AWARDS

By Heidi Karst

A recipient of the Ontario Professional Engineers Engineering Medal recently has been awarded the nation's highest honour for lifetime achievement. **Donald Mackay, PhD, P.Eng.,** has been appointed an Officer of the Order of Canada. MacKay is the founding director of the Canadian Environmental Modelling Centre at Trent University, and has greatly contributed to the quality and stewardship of the global environment. Known for his models describing the behaviour and effects of oil spills, he later developed an innovative system to predict the fate and effects of chemicals in the environment, which are currently used as the basis of regulatory and environmental policy decisions around the world (see *Engineering Dimensions*, Sept./Oct. 2003, pp. 46-49).

Fellowship in the Royal Society of Canada has been granted to **Ian F. Blake, P.Eng., and Adel S. Sedra, P.Eng.** Blake has pioneered research in coding theory and cryptography, and as a noted author of textbooks and research monographs, this University of Toronto professor has influenced generations of researchers in information theory.

Currently dean of engineering at University of Waterloo, Sedra has been recognized for his scientific contributions to the field of microelectronics, research work on the design of analog filters used in communications and signal processing systems, and co-authorship of an internationally acclaimed textbook on microelectronics. He is a recipient of the Ontario Professional Engineers Engineering Medal

The following inductees of PEO's Order of Honour have received Ontario Volunteer Service Awards for their outstanding contributions in volunteer service:

Carl J. Christensen, P.Eng., Corrado Comello, P.Eng., Richard M. Dillon, P.Eng., C. John Dunnicliff, P.Eng., Thomas A. Fekete, P.Eng., Barry Hitchcock, P.Eng, Emil Knebel, Philip A. Lapp, P.Eng, Donald Menzies, P.Eng., Patrick A. Monaghan, P.Eng., Murray Patterson, P.Eng., M. Jane Phillips, P.Eng., Tahir Qureshi, P.Eng., L. Patrick Ryan, P.Eng., Lawrence C. Sentance, P.Eng., William J. Warwick, P.Eng., and Oscar Zanatta, P.Eng.

Three Ontario professional engineers are among six recipients of scholarships awarded by the Canadian Council of Professional Engineers (CCPE) in partnership with Manulife Financial, Meloche Monnex Inc., and Encon Group Inc.The scholarships enable the recipients to pursue leading edge research in various fields to improve quality of life. **Marco Carlone, P.Eng.,** a student in physics at Carleton University, is researching ways to improve the cure rate among prostate cancer patients who are being treated with radiation therapy; **Monica Nicole Danon-Schaffer, P.Eng.,** a PhD student at University of British Columbia, is researching the potentially toxic compound polybrominated diphenyl ether (PBDE), which is often used in the production of household items such as televisions and computers; and **Marnie Ham, P.Eng.,** is studying the use of aluminum in auto manufacturing with an emphasis on structural integrity and safety.

Larry Pond, P.Eng., and Lynx North Engineering, Inc. have been awarded the Building Communities Award 2003 at the 13th Annual Nishnawbe Aski Nation Business Awards. Lynx North was incorporated in 1996, offering professional consulting services throughout northwestern Ontario and Manitoba. Its mandate is to strive to help its First Nation ownership group improve the quality of life in their communities through public health and safety works, including water and sewage treat-

At right, Howard Alper (left), president of the Royal Society of Canada, congratulates Ian F. Blake, P.Eng., on his recent election as a 2003 fellow to the society's Academy of Applied Science and Engineering.

Below, two PEO members were among the three recipients of the University of Waterloo 2003 Faculty of Engineering Alumni Achievement Medal. Left to right are William M. Tatham, William C. Lennox, P. Eng. and Brian W. McFadden, P. Eng.

photo courtesy of Mike Christie

ment plants, water mains, sewers, drainage, and roads and diesel generation.

Two PEO members have been awarded the University of Waterloo Faculty of Engineering 2003 Alumni Achievement Medal. The recipient of the medal for Professional Achievement and Academic Excellence, **William C. Lennox, P.Eng.**, is a founding member of the American Academy of Mechanics. He has been instrumental in creating a number of engineering programs at Waterloo, and continues to be a team leader, mentor and source of inspiration for young engineers. Acknowledged for his exemplary leadership and business acumen in the telecommunications industry, in addition to his involvement in co-chairing the Nortel Networks Institute Board and supporting co-op and graduate hiring, **Brian W. McFadden, P.Eng.**, was awarded the medal for Professional Achievement.

