

Professional Engineer



Vector Earns NOVA Award for Construction Innovation

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

By demonstrating a practical way to remove damaging chloride ions from reinforced concrete structures, the Vector Construction Group of Winnipeg has won the NOVA Award, given annually by the Construction Innovation Forum of Ann Arbor, Michigan, for innovative achievements in construction.

David Whitmore, P.Eng., Vector's vice-president, accepted the NOVA Award on behalf of the company. The award marked another milestone in Vector's even-year testing and development of the Norcure Electrochemical technique to remove chlorides from road-salt-contaminated concrete. Removal of chlorides and arresting of the cause of corrosion of embedded reinforcing steel extends the service life of structures such as bridges and parkades. The technology had been previously awarded the British Construction Industry Award of Excellence.

"It's an extremely exciting technology," says Whitmore. "Unlike traditional band-aid solutions, it offers a long-term cure for a lot less money. This cost-effective system has tremendous potential and could save governments and the private sector millions of dollars a year in North America."

Reverse battery: In the Norcure system, the migration of chloride ions is reversed by applying a temporary titanium or steel anode to the exposed concrete surface. Electrical contact between the concrete and the anode is maintained in electrolyte-soaked media such as fibres, synthetic felt mats or impounding tanks. The liquid (electrolyte) can be as simple as water or else a buffering alkali solution of either calcium hydrox-



Application of cellulose fibre electrolyte media to bridge columns for Electromechanical Chloride Extraction (ECE) Regina, SK.

ide or lithium borate. After connecting leads to the embedded rebar, the system is energized with a DC voltage of typically 20 to 40 volts.

With the voltage applied over a period of two to ten weeks, the chloride ions migrate to the anode and out of the concrete. As the chlorides are removed, hydroxyl ions are produced at the surface of the rebar, restoring the alkalinity of the concrete. These changes create a highly passive environment for the reinforcing steel, where it is protected from further corrosion.

"It's a clean, quiet and non-destructive process

which, with modification of the chemistry of the anode, may also have application to mitigation of damage from alkali-silica reactive aggregates in concrete," says Whitmore. "Promising research into that is underway now."

SHRP trial: Trial demonstration projects using the Norcure system began in the late 1980s. The first trial project in North America, following earlier work in Norway, was for the Ontario Ministry of Transportation on the substructure of the Burlington Skyway over Hamilton Bay. That project was completed as part of the Strategic Highway Research Program (SHRP), an ongoing program jointly funded by the USA and Canada.

The first full-scale commercial project on the continent was completed in 1994 for Saskatchewan Highways & Transportation on 24 salt-contaminated bridge-support columns. Since then, over 140,000 m² of concrete has been treated by the Norcure process, including parking structures, bridges, building elements, industrial buildings, silos,

wharves and other concrete structures around the continent.

Worldwide, over 50 chloride-removal projects have been installed to date, not only in North America but in Norway, Sweden, England, Germany, Japan, Italy and Switzerland. Acceptance of the system is growing rapidly now that the long-term results of the early SHRP test projects are published. The US Federal Highway Administration is actively promoting use of this technology to state highways departments. □

WE'VE MOVED!

The APEM office has moved. As of June 1, 1996 our address is 850A Pembina Highway, Winnipeg, Manitoba R3M 2M7. Our new phone number is 474-APEM (2736). Our new fax number is 474-5960.

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**WE HAVE LOST CONTACT.
MAY WE HAVE AN ADDRESS?**



A.I. McQuilkin
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Innovators In The Schools – A Progress Report

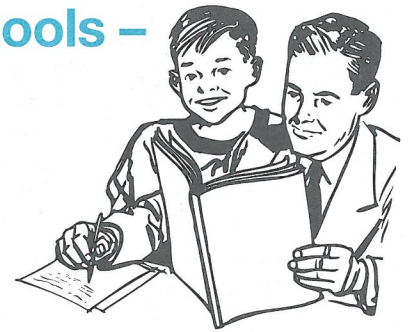
By: B.R. King, P.Eng.

“When left to the textbook, science and math are often little more than numbers on a page. BUT when a scientist, engineer or technologist visits a classroom, science and math come alive!”

Through the national *Innovators in the Schools* program, engineers can share their enthusiasm for science and math during classroom visits. Practising professionals or university students lead children through presentations, demonstrations and hands-on experiments designed to explain scientific principles by exciting real-life examples. These engineers, as role models, provide insight into careers in engineering, and students begin to look at science and math as avenues to interesting professions.

The program in Manitoba has grown rapidly, in the last two years, to become one of the busiest in Canada. Today, there are 405 Innovators from across the province who have eagerly agreed to visit the classroom upon request. (Only B.C. has more Innovators, at 450). Approximately 150 of Manitoba's Innovators are engineers, and your involvement is much appreciated by teachers and students. Thanks for your input.

Innovators are involved in classroom visits, science-fair mentoring and judging, field trips or worksite tours, job-shadowing, career days/career exploration and short-term mentoring. They also serve as information resources for teachers and presenters for teachers' in-service days. Some have participated in Information Days at the Faculty of Engineering, others at Women in Engineering Advisory Council events, Science Olympics, National Engineering Week activities, and National Science and Technology Week.



Workshops are offered periodically to help Innovators plan interesting presentations.

Last school year, 700 presentations were made in approximately 140 schools. Over 13,000 students met an Innovator. This year we anticipate that 1,000 presentations will occur, and that the database will reach 500 volunteers. Congratulations to each one who contributes to this great success!

The *Innovators in the Schools* program is offered to Manitoba students in grades 1 to 12, free of charge. The program is funded, in part, by Industry Canada and operates from the Manitoba Museum of Man and Nature. With the reduction of federal government support and the growth of the Innovators program, the Advisory Board has now begun to develop a fund-raising strategy. The increase in funding is required if we are to support, not just Winnipeg, but all of Manitoba. The Innovators program is recognized as one of the most effective programs that have affected large numbers of students in the promotion of science and mathematics.

If you would like to provide support and/or have suggestions that could assist with our fund-raising strategy, or would like to be an engineering ambassador to the classroom, please contact either Program Coordinator, Betty-Ann Kilbrei, or Program Assistant, Gail Wence. Phone 988-0699 or Toll-Free 1-800-770-STEM. □

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REINSTATEMENTS MARCH & APRIL, 1996

T.J. Van Dekerkhove

President's Message

C.L. Stewart,
P.Eng.



It's ORAP!

The Organizational Restructuring Action Plan (ORAP) was initiated in 1994 and the task-force is chaired by your Past-President and CCPE Director Doug Chapman. The task-force results were discussed at the Long Range Planning Session and again at Council in April. The implementation of the ORAP structure should begin in the fall.

The main objectives of the review of APEM's organizational structure are:

- to enhance and improve the flow of communications,
- to clarify the roles and responsibilities of the volunteers and committees, and
- to establish the staff requirements and responsibilities in the revised structure.

After initial consultation with the committee chairs and consideration of models from other provincial engineering associations, the task-force developed a proposal. The ORAP proposal is based on a two-level concept. Our many committees and task-forces are grouped under six boards that report to Council. It is envisioned that Council will meet less frequently (perhaps bi-monthly instead of monthly). However, the Councillor's responsibilities will include being chair/co-chair of one of the Boards. The role of Councillors will change from that of liaison with the committees to leadership and participation on the Boards that link the committees.

The other Board members will be the chairs of the reporting committees and task-forces. The Boards will have liaison, co-ordination and planning roles. The reporting committees and task-forces will have more clearly defined roles but generally will perform functions similar to those that currently exist.

