THE MANITOBA

Professional Engineer

ASSOCIATION OF PROFESSIONAL ENGINEERS OF THE PROVINCE OF MANITOBA

June, 1991

A Conceptual Design for the Red River Water Arch

By: B. G. Lawlor, P. Eng.

Background

During ten months of last year, a 14-member sub-committee of the Public Relations Committee, consisting of APEM members and resource persons primarily from interested governmental and municipal bodies, studied and evaluated the possibility of preserving and converting the James Avenue Fire Water Pumping Station into an Engineering Museum. A grant of $35,000 was received from the Winnipeg Core Area Initiative group to conduct a feasibility study, which was completed by Stechesen and Katz, a local architect firm.

The James Avenue Pump Station (located on the west bank of the Red River) was built and commissioned in 1906 to supply high pressure water (up to 400 psig) for fire extinguishing purposes to the Core Area of Winnipeg. The distribution system, consisting of three main headers (two of which extended to McPhillips Street), laterals and hydrants, was supplied originally by six 790-hp, coke gas-fired, cast-iron internal combustion engines driving vertical reciprocating water plunger pumps with water ducted from the Red River.

To draw attention to the Engineering Museum while demonstrating the main purpose of the pump station (which was "to create a large-volume, far-reaching water stream for extinguishing fires by firemen in a safe mode"), the sub-committee decided to provide a water-cannon-driven arch across the Red River in the immediate vicinity of the pump station, adjacent to the Alexander Docks.



Testing the water arch.

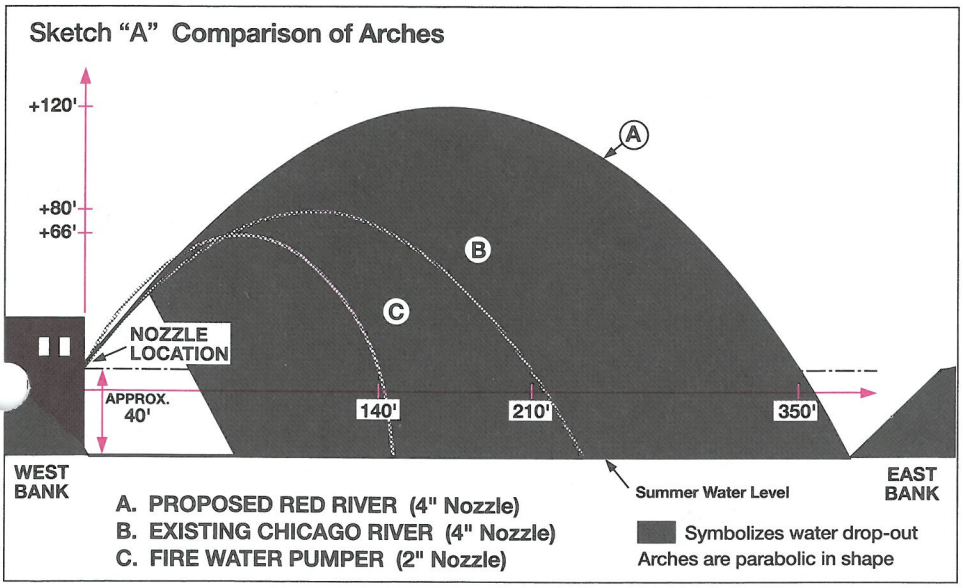
Criteria for the arch were as follows: 1) the top of the arch had to be seen from grade level at the Forks Development, which meant that it had to be 160 feet above summer water level; 2) it had to span the river with drop-out within the boundary line of the east shore; 3) its continuous water sheen had to be heavy enough to enable rainbow effects to be displayed on it by the sun and by coloured lights at night time; 4) the water cannon would be "fired" for 10 minutes every hour over the summer day time operation, say 10 a.m. to 11 p.m. and possibly during special occasions in the winter months; and 5) the water cannon would consist of a multi-stage centrifugal pump driven by an electric motor with applicable safe control features and wind shut-down sensoring.

Three alternate preliminary design studies were done. The least expensive and most adaptable alternative was to utilize the "retired" Amy Street Steam/Power Plant water pump house in the immediate vicinity of the James Avenue Pump Station on the basis it may be purchased/donated by the City. This location, adjacent to the Alexander Docks, could be a future recreational/dining development area.

Design

To put this water cannon/arch proposal into a conceptual design mode, it was proposed and approved that APEM, with funds available from the feasibility study grant, serve as an industry sponsor to a team of fourth year mechanical/industrial engineering students of the University of Manitoba. (Course 25.458, Mechanical Engineering Design,

Continued on page 7



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Have you Paid Your 1991 Dues?

Your 1991 annual dues were payable to this association by December 31, 1990.

As of March 1, 1991, the late payment penalty was assessed.

If we have not received payment for your dues, complete with late payment penalty fee, by June 30, 1991, your name will be removed from the register and you will cease to be a member of this association.

CANNOT LOCATE

Beyak, R.J.
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Gagne, J.J.H.P.
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APEM Presents Awards at MSSS

By: S.M. Parent-Pulak, P. Eng.

Where can you see presentations on home made robotic arms, logic gates, air entrained concrete and propellers all in the same room and on the same day? At this year's Manitoba Schools Science Symposium (MSSS), of course.

The MSSS was held at the University of Winnipeg's Athletic Centre from April 26 to 28 this year with approximately 650 projects entered in 12 categories.

The category of interest to APEM judges Kelly Hunter, Caroline Nieuwenburg and myself was Engineering and Technology, with 36 projects spread over grades 4 to 12.

Once our Symposium judging commitments were out of the way, we set out to find three students aged 10-15 whose projects best reflected a keen interest in the field of engineering. Those students would be awarded enrolments by the APEM in two-week summer sessions of "Mini-University" at the University of Manitoba. There they would have the opportunity to learn about both the profession and the Faculty of Engineering.

After much debate over many deserving projects, we decided upon our 1991 winners of the "Professional Engineers Award". They were Heidi Adamko of Warren Elementary School with her project "Propellers", Kim Bjorklund of Balmoral Hall School and her project "Air Content in Concrete/ Durability", and last but not least Tony Mantler of Glenelm School for his "Logic Gates" project.

We had also hoped to make an award to a Grade 12 student of a $500 entrance scholarship to the Faculty of Engineering; but there were no eligible candidates. However, APEM President Bill McDonald had the pleasure of presenting the three Mini-University Scholarships to the excited winners at the Major Awards Ceremony on Sunday afternoon.

Based on the enthusiastic response of the students, the Public Relations Committee will again coordinate APEM's award sponsorship at the 1992 MSSS next spring. □



President Bill McDonald with (left to right) Hadria Adamko (sister of award winner Heidi Adamko), and award winners Tony Mantler and Kim Bjorklund.

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WITH DEEP REGRET THE ASSOCIATION RECORDS THE PASSING OF:

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S.E. Solmundson

100% ON THE PROFESSIONAL PRACTICE EXAM

R.J. Blanchard
I.C. Pavan

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C.J. Whitlock (Missouri)

President's Message

Wm. McDonald, P. Eng.



On Borrowed Time

Our Association would have a difficult time carrying out its mandate without the many hours borrowed from our volunteer committee members.

In 1990, 195 meetings were held involving the Association's 19 committees and 150 volunteer committee members. The majority of these meetings take place at noon or in the early evening.

The logistics of organizing meetings, notifying members, taking and distributing minutes, and attending to the follow-up correspondence and actions evolving from these meetings is overshadowed only by the Task Council has of providing direction to the committees and then monitoring their workings, deliberations, recommendations and decisions.

Given that every organization, no matter how well managed, has multiple goals, values and interests, one recognizes that it is never possible to align every person's objectives with those of every other person or at times with the broader organizational goals. This task is even more difficult in organizations consisting mainly of volunteers.

Discussions that involve persuasion, bargaining, consensus-building and at times even conflict are the only way to reconcile differing points of view and getting on with issues. And making progress on issues and getting on with things are what meetings are all about. We have to continue to set and review objectives in keeping with our mandate and move forward, while motivating our constantly changing volunteer committee members.

In writing about self-renewal in organizations, John Gardner states "the only stability possible is stability in motion".[1] This certainly describes our Association. The trick is to ensure that the motion is in the desired direction. We must keep moving forward with the day-to-day tasks at hand i.e. our primary responsibilities of admission review, examination of credentials, new legislation (where required), practice and ethics concerns and professional development, and, as well, many of the secondary functions that make our Association vital to our membership.

Nothing endures but change

Heraclitus (c. 500 B.C.)

