



National Engineering Week to celebrate "engineering heroes"

by Karen Hawthorne

A tribute to some "everyday heroes" of engineering, science and technology will take centre stage during National Engineering Week, March 4-12, with the help of hosts from TVO Kids, the public broadcaster's top-rated block of after-school programs.

A live multimedia stage show in three Ontario cities—to be broadcast on TVO and simulcast on the Web—will bring to life Canadian engineers of the past, and visit today's professional engineers in industry and the engineers of the future in Canadian universities. The concept "Everyday Heroes" marks the contribution of men and women who, through engineering, have made a difference in everyday lives.



Popular *TVO Kids* hosts Patty Sullivan and Phil McCordic will MC a live show portraying engineering heroes of the past and present to kick off National Engineering Week 2000.

"Science, technology and engineering are vital to our health and well-being, including our economic health," says Sharon Airhart, who conceived the project on behalf of the Ontario Centres of Excellence. "I don't think we've collectively been very good at creating a science and engi-

neering culture in this country, and the Centres of Excellence are committed to changing that. Telling exciting stories in an entertaining way is bound to help."

Kicking off a week of activities that promote engineering and science across the country, the March 4 show runs at the Ontario Science Centre in Toronto, the National Museum of Science and Technology in Ottawa and Sudbury's Science North. TVO Kids hosts, including Patty Sullivan and Phil McCordic from the afternoon *Crawlspace* set, will be masters of ceremonies, helping reach a wide audience of junior fans, their parents and a broader public through television broadcasts and repeat broadcasts of TVO-produced vignettes on everyday engineering applications and the "heroes" behind them.

A dramatic video segment will tell the stories of engineers like Elsie MacGill (1905-1980), PEO's first female member, the world's first woman aeronautical engineer and director of Canada's wartime production of Hawker Hurricane and Curtis-Wright fighter planes. Hosts will then introduce current industry and academic profession-

als, all with the aim of boosting science and engineering public awareness.

"Role models are an important part of creating real youth interest in science and technology—just look at the role it plays in keeping up youth interest in sports," says George Nutter, a project partner from the Ontario Ministry of Energy, Science and Technology. "I see making science and technology real, through associating it with real people, as a key objective of the show."

Nutter calls interest in science, science literacy and science careers "critical" to creating a culture of innovation. "It's innovation that will lead to a strong economy, and a progressive society, in Ontario," he says.

The benefits to the engineering profession are manifold, says Stephen Jack, P.Eng., PEO's director of programs and events. He points to the building of respect for engineers and scientists among the public and in the business community, as well as creating an understanding of the role of the professional engineer.

Watch for program highlights on PEO's website at www.heroes.peo.on.ca.

Roundup of NEW 2000 Ontario events

Following are some of the events to be held to celebrate National Engineering Week (NEW) 2000 in Ontario, from March 4-12. Province-wide celebrations will comprise over 50 events and programs in about 25 centres. For more information, check listings posted on www.new-sng.ca and www.peo.on.ca.

Engineer-for-a-Day Contest

Teens 12-16 get a chance to spend a day working alongside a P.Eng. Students must complete an engineering quiz correctly to qualify for a draw for several real-world experiences during National Engineering Week.

NEW Ontario launch

Jim Wilson, Minister of Energy, Science and Technology, will give the keynote address at the University of Toronto's Great Hall in Hart House on March 3 at 3 p.m. Winners of the Ontario Engineering Competition's high school design competition and the Engineer-for-a-Day Contest will be announced.

Engineering in the Classroom

Engineers, technicians, technologists and engineering students will visit elementary and secondary schools across the province, to bring scientific concepts to life and encourage kids to

continue with math and science. Contact Valerie Hatten at vhatten@osc.on.ca for further information.

Ontario Science Centre (OSC) events

◆ **NEW School Program.** In a series of curriculum-related presentations for students from March 6 to 10, professional engineers and engineering technicians and technologists will explain and demonstrate how technology is an important building block of our future.