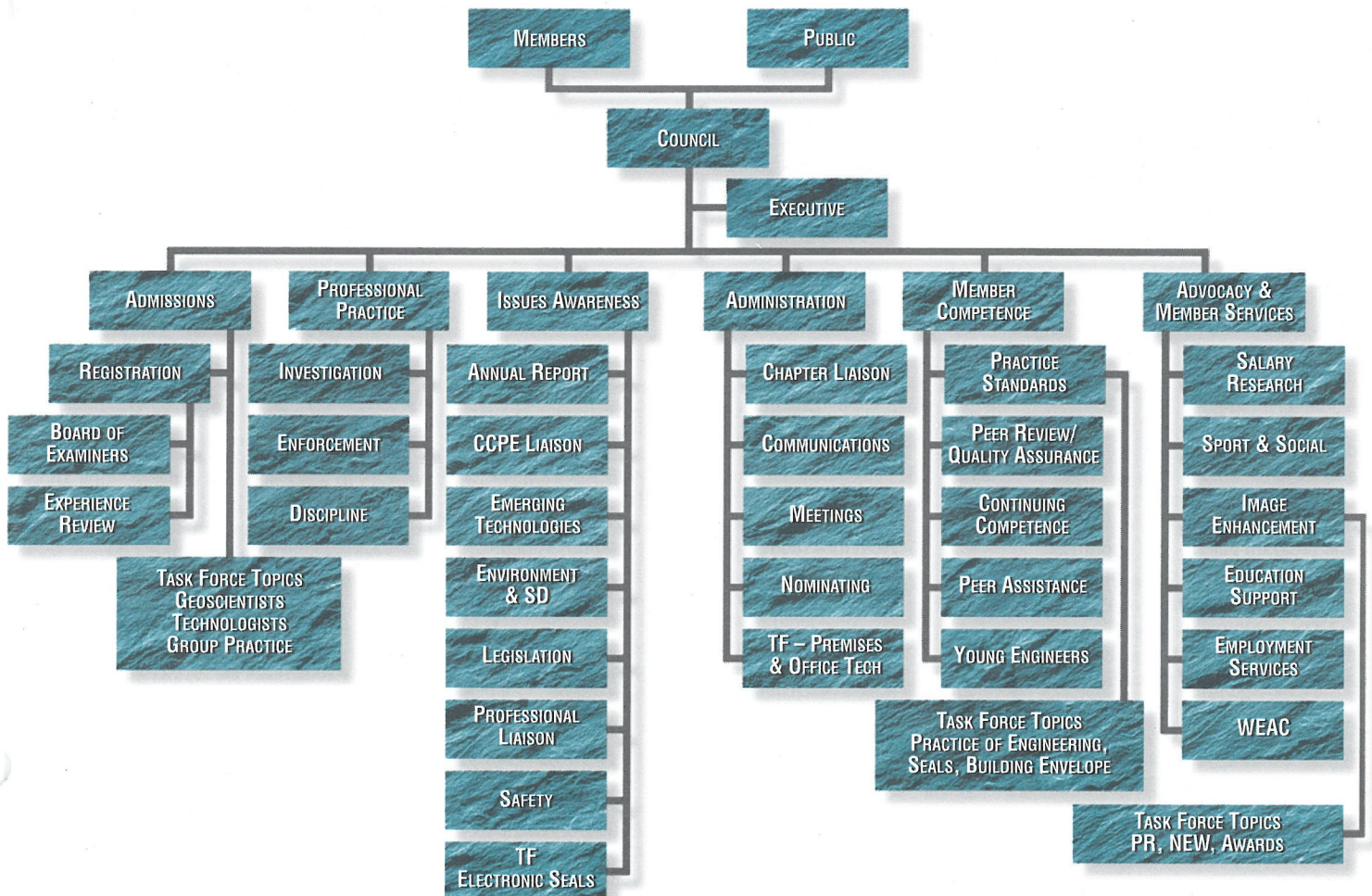
The table below shows the proposed structure. At the Long-Range-Planning session it was confirmed that the Admissions, Professional Practice and Administration activities are the core APEM activities required to meet our mandate to serve and protect the public of Manitoba. The Issues-Awareness and Member-Competence roles are closely related to the core activities. Advocacy and Member Services are loosely related to the core activities and therefore must take a lower priority when allocating organizational resources.

At the April Council meeting, we reviewed the results of the February "blue-sky" planning sessions. Council has asked that the ORAP task-force complete the process of defining the structure of APEM and the roles (terms of reference), responsibilities and outcomes from each committee or board, as well as the required staff support. Council also requested that the task-force recommend a plan for implementation. After presentation and approval of the plan by Council, the task-force will be discussing the new structure with the committee members of APEM.

When you look at the chart, it may or may not be obvious where you and your committee's activities will fit into the structure. There are some areas which have expanded, others that do not currently exist and still others where responsibilities have been combined or narrowed.

The process framework shows the relationship of one activity to another, but not the details of how each activity works. I am sure the transition from the existing to the improved structure will prove to be invigorating for the Association and its members.

As some of you are aware, at the end of May, we will have a physical reorganization of APEM. We will be moving our offices to a new facility at 850A Pembina Hwy. June will be an exciting, but exceptionally busy, month. As always, I encourage you to share your thoughts, by mail or by fax, but please forgive any delays or confusion as we cope with the move. □



CCPE President's Message

Daniel Verreault,
P.Eng.



CCPE – more than just cheap insurance!

I am well aware that for many of you the Canadian Council of Professional Engineers (CCPE) is the organization that sponsors cheap insurance programs to professional engineers. Although the CCPE sponsors many programs such as a life, disability, liability, residential, and automotive insurance programs, and although it also sponsors a number of RRSP programs, the Council is more than just member services. The CCPE is the national federation of the twelve provincial and territorial organizations responsible for regulating the engineering profession. In addition to representing the member organizations at the national level, it is also responsible for a number of value-added outputs such as the accreditation of university engineering programs, the development of national criteria and guide-

lines for the admission and the registration of members, and for the negotiation of a number of international reciprocity agreements that ease the ability of Canadian engineers to work around the world.

It is hard to believe that one year has passed since my appointment as the first full-time President of the Canadian Council of Professional Engineers (CCPE), with the elected President becoming the Chair of the Board. The past twelve months have been challenging and rewarding. Although significant changes have been made on a number of key issues, much more needs to be accomplished, at the provincial/territorial and national levels, if the profession is to maintain its relevancy to society and continue to play a legitimate role. To this end, several strategic steps have been, or will be, taken by your provincial Council and the CCPE Board of Directors. These include identification and addressing of substantive issues such as governance of the profession, national and international mobility of Canadian engineers, the public advocacy programs that the profession must implement to benefit society, and, finally, the communication strategy necessary for implementation.

The above issues were identified as essential elements of the national vision for the profession, developed by a number of your colleague engineers. This undertaking, initiated more than 18 months ago, is being finalized and should receive unanimous support by the CCPE Board of Directors during its annual meeting in Toronto, May 23-25, 1996. The draft vision statement, entitled "A vision for the Canadian Engineering Profession", reads as follows:

"Canadian engineers provide leadership to advance the quality of life through the creative, responsible and progressive application of engineering principles in a global context."

Although this statement is in a draft form, a consensus has emerged during the consultation process that would indicate that a large majority

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So, How Does an EIT Acquire Professional Service Points?