Organizations must keep fluid and be capable of change, and new members must be encouraged to come forward, "buy in" and take a stake in their Association. The Association has to work at challenging those members who make the commitment to serve on committees. The payback on the time the Association has borrowed from them has to be that:

- they feel appreciated
- they can see that their presence makes a difference
- there is a chance for advancement
- there is an opportunity for personal growth
- they receive private and public recognition
- they feel capable of handling the tasks offered
- there is a sense of belonging and "team"
- they are involved in the administrative processes of problem-solving, decision-making and objective-setting
- they recognize that something significant is happening.

The commitment of APEM volunteers is a strong indication that many of these paybacks happen. One of the more significant testimonies is that over the past four years APEM nominees have been awarded six out of fourteen national awards conferred by CCPE. The latest being the awarding of the CCPE Merit Award for Community Service to E.F.(Ted) Glass last month. The quality speaks for itself.

Organizations that depend on volunteer support have always recognized that they cannot demand conformity through the might of hierarchy. Lately, even in business, this time-worn precept is being discarded and replaced with more progressive and successful motivational management styles involving "quality consciousness" and the development of relationships, use of influence, and working together as a team to achieve mutual goals. It seems that APEM has been quietly working on this brand of quality well before it acquired a label.

Are you ready to loan us some of your time for a "quality" payback? □

1 *John W. Gardner, The Individual and the Innovative Society*

Engineering Access Program – Good News/Bad News

By: J.I. Glanville, P. Eng.

As members know, the Engineering Access Program (ENGAP) in the Faculty of Engineering at the University of Manitoba provides pre-engineering instruction and other supports for students of aboriginal ancestry who would not otherwise have the opportunity for an engineering education. The program is now bearing fruit, with the graduation this year of Daniel Edward Brown, B.Sc. (E.E.). Congratulations Dan, and thank you.

Following Dan we expect four graduates next year, four the following year, and a steady four or more thereafter, which for a biennial intake of about fifteen is a graduation rate of about 50% - the same as for the faculty as a whole. Bearing in mind the disadvantaged backgrounds of ENGAP students, we take our hats off to Dan and his colleagues who have helped the program become an integral and successful part of the Faculty of Engineering.

That was the good news. The bad news is that as part of its cut-backs the provincial government has targeted the program for phase-out. ENGAP is the only one of a family of ACCESS programs at the University of Manitoba that can match the graduation statistics for its faculty, yet it is the only one at the university being eliminated. Members may be interested in the reasons given for the phase-out.

- The program was originally intended to serve the needs of the Limestone generating project. While it is true that ENGAP was associated with the Limestone Training and Employment Agency, that agency has long since been disbanded and it was known at the inception of ENGAP that the first graduates would not emerge until well after the completion of Limestone.
- The program has a very low success rate. Given that ENGAP is the youngest ACCESS program on campus and that graduates are only now emerging (on target), this is hardly a rational argument.
- The cost per graduate is too high. The calculation was done at a time when we had no graduates, and the government found the predictable answer when the cost was divided by zero!

The Association is currently developing guidelines for our responsibility towards and involvement in sustainable development. It is not unreasonable to say that the North and its people figure prominently in the development of the province, and that the training of professional engineers of aboriginal ancestry should be given high priority. It is ludicrous that of the whole family (about fifteen) of ACCESS programs in the province, the only three targeted for phase-out are the technical ones: ENGAP and two technology programs, one at Red River Community College and one at Keewatin Community College.

ENGAP is very appreciative of the interest and support of the Association in the past. One of our former Presidents, Roger Kane, P. Eng., has been a member of the ENGAP Policy Advisory Committee since its inception and an ardent supporter. The Engineering Access Program would appreciate your support more than ever at this crucial time, and we are asking the Association and its members to make your concern known to the provincial government through whatever avenues are open to you. □

Foundation Still Seeking Donations

The 1989 Canadian Engineering Memorial Foundation is still accepting donations.

The Foundation will send receipts directly to the donor, for all donations over $10 made in 1991, by December 31, 1991.

Please send your donations directly to:
1989 Canadian Engineering Memorial Foundation
401 - 116 Albert Street
Ottawa, Ontario
K1P 5G3

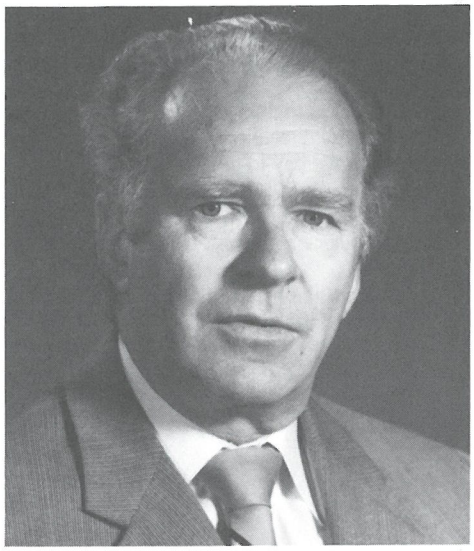
E.F. Glass, P. Eng. Awarded CCPE 1990 Meritorious Service Award For Professional Service

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

The Canadian Council of Professional Engineers (CCPE) named Ted Glass, P. Eng. as the recipient of the 1990 Meritorious Service Award for Professional Service. The award presentation took place May 17, 1991 during the CCPE annual meeting held in St. John's, Newfoundland.

The award recognizes outstanding service and dedication to the engineering profession through Canadian professional, consulting, or technical associations and societies.

Mr. Glass graduated from the University of Alberta in 1950 with a B.Sc. degree in electrical engineering. He then completed a post-graduate Industrial Training Program at Canadian Westinghouse Company in Hamilton and Winnipeg. Mr. Glass was employed for forty years with Canadian Westinghouse. He began his career as a Field Construction and Commissioning Engineer and supervised major construction projects in Quebec, British Columbia and New Zealand. In 1959, he moved to Winnipeg to manage the Electrical Manufacturing, Apparatus Repair Service and Field Service Engineering groups. In 1966, be became a Senior Sales and Application Engineer in Canadian Westinghouse's Apparatus Sales Division, and in 1973, was appointed Manager, Utility Sales, Manitoba and Saskatchewan District. Mr. Glass recently retired from the position of Manager Corporate Sales,



Ted Glass, P.Eng.

Manitoba/Saskatchewan District for Westinghouse Canada Inc., where his responsibilities included the sale and application of engineered apparatus and systems to electric utilities and major industrial projects as well as new business development.

Throughout his career, Mr. Glass participated in professional societies at provincial, national, and international levels as well as civic affairs at the municipal level. He has been active in the APEM serving on several committees, Council, and president of the Association in 1977. He is a Fellow of the Engineering Institute of Canada and served as a Chairman; a member of the Canadian Society for Electrical Engineers, and served as Vice-President and on numerous committees; a member of the Institute of Electrical and Electronic Engineers (IEEE) and elected to their Board to represent 13,000 members in Region 7 (Canada), he has also served administrative boards at local, national, and international levels; he also served as Vice-President and President of the Manitoba Electrical Association. Mr. Glass has been an active member of the Winnipeg Chamber of Commerce, the Manitoba Sports Federation, the Manitoba Baseball Association, the Board of Directors of the local Woodhaven Community Centre and the St. James Assiniboia Community Centres Board, and he has served as President of the General Council of the Winnipeg Community Centres.

He was previously presented with the APEM Outstanding Service Award, the IEEE Region 7 (Canada) Silver Medal and the International "Centennial Medal" for Outstanding Service, the City of Winnipeg Mayor's Award for Leadership in Community Service Activities and was the first recipient of the IEEE International "Innovation Award" for leadership in establishing "IEEE McNaughton Learning Centres" in Canadian Universities and Colleges.

Mr. Glass has earned a great deal of respect fro his peers, colleagues and associates, and has enhanced the quality of life for many through his active service to his profession, to his business associates, and to his community. □

V.D. (Vish) Gupta, P.Eng.

By: S.Ray, P. Eng.



Aristotle lived in a society in which women occupied an inferior position and he accepted this disgraceful view of his day. Western society has achieved a great deal since Aristotle's day, but has society really been successful in overcoming Aristotle's view toward's women? The answer to the question, definitely, is "no"; at least in the case of the engineering profession in Canada. Perhaps the issue of women's participation in engineering is not new, but it is appreciable if someone readdressed the point in his leadership campaign. Vish did it; and he still does it. That is why I chose Vish Gupta when I was assigned to interview a new councillor of the association.

Vish's career in electrical engineering was perhaps guided by the mid-seventies' job market of Manitoba rather than his actual will, although it was not completely irrelevant to his early career. He was born in Kashmir, a beautiful Himalayan Valley in the northern part of India, and he completed his schooling there. At the beginning of his career in India, Vish was a Textile Engineer. Two years after he graduated in Textile Engineering from Coimbatore, South India in 1963, he decided to change his career. Accordingly, in 1969, he completed a masters degree after a bachelors degree in Science, majoring in physics.

