



# GEONEWS

SEPTEMBER 2008



## Message from the Outgoing Head, Bob Dalrymple

As I write this, I have only 5 days left in my term as Head of the Department. The past 5 years have gone quickly



and there have been many highlights. Foremost amongst them is my ability to interact with so many of our great alumni, at the various reunions that we've hosted across the country as well as in other ways. Your generous support of our Field Studies Endowment Fund has been enormously gratifying. This represents a lasting legacy that will go on helping us to

offer a first-class field education to our students. Another highlight has been my interactions with the dedicated and hardworking faculty and support staff in the Department. They are the heart and soul of the Department. Of course, our students, both undergraduate and graduate, contribute immeasurably to the wonderful atmosphere that pervades the Department. Thank you to everyone for your contributions to the Department's activities, and to your support over the last 5 years.

The past year has been a particularly challenging time for the Department. Last summer, Mike Doggett departed to pursue other opportunities in Vancouver. He leaves a big hole in our economic-geology program. Then this past fall, we were informed that all departments across the Faculty of Arts and Science, ours included, had to plan for budget cuts ranging from 3-5% of our total budget.

This cut has been brought on by chronic under-funding of post-secondary education in Ontario.

Through the creative ideas of faculty and staff, we have devised a plan to cope with this cut in a way that will minimize the impact on our teaching. Hard sacrifices had to be made, but the overall outcome has been manageable, in part because of the revenue being generated by the Field Studies Endowment Fund. Rumoured future budget cuts will not be so easy to handle, so your generosity continues to be very important to us.

This spring, we were shocked to learn that Gerhard Pratt, one of our two geophysicists, is planning to leave Queen's to assume the Chair of the Geology Department at the University of Western Ontario. This loss will be sorely felt! The fate of our geophysics program is in doubt as a result, but it is too early to know what the future holds: the pessimistic budgetary situation referred to above was at the heart of Gerhard's decision to leave. The Department remains committed to offering a geophysics component in all of our degree programs, but whether or not we will be able to offer a dedicated geophysics program remains to be worked out.

The determination of who will be my replacement as Head of Department has not been made yet, in part because of the surprise departure of Gerhard Pratt. Dr. Herb Helmstaedt, former Head, has agreed to serve as Acting Head for the coming year. We anticipate that the succession planning will be ironed out by the time of the next Newsletter.

In closing, I would again like to thank everyone for their support (financial and moral) over the last 5 years. It has been an honour to be the Head of such a great Department!



Incoming Acting Head of Department, Herb Helmstaedt, here in 2007 with Academician Professor Xiao in the northern part of the Tarin Basin, Xinjiang, China. Notice the Queen's Geology Logo on their caps.

### **Thanks to a Great Head for a Job Well Done – Roger Smith B.Sc. '71, M.Sc. '78**

As Chair of the Queen's Geology Council, a group of departmental alumni whose purpose is to provide advice and support to the Department, I want to express my sincere appreciation to Dr. Bob Dalrymple who will be retiring from his position as Head of the Department of Geology and Geological Engineering at the end of June. Over the past four years Bob and I have worked closely together to develop the Geology Council and establish a variety of Geology Field Studies Endowments.

Bob admits that he knew nothing about Alumni outreach when he began as the Head but since he is a fine Geologist he would never let a lack of knowledge be a deterrent to moving forward. He soon found that it was his favorite part of the role and he has become a superb "Salesman" for the Department. The Geology Field Studies Endowments now exceed \$1,100,000 in endowed funds. Bob's energy, enthusiasm and his own financial contributions have been a large part of this success. This is a legacy that will indeed last until the next Ice Age.

I think that all Geology Alumni will agree that a strong Field Studies Program is an essential pillar of Geological education and those of you who have contributed to the Field Studies Funds should be proud of your support. You certainly have my deep appreciation.

For those of you who have been considering making a contribution please consider this to be an opportune moment to do so. Your contributions can be made in honour of Bob and his tireless devotion to Geology and Geological Engineering at Queen's.

For further information or to make a contribution please contact either:

- Lisa Menard, Advancement Officer: 1-800-267-7837, extension 75501 ([lisa.menard@queensu.ca](mailto:lisa.menard@queensu.ca))
- Jim Campbell, Manager, Western Canada Office at 1-403-266-6195 ([jim.campbell@queensu.ca](mailto:jim.campbell@queensu.ca))

### **Upcoming Alumni Events**

Write the following dates in your calendar. There are five upcoming events where you can get together with Queen's Geology alumni and profs. These events are a wonderful opportunity to reconnect with friends and to make new acquaintances. Graduates of all years and all programs are most welcome to attend. Current Queen's Geology Profs are planning to attend, so these events are also an excellent opportunity to find out recent developments in the Department.

#### **Calgary - Saturday, October 4, 2008**

The Sixth Annual Calgary Reunion of Queen's Geology, Geophysics, and Engineering Geology Alumni will be held on Saturday, October 4, 2008, starting at 7:00 p.m. This year the event will again be held at the home of **Bob & Irene Park** (4204 Britannia Drive SW). Thanks to Bob and Irene for their hospitality! Please RSVP to Tracey Reynaud, 403-205-6767 / [trevnaud@suncor.com](mailto:trevnaud@suncor.com), by **September 29, 2008**, with your name, graduation year, and the name of your spouse /guest. Directions will be provided at that time if necessary.

#### **Victoria – Saturday Morning, October 25, 2008**

The Third Annual Victoria "Brunch Reunion" of Queen's Geology grads will be held in Sydney, on Saturday morning, October 25, 2008 at 10:30 a.m.

This year the event will again be held at the home of **Jane Wynne & Mike Fecteau** (2362 Amherst Avenue, Sidney). Please RSVP to Jane Wynne (H) 1-250-656-6681 or (W) 250-363-6471 or [jwynne@NRCan.gc.ca](mailto:jwynne@NRCan.gc.ca) by **October 20, 2008**, with your name, graduation year, and the name of your spouse /guest. Directions will be provided at that time if necessary.

### **Vancouver- Saturday Evening, October 25, 2008**

The Third Annual Vancouver Reunion of Queen's Geology alumni will be held in Vancouver, on Saturday, October 25, 2008 starting at 7:00 p.m. This year's reunion will again be held at the home of Colin and Dawn Joudrie (4141 St. Paul's Ave North Vancouver 604-988-4074). Please RSVP to Colin and Dawn at 604-988- 4074 or colin.joudrie@teckcominco.com **by October 20, 2008**, with your name, graduation year, and the name of your spouse /guest. Directions will be provided at that time if necessary.

### **Cordilleran Round-up, Vancouver**

Sunday, January 25, 2009, 6:30-9:00 pm, Westin Bayshore Hotel, Vancouver (Room to be announced later). Cash bar; munchies provided.

### **Prospectors and Developers Association Convention, Toronto**

Tuesday, March 3, 6:30-8:30 pm, 2009, Caledon Room, Intercontinental Hotel, Toronto (next door to the Convention Centre; room to be announced later). Cash bar; munchies provided. The event last year was generously sponsored by Andre Tessier and Murgor Resources.