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

All Engineers-in-Training are now required to obtain sufficient, supervised, acceptable engineering work experience, to take this Association's Professional Practice Seminar and pass the subsequent Professional Practice Exam, to engage in a certain amount of continuing education/professional development activity, and to demonstrate a willingness to contribute toward and serve the engineering profession in general. Based on telephone calls to this Association's office, it is this last component of the pre-registration program that has EITs confused.

The intent of the Professional Service component of the Pre-Registration Program is to foster in EITs a willingness to serve, and contribute to the advancement of the engineering profession. Activities which will meet this objective include service to APEM, service to a technical organization or learned society, and promotion of the profession to the public.

EITs may serve APEM by assisting in the organization and/or delivery of any number of APEM-sponsored projects, from the Annual General Meeting and local chapter meetings to professional development seminars and presentations, to National Engineering Week

activities. Regular service on one of the Association's many committees will also qualify for Professional Service points.

Service to the profession may also take the form of the delivery of a presentation, organization of a seminar or conference, or service as an officer for a technical society.

Representing the profession in volunteer service to the community is another way in which EITs may obtain professional service points. Activities such as making presentations at high-school career days and judging science fairs – activities run through Innovators in the Schools – are considered as professional service. So are activities such as mentoring and speaking to engineering students, or mentoring and providing volunteer translation services for immigrant engineers.

If you would like to serve on an APEM committee, please call the office at 474-APEM. If you would like to become involved in making presentations in schools, please call Innovators in the Schools at 988-0699. And if you can think of other ways in which you would like to serve the engineering profession, please carry on! □

National
Engineering
Week

'97

Help Wanted
for National
Engineering Week
'97

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

This Association's Public Awareness Committee is already making plans for National Engineering Week '97, which will take place during the week of March 3-9, 1997. The centre court of Polo Park will be the venue for what promises to be the biggest public celebration of National Engineering Week in Manitoba to date; and the Committee is looking for volunteers – lots of volunteers! – both to help plan and organize activities, and staff the various events at the mall.

The first weekend of National Engineering Week 1996 was celebrated at the St. Vital Shopping Centre with the highly successful spaghetti-bridge-building competition, the new "straw-tower building" competition, and a display booth. The Committee plans to move the event back to Polo Park in 1997, and to expand the program to include five action-packed days (Wednesday, March 5 to Sunday, March 9) of competitions, activities and displays for people of all ages.

If you have any innovative ideas for activities or events, if you are interested in assisting the organizing committee, if you have any display material you would be willing to loan the committee, or if you would be willing to lend the committee a hand at the mall next March, (yes, EITs, your participation will earn you Professional Service Points!) please call Shirley Matile at 474-APEM. □

Intelligent Sensing for Innovative Structures – ISIS Canada – The Technology and Its Application

By: C. Lorenc

ISIS Canada is a newly established Network of Centres of Excellence, headquartered at the University of Manitoba Faculty of Engineering. It is funded 50% by the federal government and 50% from provincial governments, the university communities, and the private sector. The program ends March 31, 1999 with the expectation that it will extend through to March 31, 2003. The mandate of ISIS Canada is to develop civil engineering and construction capability through the development of advanced composite materials and integrated intelligent fibre-optic sensing technologies.



Lloyd McGinnis, P.Eng.,
Chairman of the Board

It is estimated that there is a \$900 billion world-wide need for infrastructure repair. The potential of the ISIS technology is no less revolutionary than the development of concrete has been to the construction industries over the last 60 years. There is real potential for the development of large-scale manufacturing of structural components and the development of new expertise for the engineering and construction communities.

During the past few years, people in Canada and abroad have become increasingly aware of a powerful new grouping of advanced technologies. The need for these arose from a study of the deteriorating conditions of urban and transportation infrastructure in Canada and around the world, as a result of such factors as corrosion of the steel reinforcement in structures, the seepage of harmful industrial tailings into the ground-water system, and increased atmospheric pollution.

In seeking to address this broad range of problems, the Canadian civil engineering profession found a partner in the aircraft industry. The result of this partnership is a new and rapidly expanding technology called ISIS (Intelligent Sensing for Innovative Structures) and is reflected in the creation of ISIS Canada.

There are many different applications of ISIS technology, and more are being implemented all

the time, but these applications all possess the following three basic attributes:

- The use of ultra-high-strength fibres which are stronger than steel, weigh only about one-fifth as much as steel, and are non-corrosive, non-magnetic and durable.
- The use of detecting devices, known as intelligent sensors, which can be built into the fibres to give "smartness" to the structure. The sophisticated sensors have the property that, once installed, they never need to be reset or recalibrated.
- The information given by the sensors is such that it can be transmitted over telephone lines or by satellite transmission to a central office. This process is called "remote monitoring".

Structures are classified as "smart" by virtue of their structural sensing systems, and "innovative" through the use of advanced composite materials. Research includes remote monitoring of structures using opto-electronic-chip technol-



Dr. Sami H. Rizkalla, P.Eng.,
President

ogy, and transmission of the sensing data via telephone- or satellite-link to a central monitoring station, where the structure can be evaluated.

There is a recurring theme of deteriorating infrastructure and the ever-increasing costs that result from it. What follows highlights a few of the areas in which ISIS technology is directly applicable.

The Building of New Bridges

By using ISIS technology, new bridges that are lighter and capable of carrying much heavier loads can be built. Remote-monitoring from one central bridge engineer's office removes the need for costly inspections. Other advantages of using the ISIS system virtually remove the problem of corrosion and extend bridge life. Such bridges are environmentally friendly. The economic advantages of being able to monitor the performance of, for example, 200 bridges without having to visit them are very large indeed.

The Repair and Rehabilitation of Existing Bridges

As with other industrialized countries, Canada has a large problem with its aging highway bridges. The problem is twofold: many bridges are heavily corroded, and legally permitted highway loads have increased since the bridges were constructed.

High-strength fibre materials (called the "smart patch") can be used as "add on" to the existing beams and deck, to strengthen the bridge. The added sheets are "smart" because they have the intelligent sensors built in. Once again, the bridge can be observed from the central bridge-engineer's office using remote monitoring. The sheets of high-strength fibre are so light that they can be attached to the surfaces of the bridge components easily.

The Strengthening of Existing Buildings

Frequently, existing buildings require strengthening, either to counteract the effects of deterioration or to meet the requirements of a new building code.

The strengthening of existing columns is achieved, by wrapping the columns with "smart" high-strength-fibre sheets. It is quite possible to double the load-carrying capacities of the columns. This technology is being used to strengthen the columns of elevated expressways in earthquake-prone areas.



Chris Lorenc,
Chief Executive Officer

Adaptation of an Existing Building to New Needs

Buildings that require a non-magnetic environment, such as hospitals introducing nuclear-magnetic-resonance (NMR) equipment, can be upgraded using ISIS technology. Such equipment requires non-magnetic surroundings, so reinforced concrete is not appropriate. A solution is either to build extensions to the existing building,

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Student Praises U of M's Industry Internship Program

By: L.P. Grimes, Engineering Student

The purpose of this article is to stress the importance of student interaction with industry as part of the education system in the Faculty of Engineering at the University of Manitoba.

At the completion of my third year in Computer Engineering I decided to enroll in the Industry Internship Program (IIP) as offered by the Department of Electrical and Computer Engineering (ECE). It turns out that that decision was the best choice I ever made in my life regarding my career as an engineer. The 16-month work term spent at Bell Northern Research (BNR) in Ottawa was incredibly valuable as I gained a wealth of experience that educational institutions are unable to offer within a packed curriculum. Due to the experience I gained, I have been offered numerous new grad positions at BNR in Ottawa as well as employment opportunities at organizations such as Glenayre and PMC-Sierra in Vancouver. I would like to point out that these opportunities would not be as readily available to me if the IIP did not exist. As well, these companies tend to recruit Simon Fraser University graduates due to their "image" gained by a strong co-operative program.

