance of municipal incinerators. It should also reduce fuel consumption and emissions in big industrial furnaces.

Essentially, the Sonotech system is an overgrown trombone slide. It uses motorized baffles to adjust the dimensions inside a combustion chamber until it resonates with sound power. Properly tuned, a furnace's own roar fans the flames, adding energy to the combustion process and thus boosting its efficiency. In a test at an Environmental Protection Agency incinerator in North Carolina, EPA officials were also pleased by a 50% to 75% reduction in soot emissions. Sonotech is now outfitting a large ment-making furnace in Colorado owned by the ıig German cement company, Polysius.

Alberta

About half a million tires are tossed aside by Calgarians every year. That makes tires one of the biggest solid-waste headaches facing city officials. Now, a University of Calgary engineer has come up with a feasible alternative to leaving the tires in landfill sites.

"This is something that this city has got to look at", says Amir Badakhshan, P. Eng., who teaches environmental engineering. "Otherwise, we could end up with a situation like last year's huge tire fire in Hagersville, Ontario."

Mr. Badakhshan asked four of his students in chemical and petroleum engineering to study the economic feasibility of using very low temperatures to turn tires into "crumb". This "crumb", or collection of very fine fragments of rubber, can be used for such things as making rubber mats, or as a filler for asphalt.

The group wanted to design a process that would physically separate the three components of the tires (rubber, fibre and steel), while not giving off heat, carbon dioxide or other environmentally undesirable products. The process they came up with starts with shredding the tires into small chips, freezing the rubber to minus 196 degrees Celsius, pulverizing it into fine powder, and separating the three components, using ıgnets and strong streams of air.

"We calculated that this process would be technically and economically feasible in Calgary", says Mr. Badakhshan. "Depending on the market value of the rubber crumbs, with a total capital investment of about $25 million, the project would generate a discounted cash flow rate of between 10 and 20 percent.

Westman News

By: D. Menon, P. Eng.

Another year of activities began in the Westman region with a bang with the fall golf "classic" in September. As usual, Ken Colcomb organized an excellent event, followed with a barbecue. Ken's organizational skills, coupled with a good fall day, attracted a good contingent of members and their family members out to the Glenlea golf course.

About 30 members and guests attended a supper meeting on November 14th. APEM was well-represented by the incoming President, Pat Feschuk, and the new Councillor from Portage la Prairie, Bob McKibbin. Pat gave an excellent account on the status of many issues such as the Chapter formation. The speaker for the occasion was Gord Collis, who is Plant Manager at the Simplot facility in Brandon. Simplot is planning a major expansion of its facilities, and Gord gave a detailed account of the process and the complicated environmental-approval process.

It was good to see some new engineers in the region at the supper meeting. Major Will Wawrychuk, who heads the base Technical group at C.F.B. Shilo, was a first-time attendee, having just recently been transferred to the post. Also attending were a couple of new Engineers in Brandon: Dennis Lassen from Canadian Oxy, and Deny St. George from Manitoba Hydro. Welcome to the Westman area to Will, Dennis and Deny.

Your chapter executives have been meeting on a regular basis to chart future events. The executives agreed to hold a joint meeting in March, 1992, with the Manitoba Chapter of the Canadian Public Works Association. The March supper meeting will be followed by the Annual meeting of the Chapter in May/June, 1992 when new executives (or recycled old ones) will be elected for the 92-93 year. Doug Delgatty, the man from MTS who is bringing you all the "cheap" long distance rates, is the current Vice-Chairman of the chapter. He has agreed to move up to the next level for 92-93.

That's all for now. See you all at the March supper meeting. □

Guest Speaker Gordon Collis

Westman Chapter Members Stella Fedeniuk, Deny St. George and Pat Versavel.

Saskatchewan

Winners of the 1991 Saskatoon Engineering Society Innovative Design Competition were University of Saskatchewan graduating mechanical engineering students Aaron Reynolds, Michael Arthur and Russell Siebert. They produced a load-sensing device with an auditory feedback mechanism that trains stroke patients to apply weight appropriately to a paralysed lower limb.

During gait rehabilitation, patients with little or no sensory perception have difficulty determining the amount of weight applied to a limb. The limb load-sensing device was designed to convert an even pressure distribution (flat foot response) on the patient's foot into an auditory stimulus for both patient and physiotherapist. The prototype includes a load-sensor, a signal processor and a transmitter/receiver unit.

The innovative design is a unique, inexpensive solution to a very important rehabilitation problem. The design also fulfills the criterion of being light-weight (2.1 lb.), and therefore very portable. It is easy to use, and adaptable to a broad range of user weights (88-200 lbs.) and shoe sizes (ladies' size 6 to men's size 13).