## **DEPARTMENTAL NEWS**

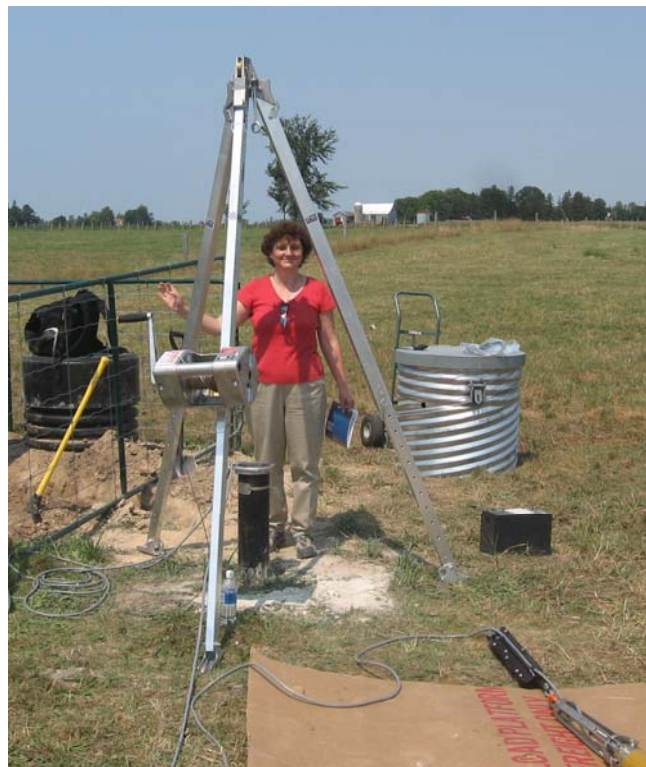
### **Department Welcomes New Faculty Member**

It is with great pleasure that I welcome **Savka Dineva** to the Department. Savka is a seismologist who has been hired into a 3-year position to help us offer our geophysics program. During the last 2 years of her term at Queen's, she will be our only geophysicist. Savka comes to us from the University of Western Ontario where she was a Research Associate and Administrative Manager of the Ontario Research Centre in Earthquake Hazard and Continental Dynamics. Previously, she worked as a Research Associate in the Bulgarian Academy of Sciences, and in the Seismology Division of Royal Netherlands Meteorological Institute. She obtained her Ph.D. at the Institute of Physics of the Earth of the Russian Academy of Sciences in Moscow, where she studied the kinematic and dynamic parameters of earthquakes in the Balkan region.

While at the University of Western Ontario, Savka worked on the POLARIS project where she was involved in the design and installation of the POLARIS seismic network in Ontario. Together with David Eaton and Robert Mereu, she was able to outline clusters of seismic activity, and to delineate possible seismic lineaments.

Their work on the Georgian Bay earthquake of October 2005 (magnitude 4.3) is one of the most detailed studies of an earthquake in eastern Canada. She developed a new seismic-magnitude scale for Ontario based on the energy of the seismic signals– the first energy magnitude scale proposed for routine work. Savka was also heavily involved in the development of a borehole seismic network around the Bruce Nuclear site in Kincardine, Ontario, which is intended to monitor the local microseismicity and to evaluate the seismic hazard for this potential nuclear-waste disposal site.

Savka is currently involved in an NSERC-funded project to investigate tectonic stress fields at the regional and local scale in eastern Canada and in mines at Sudbury. The principal long-term objectives of this project are: 1) to improve our understanding of the magnitude and tectonic cause of the stresses in eastern Canada; 2) to differentiate the local zones with comparatively homogeneous tectonic stress, in order to provide information for re-assessment of the seismic hazard in this region; and 3) to provide a technique that would allow mining companies to react quickly to changes in the local stress field as a result of mining. Savka is also working on a project to investigate the importance of oil and gas extraction as a cause of seismicity in the area north of Lake Erie.



Savka Dineva installing a borehole seismometer at Ashfield, as part of a seismic network designed to monitor microseismicity around the Bruce Nuclear site.

### Departure of Mike Doggett

The Department is sorry to report that **Dr. Mike Doggett**, mineral economist and hockey player extraordinaire, resigned from Queen's in the summer of 2007 to pursue other opportunities in Vancouver. Mike obtained his M.Sc. and Ph.D. in the Queen's Geology Department (1987 and 1994, respectively) under the supervision of **Dr. Brian Mackenzie**. He was appointed as an Associate Professor in 1999 after holding an Adjunct-Professor position in the Department from 1994 until 1999. In addition to teaching mineral economics, he was the Director of our MinEx M.Sc. program from 1998 until his departure in 2007, working tirelessly to obtain the financial resources needed to allow this flagship program to continue in the face of inadequate funding from the University. The Department is sad to see Mike leave, not only because of the loss of his unique expertise and friendly smile, but also because our chances of beating Queen's Mining in the annual Fur Cup hockey game (which celebrated its 50<sup>th</sup> anniversary in 2007) have diminished significantly. We wish Mike well.

### AWARDS AND HONOURS

#### Teaching Excellence Award to John Hanes

**Dr. John Hanes** (a.k.a. "Hockey-Stick Hanes") has received the 2008 Alumni Award for Excellence in Teaching, the highest teaching award given at Queen's! He was nominated by two former Geological Engineering students who were presidents of the Engineering Society, **Grant Bishop** ('04) and **Connor Langford** ('08), for his outstanding efforts in APSC 151 (formerly GEOL 110 and GEOL 120— the introductory Geology course taken by all first-year engineering students) and GEOL 282 (Earth Systems Engineering II: Resources and Environment). John's dedication and enthusiasm for his teaching is legendary! Indeed, many of you probably owe your decision to pursue a career in geology to John's intro course; as Grant Bishop says, John has had a resonant



**John Hanes with his famous hockey stick**

impact on many lives. The entire Department is extremely pleased that his excellent work has been recognized by this award.

#### Mark Diederichs Honoured by the Canadian Geotechnical Society

**Dr. Mark Diederichs**, one of two geotechnical engineers in the Department, received the 2007 Franklin Award from the Canadian Geotechnical Society. This award recognizes an individual who has recently made an outstanding and published technical contribution in the fields of rock mechanics or rock engineering in Canada and/or internationally. Mark was cited for his "contributions to the state-of-the-art in prediction and analysis of spalling failure in tunnels". Our other geotechnical engineer, **Dr. Jean Hutchinson**, received the same award in 2003. For more on their research, see the "Research Profiles" section of this Newsletter.