More importantly from your point of view, I noticed that many BNR managers were unaware

of the excellent program you have here in the ECE department. My hiring manager was quick to point out to me that our program is comparable to the University of Waterloo although not enough university-industry co-operative interaction exists here at the University of Manitoba to gain the "image" it so deserves. As a consequence of some excellent work done by last year's internship students at BNR, the IIP position postings this year have more than tripled. I believe this is a tribute to your program here, although expanding the IIP program or perhaps introducing a 4-month co-operative program with industry would offer a win-win situation for both graduates and the faculty.

I recommend that the Faculty of Engineering increase funding to such programs within the ECE department and the faculty. No matter how you look at it, a university is only as qualified as it's graduates. Taking my opportunities as an example illustrates the direct relationship between graduate career opportunities, university image and programs such as the IIP. In an in-cresingly competitive technological industry, the key to graduate success is industry experience.

Thanks to the IIP for allowing me these career possibilities! □

Have You Paid Your 1996 Dues?

Your 1996 annual dues were payable to this Association by January 1, 1996. As of March 1, 1996, the \$50.00 late payment penalty was assessed.

If we have not received payment for your dues, complete with late-payment penalty fee, by June 30, 1996, your name will be removed from the register and you will cease to be a member of this Association.

If you are de-registered and wish to become reinstated to membership, you will be required to:

- pay the current deregistration fee (\$300);
- pay the current annual membership dues;
- pay the current admission fee;
- write and pass the Association's Professional Practice Test (if you re-apply within one year of de-registration) or attend the Association's Professional Practice Seminar and write and pass the Professional Practice Examination (if your re-apply more than one year following de-registration);
- provide the names of referees who will verify at least four years of your recent engineering work experience; and
- provide Council with a satisfactory explanation as to why you allowed your membership to lapse. □

Manitoba Company Spotlight:

Wilson Auto Electric Limited

By: H.F. Lobo, EIT

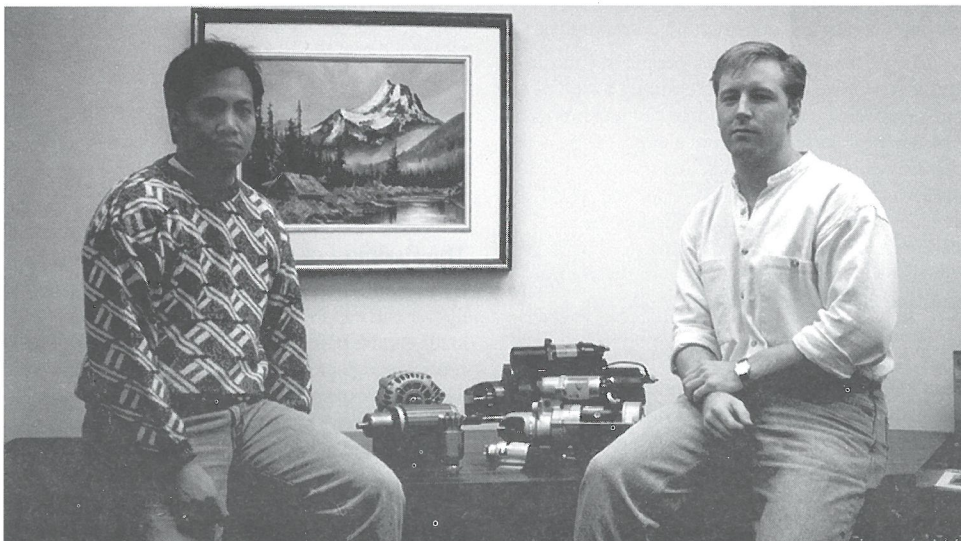
In September, 1995, Wilson Auto Electric became the first North-American electrical re-manufacturing company to receive ISO 9002 certification. This milestone was granted by Quality Management Institute (QMI). Wilson started out as a local repair shop, back in 1940, specializing in rewinding motors. Today, 55 years later, Wilson has grown to service the industrial, marine, agricultural, and automotive areas in over 50 countries worldwide, employing 400 workers, of whom 50 are employed by Wilson's Toronto affiliate.

Supply manager Jerome Knysh, P.Eng. said that the number of products has tripled in the last five years to 15,000. Wilson has produced approximately 375,000 alternators in years past, yet has the ability to produce 750,000 alternators and starters annually, all to original equipment manufacturer (OEM) specifications. Wilson is in the business of "reverse engineering", which means that once an existing product (say, a defective starter) hits Wilson, it is torn down completely. All components derived from tear-down are tested to see whether they are salvageable. Once the analysis is completed, the components are thrown into production, or, essentially, re-manufactured.

One of Wilson's inherent improvements to quality comes from the fact that, before 1991, there were no engineers on staff. Now, there are ten engineering professionals working on constant improvements. Prior to January, 1992, in

which Wilson initiated a "change program", a product on the assembly line, it has been said, would travel approximately one kilometer because there was no proper flow. After implementing this program, that figure had been reduced to 100 meters.

With this commitment to quality, it's easy to see how the ISO 9002 mark was reached. (Incidentally, if you have ever had to replace the alternator in your car, chances are that the "core" for which you were reimbursed went directly to Wilson. Fancy that!) □



Wilson Auto Electric's Gerry Lagadi, EIT (left) and Quentin Fisher, EIT with typical Wilson products.

Research & Development

The Life Cycle of an Idea – From the Laboratory to the Marketplace

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

How does an innovation get from the idea stage to the marketplace? At a recent APEM luncheon, organized by your Research & Development Committee, John Cherry, from the Canadian Industrial Innovation Centre (CIIC), told us everything we need to know and how he can help. John is the Manager of Technology Programs at the CIIC, located in Waterloo, Ontario. A professional engineer specializing in the liaison between engineering and product marketing, he presented a wealth of information and real-world examples to those in attendance. The most important message he brought was that the CIIC is dedicated to helping inventors, entrepreneurs, and innovative companies – people like you!

A key tool used by the CIIC to assist product developers is a Critical Factor Assessment. The assessment includes 42 points of evaluation grouped into ten categories. The three fundamental questions answered by the questionnaire are:

1. Does the product work?
2. Does anybody want to use it? and
3. Can the inventor affordably access the marketplace?

The CIIC sees about 85 ideas each month. About 95% make it past the first question, and about 75% past the second question. Okay, so it works and somebody wants to use it, but can you make the product affordable to the marketplace? Only about 20% of those that come in the door at CIIC make it past the three questions, and only 2% will actually make it to the marketplace. John highlighted the importance of this final question with the reminder that, "You must ask the marketplace what it will pay and what it wants, not

what features they want and what they will pay for the product. Finally, take the market information and finish the development of your product. Based on his experience, John said the three qualities all successful entrepreneurs seem to have are creativity, a willingness to work in multidisciplinary environments, and persistence. To drive home the persistence component, John reminded us that Michael Jordan was cut from his high-school basketball team.