On 2nd January, 1970, he, at thirty, came to Winnipeg as an immigrant. For two years after that, Vish struggled to cope with the land and the people, and hoped to find a fruitful career. Finally, at the advice of Canada Manpower, he changed his career for the second time, to Electrical Engineering. In 1973 he entered the third year engineering program at the University of Manitoba, and graduated in the following year. But in 1971 the happiest thing happened in his life: Vish met his wife, Marcia, whom he married in 1972. Just after graduation, in 1974, he joined Manitoba Telephone System (MTS) in Winnipeg, and remains proud of that decision to date. Vish's long career with MTS has remained most eventful and full of challenge. Currently he is the Project Manager of an important planning project for acquiring a customer-focused quality service delivery system for major customers. MTS recognizes his contributions in Large Business Development as well as in Computer Disaster Recovery projects. Vish thinks that his success at MTS is not because he is an expert in his profession, but because of his mere common-sense, which might not be so common today.

Vish describes his family as a happy DITK (Dual Income Three Kids) family. His wife is a registered nurse. They have one daughter(16) and two sons (12&11) who are very active in sports and school.

Vish has a strong vision for Manitoba and believes that one day, the joint and active participation of government, industries and universities will create a better and stronger Manitoba. Vish hopes that his participation in the past, with the University of Manitoba's various committees, and his present involvement in Miconex, EIAM, and STAN will enable him to fulfill his vision. He has vision, too, in developing programs to increase women's participation in engineering, and to increase industry hiring of engineers in Manitoba. Vish, an active member since 1977, thinks APEM should have an independent body from within, which will be able to promote the image of the engineering society exclusively.

Because he has spent such a short period of time to date as a Councillor, Vish is unable to comment on Council's policies. He has, however, already raised two issues. The first is the practice whereby Executive Committee reviews and votes on controversial issues intended for Council, a few days pr to the Council meeting. The second is the issue o dissenting votes. Vish feels that dissenting votes should be reviewed at a later date as inputs toward making changes in existing procedures.

Vish's vision, the Association's action, and Council's command; together they can make a better tomorrow for APEM. □

Professional Development

Environmental Decision Making and the Conawapa Project

By: R.K. Giercke, P. Eng.

The unusually large turnout of 80 persons for the March 19, 1991 APEM breakfast meeting was both a tribute to the speaker and evidence of interest in his timely topic. Those in attendance were treated to a thought-provoking presentation on the increasing complexity of doing business in today's world of evolving environmental issues. Dr. I.W. Dickson's review of Manitoba Hydro's Conawapa project demonstrated the mindset and planning required to deal with the growing number of environmental and sustainable development issues that are becoming more influential with each passing day. This article summarizes Dr. Dickson's presentation.

Dr. Dickson is Vice-President of Environmental Affairs, a division that was recently added to the Manitoba Hydro organization. The Manitoba Hydro Board's strong commitment to the environment is reflected in its mission statement: "To perform, facilitate, and support the design and implementation of programs, practices and procedures that make all decisions and activities of Manitoba Hydro environmentally sound." Environmental Affairs is responsible for the Environmental Services, Mitigation and Property departments.

Manitoba Hydro is not alone as it tries to make decisions on a multi-million dollar project in this new world of rapidly evolving events, issues, sensitivities and regulations. Dr. Dickson observed that "a very real concern, globally, for our destiny coupled with paranoia and distress with government systems has got us into a way of doing business today relative to the environment (participation)". Everyone is into the environmental scene today and coping with changes. Who would have thought in July of 1990 that the United States of America would join forces with its allies to win a major war in the Persian Gulf, all in less than nine months? The environmental impacts of that war continue to unfold.

Conawapa, in design, is not unlike the Limestone facility. However, Conawapa will be a much more complex and costly venture than its predecessor because of evolving environmental issues. It is not simply a matter of dealing with the small amount of shoreline and water quality degradation related to the Conawapa site. Its contribution to the cumulative environmental impact of Manitoba Hydro's power generation and distribution network throughout the province is of greater interest. Environmental affairs related to new and existing transmission lines needed to carry power to customers beyond the Manitoba border must be addressed. These include wilderness issues, electro-magnetic force concerns, habitat destruction and concerns about degradation of parks and recreational properties.



Dr. I.W. Dickson addresses breakfast meeting

Manitoba Hydro had a good appreciation for environmental and sustainable development trends in society when it embarked on the Conawapa project. Therefore, environmental studies and associated budget allowances were included in the project plan from the outset. Unfortunately, well-defined environmental guidelines are not available because the approval process is evolving and clear direction is not forthcoming. It will soon be announced that a Federal-Provincial panel has been struck to manage the environmental process.

Out-of-province power sales are an incentive for building Conawapa. It is of paramount importance that Conawapa power be available by the year 2,000 to avoid costs of not meeting schedules. The accurate forecasting of environmental requirements will be a key factor in Manitoba Hydro receiving its licence and building Conawapa by that date. Therefore, it is important that Manitoba Hydro anticipate future environmental trends so that its preparatory work appropriately meets evolving Public Utilities Board requirements. An evolving joint federal-provincial review process, native land title issues and northern job initiatives with associated socio-economic consequences all influence Manitoba Hydro's way of doing business.

Continued on page 6

Lower Oil Prices?

By: S.D. Koetke, P. Eng.

The topic of the April 23, 1991 breakfast meeting was "World Oil Production - Demand and Pricing". The speaker was Dr. Kenneth Rosing, visiting professor at the University of Manitoba.

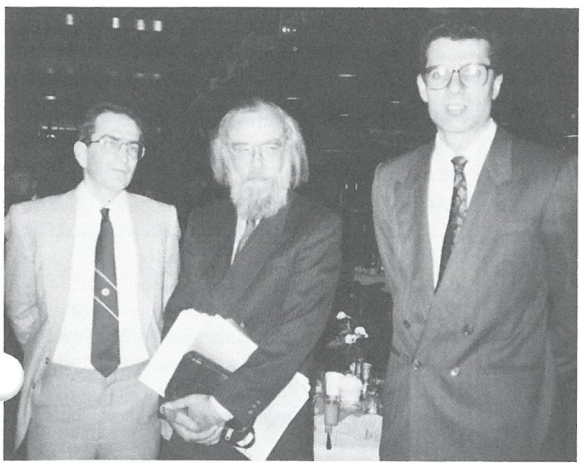
Dr. Rosing has lectured at the University of Minnesota, University College and King's College in London, and Nederlands Economische Hogeschool Erasmus Universiteit in Rotterdam. Dr. Rosing has also published five books, including The Future of Oil (ed. 1 & 2), and is a frequent contributor to energy and oil conferences.

Dr. Rosing's presentation began with a brief history of oil as a source of energy. He noted that, as recently as 1937, it was coal which provided the bulk of the world's energy. By 1972, nearly all of the industrialized world was dependent on oil--much of it imported.

This set the stage for the formation of OPEC. The formation of OPEC was not, in Dr. Rosing's opinion, due to the greed of the oil-rich gulf states. Rather, he contends that OPEC resulted from U.S. oil companies attempting to maximize profit. In the early 1970's, faced with oil prices below $5/bbl., the American majors elected to cut the royalties paid to states like Venezuela & Saudi Arabia. It was only in retaliation that these nations formed the OPEC cartel.

Many of us will recall that, soon after its inception, OPEC instituted an embargo against many oil-dependent western nations. Dr. Rosing pointed out that there is another widely held misconception regarding this crisis. True enough, the embargo was begun by OPEC, but this alone was not responsible for the price climbing from below $5/bbl. to $19/bbl. Most of the price increase, according to Dr. Rosing, was due to western nations' panic-buying on the spot market.

Ironically, the spot market, a term many of us are familiar with, has traditionally been the source of only 5 to 10% of world supply. Because it is such a small fraction of supply, it is extremely susceptible to violent price fluctuations. Unfortunately, the spot market is the only window we have to check current pricing. If the spot market goes up drastically, it encourages suppliers to break long-term contracts – responsible for the other 90 to 95% of supply.



Left to right: Malcolm Brown - Canadian Institute of Surveying and Mapping, Dr. Kenneth E. Rosing and James Hildebrandt - Chairman, Professional Development Committee

Continued on page 9

Toward Professional Registration of Geoscientists in Manitoba

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

A survey of Manitoba geoscientists was recently conducted to determine if support exists for registration under an amended version of the Professional Engineering Act. The majority of those surveyed responded in favour of registration and the Sub-committee on Professional Registration of Geoscientists in Manitoba is recommending a course of action to achieve this objective.

This article attempts to present an overview of the background and related issues at this time.

National registration efforts for geoscientists are being coordinated by the Professional Registration Committee of the Canadian Geoscience Council (CGC) which is an umbrella organization for approximately 17,000 geoscientists across Canada. This committee has been delegated the responsibility by the major CGC member societies for all matters related to professional registration of geoscientists in Canada.