#### Noel James Receives Prestigious Medal

Ohio State University has awarded **Dr. Noel James** its Bownocker Medal for research excellence in the geological sciences. Noel is a world-renowned carbonate sedimentologist whose research has made many significant contributions to our understanding of how limestones are formed in settings as diverse as warm tropical oceans and cold near-polar waters. This research has extensive implications for hydrocarbon exploitation and for elucidating how ocean chemistry has evolved through time. Dr. James is also a Fellow of the Royal Society of Canada and holds a Queen's Research Chair

#### Guy Narbonne Publishes Landmark Paper and receives Queen's Research Prize

The sudden appearance of large animals in the fossil record perplexed Charles Darwin and has been commonly referred to as Darwin's Dilemma ever since. In a recent paper published in *Science* (2007, v. 315, p. 92-95), **Dr. Guy Narbonne** and his colleagues provide geochemical evidence from Newfoundland (subsequently confirmed by other workers using other sections of the same age) that suggests that the sudden appearance of large animals 575 million years ago was coincident a dramatic increase in the level of oxygen in the world ocean. This event followed closely on the ending of the global Snowball-Earth glaciation and may have been triggered by it: nutrients supplied to the ocean by glaciation may have permitted the prolific growth of phytoplankton, which then liberated oxygen. *Essential Science Indicators* recently featured it as the "one of the most cited new papers in the geosciences worldwide" (May 2008). In September 2008, Guy also received the 2008 prize for Excellence in Research from Queen's University.

## **Gerhard Pratt: CSEG Distinguished Lecturer for 2008**

Seismologist, **Dr. Gerhard Pratt** was selected as the Distinguished Lecturer for 2007/2008 by the Canadian Society of Exploration Geophysicists. His lecture, “What Else

Can the Seismic Waveform Tell Us?”, examined the use of waveform inverse methods for the production of seismic velocity images. This technique offers a dramatic improvement on conventional seismic-velocity methods, and he and his students have applied the technique at spatial scales ranging from small civil-engineering sites, through to exploration scales, and even to crustal-scale problems. For more information on the talk, visit Gerhard’s website <http://geol.queensu.ca/people/pratt/2008CSEGLectureTour.pdf>. Gerhard’s selection as the CSEG Distinguished Lecturer recognizes his innovative contributions to the improvement of seismic-imaging techniques.

## **Laurent Godin Provides Good Reviews**

**Dr. Laurent Godin** has received the Geological Society of America’s “Excellence in Reviewing” award. Reviewing manuscripts is one of the most crucial steps in the publication process, but usually goes unrecognized, except for brief mention in the acknowledgements of a paper, so the receipt of this award is especially gratifying.

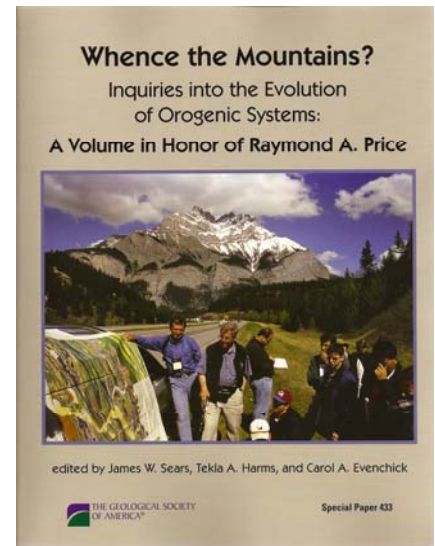
## **Steve Rose Re-elected Vice Chair of OSPE**

Adjunct Professor **Steve Rose**, who has played an important role in our geological-engineering design courses (GEOL 446 and 447) for many years, has been re-elected for a second term as Vice Chair of the Ontario Society of Professional Engineers (OSPE). OSPE advances the professional and economic interests of Ontario’s professional engineers by advocating with governments, offering valued member services, and providing opportunities for ongoing professional development. Its function is distinct from that of the Professional Engineers of Ontario (PEO), which is responsible for the licensure of engineers and the maintenance of professional standards. Steve’s duties include assisting in the development of policy for the OSPE and in liaison with government, the media and other engineering organizations.

## **Ray Price’s Lifetime Achievements Recognized**

For 50 years and counting, Professor Emeritus, **Dr. Ray Price**, has undertaken cutting-edge research on the origin of the Canadian Cordillera. In the process, he has generated ideas about mountain-building processes that are applied to mountain belts around the world. To honour Ray’s contribution, the Geological Society of America held a research symposium in 2004 that brought together

the leading experts on orogenesis. The publication arising from that meeting (see cover picture below) has now appeared.



Cover of the Geological Society of America Special Paper in honour of Dr. Ray Price (second from left). The peak in the background is Cascade Mountain, between Canmore and Banff, Alberta.

## **Connor Langford Wins QUAA “Outstanding Student” Award**

**Connor Langford** (B.Sc. Eng. '08), former President of the Queen’s Engineering Society, has received the “Outstanding Student Award” for 2007 from the Queen’s Alumni Association. This award is given annually for exceptional contributions in two or more of the following categories: leadership; academic, athletic or artistic achievement; voluntary service abroad; community service; and support for the Queen’s Alumni Association. Connor was heavily involved in a wide range of activities with the Engineering Society and with the larger University, including participation in the development of the new Strategic Plan for the University and the selection of the new Dean of the Faculty of Applied Science. While doing all this, Connor maintained an exceptional academic record in Geological Engineering. His easy-going smile will be missed now that he’s graduated.



Connor Langford at the Wilanw Palace in Poland.

### Engineering-Design Project Receives Recognition

Two of the geological-engineering students from the 2008 graduating class, **Sarah de Jonge** and **Heather Wells**, have won second place in the Canadian Geotechnical Society's annual "Undergraduate Group Report" competition this past spring. Their study, entitled the "Rose Cemetery Grave Identification Project", was done for the 4<sup>th</sup>-year geological-engineering design course under the supervision of **Dr. Gerhard Pratt**, and used a variety of geophysical techniques to locate unmarked graves in a pioneer cemetery in Prince Edward County west of Kingston. In recognition for their effort, they were presented with certificates of appreciation by the local members of the Provincial and Federal parliaments, by the County Council and by the United Empire Loyalist Association of Canada (see picture below).

It is worth noting that the Canadian Geotechnical Society initiated its national competition for undergraduate group projects in 2002. Since then, students from our Department have been judged as overall competition winners, or runners-up, 6 out of the 7 years. This is a record that is unequalled by any other program in Canada and speaks to the quality of our students!



**Mr. Peter Johnson U.E., President United Empire Loyalist Association of Canada, presenting certificates of appreciation to Heather Wells (left) and Sarah de Jonge for their work on locating unmarked graves in a pioneer cemetery.**

### Dawn Kellett Wins "Best M.Sc." Thesis Prize

**Dawn Kellett** (2007, M.Sc.) has received the "Jack Henderson Prize" for the best M.Sc. thesis on a structural-geology topic. This prize is awarded annually by the Structural Geology and Tectonics Division of the Geological Association of Canada. Dawn's thesis dealt with back-folded sedimentary strata in the core of the Himalaya Mountains in Nepal, and was produced under the supervision of **Dr. Laurent Godin**.

### Graduate Students Receive Awards from the SEG

Over the last two years, a large number of our graduate students have received significant awards from the Society of Economic Geologists (SEG). In 2007, **Evan Smith**, who is working on the origin of brown diamonds, received a Graduate Student Fellowship from the Society of Economic Geologists (SEG). In addition, four of our graduate students received significant research awards from the SEG. They are **Hanna Grant**—Zn-Pb-Cu-Ag Hackett River Volcanogenic Massive Sulphide (VMS) deposit, **Kathryn Kitney**—Barry Gold Deposit, Quebec, **Gregory Lester**—Chemistry of IOCG deposits; and **Allan Montgomery**—the Alto Chicama-Quiruvilca epithermal Au-Ag district, north-central Peru.