◆ **Engineering Fun Days.** Family workshops are planned for March 4, 5, 11, and 12. Kids of all ages get a chance to design, build and test engineering gadgets.

◆ **Engineering Innovation Forum.** "Life in the Computer Age" is the theme of this year's forum, to be held March 8. To reserve a seat, contact Rina Kulathinal, P.Eng. at rkulathinal@umagroup.com

Ontario Engineering Competition 2000

The University of Toronto's Hart House will host the competition March 3-4. Ontario university engineering students will compete in several categories, including: explanatory communications, editorial communications, entrepreneurial design and team design.

Canada-France agreement to promote mobility for engineers

by Karen Hawthorne

A new agreement between Canada and France should see better mobility for engineers to work in both countries—and put Canadians on a list of engineers eligible for French government projects.

Signed by the Canadian Council of Professional Engineers (CCPE) and the Commission des titres d'ingénieur (CTI) last October, the agreement recognizes licensed Canadian professional engineers who are graduates of an engineering program accredited by CCPE's Canadian Engineering Accreditation Board (CEAB). Those P.Eng.s will now have the right to practise engineering in France as "ingénieurs diplômés."

In Canada, the agreement must be ratified by each province to be effective in that jurisdiction. Since PEO has not ratified the agreement, it will not apply to French engineers applying to PEO for licensure, but it will apply to Ontario engineers applying for licensure in France.

Norm Williams, PhD, P.Eng., PEO's deputy registrar of admissions, says PEO will continue to assess the academic qualifications of French engineers applying for a licence with PEO, to determine if they are acceptable to Council. If equivalency is confirmed, French applicants will be considered to have met the academic requirements for licensure. Otherwise, examination programs will be assigned to enable the applicant to remedy any identified deficiency.

French engineers applying for licensure in all other provinces except Ontario, who hold the title ingénieur diplômé through graduation from an engineering program offered by a university or school recognized by CTI, will be considered on the same basis as graduates of engineering programs accredited by CEAB. They will not be required to write technical examinations to be licensed as professional engineers in Canada, but will be subject to the same work experience and professional practice examination requirements as Canadian applicants.

"Essentially, we have mutually agreed that the accreditation processes used by CCPE and CTI are substantially equivalent, and recognized that graduates of the engineering programs accredited by CEAB and the universities and engineering schools accred-

ited by CTI are highly qualified," says Gilles Delisle, PhD, ing., head of the Canadian negotiating team and a member of CCPE's international affairs committee.

Richard Hancock, P.Eng., CCPE Chair, says the agreement reflects the trend toward global free trade of professional services and the desire for international mobility of qualified engineers.

Last year, however, PEO Council withheld its endorsement of the agreement because it does not apply to foreign-trained PEO members, since they are not graduates of CEAB-accredited programs. Councillors expressed concern that the agreement would not provide equal and fair treatment to all Canadian engineers, pointing to the Task Force on Admissions, Complaints, Discipline and Enforcement's recommendation that PEO withhold approval of any new mutual recognition agreements (MRAs) until the concern of unequal treatment of foreign-trained members is addressed.

At its September meeting, Council passed a motion calling on CCPE to renegotiate the MRAs already in place to include a clause that would allow all of PEO's licensed members to be treated as though they were graduates of CEAB-accredited programs. The motion also requires that Council not endorse any MRAs until the issue is resolved.

But there is a provision in the agreement for monitoring and information exchange, indicating room for revisions in future, says Wendy Ryan-Bacon, P.Eng., CCPE's vice-president of international affairs. "It's very difficult to have actual equivalence measured because the systems are so different," she says of negotiating on behalf of all P.Eng.s, including foreign-trained members.

To be licensed as professional engineers in Canada, applicants must be graduates of CEAB-accredited programs or have equivalent education, meet the work experience requirements for the jurisdiction in which they intend to practise, and pass a profession practice examination. The French system for licensure of engineers is based on only academic qualifications. To become an ingénieur diplômé in France, students must complete a five-year engineering program, which places considerable emphasis on work placement within the industrial sector.