In the past, depending on the professional engineering association involved, geoscientists have been permitted to register as professional engineers on an individual basis. In general, the feeling is the arrangement has not worked and the individuals who were allowed to register found their registration was not transferable to other professional engineering associations.

The Canadian Geoscience Council formed an ad-hoc committee in the early 1980's to investigate the registration of geoscientists. The committee has evolved into the current CGC Professional Registration Committee and has been assigned to:

a) provide the CGC with timely reports on the current status and plans for registration of geoscientists in each province and territory;

b) develop a vehicle for transferring registered status between jurisdictions;

c) evaluate the different models that could be used in nation-wide accreditation of geoscience programs; and

d) take a pro-active role in determining the need for registration in jurisdictions that currently do not provide for registration of geoscientists.

Alberta has the most experience with the professional registration of geoscientists. The act creating the Association of Professional Engineers, Geologists and Geophysicists (APEGGA) was enacted in 1977. The APEGGA Council is comprised of a four member executive committee, twelve councillors and two public representatives. There are always three earth scientists on Council to ensure representation of geoscientists' interests.

In British Columbia, changes to the Engineers' Act to provide for the registration of geoscientists were passed by the British Columbia legislature in 1990.

In Newfoundland, the members of the Association of Professional Engineers voted to include geoscientists in a common association in 1983. The government passed the revised Association of Professional Engineers and Geoscientists Act in 1988. Geoscientists use the P. Geo. designation.

The Northwest Territories Associatioh of Professional Engineers, Gemologists and Geophysicists (NAPEGG) held their first meeting in 1981. It was later decided to include geologists and geophysicists along with the original group of engineers.

A task Force was initiated by the Canadian Council of Professional Engineers (CCPE) to "Review the Participation of Geoscientists in CCPE". A report was made on May 17, 1991 to the CCPE Board of Directors. The Task Force recommended that because it was satisfied that the APEGGA admission standards for education and training for geoscientist registration are equivalent to those set for engineers and that the APEGGA standards have served as a model for other associations, it would be acceptable to appoint geoscientists to the CCPE Board of Directors as constituent Association representatives.

In Manitoba, there is no current provision for the registration of geoscientists. Geoscientists have been registered on an individual basis as Professional Engineers under the APEM Act. The APEM has discontinued this practice.

At the April 1991 APEM Council meeting, a motion supporting full participation by geoscientists in CCPE affairs, or any progress towards full participation as defined in Section 8.2.1 of the CCPE Task force Report, was carried. This section of the report considers the option of full participation in CCPE affairs of geoscientists who would have access to all CCPE offices with full assessment. CCPE By-Laws would have to be amended accordingly.

William Brisbin, a professor in the Department of Geological Sciences at the University of Manitoba, was approached by the Professional Registration Committee of the CGC to explore these matters in Manitoba.

According to Professor Brisbin, there are approximately 350 geoscientists in the province who are affected by these activities. About 50% of the geoscientists responded to the sub-committee's initial survey. 95% of the respondents were in favour of registration under an amended act. Thirty-nine of the geoscientists answering the survey are currently registered as Professional Engineers.

During an informational forum held at the conclusion of the Manitoba Energy & Mines annual meeting with industry on November 20, 1990 the questionnaire results were presented to sixty-seven geoscientists. Topics of discussion at the meeting related to registration included:

a) developing standard regulations to facilitate the movement of professional geoscientists between jurisdictions;

b) eligibility of geoscientists for registration and requirements adopted by Alberta, Newfoundland, N.W.T. and British Columbia;

c) registration as a requirement to practice; and

d) APEM position on geoscientists.

During the forum, some concerns were expressed that groups outside of Winnipeg had been overlooked and were not represented, and th there would be dominance by engineers in any future combined organization. Participants also raised the issue of registration as a right to practise.

Generally, the feeling in the geoscience community is that registration is proceeding across Canada.

As far as action by the Sub-committee on Professional Registration in the province, their mandate is to ascertain the desires of Manitoba geoscientists with regard to future registration and design a course of action if there is a consensus.

In a second questionnaire, the sub-committee received a mandate to act on behalf of Manitoba geoscientists in the matter of registration. Accordingly, the sub-committee is:

a) expanding to include representatives of all geoscience interest groups;

b) proceeding in developing a proposal for registration under an amended version of the Engineering Professional Act;

c) circulating the proposal to all Manitoba geoscientists for their comments and revisions if required;

d) seeking ratification from all Manitoba geoscientists of a final proposal; and

e) forwarding the ratified proposal to the APEM for their formal consideration. □

The Conawapa Project

Continued from page 5

Manitoba Hydro has recently submitted its application to build Conawapa. As part of the evolving process of funding interveners in the public review process, Ontario Hydro has recently received requests for intervener funding in the order of $65 million to fund expert advice requested by public interest groups wishing to present an environmental position during the "hearings" process. This type of consideration is a major factor in the rapidly escalating cost of power generation projects at this time.

We are all in a learning process where the game rules are unfolding as we proceed. This will require a whole new approach to doing environment/ engineering business. A new orientation can be expected in our academic programs if our educational system is to play a major role in shaping future engineering programs.

Dr. Dickson believes that the Chinese proverb "May you live in interesting times" is most applicable at this time as we strive to achieve the proper balance of environmental ideals and economic practicality. □

Letter to the Editor

We read the correspondence forwarded respecting so called Sustainable Development and it appea to us that all of these lofty goals and guidelin could be summarized into a very short statement; namely "Do no harm". Everything else is verbiage and obfuscation.

Yours very truly,
J.R. SPRONKEN & ASSOCIATES LTD.
John R. Spronken, P. Eng.

Revised Guide Now Available

The January, 1991 revision of this Association's **"Guide for the Engagement of a Consulting Professional Engineer"** is now available, upon request, from the APEM office. Please call Heather, at 942-6481, to request your copy.

APEM Member Wins Top Research and Development Award

On April 23, 1991, Dr. Howard Card, P. Eng., a professor of electrical and computer engineering at the University of Manitoba, became one of the recipients of the Information Technology Association of Canada (ITAC) Award for Academic Excellence. This award, known as the "Nobel Prize" for research in information technology, comprises $50,000 over two years, to supplement salary and finance research.

Dr. Card received this award for his work in the design of hardware for "neural computing". His neural networks allow computers to learn, just as people learn, by showing them solutions to typical problems. These networks are of great importance in speech and vision systems, where actual biological learning mechanisms can be incorporated into the computer design.

APEM congratulates Dr. Card for this most significant achievement. □

Red River Water Arch

Continued from page 1

requires that students design a proposal for a sponsor from industry.)

I acted as the sponsor on behalf of APEM to give direction and guidance to achieve the desired arch design. The design team was Design Group 4, comprising fourth year mechanical engineering students John Demchenko, James Pawluk, Michael Stewart and Glen Tait, fourth year industrial engineering student Dallas Moffatt and, by good fortune, fourth year electrical engineering student Brian Katz.

The group started on the design in September. They finally decided, having reviewed other locations and water source support, to mount the water cannon nozzle on the east wall of the Amy Street Steam Plant water pump house and locate the motor control centre with its PLC (programmable logic control) within the James Avenue Pumping Station proper.

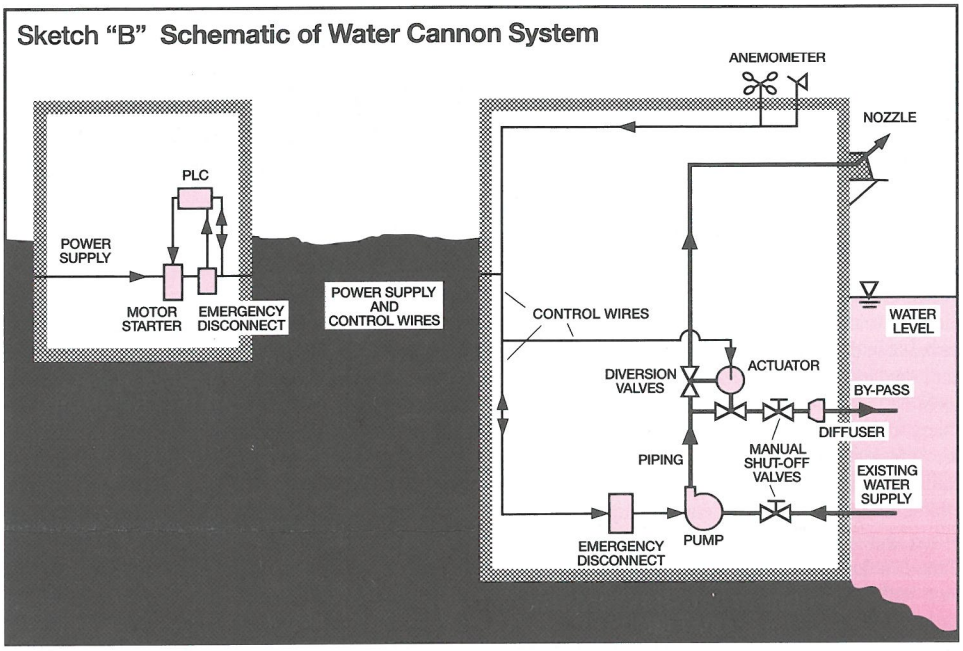
To accumulate data for the actual hydraulic and power requirement for the cannon/arch, we were fortunate to receive assistance from the Winnipeg Fire Department. They placed their largest pumper at the Alexander Docks for the use of the design team. Readings were taken for elevations and horizontal distances, pressures, flow rates and velocities for various nozzle sizes, all for the team to extrapolate and ratio, enabling them to achieve a water arch which reached the elevation of 120 ft. above the cannon nozzle proper while spanning a horizontal distance of 350 ft.