In 2008, four more students received research awards: **Steve Beyer**—unconformity-hosted uranium deposits in Proterozoic basins; **Hanna Grant**—Zn-Pb-Cu-Ag Hackett River VMS deposit; **Evan Smith**—crystal defects, impurities and brown colouration in diamonds; **Pim van Geffen**—geochemical transport of metals in overburden and the exploration for deeply buried ore deposits. In addition, two students received Graduate Student Fellowships: **Gabriela Budulan** for her work characterizing glacial till and bedrock of the Halfmile Lake Zn-Pb-Cu VMS deposit, New Brunswick; and **Mariasole Lombardo** for a study of metal incorporation in As-bearing iron sulfides in Carlin-trend gold deposits. Clearly, mineral-deposits geology continues to flourish at Queen's.

### Paleontology Graduate Students Win Presentation Awards

**Marc Laflamme** (Ph.D. '07), received the "Rupert H. MacNeil Award" for the best student presentation at the annual meeting of the Atlantic Geoscience Society in 2007. In the same year, M.Sc. student **Emily Bamforth** won both the "Thomas E. Bolton Award" for best student presentation at the Canadian Paleontology Conference and the "Best Presentation Award" at 6<sup>th</sup> annual Advances in Earth Science Research Conference (AESRC). Both Emily and Marc were supervised by Dr. Guy Narbonne and were reporting on their work on the Ediacaran fossils at Mistaken Point, Newfoundland.

### Geotechnical Engineering Graduate Students Recognized

**Matt Lato** (M.Sc. student) was an Invited Keynote Lecturer at SPAR 2008 (Spar Point Research LLC Conference, March 2008, Houston, Texas). His presentation was entitled "Geotechnical applications of lidar: static to

mobile". Being invited to give a keynote talk is an accolade for any professional, but is even more so for a graduate student. **Kathy Kalenchuk** (Ph.D. student) won the "Best Poster Prize" at the GEOIDE (Geomatics for Informed Decisions) Annual General Meeting. Her poster was entitled "Application of sensor data to slope-stability assessment." Kathy and Matt are supervised by Drs. **Jean Hutchinson** and **Mark Diederichs**.

#### **GEOLOGY ALUMNUS PROMOTES NOVEL WAY TO DONATE**

The following article is reprinted from the Spring 2008 issue of Queen's *Financial Planner*, a publication of the Queen's Office of Planned Giving. In total, the Geology Department has received nearly \$300,000 from the sale of stock options designated to us by Gord. If you have the opportunity to do something similar, we would be extremely appreciative!

#### **"Exercising Your Options For Queen's" by Gord Keep (B.Sc. '79)**

As Executive Vice President of Fiore Financial Corporation in Vancouver, BC, Gord Keep (Geological Sciences, '79; pictured below) says he is glad to have opportunities to use his direct involvement with junior mining companies to benefit Queen's.

"When companies grant stock options to directors, officers and employees, they can also set aside an amount for charitable giving," he says.

"A stock option allows Queen's to purchase a specified number of shares in the company at a set price, for a set period of time. The University then exercises the options at a later date and uses the proceeds to fund programs for students.

"I have stayed in contact with the Geology Department since I graduated, and when the call came for help in funding the field school programs, I came up with a proposal to create an option program from junior mining companies with officers or directors who were also Queen's grads. There is also the opportunity to designate any resulting proceeds to a particular faculty, project, or area of the university.

"This is a very easy, cost-effective and risk-free method of giving," adds Gord. "The funds realized by Queen's do not come out of pocket, but rather from company growth."

Gord hopes more Queen's alumni in senior management positions will use their knowledge and experience to help direct corporate stock options towards their alma mater and by doing so, provide financial benefits to Queen's for years to come.

Gordon Keep's career in corporate finance has spanned over 20 years. He met his wife Katherine (Political Science, '81) at Queen's. Their daughter Heather is enrolled in the Kinesiology program at Queen's.

If you are interested in learning more about donating employee and corporate stock options, securities or flow-through shares, Christina Attard, Senior Planned Giving Officer with Queens University would be pleased to speak with you. She can be reached at 1-800-267-7837.



Gord Keep (B.Sc. '79), Executive Vice President, Fiore Financial Corporation, Vancouver

#### **RESEARCH PROFILES**

Past editions of this Newsletter (go to [http://geol.queensu.ca/dept\\_newsletr/index.html](http://geol.queensu.ca/dept_newsletr/index.html)) have profiled the work of our crustal-dynamics and mineral-deposits research groups. In this edition, we highlight the research of two of our newer areas of strength, environmental geology and geotechnical engineering.

Environmental geology is a diverse subject that has grown rapidly over the last 1-2 decades, becoming the predominant area of expertise in many geoscience departments. Here at Queen's, our environmental geoscientists (Drs. **Heather Jamieson**, **Kurt Kyser** and **Vicki Remenda**) are closely integrated with the rest of the Department and apply fundamental geological and geochemical

techniques to their environmentally oriented research. **Dr. Heather Jamieson**, whose position includes a 50% secondment to the School of Environmental Studies at Queen's, uses cutting-edge techniques to explore the mineralogy and geochemistry of mine tailings. **Dr. Kurt Kyser** uses isotope- fractionation patterns to track the movement of material through the geosphere, hydrosphere and atmosphere. The approach to tracking pollutants is very similar to that used to locate buried ore bodies. A novel area of Kurt's research involves the use of tree rings as detailed recorders of changing environmental conditions. Kurt's research was profiled in a previous Newsletter. **Dr. Vicki Remenda** is a hydrogeologist who is interested in the relationship between groundwater and surface water such as that which occurs in wetlands. The flow of water (either into or out of the ground) has a very important influence on the character of these water reservoirs, but has not been studied widely.

Our geotechnical engineering group consists of Drs. **Mark Diederichs** and **Jean Hutchinson**. **Dr. Mark Diederichs's** research focuses on the design and stability of tunnels in both mining and civil-engineering settings. By contrast, **Dr. Jean Hutchinson's** work is primarily devoted to slope-stability issues in surficial settings such as along railway lines. This work incorporates the use of cutting-edge geographic information systems (GIS) technology, with the assistance of research associate **Rob Harrap**.

#### **Dr. Mark Diederichs: Tunnel Machine Engineering vs Engineering Geology**

Worldwide transportation infrastructure is expanding and renewing itself at an unprecedented rate. In areas with topographic relief and in urban areas with complex land use, tunneling is the preferred option for new motorways, railways and hydraulic transport. Excavation with large automated tunnel-boring machines (TBM) has replaced conventional digging or drill-and-blast construction. In rock tunnels, these large and complex machines need to be designed to accommodate a wide variety of geological conditions.