Based on my personal experience, I can say that the Canadian Industrial Innovation Centre is an extremely helpful organization. Its review of my product was thorough, informative, and based on factual market information. Most important, the cost for its service was quite affordable and is well within the reach of small-or-medium sized ventures. I encourage anyone who has an idea to take it to John and the people at the CIIC. You will not be disappointed. John and his staff can be

Continued on page 8

tell it!" He went on to give an example of a product that didn't quite make it. The product was, of course, a better mouse-trap, of which the CIIC has evaluated more than 27 in its 20 years of operation. Anyway, this particular trap was called a Rat-a-pult. It was an elaborate mouse-launching device. It was hoped, that, when the mouse came down, it would land somewhere other than in your morning cup of coffee! The retail price for the Rat-a-pult was \$299. What was the value of a mouse-trap in the marketplace? About 99 cents. Needless to say, not too many Rat-a-pults were sold. "Sure", John said, "they sold a few, but not as mousetraps. The people probably bought them as novelty items."

The price people will pay will vary for any product. For example, some people drive Cadillacs, while others drive Chevetttes; some people wear Rolex watches, while others are happy with Timex. The key is to know where your product fits in. Are you producing a Rolex or a Timex?

John ended his talk with four recommended actions to enhance success. First, develop the product to show that you can make it, then stop. He does not care if it is held together with barbed wire and gaffing tape. Stop, and go to the market. Ask



Doug Strang (right) thanks John Cherry.

Publication Committee Seeks Members

If you are an EIT or know of an EIT who is interested in becoming involved in the Publication Committee, we would like to hear from you. Service to the Association through membership on the Publication Committee will earn professional service points. For more information please contact Shirley Matile at 474-APEM.

One Courageous Young Man: Steve Fletcher, EIT

By: B. Stimpson, P.Eng.

Early this year, Steve Fletcher, a 1995 graduate of the Geological Engineering Program, sustained serious spinal-cord injuries as a result of a collision between his vehicle and a moose. He is now undergoing rehabilitation and showing great courage and determination. Steve was employed in the mining industry at the time of the accident.

Steve's activities and accomplishments are truly outstanding for a young person. He is active in the Manitoba Natural History Society, having started a chapter on the U of M Campus, as well as becoming the youngest-ever Board Member of the Society. His athletic abilities are well known

– a Manitoba champion in kayaking and an excellent swimmer, for example. His leadership qualities led to Steve becoming the President of the Geological Engineering Society in his graduating year, in which capacity he worked with dedication for his fellow students, for the Geological Engineering Program, and for the Department of Civil and Geological Engineering. □

Editor's Note:

Several of this Association's members have visited Steve in the hospital and are impressed by his determination to overcome his injuries and his desire to become a professional engineer and serve society.

Council Reports

TUESDAY, MARCH 12, 1996

By: *W.G. McKay, P.Eng. (Ret.)*

AT WHICH COUNCIL CONTINUES THE REVIEW OF MAJOR LOCAL AND NATIONAL CONCERNS

The meeting commenced at 12:30 p.m. with President Stewart and councillors Permut, Osman, Symonds, Thomson, Roberts, Ursel, Britton, and Spangelo in attendance. Four councillors were absent.

In general, the Council proceeded through the agenda with little delay. However, there continues to be those items, both of local and national concern, through which Council can only proceed at a cautious pace.

Novell

This legal case between PEO and Novell, a large American conglomerate which engages in computer training and accreditation, continues. Of concern to all of the associations is the use of the term "Engineer" as in "Certified Network Engineer" (CNE), all set forth in a document of accreditation issued by Novell. In very brief essence, PEO has entered into a court order agreement with Novell, which would prohibit the use of the term "engineer" in such a manner that "professional engineer" may be implied. Ontario has been soliciting the support of other associations to this agreement. After further legal counsel and review, and while it is not the best of all worlds, the Council agreed to support Ontario in its court order against this organization. This agreement does not prohibit APEM from prosecuting infractions involving Novell in Manitoba. However, by having supported the agreement,

TUESDAY, APRIL 9, 1996

By: *B. Thomson, Councillor*

AT WHICH COUNCIL DISCUSSES NEW CONCEPTS & IDEAS – FAX & FACT

The April meeting of Council was called to order by President Cathy Stewart at 12:30 p.m. The Council approved the minutes of the March meeting, the minutes of the March Executive Committee meeting, the February 1996 financial statement, and the report from the Registration Board.

The Council then discussed the report of the Long Range Planning Session held on February 3, 1996. It was agreed that the implementation of the recommendations of this plan is an important step in the future of the organization. Council discussed the impact of the Organizational Restructuring Action Plan (ORAP) report on the implementation of the long-range plan. The decision on the direction and priority of issues will be greatly affected by this report. The report from ORAP is expected to be tabled at the June meeting of Council. It was decided that further decisions would be discussed after consideration of this report. A motion was put forth that the Enforcement portion of the report be approved by Council and forwarded to the Enforcement Committee for implementation. The motion was carried.

Council unanimously supported the recommendation of the appointment of Dennis G. Hodgkinson, P.Eng. to the Investigation Committee. It was agreed that Mr. Hodgkinson will be a valuable addition to this Committee.

A proposal was put forward for a faxback system to reduce costs for publicizing APEM events. The proposed system would do away with the costly one-page notices that are currently included in the bi-monthly mailing. A one-page calendar of up-coming events would be printed in the MPE. Each event listed would have a unique number-code. To use the system, a person wishing to receive the document would call a Winnipeg number, be guided through a menu of options, then leave a fax number. The requested information would then be faxed directly to that number. Council voiced concerns about out-of-town calls and was informed that an 800-number could be provided. Members not having access to a fax machine will be prompted to leave their mailing address by voice message so the required documents can

the legal position of the Association may be strengthened should there be future legal proceedings.

MAA & APEM

This dispute between the Architectural Association and APEM arises from a prosecution of an APEM member by the architects, allegedly for contravention of the architects act. Resolution of the concerns by both associations through the use of arbitration has failed, and the case will be proceeding to civil court trial. Considerable legal costs are anticipated.

Certified Technicians and Technologists Association of Manitoba (CTTAM)

Further discussion between CTTAM and APEM are to be held, where it is anticipated that each side will set forth the interests of all parties, including the public. Council gave approval and support to this approach of mutual discussion between the two organizations.

Office Move

Arrangements have been finalized and the move is on for June 1, 1996 to 850A Pembina Highway. The new premises comprise a single-storey building located north of the Pembina Highway underpass, next to the Round Table Restaurant. The other tenant of the building is Reid Crowther & Partners, Consulting Engineers.

Parking for volunteers at this new location will be plentiful – and free!

Continuing Programs

Several councillors reported on the current status of the Law Reform Commission, the proposed Engineering and Geoscientific Professions Act, the Mobility Agreement, NAFTA, etc.

The meeting adjourned at 4:00 p.m. Perhaps it was due to the warmer weather, the closeness of spring and an air of levity that the councillors completed the 16-item agenda in 3 1/2 hours. □

be mailed. There was also concern over the additional work-load for staff and the possible drop in participation in some events. These issues were discussed and Council was informed that staff are willing to take on this additional responsibility. It was not clear whether the impact on participation in events would be positive or negative. The motion was made to put this system on-line after the move to the new premises. The motion was carried.

Council considered a request to endorse the National Energy Code for Buildings. The R&D Committee co-sponsored a session on the code on March 20, 1996. The intent of this proposal is that all new buildings be built to minimum standards of energy use. It was agreed that this was a positive step – that by constructing buildings that are more energy-efficient, we will help conserve valuable resources for future generations. A motion was made that the APEM issue a letter to the Manitoba Government in support of the adoption of the National Energy Code in Manitoba. The motion was carried.

Cathy Stewart reported on the meeting held with the Certified Technicians and Technologists Association of Manitoba. Positive discussions with this group will continue to ensure that each organization presents an Act with mutual support. These discussions will continue with reports coming back to Council.