From this test data supported by hydraulic formulae, the students did their conceptual design, complete with a 36-page report.

Their design is best exemplified by the accompanying sketches.

In conjunction with these sketches are the following hydraulic and electrical data: 1) flow rate - 5275 US gpm; 2) electric motor - 1500 hp; 3) piping discharge size - 12 in.; 4) nozzle diameter - 4 in. (inclined 55 degrees from the horizontal); 5) pump discharge pressure - 305 psig. (If 6 in. piping had been used, pump discharge would have to be 750 psig). Order-of-magnitude cost was $300,000.

Other features of the design/report included: environmental and legal considerations, such as navigability of water crafts on the river; review of regulations by the Riverbank Management Committee, with respect to bank erosion, legal liabilities and concerns for safety of the viewing public in the vicinity of the arch. Wind velocities and direction were given special control for safety and economical considerations.



Congratulations

To Brian, Dallas, Glen, James, John and Michael for their enthusiastic input into the design and report. Good Show!

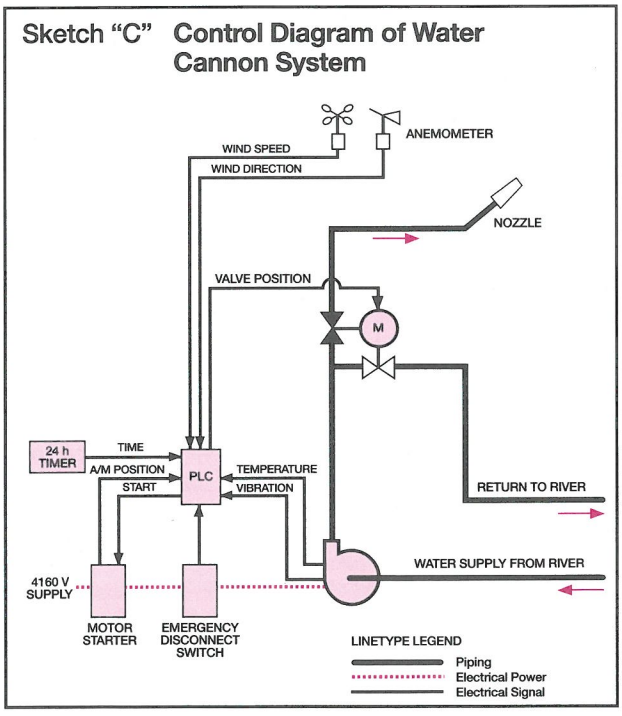
Acknowledgements and Thanks

On behalf of the students and myself, many thanks go to the Faculty of Engineering professors acting as advisors, and the following City of Winnipeg departments: Fire Department, Riverbank Management Committee, Environmental Planning, Hydro, Amy Street Steam Plant and Harbour Master.

Foot Note

Sketch "A" shows the enormity of the water arch as compared to the Fire Department's largest pumper and a water arch across the Chicago River in Chicago. As can be perceived, this Red River water arch, complementing the pumping station converted into an engineering museum, would be a great tourist attraction.

Look at the students' design report on file in the APEM office. Go see the equipment and building of the James Avenue Pump Station. Consider that the original pumping machines could have achieved the above arch from 1906 up to 1986. A high-tech achievement, even in this day! □



Women of Distinction

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

On May 2, I had the pleasure of attending the fifteenth annual YM-YWCA Women of Distinction Awards dinner, held this year at the Westin Hotel, and of accepting, on behalf of the membership, a plaque of recognition for our Association's contribution to this very worthwhile event.

The evening commenced with the introduction of the 39 nominees – every one of whom came with awe-inspiring credentials which I'm sure humbled most of the 700 – odd people in the room (and which certainly humbled me!)

Dinner followed, with greetings from the usual group of dignitaries. Next came the special guest speaker for the evening; Claudette McKay-Lassonde, P. Eng., one of our profession's own "Women of Distinction" who was recently appointed Assistant Deputy Minister of Trade and International Relations, Ministry of Industry, Trade and Technology for the Ontario provincial government.

Ms. McKay-Lassonde's presentation commenced with a number of statistics showing the increase in the number of women in the workplace, and the increase in female enrolment in post-secondary education. She then touched on the salary differential between men and women, and the "glass ceiling" syndrome, describing the glass ceiling as being strongest, thickest and most impenetrable for the profession of engineering.

On the subject of engineering, she described Canada's low percentage of engineers per capita (one-half that of the U.S. and one-quarter that of Japan), the impending shortage of engineers, the low percentage of female engineers (less than 3%), the inability of females to attain supervisory levels, the fact that female engineers earn less than their male counterparts, and the general expectation that the aspiring young female engineer "look like a lady, act like a man and work like a dog".

She told the audience that she would appreciate some company in her discipline – not only for sisterly companionship, but for helping to change the image of, and attitudes within, the profession. (She drew an enthusiastic round of applause for her suggestion that the introduction of some female sensitivity to the profession may help put a stop to the boorish activities of male engineering students!)

Ms. McKay-Lassonde wrapped up her speech by reminding the audience that, by the year 2000, a full 50% of the Canadian workforce will be female, and by pleading with us to open up new doors for women. She asked the parents in the audience to praise their daughters and to encourage them to become engineers. She asked the educators in the audience to teach female students that the world is their oyster. And she asked each of the employers in the audience to promote a promising female to the position of Vice-President!

Ms. McKay-Lassonde's presentation was extremely well-received. In a few brief minutes, she had accomplished more than our Public Relations Committee, hard-working as they are, would have been able to accomplish in a year! Thank you, Claudette!

This article would not be complete without a description of the finale of the event: the announcement of the winners of this year's Women of Distinction Awards. And women of distinction they truly are!



Claudette McKay-Lassonde, P.Eng.

The recipient of the Professional Award this year was Joan McLaren, Director of Program and Staff Development at Red River Community College, for her considerable efforts in developing policy to free college literature from sex stereotyping, for her leadership role, as an educator, for women, and for her significant contribution to an impressive number of organizations and groups within the community.

Jerry Bjornson, who has acquired extensive lay knowledge of the law and government, received the Arts Award for her communication of that knowledge with respect to women's rights, for her tireless efforts as Co-ordinator of the Charter of Rights Coalition, and for her significant contribution toward legitimizing women's concerns as an important aspect of constitutional reform.

Judith Opitz-Silver, President of the Manitoba Association of School Trustees, received the Public Affairs Award for, among many other impressive accomplishments, her leadership role in her school division's pay equity program, her community's sexual abuse awareness program and the North Winnipeg YM/YWCA's renovation program, and her new program designed to keep teenage mothers actively involved in education.

Marvelle McPherson, a registered nurse, received the Management/Labour Award for her impressive contributions to the profession of nursing, including her many years on the Board of Directors of MARN, and to the community, including her campaign efforts for the United Way as well as political parties at the provincial and federal levels.

Lastly, but certainly not least, the Community Service Award was presented to Gloria Penner, who opened her home in 1965 to care for children from the North with special medical needs, and now, 26 years later, has what is regarded as a model care home for Inuit people with medical needs.

The credentials of the award-winners were truly superlative, and I think everyone in attendance that evening left the hotel feeling inspired to become more actively involved in their communities, and proud to have women such as these as role models. □

News From Other Associations

By: B.A.K. Danielson, P. Eng., and H.S. Zbigniewicz, P. Eng.

ONTARIO

The APEO has increased its annual fees to $105 effective April 1, 1991. Their 1991 budget has a projected $540,000 deficit that is due to inflation, increase in staff and office space and the APEO absorbing the G.S.T. on annual licence fees.

Three Ontario Universities have recently introduced space science programs into their institutions. This spring the Royal Military College (RMC) in Kingston will graduate eight students with Bachelor of Space Science degrees. York University will follow with their first graduates in 1994, while the University of Waterloo will commence its program this fall. RMC and York plan on a more technically oriented program while Waterloo plans on training all disciplines with a space – oriented background. Although the programs will vary between institutions, all graduates will have an appreciation for the interdisciplinary concerns involved in the Canadian space industry.