In ongoing international mobility forums, there is talk of forming an international registry of engineers. But not all countries have an accreditation system to provide a benchmark for international licensure. One solution on the table is a uniform "outcomes assessment" program to determine professional competency for licensure abroad, Ryan-Bacon says.

Certifying body for technologists appoints new executive

by Karen Hawthorne

After a career highlight that saw the recent opening of the \$7.1-million Centre for Engineering Design and Rapid Manufacturing at Centennial College in Scarborough, Angela Shama, P.Eng., CET, has joined the Ontario Association of Certified Engineering Technicians and Technologists (OACETT) as its new executive director.

As former director of Centennial College's school of engineering technology, Shama recruited government and industry partners to raise \$4.7 million for the new centre. As OACETT's executive director, she is responsible for strategic planning for the association, coordinating industrial outreach, liaising with Ontario colleges for member recruitment, and representing the association to the provincial government. Part of the job is promoting recognition for certified engineering and applied science technicians and technologists.

"The members of the engineering team



OACETT Executive Director Angela Shama, P.Eng., CET, will promote recognition of OACETT members of the engineering team.

will work together even more effectively, with each team member contributing to the best of his or her ability and training," Shama says of the future of engineering and the challenges ahead. "I believe the role of engineering technicians and technologists as part of that team will strengthen in the future."

Shama stresses that it's critical for engineering technologists and all members of the engineering team to be lifelong learners, to constantly adapt to new technology and to continue to upgrade their skills—especially given the myriad oppor-

tunities in new areas of technology, such as rapid manufacturing and virtual reality.

Trevor Onken, CET, OACETT's president, says Shama brings solid skills to the job: "Shama is a dynamic leader, whose college administration experience and ability to establish industry partnerships will serve OACETT well."

At Centennial College, she coordinated the curriculum development process for a new post-diploma program in rapid prototyping, and the design and construction of two new computer design labs. She was with the Ontario community college system from 1986-99.

Shama replaces Bruce Wells, CET, executive director since 1985, who stepped down from the position in October. Most notably, Wells worked with the PEO-OACETT Joint Management Board to bring the new 1998 OACETT Act to fruition. The act includes a definition of work for engineering technicians and technologists.

Correction

In error, two members' names were published in In Memoriam in the December 1999/January 2000 issue of The Link: **John F. Gartner, P.Eng.**, and **Stanley H. Cooper, P.Eng.** We apologize for both mistakes and any inconvenience or distress they may have caused.

Gartner practises engineering geology with Gartner Lee Limited in Markham, which he co-founded with Pat Lee 27 years ago. He is also an adjunct professor at the University of Waterloo, teaching two undergraduate courses in the Faculty of Science, and business manager for the Canadian Geoscience Council.

Cooper is president of Cooper Karwowski Consultants Ltd., Consulting Structural Engineers, in Toronto.

New national construction codes in the works

by Karen Hawthorne

Industry is calling for building and fire codes that are easier to use and that support innovative design solutions.

The Canadian Commission of Building and Fire Codes is responding with a revamping of the codes—a process started in 1995 that should see new versions of the codes published in 2003.

Code committees are looking at each requirement in the national model codes and clearly identifying the intent of each. The results of this bottom-up analysis will be used to restructure the codes in a new objective-based form, making the intent behind each requirement clear and encouraging innovation. The new codes will also be easier to apply to renovations, which often involve alternative approaches not described specifically in the codes, says John Haysom, P.Eng., Ottawa's project manager for the objective-based codes project.

Haysom says other countries have tried to address similar concerns by develop-



New objective-based, national building and fire codes under development are expected to clarify the intent behind requirements and encourage innovation. They are slated for publication in 2003.

ing performance-based codes, but that this has proved disruptive to code users in those countries because their code bodies, like those in Canada, are not in a position to develop quantitative performance criteria and measurement methods for all aspects of building performance.