Jane Gowing, P.Eng., founder of Gowing Contractors Ltd., is the recipient of one of the 2003 Rotman Canadian Women Entrepreneur of the Year Awards by the University of Toronto's Joseph L. Rotman School of Management. Since its inception as a home-run business in 1998, Gowing Contractors Ltd. has expanded to provide water and wastewater treatment consulting services throughout Southwestern Ontario, as well as securing contracts with the City of Phoenix and Peel Region of Ontario.

Michael Sefton, P.Eng., has been bestowed the title of university professor by the University of Toronto in recognition of his exceptional scholarly achievement and pre-eminence as a faculty member of chemical engineering and applied chemistry, and of the Institute of Biomaterials and Biomedical Engineering.

PEO CHAPTER CALENDAR

PEO Chapter Calendar lists upcoming chapter meetings and events. Send listings to: Sharon Gillam, Chapters, PEO, 25 Sheppard Avenue West, Suite 1000, Toronto, ON M2N 6S9; fax: (416) 224-8168; email: sgillam@peo.on.ca. Deadline for the July/August 2004 issue is June 4.

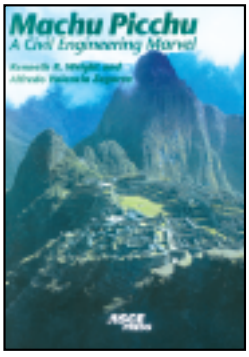
APRIL

April 4, 2004
BRANTFORD
PEO Ice Skating Event, 2:00 - 3:00 p.m.,
Wayne Gretzky Sports Centre–Blue Rink
Contact: Philip Webster, P.Eng., 519-752-5436 ext. 115 (work), 519-751-2016 (home), pwebster@sympatico.ca

April 7, 2004
HAMILTON
Annual General Meeting, Glendale Golf and Country Club, Mountain Albion Road, Hamilton, 5:30 p.m.
Contact: Peter Tregurtha, P.Eng., 905-335-0968 or ptregurtha@sympatico.ca

April 8, 2004
MISSISSAUGA
A Tour of Fielding Chemical Ltd., 839 Central Parkway West (at Mavis Road), Mississauga.
Contact: Alan Giacomelli, P.Eng., at allang@spectranet.ca

BOOKS



Ancient society has modern appeal
Machu Picchu: A Civil Engineering Marvel,
Kenneth R. Wright, Alfredo Valencia Zegarra, Ruth M. Wright, Gordon McEwan, $66.09, ISBN: 0784404445, 144 pp, American Society of Civil Engineers

Contrary to popular belief, Machu Picchu was not the last stronghold of the Incas but, rather, a royal estate of the emperor Pachacuti, constructed beginning in about 1450. It represented the pinnacle of engineering of the Inca civilization at that time, built so well that it survived 500 years buried in the jungle and is now in operation essentially as it was during its peak.

This book presents an excellent engineering analysis of the hydrology and construction of the monument, in terms understandable by non-engineers. It is good reading for anyone interested in general history or the engineering capabilities of ancient societies. There are many diagrams and pictures, making the subject matter easy to understand.

"Try to imagine the site conditions with which the civil engineers were faced in 1450. Two mountains had a ridge between them and sheer drop-offs on both sides to the river 1600 feet below ... and no level fields for growing crops." The most striking fact of the location is that it was extremely remote, located 50 miles from the Inca capital.

Hydrology: The first matter to be taken care of was the supply of water to the domain of the royalty, urban area and agricultural area. There was a spring some 2500 feet from the location of the estate and also a secondary spring. These springs were not enough to supply the demand, especially during the dry season. Including a porous wall on the upper side of the canal delivering the water solved this problem. Underground water stored in the porous rock above the canal would be delivered over the length of the canal. Ancient climatological studies using nearby icecaps indicate that this combined flow would have been enough to supply all needs during the dry season–about three gallons per minute.

Sixteen fountains were in place; the highest one provided for the use of the emperor's palace and the progressively lower ones for each urban area.

Contruction: Walls were built to allow for agricultural terraces. In each terrace, soil was placed on the surface with gravel in the next layer and chipped stone below. This allowed rainfall to drain naturally. In the construction of the buildings, the stones were finely carved to fit together very tightly; some were up to 10 feet in length. There are 18 stonewall types found at Machu Picchu, ranging from carefully cut stone to rough fieldstone work.

If you had limited interest in seeing Machu Picchu before reading this book, you will want to see it for yourself. With fountains designed more than 500 years ago, this is a site that would compare with anything in Egypt or Greece.

Reviewed by Ron Bailey, P.Eng. Director, IT Services, PEO