ALBERTA

The University of Alberta reports that its Environmental Engineering and Science program is one of the most extensive offered in Canada. The present program, introduced in 1979, has been refined to include four undergraduate and nine graduate courses, as well as an Environmental Science option for students with non-engineering undergraduate degrees. Research has been developed in water quality, treatment and distribution, wastewater collection treatment and disposal, receiving water impact studies, solid waste management, and air quality investigations. In addition, a wide variety of industrial waste treatment studies have been conducted. The physical facility consists of world-class analytical laboratories and advanced bench and pilot scale environmental technology assessment laboratories. The on-campus Newton Research Building houses equipment valued at over $880,000 and there are two off-campus pilot plants. All disciplines of the Faculty of Engineering are responding to the need for more environmental awareness, and a faculty-wide effort is being made to produce engineers that are technically and environmentally capable of meeting tomorrow's engineering challenges.

BRITISH COLUMBIA

In January 1991, the University of Victoria began offering a new Certificate Program in Technology and Management for graduate engineers, computer scientists and applied scientists working in technically oriented organizations. The principal objectives are to enhance the abilities of individuals to effectively manage a technically oriented organization, and to provide further education in selected technical subjects. Six core courses for the program are Communication Skills, Finance and Accounting, Management Skills, Database Concepts, Expert Systems, and Data

Continued on page 12

Council Report

March 11, 1991 *By: B.R. Newton, P. Eng.*

AT WHICH COUNCIL MAKES SOME FUNDAMENTAL DECISIONS AND YOUR INTREPID REPORTER FIRST GOES UNDER FIRE

(In preparation for that career move to CNN).

I had originally intended to provide a somewhat "off-plumb" view of a Council meeting – choice ramblings from someone ill-prepared, illiterate, and certainly uninitiated in the ways of Council. After all, there are the council minutes which record the truth in its official form, and that's really not what this publication is all about, is it? Besides, my shorthand's not what it used to be.

I had planned to comment on the stampede for the butter tarts; on how, to a journalistic rookie like myself, waiting for my first Council meeting to begin was like waiting for the ground war to start; on how, at 1:00 sharp, the sudden cessation of lip smacking sounded the "all clear" for business to begin.

And Council did not disappoint. The first orders of business – approval of agenda, acceptance of previous minutes, licences, registrations, reinstatements and the litany of other mundane items – were handled quickly and efficiently, with a flurry of motions and hands going up so fast you'd have thought you were in an Iraqi bunker. A financial statement filled with more figures than the Sports Illustrated Swimsuit Issue (though none quite so rounded) was dispatched faster than the Leafs from post-season possibilities.

Oh, there were items of substance discussed. A Practice & Ethics Committee discipline by-law recommendation was carried over from the last meeting. It involves handling some of the "lesser" actions without involving Council through provision of a "Discipline Committee" and an "Investigation Committee". Justice can best be served where a clear distinction is maintained between the body investigating an issue and the body determining the guilt and punishment. There seems to be some question whether this move accomplishes this.

Council gave its support in principle to the concept of a CCPE National Contingency Fund. This common fund would be available to help ensure that all Engineering Associations across the country have funds for any disciplinary actions they may have to undertake. Enforcement should never be limited by financial constraints.

A draft position paper on sustainable development and the practice of Professional Engineering in Manitoba was reviewed. It will be provided to the general membership for input. The purpose is to develop a code of conduct and to "strike the appropriate balance between environmental necessity and economic reality" – before someone else strikes it for us, that is. The paper in its present form is all motherhood, sweetness and light, and left this reporter with a serious case of the "warm and fuzzies". I felt like rushing out to embrace my fellow man, or sell flowers at the airport.

But I find I must come back to the speed and efficiency of Council, as items were resolved with ne'er a blink nor a blither, and the agenda was whittled down faster than political loyalties in the face of an opposition landslide. Only now I offer the observation as editorial comment on the ease with which matters of a fundamental nature were dispatched – matters which affect the way we, as professionals, conduct ourselves.

An engineer may soon affix his seal to work that was neither produced by himself nor done under his supervision. This change to the current "Guide to the Ethical Use of the Seal" brings it in line with the proposed Code of Ethics as revised in August of 1990 and approved in principle by Council. Clearly the use of the seal never precludes the responsibility for careful review of the work, and this revision may help to avoid duplication of design and production tasks. There is the opinion, however, that it will permit non-engineers to carry out design work (with an engineer "legitimizing" it at a later date). This would be in contravention of the Engineering Profession Act, and therefore illegal.

A more cynical view is that it will allow an engineer, with a clear conscience and the blessing of the Association, to sell his seal to firms who see engineers as just another step in an approval process. In our recessionary times, this seems another opportunity for engineers to be pushed into the position of bidding for assembly-line work. One might sarcastically say (were one of that ilk) that the Sons of Martha might as well open a franchise with a drive-through window and two-for-one specials.

Further revisions will eventually allow for electronic reproduction of the seal. Drawing originals may then reside within a floppy disk rather than on mylar or vellum. The ease with which an original can be revised without the design engineer's knowledge almost seems a self-fulfilling prophecy. It is this reporter's thought that drawings at some point must exist in traditional form, and this would be the logical point to affix the seal. As well we must ask whether electronic reproduction satisfies the intent that using one's seal should be a conscious act in keeping with our obligations. But perhaps the other question is why we seem so willing to provide our clients with original drawings in the first place. I believe this matter will receive more scholarly attention in later editions of this publication.

To have witnessed these sweeping changes to the use of the seal, accomplished as they were in less time than it took you to read to this point, was disconcerting and unsettling. Some fault, I'm sure, lies with me for not being in tune with the discussions our Association must have had among its membership since I returned some 15 months ago. No doubt these contentious issues have been discussed to death, with the majority viewpoint now reflected (although this begs the question of whether an ethical right exists to be changed by the whim of a simple majority). Or perhaps we should be considering the purpose of the seal itself – whether it is to be viewed as a symbol of the integrity of the profession or merely a bureaucratic anachronism (maybe, after all, it is just a rubber stamp).

Perhaps my objections are simply part of the human reflex: our natural distrust of all change except that which can be chewed and swallowed in manageable pieces (much like the infamous butter tarts). And perhaps what we are seeing is not an example of principle being eroded in the name of expediency. □

Lower Oil Prices?

Continued from page 5

Dr. Rosing pointed out that growth in demand has very little to do with major price hikes. His data showed that, for most of this century, total energy use has grown at about 2% annually, except for a 25-year period after World War II. When Western Europe was rebuilt on the basis of cheap oil, the annual growth in energy demand jumped to 4.9%.

Limited growth in energy consumption led Dr. Rosing to forecast static to slowly decreasing oil prices for the short, medium and long term. Dr. Rosing noted that "low cost" oil reserves actually grew from 635 billion bbls. in 1973 to 750 billion bbls. in 1990. He made the prediction that oil prices will remain in the $12 to $18/bbl. range for the short term.

In the middle term, Dr. Rosing feels that the industrialization and rebuilding of Eastern Europe and the U.S.S.R. may bring on a period of increasing demand, much like the situation in Western Europe after W.W. II.

Due to time constraints, Dr. Rosing concluded his presentation there. However, during the ensuing question and answer session, some interesting points were raised. Dr. Rosing contends that, while oil company executives are required to maximize profits, they must be careful not to raise prices too high. If prices were to stay above $20/bbl. for an extended period of time, it would become economically viable to develop alternative energy sources, such as hydrogen.

When asked the cost of Hibernia oil, Rosing estimated it at $14/bbl. If his price predictions prove correct, the profits from Hibernia would appear to be marginal at best. □

Ingenieurs 2000

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

In France, the National Conservatory of Arts and Crafts (CNAM) is starting the training of engineers using an apprentice system similar to Canada's sandwich programmes. Four organizations, Renault, SNECMA, Thomson, and Vsinor-Sacilor, will cooperate in this programme that will have, initially, two streams leading to mechanical engineer or electronic-informatic engineer. The apprentices will be paid by the company which will also pay the apprentice's fees at the university he/she is attending. "Motivation and technological aptitude will count as much as an aptitude for mathematics." Series "F" technological bachelors will be given priority for entrance to this new programme. □

Use Of Heat Pump Technology For Space Heating And Cooling Requirements

By: D. Fedirchuk, P. Eng.

Someone once said that man is a creature who is never satisfied: when it is hot he wants it cold, and when it is cold he wants it hot. Luckily for mankind, the 1930s saw the development of the heat pump.

What Is A Heat Pump?