The meeting was adjourned at 5:00 p.m. with the sun still shining. □

The Life Cycle of an Idea...

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reached at 156 Columbia Street West, Waterloo, Ontario, N2L 3L3; phone 519-885-5870; FAX 519-885-5729; or at their WEB address: <http://www.innovationcentre.ca/> □

This article is the first of a series focussing on technical innovation and creation by Manitobans. Watch for future Life Cycle of an Idea articles which will feature Manitobans discussing the birth of their ideas and how they made it to the marketplace. If you know of someone you would like to see featured in this series, please contact Daryl McCartney at the Department of Civil & Geological Engineering, University of Manitoba, R3T 5V6; telephone 474-6558; FAX 261-9534; email mccartn@cc.umanitoba.ca; or any other member of the Research & Development Committee. Happy inventing!

Engineers in the News

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

Joe Lucas, P. Eng., has been appointed Winnipeg Office Manager of MCW Consultants Ltd. and MCW Energy Reduction Services.

Mr. Lucas graduated in 1973 from the University of Manitoba with a degree in Mechanical Engineering. He is currently practising engineering in Manitoba, Ontario and Minnesota. He is an active member of a number of APEM committees, as well as a dedicated member of Council.

MCW Consultants was formed in Winnipeg in

1964. The firm provides consulting services to international clients from major Canadian offices. MCW Energy Reduction Services conducts energy-performance programs across Canada.



Loren Gudbjartsson, P. Eng., who received his degree in Mechanical Engineering from the University of Manitoba in 1980 and has been a member of APEM since 1982, is now a Principal with Kraftur Engineering Inc. in Vancouver, B.C.

Kraftur Engineering Inc. was the 1995 recipient of B. C. Hydro's Power-Smart Excellence Award for its innovation in the design of Power-Smart industrial programs for a wide range of industries throughout B.C. □

CCPE President's Message

Cont'd from page 4

of participants agree that the engineering profession must adopt, without delay, a number of policies that will address the above issues in a proactive and aggressive manner.

The need for enhanced government and external relations becomes clearer as the vision takes shape. All governments are expecting, and some are demanding, that professionals become vocal in expressing their views on proposed government policies. The significant restructuring of the social safety-net, including the proposed changes to the funding of education, will have a significant impact on our profession. The Council must develop clear policies to influence, as appropriate, the public-policy-making process.

A related element of a strong profession is the need to develop and implement a strong advocacy strategy, as society needs to benefit from the knowledge and expertise of engineers. The issues to be addressed are obviously ones where our collective wisdom will be most influential.

A number of externally driven projects continue to create great challenges for the Council. The newly established national sectoral councils in the environment, software, and technology sectors are noteworthy. In the environment industry,

a strategic alliance with the Canadian Council for Human Resources in the Environment Industry (CCHREI) has resulted in the signing of a Memorandum of Understanding. It is essential that the profession remain attentive and diligent to ensure that these organizations are positively influenced by our profession.

On the international scene, the signing of the North America Free Trade Agreement in June, 1995 was an important milestone that will enhance our international competitive edge, and significantly benefit our profession. The implementation phase has now been initiated with the development of national guidelines. Mexican representatives have formally informed us that they have completed their ratification process. Considering that it is estimated that Mexico must spend in excess of six billion dollars annually in the construction of its infrastructure, the opportunities for Canadian Engineers are significant. With respect to the American States, the Council expects that, in the near future, only a few U.S. States will become signatories to the NAFTA engineering agreement.

Finally, the above programs are being developed by mainly member volunteers and staff. Should you have the expertise and wish to contribute to the affairs of the CCPE, you may contact your association or, alternatively, you may contact me directly at the CCPE office. □

Tech Network

By: G. Kibria, P.Eng.

A good number of professional and business organizations in Manitoba have been undertaking and organizing seminars and workshops for their members. These seminars and workshops constitute important parts of their services to their respective members. Occasionally, renowned speakers are brought in from outside Manitoba, even outside Canada, for these programs. Attendance at these programs can be improved significantly through network and wide circulation of the programs among professional organizations. Currently, there is hardly any exchange of information among various organizations regarding these programs.

The Association's Professional Development Committee has initiated a Tech Network among the professional organizations in order to facilitate exchange of information and, in the process, to help APEM members in improving their professional development activities. The activities of the Tech Network will include:

- establishing and maintaining a liaison committee with representatives from various organizations;
- organizing bi-monthly meetings of the liaison committee; and
- sharing information and programs among participating organizations.

Golam Kibria of the Professional Development Committee has already contacted some organizations in order to initiate the Tech Network activities. To make this initiative more effective and successful, it is required that professional organizations participate in the above activities. It is not certain how many professional organizations are currently present in Manitoba. All professional organizations are, therefore, requested to send the name of the organization, address, name of the Chairperson, telephone and fax numbers to Golam Kibria, at Fax No. 775-5768. Upon receipt of this information, a comprehensive list of the professional organizations will be prepared. □

ISIS Canada

Cont'd from page 5

using fibre-reinforced concrete, or replace existing structural members with fibre-reinforced concrete.

Another example for non-magnetic structures is high-speed railways using the so-called linear motor. Large magnetic fields are involved, and the surrounding structure must be non-magnetic. This is a kind of transportation that may become widespread in the future.

Architectural and Aesthetic Renewal

Buildings sometimes experience exterior deterioration. The loss is more one of aesthetics than structural strength. The use of high-fibre-content cements and mortars in such areas can make repair efficient. Cements made with these materi-

als are easily moulded into any shape, so the lost portions of a building facade can be easily replaced.

Reducing the Seepage Problem

When concrete tanks deteriorate, the problem of seepage appears, and tends to accelerate with time. An example of this is gasoline tanks, with the danger of fire as well as soil contamination. The use of ISIS technology, both for new and existing tanks, can markedly reduce seepage.

Concluding Remarks

Manitoba is fortunate to have ISIS Canada, a multi-leading technical group on many aspects of infrastructure improvement and renewal, which is committed to solving some major infrastructure problems and ultimately saving both the public and private sectors large amounts of money on costly repairs. □

Its leaders are no less accomplished than their research counterparts. Leading the Board of Directors is Lloyd McGinnis, P.Eng., a distinguished Manitoba professional engineer.

Dr. Sami H. Rizkalla is a Professor at the Civil and Geological Engineering Department, Faculty of Engineering, University of Manitoba who serves as President of ISIS Canada. He leads the ISIS Canada team of internationally recognized researchers and is responsible for the co-ordination of research efforts.

The Chief Executive Officer of ISIS Canada is Chris Lorenc, B.A., LL.B., who brings to the position a wide range of experience.

For further information about ISIS Canada, please call 204-474-8506 or write to the ISIS Canada Administrative Centre, Room 227 Engineering Building, University of Manitoba, Winnipeg, Manitoba, R3T 5V6. □

The Annual Engineering Student Dinner: A Worthwhile Investment

By: W.G. McKay, P.Eng. (Ret.)

On Tuesday, April 9, the traditional student/engineer dinner took place with some 120 second-, third-, and fourth-year engineering students, along with a similar number of engineers, having an enjoyable evening together. Cathy Stewart, P.Eng., President of APEM, was the guest speaker.

While the dinner had been arranged by the Bio-Systems Engineering Department, under Professor Ron Britton, other learned societies had also participated.

During the pre-dinner reception, students met their host engineers and the exchange of acquaintances and experiences began.



Dean Don Shields thanks speaker Cathy Stewart.