As rock strata in alpine regions are often inclined or vertical, a single machine must navigate a wide variety of rock conditions, often with conflicting design requirements. Conventional TBM face-cutting technology must be refined in many cases to deal with very hard rock or with the complex interactions of stress and geological structure in the tunnel face. In weaker rocks at depth, rapid tunnel-wall convergence (squeezing) can trap a TBM in place if control or accommodation measures are inadequate. In horizontally stratified (sedimentary) environments, large contrasts in rock-layer properties and behaviour can pose special challenges for a large TBM due to the relative in

flexibility in support options compared to conventional mining techniques. Failure to design appropriately for these challenges can severely impact the success or the economic viability of a TBM project with excess costs climbing into billions of dollars per project.

**Dr. Mark Diederichs** and his graduate students are tackling problems such as these in tunneling projects around the world. **Marlene Villeneuve** (Ph.D.) is completing her work on TBM cutter performance in hard crystalline rock at the Gotthard and Loetschberg base-tunnels in Switzerland. **Mathew Perras** (M.Sc.) is investigating the influence of sedimentary strata on a large TBM excavation near Niagara Falls, Ontario. **Laura Branscombe** (M.Sc.) has begun a project to investigate squeezing behavior and support options related to the new Lyon-Torino high-speed rail tunnel between France and Italy. **Nicholas Vlachopoulos** (Ph.D.) is investigating the influence of mixed geology and tunnel-tunnel interaction in squeezing ground in northern Greece. **Matthew Lato** (Ph.D.) and **Stephanie Fekete** (M.Sc.) are investigating the use of laser-based imaging (Lidar) for real-time mapping of tunnel condition in Oslo, Norway, and in northern Ontario. Other projects involve tunnel challenges in Sweden, Venezuela and British Columbia. All of these projects will contribute to an improved integration of engineering geology and the design of tunnel-excavation processes.

#### **Dr. Jean Hutchinson: Engineering Geology of the Vimy Ridge Historic Site**

The Canadian National Memorial site, at Vimy Ridge, France, commemorates the efforts and loss of life of Canadian troops in the First World War. The site comprises the monument, a Visitors Centre, the Grange Tunnels and

Top: **Marlene Villeneuve** in front of the Gotthard TBM at +2000m depth;

Bottom left: Niagara Beck TBM;

Bottom right: **Matt Perras** investigating surface exposure of Whirlpool Sandstone-Queenston Shale contact at the TBM elevation.



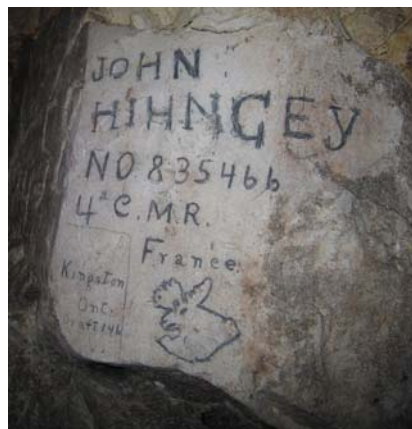
Restored trenches and several cemeteries, and is visited by over a million people each year. A substantial portion of the battlefield terrain remaining from WWI is preserved at this site, including trenches, shell holes, and military mining craters. The site is further disturbed by subsidence of the ground surface due to collapse of underground excavations left from the war.

A significant number of subsidence events have been recorded within the last decade, prompting Veteran's Affairs Canada to undertake a review of risk at the site. There is concern that ground-surface subsidence could compromise the safety of visitors or workers. Excavated in chalk, the tunnels, dugouts, underground headquarters and hospitals have created a labyrinth of subsurface voids. The location of many of these excavations is unknown. In collaboration with other groups who are assessing the historical record and using geophysical techniques to try to locate the voids, **Dr. Jean Hutchinson** was asked to evaluate the potential for ground subsidence at the site. Her team, including **Dr. Mark Diederichs**, **Dr. Catherine Reid** (Post-doctoral Fellow) and **Maureen White** (M.Sc., 2007), mapped and sampled the chalk, to assess the stratigraphic position of the excavations, and to evaluate the structure and strength of the rock mass. The chalk was accessed along the coasts of both England and France, in quarry excavations, and in WWI tunnels and declines that have been discovered and re-opened in recent years. It was humbling to be among the first people in over 90 years to view the names, faces and prayers carved into the tunnel walls by the soldiers.

The research considered the depth and dimensions of the different types of excavations, the chalk condition and effects of weathering on its strength, to evaluate the probable stability of the excavations using computer simulation codes. Interpretation of the results of this analysis allowed development of general hazard relationships between span and depth, to isolate excavation classes that pose a long-term hazard and to reduce the priority for those that are unlikely to fail to surface and those that are likely to have failed soon after construction. An article describing some of this work was published in the International Journal of Rock Mechanics & Mining Sciences in January 2008.



**Maureen White** (M.Sc., 2007) evaluating the collapse of overburden into a WWI tunnel at the Goodman subway tunnel.



Graffiti from the wall of the Goodman subway tunnel.

### **Dr. Heather Jamieson: Environmental Geochemistry of Metals**

**Heather Jamieson** and her research group work in the area of environmental geochemistry with an emphasis on the environmental impact of metal mining. Much of this work has focused on understanding the geochemical controls on the mobility of arsenic and antimony by sampling co-existing water and solids (tailings, sediments or soil) and subjecting these to advanced analytical methods. Field sites include the Giant gold mine near Yellowknife, NWT (**Steve Walker**, Ph.D. 2006; **Claudio Andrade**, M.Sc., 2005; **Skya Fawcett**, Ph.D., in progress; **Lori Wrye**, M.Sc., in progress) and abandoned gold-mine sites

in Nova Scotia (**Catherine (Craig) Daniels**, M.Sc., 2006; **Madeleine Corriveau**, M.Sc., 2006; **Steve Walker**, PDF, 2007; **Stephanie DeSisto**, M.Sc., in progress). The group has developed synchrotron-based micro Analytical methods that can determine the contaminant-hosting minerals in tailings, airborne dust and mine-impacted sediments and soils. They have taken a grain-scale approach which involves collecting X-ray diffraction data of individual particles, as well as measuring the oxidation state of As or Sb. Recently, Heather has become particularly interested in the risk to human health associated with ingesting or inhaling metal-bearing particles and has initiated projects aimed at characterizing these materials so that risk levels can be understood better. For example, the arsenic-rich mine tailings in Nova Scotia are publicly accessible and some are used for dirt bikes and trail walks. The results produced by Heather and her colleagues have been used by the Province of Nova Scotia in risk assessment. Other research projects involve the examination of smelter-influenced soils in Western Australia (**Mallory Drysdale**, M.Sc., 2008), water chemistry and CO<sub>2</sub> sequestration in kimberlite processing (**Andrew Rollo**, M.Sc., 2003; **Claudine Lee**, M.Sc., 2005) and, in association with Health Canada, a recent initiative on metal-bearing compounds in household dust. In collaboration with students and colleagues in Civil Engineering, Heather has investigated metal attenuation in geosynthetic barriers (**Karina Lange**, Ph.D., in progress, co-supervised with R.K. Rowe), and passive remediation of acid mine drainage (**Erin Clyde**, M.Sc., 2008, co-supervised with P. Champagne). Heather is a Principal Investigator in the NSERC Strategic Network “Metals in the Human Environment” and a Research Director of the Geo-Engineering Centre at Queen’s-RMC



Children riding dirt bikes on tailings near an airborne-dust sampler, Montague Gold Mines, Halifax, NS. Total arsenic content of near-surface tailings is 2 wt%.