As the name implies, a heat pump is a device that is used to move heat energy from one medium to another. An example of this is the effect one experiences if one touches the back of a refrigerator while it is operating. The heat given off to the surrounding air by the condensing coils is the result of work done by the compressor on the refrigerant gas and by the heat transferred from the material inside the refrigerator (food and/or unspecified beverages). In this illustration, work done by the compressor pumps or moves the heat from the air inside the refrigerator to the air in the room.

How Does A Heat Pump Work?

In order to explain a heat pump's operation let us follow the refrigerant in a heat pump cycle (see Figure 1). Starting at A, we arranged to have a substance called a refrigerant in a liquid form. The liquid refrigerant is then allowed to flow into a device called an expansion valve or pressure reducing capillary tube. The liquid refrigerant entering this area experiences a reduction in pressure and as a result starts becoming a gas, (point B). In the process, heat is absorbed by this refrigerant. By the time the refrigerant has passed through the evaporator (point C) it has become a gas and has absorbed its latent heat of vaporization. The compressor at point D pulls this gas into its suction side and does work on this gas to compress it. The hot compressed refrigerant gas at point E then enters the condenser coil. As the hot compressed gas travels through the condenser, it gives off heat as shown at point F. With the reduction of temperature, the refrigerant gas is converted back into a liquid to complete the cycle. It is this change in state from liquid to gas and vice versa along with the refrigerant's latent heat of vaporization that causes heat to be pumped from the evaporator to the condenser. Please be advised that this is an electrical engineer's interpretation of a thermodynamic cycle. Hopefully this has not totally disgusted all you mechanical engineers.

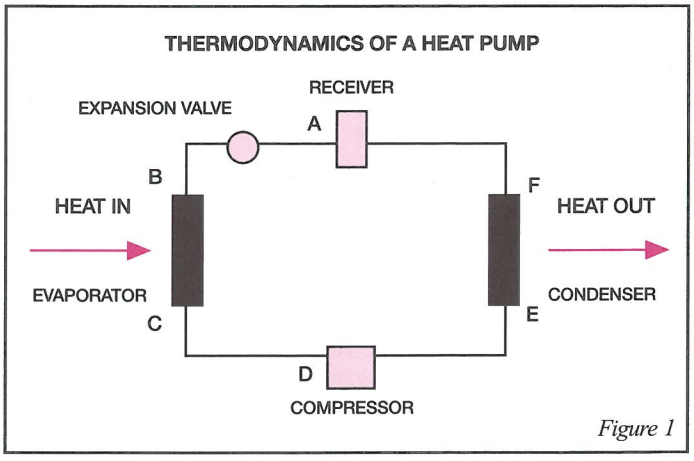


Figure 1

Application Of Heat Pumps For Space Heating And Cooling

In reviewing the operation of a heat pump cycle, we can see that three things happen during a heat pump's operation:

1. Heat is absorbed by the evaporator.
2. Energy is absorbed by the compressor (in terms of the energy supplied to the compressor motor).
3. Heat is released by the condenser.

In order to heat the air in a building using a heat pump, one would arrange for a suitable heat source at the evaporator and for the resultant heat given off at the condenser to be released into the air of the building. To cool a building, one arranges for the reverse to take place.

Heat Sources For Heat Pumps

A suitable, appropriate heat source must be found to operate a heat pump. This heat can be waste heat given off by industry, from the earth itself or from water trapped below the earth's surface. Ground water in the Winnipeg area interestingly enough is at the appropriate same temperature as the average air temperature, about 5ºC. Earth temperatures increase the further down that one goes. Heat pumps have been successfully utilized in Manitoba using so-called open loop systems by pumping water up from the ground, extracting some of its heat, and then returning it back into the ground. Heat pumps have also been successfully utilized by pumping a suitable heat transfer fluid through pipes buried in the groups in a closed-loop mode. Each of these methods has its own merits and problems.

Why Use Heat Pumps?

The use of heat pumps is basically a question of dollars and sense. The efficiency of a typical ground source heat pump operating in the heating mode is approximately 250%, where percent efficiency is defined as useful $\frac{\text{energy out x 100}}{\text{energy in}}$.

This is marvellous when compared to efficiency values of other forms of heating. Since the technology has been around for about sixty some years, it is well understood and does not need further demonstration. Commercially available units are applied today in Manitoba for both commercial as well as residential heating and cooling requirements.

Sizes for heat pumps are defined in the same manner as for refrigeration equipment, in tons. A ton is an expression of cooling that has some historical background and relates to the heat absorbed in a 24 hour period by 2,000 pounds of ice going from 32ºF to water at 32ºF (0ºC). The latent heat of water in going from water to ice is 144 BTUs per pound. A ton of ice thawing into water would therefore absorb 2,000 x 144 = 288,000 BTUs over a 24 hour period. The rate of heat transfer per hour would be 288,000/24 = 12,000 BTU/hr. This is number that is referred to as a ton of cooling by the refrigeration industry. You may have noticed the reference to the English measurement system. This again is historical, and those of you who wish metric measurements can make the appropriate conversions.

Economics Of Heat Pumps

In order to justify the use of a heat pump, the usual economic factors should be considered, such as initial capital costs, operating costs and payback period. A review of heat pump applications in Manitoba estimates that there are at least 400 residential heat pump installations and probably at least 20 providing heating and cooling to commercial buildings. A check with some heat pump suppliers indicates that installed heat pump prices can range from $2,000 to $4,000 per ton for residential use.

In the economic analysis of a heat pump system one should also consider fuel alternatives and technology alternatives. One could also consider environmental and sustainable development issues. In this author's own analysis of heat pump performance and economics for his own residence over the last four years, it was found that energy requirements for heating have dropped by approximately 250% and peak energy demands have dropped by 200% over straight electric resistive heating. This difference in percentage is explainable by the fact that the heat pump sizing was such that occasional resistive heat supplement is required. Approximately 5% of the total heating requirements is supplied by resistive heating. This occurs during the coldest winter days. Had the heat pump size been increased, the need for this resistive requirement would have been eliminated (mind you, at the expense of a possible larger capital expenditure). The heat pump used has a closed-loop earth coil. Measurement of this loop, the surrounding soil and undisturbed soil temperatures indicates that no lasting or significant soil temperature changes can be attributed to other than normal seasonal variations. Finally, capital payback for the system is estimated to take seven years. This time is dependent upon energy and interest rates, capital costs and energy requirements.

Conclusions

The application of heat pump technology has been demonstrated over the last 60 years to be a viable form of building space heating and cooling. Sound engineering design practices should be applied in the use of this technology to ensure success. Economics may dictate that heat pumps may not be the right solution for every heating/cooling building requirement, but certainly one should consider the technology during the evaluation process.

In a world of increasing energy requirements, global warming because of carbon dioxide content increase, and a general concern for the environment, it is comforting to know that heat pumps stand ready to solve some of these problems. □

APEGGA Annual Meeting

: *N.P. Feschuk, P. Eng.*

The 71st Annual General Meeting of APEGGA was held at the Palliser Hotel in Calgary on April 12, 1991.

President Norman Orr, P. Eng., opened the annual meeting shortly after 9:00 a.m. when it was established that a quorum of sixty was present. Following appropriate greetings, the results of the Council election were announced. The meeting flowed smoothly as President, Executive Director, and twenty-six various committee chairmen and eight branch executive presented their reports along with the Auditor's report. Sprinkled throughout the proceedings, representatives of sister associations from British Columbia, North West Territory, Manitoba and Ontario brought greetings from their respective memberships.

One amendment to the APEGGA's By-Laws was introduced. The amendment dealt with the By-Law governing conferring life membership in the association. The By-Law amendment was necessitated by a complaint registered, on the grounds that the By-Law discriminated on the basis of age, with the Alberta Human Rights Commission. The By-Law required that life membership be conferred on members who were 60 years or older. The amendment led to considerable discussion from the floor with some suggestions that complaints should be challenged at a Human Rights hearing. Eventually ə amendment removing reference to age from the ˌy-Law passed.

The business portion of the annual meeting concluded at noon, followed by a luncheon which was attended by about three times the number of members that were at the business portion of the annual meeting.

The luncheon speaker, Mr. Gerry Maier, P. Eng., President and CEO, Trans Canada Pipelines, recipient of the Canadian Council of Professional Engineer 1990 Gold Medal Award, announced the establishment of an international transportation research centre in Calgary. Picking up on Premier Filmon's previous evening speech at the Summit Awards, Mr. Maier added his support to sustainable development and the necessity for members of APEGGA to become involved in the political arena. Contrary to Premier Filmon's optimism with respect to the constitutional issues, Mr. Maier stated that Canada is in far worse constitutional shape than most realize, and we cannot isolate ourselves from the problem. He asked that we reflect on our country and clearly understand what we stand to lose if Canada as we know it does not survive.