The after-dinner procedures were started by Ray Hoemsen, Director, Industry Liaison, acting as master of ceremonies. The guest speaker, APEM President Cathy Stewart, was introduced by engineering Senior Stick Andrew Hymers.

With illustrated visual aids, Ms. Stewart made an excellent presentation on "Being an Engineer". Beginning with her definition of engineering as the "Art of the Possible", she set forth nine elements. These were: Imagination, Innovation, Inspiration, Perspiration, Perseverance, Patience, and Leadership, Learning, Legacy. Her elaboration of these nine elements very explicitly described much of an engineering career.

Her next strong point was "Communications" – in many ways and with many people – a very essential part in the development of an engineering career.

A Chemical Engineer with Inco in Thompson, Ms. Stewart then illustrated these points with visual aids of her role in the process side of Inco's operation. She closed the presentation with a summary of the qualities of professional engineer. Listening to President Stewart, one could ascertain that here is an engineer, who by her practical day-



Senior Stick Andrew Hymers emcees the proceedings.

to-day experiences as a technologist and later as a professional engineer, has established the credentials of a learned engineer.

Cathy was thanked by Dean Shields and presented with a gift.

It was unfortunate that the originally scheduled February student dinner had been postponed because of the uncertainty of support from the profession, but it was indeed fortunate that this occasion had "risen from the ashes". For the professional engineer in practice or in retirement, it is gratifying to meet and to communicate with these young engineers-to-be. It should be an obligation on behalf of the professional engineers to attend this dinner and pass on to the upcoming engineers some of the benefits of their experiences. □

Electronic Business Management

By: P.C.H. Wong, EIT

This well-attended one-day seminar took place on February 22, 1996 with Kelly Kjaranson, P.Eng., as Master of Ceremonies. President Cathy Stewart, P.Eng., gave a brief introduction before the first speaker, Greg Brezinsky of Microsoft Canada, presented a topic entitled 'Making Your Point'. He talked about the features of modern presentation-graphics software, using PowerPoint for Windows'95 as an example.

Next, Past-President Dr. Doug Chapman, P.Eng., Chair of the APEM Task Force on Electronic Seals and Electronic Documents', He explained the benefits and risks of data encryption and electronic document storage. To spice up the morning, his presentation was made using Windows

2000 (Mac OS). He also pointed out the potential benefits of this technology for the public including such professions as architects, lawyers, doctors, and pharmacists.

'Automation in the Workplace' was the theme for case-study presentations. Charlie Lew, P.Eng., from the City of Winnipeg, talked about 'Computer Applications at the City of Winnipeg Water Pollution Control Centres'. He mentioned the hardware and software used in process-control systems, and the rationale for the choices.

The next case-study, 'Integrated Business System Implementation', was presented by Mal Symonds, P.Eng., and Rob Perry, P.Eng., of Bristol Aerospace. They shared their experience of implementing new technologies, citing the Boeing 777 as an example. It was interesting to note that their biggest investment is in education and training while they are improving their economics.

The third equally interesting case-study, 'Data Management in Engineering Studies', was presented by Bryan Weber, P.Eng., of UMA Engineering. He talked about the linking of AutoCAD data and database, and used the Shoal Lake Aque-

duct study as an example.

After lunch, Gerry Miller and Tracey Keryluk, of the University of Manitoba, gave an Introduction to Internet. Actual link-up to World-Wide-Web was made using Netscape. Then they presented Internet search tools and tips, virus-protection, and engineering-related site addresses.

Next, Rory McLeod of Xerox Canada talked about 'Adaptive Workflow for Continuous Process Improvement'. Their Workflow software can monitor workflow (or lack of it), approve a business loan, or issue a pink slip automatically. He also compared it to Lotus Notes.

Finally, Steve Russell, P.Eng., of Ernst & Young, gave a presentation on 'Management of Organizational Change – Use of Electronic Media'. His topic balanced the above presentations by emphasizing the consideration of human factors in times of change.

This seminar was presented by a good combination of speakers to an audience representing a great variety of disciplines and experience levels. It ended after the speakers answered the audience's questions and APEM thanked the speakers. □

Chek Lap Kok Airport

By: V.L. Dutton, P.Eng. (Ret.)

No, those of our world-travelling members, such as Michael DeWiele, P.Eng., will not yet have landed at this newest of airports since it is not scheduled for opening until April, 1998. Chek Lap Kok is Hong Kong's new "aircraft carrier" that will replace Kai Tak International. Expected to handle 35 million passengers when opened, it is planned to handle 85 million passengers in 2040 – a growth-rate of about a million passengers per year. An aircraft will either land or take off every 20 seconds.

Built on two off-shore islands in the south China Sea, the final result is not unlike a huge "carrier" moored off the south-east shore of Hong

Kong. Approaches to the airport will be over water, unlike today's Kai Tak where the aircraft literally thread their way between the skyscrapers and are so close that "passengers, looking out the port-holes, can see the Chinese sitting at tables in their apartments."

By a "happy convergence of circumstances", a Canadian engineer, Benoit Belley, ing., became the general manager of this huge job (\$10 billion US) in 1991.



M. Belley graduated in Civil Engineering in 1962. Some 20 years later, he returned to the University of Montreal to enroll in the Asiatics Department. While the official language "on the job" in Hong Kong is English, M. Belley's mastery of Mandarin proved to be invaluable as his management team was developed.

Chek Lap Kok was built by using some 40,000 tonnes of explosives to remove the tops of two islands. Then, using a fleet of dredges from, primarily, Belgium and the Netherlands, "some 226 millions of cubic metres of 'mud' were dredged" to form the final "platform". The maximum dimensions of this new island are 3.0 km x 5.0 km with a total area of 15 km². To this old country boy, that is about 8 1/2 sections of land – a strip one mile wide by 8.57 miles long – from Foxwarren to the Birdtail crossing west of Sols-girth. Impressive! The dimensions of Winnipeg's International airport are 4.7 km by 3.7 km for an

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The Engineering Endowment Fund Advisory Committee

By: J.D. Adam, P.Eng. (Ret.)

The Engineering Endowment Fund Advisory Committee is a committee of the Engineering Faculty Council. Faculty Council approves the Terms of Reference and composition of the committee. The committee is made up of four professors, two support staff, three undergraduate students, one graduate student, a secretary from the Faculty of Engineering and three alumni. They are all chosen from different engineering disciplines. The chair is expected to be one of the alumni. I was elected and approved as the chair when Dick Russell, P.Eng. retired from the Committee in 1994. The committee reports its decisions to Dean Don Shields, P.Eng., and his staff carries out the administrative work.

The participation is lively and effective from all members of the committee. The applications come from a myriad of sources in the Engineering faculty and it is a real education keeping up with it all.

In the spring of 1994, the committee had \$31,000 to allot, and \$150,000 in applications. In 1994 the competition became a fall competition and a total of \$54,000 was allocated against requests of \$114,500. In the fall of 1995, we dispensed \$96,000 against \$141,000 requested. The Department of Private Funding advises that the Engineering Endowment Fund allotment for 1996 will be approximately \$78,000.

The committee obtains the endowment funds as follows: the Department of Private Funding obtains capital donations, and the university administers and invests these funds. The Engineering Endowment Fund is allocated 70% of the earnings (interest, etc.) of the funds donated to the Engineering Capital Fund.

I am working on a personal pledge of \$500.00 a year which goes into the Engineering Capital Fund. I get a reminder every quarter, send in my cheque, and have the satisfaction of

knowing I'm helping.