The design concept has the potential to be adaptable to a spectrum of rehabilitation applications, including neurological, orthopaedic, and amputee disabilities. The research project was supervised by Professors Allan Dolovitch and Richard Burton. The off-campus supervisor was Ms. Cathy Watts, a physiotherapist at Parkridge Center in Saskatoon. □

Winnipeg To Host International Symposium On Grain Ecosystems

The International Symposium on Stored Grain Ecosystems will be held in Winnipeg, June 7-10, 1992. The Department of Agricultural Engineering at the University of Manitoba is organizing the Symposium.

The objective of the Symposium is to assemble internationally recognized experts in all fields of grain storage research to share current knowledge and to explore future needs, from both a research and an applications perspective. A program of invited speakers will focus on identified topics in grain storage, and an extensive poster session will provide a breadth of current topics.

The speakers will discuss topics which will include expert systems-based management; biological interactions of grain and insects; computer modelling of heat, moisture, intergranular gas and pest populations; structural loads on storage bins; transportation of grain; physical and chemical control of insects and mites; health hazards; economics of storage; and sampling techniques.

Industrial displays will showcase the latest in equipment for applications ranging from the research laboratory to the field.

Further information can be obtained from D.S. Jayas, Associate Professor, Agricultural Engineering, University of Manitoba, Winnipeg, Manitoba R3T 2N2 Tel: (204) 474-6292, Fax: (204) 275-0233. □

Career Pamphlets Available For Engineers Visiting Schools

By: W.H. Brant, P. Eng.

The APEM Public Relations Committee (PRC) has undertaken several initiatives to encourage more students to consider engineering as a career. One of these initiatives has been the preparation of new pamphlets for distribution to students. The PRC became aware of a "Career Information" package prepared by APEO. After reviewing it, committee members decided that editing versions of two of APEO's pamphlets would be a cost-effective way to produce such publications. APEO kindly gave permission, and forwarded duplicate negatives of the text and artwork, for our use. The PRC edited these to remove references specific to Ontario, and to adapt them to use in Manitoba.

One pamphlet is aimed at grades 7 to 9, and the other at grades 10 to 12. They describe the fundamentals of the profession and the basic academic preparation necessary for entry to university engineering programs. One thousand copies of each are available from the APEM office for use by members involved in visiting schools and other activities related to encouraging students to consider engineering.

Staff Note:

In addition, copies of a colourful brochure, prepared by CCPE, entitled "Engineers - Creators of Tomorrow", and probably targeting elementary/junior high school students, are available at the APEM office upon request. Also, for members planning to visit schools, an excellent guide entitled "Selling Science to Students", is available, as is a limited number of posters promoting mathematics and science at each of the elementary and junior high school levels. □

Consulting Engineers' Guide Update Available

By: D. Whittaker, P. Eng.

In the current "Guide for the Engagement of a Consulting Professional Engineer", adopted by the Association in January 1991, the billing rates shown in Appendix "A", Example Hourly Billing Rate Calculations, are shown as "Based on Selected Annual Salaries from the 1990 APEM Survey". The "Employer Salary Survey" was used.

It is intended that the figures in Appendix "A" will be updated after the completion of each salary survey. This has now been done, to reflect the 1991 survey.

The updated version of Appendix "A" is now available on request at the Association office. □

Coming Events

"ICE ENGINEERING FOR RIVERS AND LAKES"
February 17-19, 1992
University of Wisconsin - Madison
For further information contact:
Professor C.A. Wortley,
Dept. of Engineering,
University of Wisconsin.
Madison, WI 53706
Tel: (800) 462-0876

2ND ANNUAL CANADA - U.S. ENVIRONMENTAL REGULATION CONFERENCE
March 23-24, 1992
Toronto, Ontario
For information contact:
Executive Enterprises, Inc.
Tel: (212) 645-7880 or Fax: (212) 645-8689

Call for Papers

44th Annual Convention
WESTERN CANADA WATER AND WASTEWATER ASSOCIATION
October 13-16, 1992, Calgary, Alberta
No closing date for abstracts listed.
For information Contact:
M. Adkins, P. Eng. or D. Munsie
Reid Crowther & Partners, Calgary
Tel: (403) 253-3301 Fax: (403) 255-3189

Request For Thesis Readers

Thesis Day - Electrical and Computer Engineering – March 20, 1992

Anyone interested in reading theses is invited to call Tammy at 474-9603.

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