APEGGA SUMMIT AWARDS

"Let us now praise famous men -
For their work continueth,
Greater than their knowing!"
- from Kipling

On April 11, 1991 at the Calgary Convention Centre in excess of 1100 engineers and friends at $55.00 a ticket gathered to honour and bestow upon seven engineers and one firm recognition of their accomplishments through the Centennial Award awarded to A.G. Slekys, P. Eng., Ph.D.; L.C. Charlesworth Award awarded to D.A. Carswell, P. Geoph.; Frank Spragins Award awarded to R.K. Kerr, P. Eng., Ph.D. and M.A. Clegg, P. Eng. Ph.D.; Special Award awarded to G.J. Berg, P. Eng.; Achievement Award awarded to Hyprotech Ltd.; Honourary Membership awarded to G.B. Miller; and Honourary Life Membership awarded to N. Orr, P. Eng. and to honour the retiring members of APEGGA Council, D.T. Irving, P. Eng., L.T. Bruton, P. Eng. Ph.D., C.W. Gibson, P. Eng., R.D. Orr, P. Geol., M.J. Rosseker, P. Eng., and M.J. Antonio, Public Member and D.F. Burrows, Public Member.

The entire awards evening was conducted in the finest tradition. The evening was advertised as a black tie event and many who attended were so attired.

The awards evening started with a reception, followed by a VIP march around the convention floor led by the HMSC Tecumseh sea cadet marching band.

The award portion of the program was preceded by the dedication of the 1991 Summit Awards, symbolic of the highest level of achievement by APEGGA members, to the memory of Thomas Douglas Stanley, P. Eng., and Bill Fraser, P. Eng.

Because of the size of the group, two large T.V. screens were used to enable the audience to view the proceedings. During the opening ceremonies for the awards, an intruder, Adam, an intelligent computer circuit, appeared on one of the screens and made various attempts to take over the meeting. The Honours and Awards Chairman, Andy Gilliland, P. Eng. (a past president of the APEM), the Master of Ceremonies, Tom Evans, P. Eng., and Norm Orr, P. Eng., APEGGA President had to deal with Adam. Adam wondered out loud about the preoccupation of P. Eng's, P. Geoph's, and P. Geol's with the use of abbreviations such as APEGGA, Kilos, BSc, and AIME.

Premier Gary Filmon, P. Eng., who was the guest speaker, was interrupted by, and in good humour engaged in a war of words with, Adam.

Premier Filmon spoke about sustainable development, and about the significant contribution engineers can make on school boards, municipal councils, in the provincial legislature and in parliament; and he extended his personal encouragement to professional engineers across the country to get involved politically, stating that the engineers' education makes them well- suited to deal with the political issues of today. Speaking on the constitutional issues facing Canada today, the Premier stated the problems are surmountable providing all parties involved are committed to resolve the issues in good faith and reasonableness.

Congratulations to the recipients of the Summit Awards and to APEGGA for an excellent evening. No APEGGA members could have left the Summit Awards without standing a little taller and feeling much prouder about their profession and the contribution their profession makes to society. □

New Faces

An informal, late – afternoon reception was held on May 1st at the Wildewood Club in Fort Garry. Our President and Council used the occasion to meet and welcome new members to our Association. Those attending included newly registered members, council members, chairmen of committees and members of staff.





Above: New Members Fred Oberbuchner, David Swatek and Mark Plett.

Left: Bob McKibbin, Annual Meeting Chairman, chats with new members Ruth Eden and Rhonda Prepes.

Below: New members Jeff Boyko, Jim Lukashenko, Ken Little, Brant Magnusson and Dave Wardrop.

Committee chairmen were busy recruiting new members for their committees. President Bill McDonald, in a short speech, welcomed all new members and expressed the view that the infusion of new blood into APEM could only have positive results.

The mingling and interacting of older members with new, younger members made the occasion doubly enjoyable. □



Kuwait Reconstruction

Manitoba Industry, Trade and Tourism has recently released a newsletter pertaining to possible opportunities in the reconstruction of Kuwait. Canadian companies may make their interest known by registering with:

Canadian Commercial Corporation,
Kuwait Reconstruction Desk
Ottawa, Ontario
Phone (613) 996-0034
Fax (613) 995-2121.

Those wishing to deal directly with U.S.A. Army Corps of Engineers, Winchester, Virginia, should contact:

Ms. Martha Rudolph
Phone (703) 665-3693/3668
Fax (703) 665-3621/3626.

Companies aware of a project being undertaken should negotiate with:

U.S.A. Army Corps of Engineers,
Dhahran, Kingdom of Saudi Arabia,
Attention: Mr. Bo Bounds
Phone (3) 857-0595
Fax (3) 858-0838.

As previous records of company registration may no longer exist, registration is advised. For further information and indication of interest, please contact:

W.G. Ratcliffe,
Senior Trade Development Officer,
Manitoba Industry, Trade and Tourism,
Winnipeg,
Phone (204) 945-2452
Fax (204) 957-1793.

News From Other Associations

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Communications. Five elective courses are selected from three specialty option areas: Computer Visualization, Data Communications and Networks, and Management for Professionals. Additional specialty courses may be developed according to need and a final project rounds out the requirements for the program.

Also in British Columbia, the Association for the Promotion and Advancement of Science Education (APASE) is working to increase public awareness of science and technology, and to increase the quality and quantity of science education in the schools. APASE is presently considering a program called "Engineering for Children" which has been initiated to introduce engineering to elementary school children so that their first contact with engineering activities is rewarding and enjoyable. "Engineering for Children" is a teacher-training workshop where teachers learn how to use the recommended activities to introduce engineering to their classes using a "hands-on" approach. Teachers are also introduced to special activities and teaching strategies which increase the involvement of girls. The objectives are to introduce a new concept (engineering) to children, and to show them that engineering is a problem-solving activity, is related to everyday life, that everyone can do it (girls equally as well as boys), and that it is, in fact, fun! □

Coming Events

XVIII INTERNATIONAL CONGRESS OF REFRIGERATION INC.
August 10-17, 1991, Montreal, Quebec
Contact: Steve Bittner, Coordinator
3600 Boulevard Casavant Ouest,
Saint-Hyacinthe, Quebec, J2S 8E3
Phone: (514) 773-1105
Fax: (514) 773-8461

1991 INTERNATIONAL PUBLIC WORKS CONGRESS AND EQUIPMENT SHOW
August 24-29, 1991, San Francisco
Contact: American Public Works Association,
Chicago, Illinois
Phone: (312) 667-2200

Technical University of Nova Scotia
SEMINAR ON UPGRADING BRIDGE INSPECTION SKILLS
June 3-4, 1991, Holiday Inn Crowne Plaza, Winnipeg
Contact: Professor Hira Ahuja
Phone: (902) 420-7510

Western Canada Conference
MANUFACTURING '91: "TARGETING TALENT & TECHNOLOGY"
September 19-20, 1991, Calgary Convention Centre
Contact: John Emery
Phone: (403) 268-2771

B.C. HYDRO DAM SAFETY SEMINAR
October 21-25, 1991, Vancouver
Contact: Niels Nielson
Phone: (604) 663-3656
Fax: (604) 663-3597

Canadian Institute of Steel Construction
"CONNECTIONS FOR STEEL STRUCTURES"
November 4, 1991, Winnipeg
Contact: Brenda Williamson
Phone: 1-800-268-3104
Fax: (416) 491-6461

Canadian Institute of Steel Construction
LOW RISE STEEL FRAMED BUILDINGS
November 5-6, 1991
Contact: Brenda Williamson
Phone: 1-800-268-3104
Fax: (416) 491-6461

Calls for Papers

14th International Symposium on WASTEWATER TREATMENT and Third Workshop on DRINKING WATER
November 12-14, 1991, Montreal, Quebec
Submit 1-3 page summary, plus resume, by June 14, 1991, to:
AQTE - Symposium '91
407 blvd. Saint - Laurent, Suite 500
Montreal, Quebec H2Y 2Y5
Fax: (514) 866-4020

SIXTH CANADIAN MASONRY SYMPOSIUM
June 15-17, 1992, Saskatoon, Saskatchewan
For information and submission of abstracts contact:
Dr. K.W. Nasser, Chairman,
Technical Program Committee,
Dept. of Civil Engineering,
University of Saskatchewan,
Saskatoon, Canada, S7N 0W0
Phone: (306) 966-5360
Fax: (306) 966-8710
Date of Closure: September 30, 1990

International Symposium
CEMENT INDUSTRY SOLUTIONS TO WASTE MANAGEMENT
October 7-9, 1992, Calgary, Alberta
Submit 50-100 word summary by September 1, 1991, to:
Canadian Portland Cement Association
201-1155 West Pender Street
Vancouver, B.C. V6E 2P4
Contact: Robert W. Piggott, P.Eng.
Phone: (604) 685-0582
Fax: (604) 685-1574

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