### **QMinEx M.Sc. Program Is 30 Years Old**

The Department’s course-based M.Sc. program in mineral exploration, which is also known as QMinEx, is celebrating its 30<sup>th</sup> anniversary this year. The success of this program is indicated by the fact that it has graduated about 150 professionals, many of whom now occupy senior positions in the Canadian and international exploration industry. The fact that QMinEx has survived several mineral-industry cycles and a nearly complete turnover of departmental faculty is a testament to the high quality of the students, the continued commitment of faculty, and the dedication and vision of the successive QMinEx Directors and Coordinators who have adapted the program to fit the times.

Despite its success, the QMinEx program cannot remain static because departmental expertise has changed and the needs of the mineral industry continue to evolve. In particular, the recent departure of Dr. Mike Doggett (see above), who served as the Director of QMinEx for the last 10 years, has made it necessary to undertake a thorough re-evaluation of the program. Members of the QMinEx Committee agree that it is important



Heather Jamieson sampling near Yellowknife, NWT, July, 2007.

## **A Big “THANK YOU” To Our Donors**

In the little over a year since the production of our last Departmental Newsletter, the Department has received donations from a record number (~ 125) of individuals and companies (see list below). Some of the companies made donations matching those made by one or more of their employees: if your company has such a program, check it out as it doubles the size of your gift.

We offer our sincere **THANK YOU** for the generosity of all of these individuals and companies! No matter how big or small the donation, it means a lot to us, especially in these hard financial times. Because of the continued generosity of our alumni and friends, our Field Studies Endowment Fund now stands at the impressive total of approximately \$1,250,000 in cash and pledges. This is truly amazing!! Revenue from this fund directly helped students who attend our second-year mapping field school (see photo below).

### **Donors over the last 13 months are:**

George Albino, Sheila Albon, James Allen, Jeff Austin, Geoffrey & Shelagh Ballard, Robert Baragar, William Barclay, Grant Bartlett, Doreen Bayliss, Fran Berry, Donald Blyth, Peter & Lorraine Bolton, Peter Bresee, Christopher Brett, Daniel Brisbin, Ruth E Brydon, Jennifer Burgess, Steven Butler, Charlene Butler, Karl Butler & Rebecca Mills, John Callahan, Finley Campbell, Alexandra Campbell, Colette Charest, Stephen Cheeseman, Ned Chown, Leslie & Helen Coleman, Jon Collins, Gordon Cooper, Stephen Coulter, Robert Dalrymple, Scott Digel, John Dixon, Justina Donkers, Heather Douglas, Bruce Downing, James & Zaheela Duck, Marcel Dufresne, Darlene Dufresne, Thomas Ebborn, Carol Ellis, Theresa Erb, Estate of Iva Speers, Chris Mintz & Adrienne Farrell, Wayne Foo, Sarah McLaren, Alan Goodwin, Peter Green, Anita Green, G.V. Greene, Jonathon Greggs, Lee Groat, Robert Harrington, Herwart Helmstaedt, Penelope Henderson, Thomas Hofer, Michael Hriskevich, Thomas James & Fan Chen, Donald James, Judith and Noel James, Gretchen Johnston, Samantha Kenway, David Kisilevsky, Erin Lamb-Faquier, Brenda Laquerre, Robert Laquerre, Joseph Lau, Patricia Lee, Desmond Lee, Leonard Lloyd, Neil Lund, Jean Lund, Heather A Mace, Giulio & Mary Jane Maffini, Janet Malcolm, Howard Manchester, Vera Manchester, John McAdam,

Sandra McBride, Beth McClenaghan, Timothy McLaren, Donald Medwedeff, Sheelagh Mercier, Robert Merrill, Dorothy Milburn-Smith, Howard & Patricia Milthorpe, Meera Nathwani, Joan Nicholson, William Pearson, Susan Pfister, Kirsten Pugh, Gregory Reid, Andrew Roberts, James Robertson, Alexander Romaniuk, Steven Rose, Michael

Rose & Susan Riddell Rose, Pierre Sauve, Paul Saxton, Kathryn Scales, Jon Scoates, Mary Scoates, Linda Shanks, Wanda Shewan, William Slavin, Graham Smith, Anna Smith, Roger & Lorna Smith, Michael Stewart, Martin Telford, Cynthia Visser, Andrew Vogan, Ross Vogan, Yvonne Waldron, William Waldron, Jane Werniuk, EnCana Cares Foundation, WA Barclay Exploration Services Ltd., Lyn Petroleum Inc., IAMGOLD Corporation, Bromley Resources Ltd., the Charitable Gift Funds Canada Foundation, and Honeywell ASCA Inc.

If you haven't made a donation yet and would like to do so, the Department has a friendly and helpful group of people from Queen's Advancement who can assist you. These individuals and their contact information are listed below.

Jim Campbell, Manager, Western Regional Office for Queen's University: 1-403-266-6195 ([campj@queensu.ca](mailto:campj@queensu.ca)). If you live in western Canada, and especially in Alberta, Jim's the person to contact.

Faye Ransom, Senior Planned-Giving Officer: 1-800-267-7837, extension 77823 ([faye.ransom@queensu.ca](mailto:faye.ransom@queensu.ca)). Faye is able to give specific assistance with bequests and the naming of the Department in a will.

Lisa Menard, Advancement Officer: 1-800-267-7837, extension 75501 ([lisa.menard@queensu.ca](mailto:lisa.menard@queensu.ca)). For all other donations, big or small, Lisa is the person to contact.

## AL GORMAN'S "ALUMNI UPDATE"

I apologize in advance if I have included news that is out of date and for not including oral reports that I have forgotten. Also, I stand corrected. I claimed in the last newsletter that Room 225, Miller, was a Geology 1 Lab in 1955. **Brenda Mitton**, long-time Administrative Assistant in our department, informed me it was the library. She of course is right.

I continue to encourage alumni to contact me with news. My e-mail address is [gorman@geol.queensu.ca](mailto:gorman@geol.queensu.ca) and my telephone number is 613-533-6176. If you're in Kingston, drop by my office (the same old place- Miller 229)—I'm always there.

1967

**Lo-Sun Jen**, M.Sc., retired from his position as Executive Advisor on Mining Development and Investment with the Mineral Resources Sector, Natural Resources Canada, in February, 2007.

1972

During Homecoming last September, the Class of '72 had a breakfast get-together at Ramekins Restaurant on Bath Road on Saturday morning. It was organized by Doug VanDine

here in Kingston. Attending were Doug VanDine and Donna Morrissey, John and Sandra Stevenson McCance, Dave Comba and his wife, Harry Baker, Brian Hudson, and Tom Muir. I represented the Department.