"They had to fall back to qualitative performance requirements that, in effect, say 'build a good building,'" Haysom explains. "The difficulties in complying with and enforcing such a code are obvi-

ous. We aimed to achieve the desired improvements in the codes in a less disruptive way."

The new codes will contain clearly articulated objectives and functional requirements, as well as solutions. The result? A design, system or product that doesn't meet prescriptive requirements could satisfy the clearly stated objective and functional requirements, opening the door even more widely to new, acceptable solutions.

"The adoption of objective-based codes will give engineers greater flexibility in developing innovative designs," says PEO Councillor Gina Cody, PhD, P.Eng., chair of PEO's Professional Practice Committee and principal at Construction Control Inc., a Woodbridge-based firm of consulting engineers specializing in building inspections. "The codes have not been responsive to the rapid changes in technology," Cody says. "With the steady increase in the number and complexity of international trade agreements and the globalizations of markets, it must be made more adaptive and less prescriptive."

In 1998, a Professional Practice Committee working group prepared a submission to the joint task group of the Canadian Commission of Building and Fire Codes and the Provincial/Territorial Committee on Building Standards, calling for one national building, fire and plumbing code, restricted to fire and life safety, public health and structural sufficiency issues. This submission was adopted by the Canadian Council of Professional Engineers and submitted to the task group.

To that end, the commission proposed to declare health, safety and accessibility as the principal objectives of the National Building Code. This position on the objectives will be published for public consultation in late spring of this year, as will similar assessments of the objectives of the National Fire Code and the National Plumbing Code.

Packages of detailed technical changes aimed at updating the code will be circulated for public comment in mid 2001. The draft objective-based codes will be circulated for public review in mid 2002.

Code compliance and enforcement

New, objective-based building and fire codes slated for completion in 2003 will have little effect on enforcement procedures, except to better facilitate them by making the objectives and intents clear. That's according to John Haysom, P.Eng., project manager for the Canadian Commission of Building and Fire Codes' code revision project.

Most code users, including engineers in construction, will be largely unaffected by these changes, says Haysom. They will continue to use the performance and prescriptive requirements just as they have always done.

Builders will still be obligated to meet design standards, safety levels and the performance standard outlined in section 78 of Ontario Regulation 941 of the Professional Engineers Act, which requires a building permit holder to retain a professional engineer to carry out a review. The engineer will be required to ensure that the construction complies with drawings approved by municipal building departments.

When a dispute arises over how a particular code requirement should be applied in a particular situation, engineers and building officials will have the detailed intent statements for that requirement, and the overall objectives and functional requirements to which the requirement is linked, to help resolve that dispute, Haysom says.

Although some building officials fear that publication of the objective-based codes in 2003 will suddenly "unleash a flood of 'off the wall' proposals," Haysom says, the commission's presentations to building associations around the country have helped put officials at ease.

Waterloo engineer's invention makes professional hockey safer

by Susanne Frame

Thanks to the vision of a Waterloo engineer, hockey players can crash into hockey rink boards without fear of injury.

Gary Johnston, P.Eng., is the inventor of both Check-Flex boards and "seamless" glass, two of the latest innovations to hit the hockey world in the past few years.

"Injuries resulting from slamming into the hockey boards were a problem," says Johnston, owner of Johnston Engineering & Machine Design in Waterloo. "Only about 12 per cent of injuries result from hitting the boards, but if you can reduce that 12 per cent, you're doing something positive."

For big arenas, the aluminum Check-Flex boards are made in 2.4-metre sections. Springs located at the base of the board cushion players upon impact, by



Gary Johnston, P.Eng., holds the spring that allows hockey boards to cushion the blow for hockey players. Johnston is the inventor of the new Check-Flex spring-loaded hockey boards.

compressing when the boards are hit, acting as a shock absorber. Glass, 2.4-m high, sits on top of the boards, and moves with them.