The engineering students are enthusiastically helping, too. They recently voted 89% to extend, for three years, an annual \$50.00-per-student contribution to the Engineering Endowment Fund. This is in addition to a pledge of \$25 per student per year toward a capital fund for a major renovation of the Engineering building.

The Engineering Endowment Committee has had to adapt and become more proactive, too. This year we had four overlapping proposals regarding multimedia resources. There were also three requests from student groups for computer up-grades in student chapters. We took the initiative to request UMES to co-ordinate a study of computer upgrades required in all student chapters. This resulted in computer upgrades in seven student chapters immediately, with more to come next year. Usually, individual awards are a portion of the total amount requested, so that student groups have to continue with their own fund-raising as well.

The proposed renovations and additions to the Engineering building comprise another exciting project. The renovations will create an ideal classroom to illustrate everything a modern classroom should be and have, eventually rotating professors and classes through it for periods of time – obtaining their input and witnessing the excitement factor of their being involved is truly enjoyable. This has ramifications regarding distance education as well. Glenn Morris, P.Eng. advises of similar distance-education classrooms being developed in several universities he visited in the last few months. So far, only the physical factors are under construction: acoustics, lighting, air-conditioning, extensive wiring for present and future installations of computers, cameras, monitors, control consoles, etc. The Engineering Endowment Fund Advisory Committee endorsed

a request for \$20,000 to complete the physical up-grades. Eventually, this room will be a "Show Classroom" to illustrate to capital funding authorities what is needed in new renovations or additions, as well as for modern usage.

The Endowment Committee's role has been primarily as a catalyst thus far due to limited funds. However, every project is exciting and gives us more insight into the myriad of activities in the Engineering Faculty. Due to limited space, I list the other 1995/96 projects in condensed form below:

All Departments

- Development of Multi-Media Distance Education Classroom
 - Employment Candidates Resumes on the Internet
 - Computer Funding for Engineering Student Groups
 - Engineering Entrance Scholarships
 - UMES Proposal of 1995/96 Conference & Competition Funding
 - Mini-University Engineering Program
 - Engineering Newsletter
 - GASAT 8 International Conference
- Total \$ 56,500.00

Civil and Geological Engineering

- Reconnection of a Gilmore Test Frame
 - 1996 ASCE Steel Bridge Competition
 - Great Northern Concrete Toboggan Race Conference
 - Great Northern Concrete Toboggan Race
- Total \$ 17,500.00

Mechanical and Industrial Engineering

- Interactive Process Real-Time Control and Simulations
 - UMSAE Design Lab
- Total \$ 9,000.00

Electrical & Computer Engineering

- Multimedia Resources & Facilities for Engineering
- Total \$ 13,000.00
- TOTAL \$ 96,000.00**

"Rockets and Bridges and Optics, Oh My!"

By: C.A. Nieuwenburg, P.Eng.

The 25th Anniversary of the Manitoba Schools Science Symposium was held April 26 - 28 at the University of Winnipeg, and APEM was there, once again, to participate in the event. Nine volunteer judges and I spent up to six hours previewing, judging and discussing over 100 projects in order to select winners for APEM's awards. APEM's sponsorship of the Symposium included \$200.00 towards the organization of the event, and awards of one \$500.00 engineering scholarship to the University of Manitoba and three enrollments in the Engineering module of the University of Manitoba's Mini-University program.

As usual, the variety of projects and the skill levels of the students presenting them were simply mind-boggling. Eleven- and twelve-year-olds were making presentations on subjects from thermocouples to fibre optics to construction of an electric lock. The winner of the engineering scholarship, Clint Stuart of Silver Heights Collegiate, built an accelerometer to measure the forces involved in rocket flight.

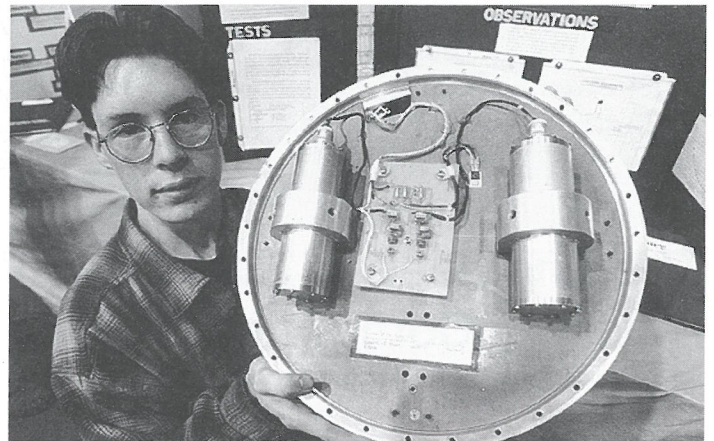
Also typical was the difficulty that the judges had in narrowing down the Mini-U winners to

just three. Those lucky students will spend two fun-filled weeks at the University of Manitoba, learning about designing a highway system, designing and building a bridge, designing and launching a rocket, building a door alarm, building a transmitter and conducting soils analysis, plus many other interesting activities – including recreational games and life-sports. This year's Mini-U winners were Rebecca Coish of Balmoral Hall, for her project on bridge construction; Grady Stephenson of Austin Elementary, for his project on airfoil aerodynamics; and Cody Matties of Crestview, for his project on biomass fuels.

Richard Bernhardt, member of the APEM Public Awareness Committee and also one of the volunteer judges, attended the Major Awards Cere-

mony on Sunday, April 28th, to make the presentation of APEM's awards. He also presented "Outstanding Achievement" ribbons to another 25 students who deserved recognition and encouragement for the interest they had shown in engineering.

A big thank you to my faithful judges, Richard Bernhardt, Kris Dick, David Grant, Kelly Hunter, Gene Manchur and Brian Trenholm, who come out every year and tirelessly give their time and effort to a great cause, and to the three new judges (Steve Crockett, Susan Egland and John Wieler). I hope to see you all again next year! □



Clint Stuart with accelerometer.

Photo courtesy Joe Bryksa/Winnipeg Free Press

With over 28,000 members, The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) is the largest professional organization in Alberta and the third largest of its kind in Canada.

This complex organization offers a unique opportunity for an exceptionally gifted leader to make a difference as

executive director

You will be the driving force behind the regulation and future development of the engineering, geology and geophysics professions in Alberta, and be its highly visible representative with governments, industry, academia, the media and the public.

You will manage a substantial organization of 30 permanent staff and over 500 volunteers, and you have the professional qualifications to be a member of APEGGA.

You have earned the respect of your profession and have demonstrated the leadership, visionary, management and diplomatic skills needed to be successful in this challenging and rewarding position.

Qualified candidates are requested to send a resume with an expression of interest to

search group inc.

Chek Lap Kok Airport

Cont'd from page 11

area of 17.3 km², 6.7 square miles or 4300 acres.

The average elevation of this new island is six metres above the surrounding sea. As a result, dykes have had to be built. If they were to be built on Portage Avenue, they would stretch from Main Street to the Perimeter clover-leaf.

M. Belley's job came to an end last September, with the construction of the infrastructure all that remains to be done. After four years of day-and-night work, he planned to do some sight-seeing around the Orient until the end of the year, while improving his Mandarin. Even being tri-lingual, he may have his problems finding another such mega-project on which to work – but I trust that you will join me in wishing him well. □

Position Wanted

Civil engineering and Civil Technology graduate specializing in geotechnical, environmental and municipal, seeking full-time employment with testing or consulting firm. Currently enrolled with APEM as an EIT.

Experience in the construction industry and with writing preliminary design and feasibility studies.

Offering services on a volunteer basis for two weeks in order to prove my worth.

For more information, call Craig at (204) 888-3931. □