**Shaun Frape**, B.Sc., Hon.; M.Sc., 1974; Ph.D., 1979, was the 2007 winner of the O.E. Meinzer Award conferred by the Hydrogeology Division of the Geological Society of America for his work on the hydrogeology and hydrogeochemistry of deep crystalline rocks.

Captain **Bruce Horne**, B.Sc., Hon., is still operating the Horne Ferry between Wolfe Island and Cape Vincent, New York.

1975

**Andy Fyon**, B.Sc., Eng., is presently Director of the

Ontario Geological Survey. He is in to photography, inspired no doubt by GEOL 333, and shows his skill at his floral-centered website

1978

**Bob Powell**, B.Sc., Eng., is now with Knight Piesold in North Bay as a specialist Geotechnical Engineer. Bob has returned to North Bay after spending a number of years in the U.S.

1981

**Ken Lyon**, M.Sc., left Toronto to join Worley Parsons Komex in Calgary as Principal Hydrogeologist and Technical Director, Contaminated Sites, concentrating on risk

and liability strategic management. He can be reached at [ken.lyon@worleyparsons.com](mailto:ken.lyon@worleyparsons.com)

1982

Last September, the Class of '82 held a large Homecoming Dinner at the Ambassador Hotel on Princess Street. Stormin' Norman Vaughan appeared to be Official-in-Charge of the operation. Class of 1982 attendees were: Lynn Anglin, Tracy Armstrong Legault, Jane Bracken Benwood, Mark Brenchley, Julia O'Connor Campbell, Collette Charest Casgrain, Cynthia Corlett Visser, Jill Donnelly, Carol Ellis, Peter Gordon, Anne Pedskalny Green, Lee Groat, Greg Hood, Gretchen Crawford Johnston, Pat Lee, Jean Legault, Marc Legault, Janet Malcolm-Peters, John McGaughey, Keith Morrison, John Reddick, Mike Timlin, Sean Trueland, Normie Vaughan, and Brad Wilson. Also there from earlier years were Sue Walker and Phil Walsh.

**Brian O'Hearn**, B.Sc., Eng., is now Mining Services and Territory Manager for Lafarge Canada Inc.

**Lyn Anglin**, B.Sc., Hon.; M.Sc. 1987, Memorial; Ph.D., 1992, Carleton, left the GSC after almost 20 years to become President and CEO of Geoscience BC, an industry-led non-profit organization funded by the B.C. Government to undertake geoscience projects aimed at attracting new exploration to the province. She was recently elected President of the Geological Association of Canada, and is also a council member of the Society of Economic Geologists and of the organizing committee of the annual Mineral Exploration Roundup in Vancouver. She was a co-author of the GSC's "Ore Mineral Atlas" and of a GSC volume on the Yellowknife area. She can be reached at [anglin@geosciencebc.com](mailto:anglin@geosciencebc.com).

**Phil Bateman**, B.Sc., Hon.; M.Sc., U.W.O.; 1984, Ph.D., Colorado School of Mines, 1988, worked for Chevron in Calgary, then in New Orleans, then on to Houston. He and Angie have two daughters, Amanda in ArtSci '09 and Sara in B.Sc./B.Ed. '11.

**Norm Vaughan**, B.Sc., Hon.; Ph.D., Education, Calgary, 2005, teaches grad courses at the University of Calgary, but his main focus is helping to start a new B.Ed. Program at Mount Royal College in Calgary (soon to be a university).

1983

After organizing the Homecoming get-togethers in 1998 and 2003, **Janet Sidey** and **Jane Hughes** have stepped aside and **Wendy Miller Diaz** and **Mike Young** are organizing this class' 25-year get-together at Homecoming this Fall.

**Tom Ebborn**, B.Sc., Eng., MBA, Western, is Managing Director, Investment Banking, Tristone Capital, Inc., in Calgary.

1987

**Mike Doggett**, M.Sc., 1987; Ph.D., 1994, reported a Geology victory in the fiftieth Fur Cup against Mining in March, 2007. Al Gorman, who was an early player in these games, dropped the puck for the opening faceoff. Unfortunately, Geology lost in 2008, despite a great game by Mike and his fellow teammates.

**Andrew Polak**, B.Sc., Eng., has been with Ontario Hydro/Ontario Power Generation for 20 years. He is the Senior Design Engineer responsible for the upkeep and improvement of their nuclear engineering program in Pickering. He lives in Ajax with his wife Rebecca, son John, 11' and the twins Henry and Emily, 8.

1990

**Eric Romero-Seirra**, B.Sc., Hon., B. Ed., 1997, is now living in Hamilton, where he is still teaching and keeping the dust off his rock collection.

1991

**Cathy Hyde-Barber**, B.Sc., Eng., left Schlumberger after 11 years, working mainly in South America, to be a mom to a daughter, now 3. She is now in Hous

1992

**Jason Gerhard**, B.Sc., Eng.; M.Sc., Ph.D., Civil, was at Homecoming, and has returned to Canada. He has been trying to enlighten Civil students at the University of Edinburgh. One of his students probably outshone all the Scots in grad school-Gavin Grant, B.Sc., Eng., 1998, M. Sc., Civil, 2000.

1994

**Eric Gonneau**, B.Sc., Eng.; MBA, Laurentian, went to Trow Associates, Sudbury, on graduation, but now is a real estate investor, running Redbrick Properties with his brother, Mark. Last fall, he was working on a project to build housing to cope with the anticipated influx of students that would accompany a large increase in the size of Georgian College, Barrie.

1995

**Andrew Feustel**, B.Sc., M.Sc., Purdue, Ph.D., Queen's, the Department's only astronaut, is scheduled to make a trip to the Hubble Telescope in October 2008, where he will display his engineering know-how by improving the images obtained from the telescope.

1997

Homecoming saw a fairly large group of Class of '97 engineers in attendance. These included **Laurence Arcand**, **Matt Boucher**, **Alison Cole**, **Jason Crowder**, **Chris Elvidge**, **Dave Hill** (with son), **Rob Panek**, **Chris Podetz**, and **Amy Sloma**.

**Amy Sloma**, B.Sc., Eng.; M. Sc., Civil; Western, 1999, worked for O'Connor Associates till December, 2000,

then spent 3 years in a Denver-based company as a hydrogeologist, with projects in South Korea and various airfields in Alaska. She and Rob McLean (M.Sc., Civil, 2002) were married in Hawaii, moved to Australia in 2004, where they worked on geoenvironmental projects in southeast Asia. They came back to Canada in 2006, working in B.C., with a baby due in 2008.

1998

**Nadia (Belanger)** and **Art McCarthy**, B.Sc., Eng., were married in July, 2002. They live in Calgary and have 2 children, Arthur, 4, and Gerard, 1. They would love to hear from old friends.

They live at 2627 63<sup>rd</sup> Ave., Calgary, T3E 5J6, email-nmccarthy@shaw.ca

**Jordan Beveridge**, B.Sc., Eng., joined Public Transport Group, Transport Canada, in January '07, and works mainly in Toronto, poor guy, Southwestern Ontario, and on the East Coast. He reports that air photos are a huge planning tool, but that

might be just his attempt to save my job. He got married in 2002, and has a 14 year-old stepson.