The invention of the Check-Flex boards emerged from the creation of "seamless" glass. First installed for the Vancouver

Canucks in 1995, fans loved the glass because it was aesthetically pleasing and offered better sightlines for watching the game. Unfortunately, the combination of the new boards and glass did not provide the "springy" quality expected by today's hockey player.

Johnston and Bruce Irving of Crystaplex responded by inventing the Check-Flex hockey board solution. Crystaplex is the Mississauga-based manufacturer of the Check-Flex system, which 10 National Hockey League (NHL) facilities currently use.

The next challenge for Johnston is to provide a Check-Flex solution affordable for community rinks. The system costs at least \$170,000 to install in a NHL-calibre arena.

After all of this dedication to improving the sport of hockey, can Johnston be counted as a fan? "I do watch hockey," says Johnston, "but mostly for the boards."

Seminar features international sustainable development expert

Engineers play an integral role in realizing sustainable development. PEO's Environment Committee will host a seminar on the topic, called "Engineering for the Future: Our Role in Sustainable Development," on April 12, from 8:00 a.m. to 12:30 p.m.

To be held in Toronto, the seminar will bring you up to date on current trends and global developments in sustainable development, while providing two Canadian case studies illustrating how professional engineers have contributed to this goal. You will leave with a renewed understanding of what sustainable development is, what benefits it offers and, most importantly, how this important concept can be incorporated into your work. The seminar is suitable for engineers of all disciplines interested in learning how sustainability principles can be applied to daily design and decision making. The \$50 cost includes breakfast.

Keynote speaker Nicholas Sonntag, P.Eng., president, CH2M Gore and Storrle Ltd., will discuss global trends in sustainable development. Sonntag was formerly executive director of the Stockholm Environment Institute, which develops best practices on sustainable development for decision makers in business and government. He also served as senior advisor and chief of staff to the secretary general of the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992.

Linda Churchill, P.Eng., operations engineer, Regional Municipality of Waterloo, will present case studies illustrating how public-private sector partnerships have reduced energy consumption and greenhouse gas emissions at Waterloo and Cambridge landfill sites. Dr. Tobias Nickel, corporate communications manager, BMW Canada, will talk about the design of BMW cars for sustainability, and the design and implementation of new sustainable fuel technologies.

For more information or to register, contact Shirley Lowery at PEO at (416) 224-1100, ext. 462 or (800) 339-3716, or by email: slowery@peo.on.ca. Also see the fax-back registration form in the February/March 2000 issue of *The Link*.

U of T scholarship commemorates past university president

by Susanne Frame



James Ham, P.Eng.

University of Toronto engineering students can look forward to a new scholarship for first-year students.

Gerry Heffernan, P.Eng., an alumnus of the class of

'43, created the fund to celebrate the life and accomplishments of classmate James Ham, P.Eng. "He was by far one of the brightest minds of the university," Heffernan says. "I thought there should be some commemoration of our most outstanding classmate."

The Class of 4T3 James Ham Memorial Engineering Scholarship Fund was established in 1998. Heffernan started the fund with a donation of \$25,000. To date, over \$50,000 has been collected toward it.

Joining U of T's engineering faculty in 1953, Ham served the university community for the next 44 years. In 1966, he was named dean of engineering. While president of the university from 1978 to 1983, Ham and Dr. Fraser Mustard conceived the idea of an "Institute without Walls." This idea grew into the Canadian Institute for Advanced Research.

Ham was named an officer of the Order of Canada in 1980. In 1984, he received PEO's Professional Engineers Gold Medal.

The drive for more funding continues, however. The minimum target for the endowment is \$250,000. The fund will provide an annual minimum of \$12,500 to fund a scholarship. Members interested in contributing to the scholarship fund can send donations to Malcolm McGrath, Engineering Alumni Office, 35 St. George Street, Room 173, Toronto, ON M5S 1A4.