**Graham Emmerson**, B.Sc., Eng., and **Jenny Beanish**, B.Sc., Hon., are living in Calgary. Graham is with the National Energy Board as a pipeline/geotechnical engineer and Senior Project Manager. Jenny works with Devon Canada as an exploration geologist. Their family of 3 will become 4 in September.

1999

**Faye Logan**, B.Sc., Hon., passed away in early July after a brief battle with cancer. The obituary is available at <http://www.northcuttelliott.com/deathnotices.php>. The Department sends its condolences to her family and friends.

**Susan Pfister**, B.Sc., Eng.; M.Sc., Memorial, reports that after 7 years on the rock, she has moved to Carp, Ontario, and joined Water and Earth Science Associates as an environmental engineer. She married Ted Radstake in September, 2006, and both are in to rock climbing and triathalons. Friends can reached her at [spfister@wesa.ca](mailto:spfister@wesa.ca)

2002

**Ian Picketts**, B.Sc., Eng., is a member of the Queens University Council. He is presently working on his M.Sc. at UNBC, but is considering upgrading to a Ph.D.

2003

**Kelly Batten** (Hender), M.Sc., 2003; Ph.D., 2007, Carleton, has settled in St. John's and is working for a petroleum exploration and production company, whose work is focused on the offshore.

2004

**Nathalie Maurer**, B.Sc., Eng., is a member of the Canadian women's pair which won a silver medal in rowing at the Pan American Games in Rio de Janeiro in July, 2007.

2005

**Adam Melnyk**, B.Sc., Eng., left Golder Associates, Burnaby, to become a research associate in Mining Equity Research at Canaccord Adams in Vancouver.

**Ryan Weir**, B.Sc., Eng., was in Ottawa after graduation, but moved to North Bay in early 2006 to join Knight Piesold, working on socio-economic reports dealing with an Arctic project. He spent the field seasons of 2006-07 near Pond Inlet doing work related to the environment, including drilling, test-pitting, materials testing and permafrost investigations. (Looks like our G7 option is filling a niche). A daughter arrived for Julie and Ryan in February, 2007.

2006

**Melissa Chappel**, B.Sc. Eng., is presently working on her Ph.D. in the Civil Engineering Department. She flew a camera-carrying tethered blimp over a sheet of the geomembrane used as a liner for landfills and analyses the sealant value of the liner.

2007

**Ryan Lyle**, M.Sc., is working in the salt mines at Goderich, Ontario, as a geotechnical engineer, trying to keep the walls from falling in. As my Dad, a marine engineer, used to say, don't rely on getting much support from an old salt.

**Cara Walker**, B.Sc., Eng., is working for Knight Piesold in North Bay. Cara reports that she has been active on projects in Baffin Island, Mexico, and the Caribbean in her first year with the company.

---

## The "Serial Retiree": The Eclectic Career of Bob Skinner (B.Sc. '68)

In retrospect it was perhaps logical that Bob Skinner (B.Sc. '68) would go to Queen's and study geology. As a boy, hunting and fishing along the Moira River north of Belleville, he was always wondering what formed the elongate, tear-shaped hills (drumlins) all aligned in the same direction. After getting his degree at Queen's, he pursued his love of Quaternary geology, obtaining his M.Sc. ('69) and Ph.D. ('71) at the University of Washington. This led to a job at the Geological Survey of Canada, developing sampling techniques to prospect glacial tills for

diamonds and base metals, and assessing the potential impact of the James Bay Hydro Project.

Driven more by curiosity than by any plan to develop a career, Bob agreed in 1973 to be loaned to Foreign Affairs as a science advisor in international space and oceans law. He was recalled to the Department of Energy, Mines & Resources in 1975 to set up its office of environmental affairs, and eventually held senior positions in oil-import policy, oil-and-gas market regulation, and, subsequently, from 1985 to 1989, as Assistant Deputy Minister of Energy Commodities where he played a lead role in de-regulating energy markets and in downsizing the energy department. Having done himself out of a job, he accepted a foreign assignment as Director of the policy office at the International Energy Agency at the OECD in Paris in 1989. When the Berlin Wall came down, he found himself leading teams to central European capitals to advise the post-communist governments on energy policies.

Bob took early retirement from the civil service in 1996 and joined Total, the French oil company, working in business development in downstream gas and power. In 1998, he set up their office in Calgary to secure their entrée to the Alberta oil sands. When Total and Elf merged in 2001, he 'retired' again. Soon afterwards, he was approached to become the Director of the Oxford Institute of Energy Studies. After nearly four years in Oxford, he 'retired' for a third time and returned to Canada to work on his book, 'Difficult Oil', a critical assessment of our remaining hydrocarbon reserves. In 2006, when he was approached by Norway's Statoil to advise them on their oil sands strategy, he couldn't resist. He is now Senior Vice President of their Canadian affiliate in Calgary, with responsibility for commercial development for oil sands and the east-coast offshore.

In 1974, Bob married Dawn Kristen Kerr (Queen's Geology, B.A. '68), who has become an international prize-winning book artist. They have two sons, Matthew (Queen's B.Sc. '99) and Luke (Queen's B.Sc., Eng. '99). Matt did a M.Sc. at the University of Victoria, and Luke went to Cambridge for his M.Sc. and Ph.D., and is now a Royal Society Research Fellow at Christ College Cambridge doing research on the palaeoclimate record contained in Atlantic deep-sea cores. When we caught up to Bob, he had just come back from a field trip to the James Bay Lowlands serving as river guide and field assistant to his son Luke. They had returned to Bob's doctoral research area to sample a climatologically important marker bed, exposed along the banks of rivers that Bob had traversed by freighter canoe in the late sixties. Bob found the return a moving experience, while having to admit that climbing cliffs, hauling boats, and choking on a million biting flies seemed oddly more difficult than it was nearly 40 years ago.

Bob's advice to students is to follow your curiosity and be open to the opportunities that present themselves. The future will look after itself.



Photo of the 2<sup>nd</sup>-year class (combined geology and geological engineering) at our field school in Sutton, Quebec (May, 2007). During this 2-week-long field school, students map the study area and produce a comprehensive and detailed 3D geological model and structural interpretation of the area. In the context of their mapping, the students also undertake a set of more detailed projects that relate to the specific degree program in which they are registered. These include: a metamorphic survey, a foundation and rock-anchorage design, an environmental baseline study, an aggregate resource assessment, a geophysical survey and interpretation and a mine design and economic evaluation of a potential mineral deposit.

**THANK YOU TO OUR GENEROUS DONORS—  
YOUR DONATIONS HELP TO FUND FIELD SCHOOLS SUCH AS THIS  
SPRING 2007**



# GEONEWS

SEPTEMBER 2008

## Contact Us

**E-mail:** [hyde@geol.queensu.ca](mailto:hyde@geol.queensu.ca)  
**Snail mail:** Geological Sciences & Geological Engineering  
Bruce Wing/Miller Hall  
Queen's University  
Kingston, ON K7L 3N6  
**Tel:** 613-533-2597