Welcome to this issue of GeoNews! We hope you all have a healthy, happy and prosperous 2005.

It has been some time since we last communicated with you. Our excuse is that we have been very busy. In particular, we have been preparing for two nearly simultaneous reviews. The first of these, a Queen’s-initiated “Internal Academic Review” examines all aspects of our activities: teaching, research and service to the university and larger scientific community. The two external reviewers visited us during the fall; preliminary indications are that we will receive a very positive report from them. The second review, which is being conducted by the Ontario Council for Graduate Studies, will examine our various graduate programs. The visit by these external reviewers will take place in April. The preparation of the documentation for these two reviews has consumed several person months and a small mountain of paper. However, we anticipate that the results will be positive.

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Greetings from the Head

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Special points of interest:

- Geology Council creates Field Studies Endowment Fund
- Guy Narbonne helps create the new Ediacaran Period
- The call of the north—Al Gorman at the pole
Greetings from the Head  (Continued from page 1)

Some of the results of our comparative analysis indicate that our faculty members currently have the highest per-capita NSERC funding of any department in the country. We also have the highest ratio of students to faculty members of any traditional earth-science department. Our faculty and students have been the recipients of a large number of honours since the last Newsletter, and their research has been the subject of unprecedented media coverage (see details below). Our undergraduate enrolments remain high (approximately 50 second-year students, combined Applied Science and Arts and Science) and the number of graduate students is steady at approximately 60. Overall, it has been a busy time since we last reported to you, and the Department remains a healthy and happy place.

In other news, the Department has embarked on a more active phase of outreach to our alumni. We have created a Geology Council that is currently based in Calgary, but which we hope will gradually expand its sphere of influence to encompass graduates throughout western Canada. We would like to form another “branch” of the Council that is based in central Canada (Toronto and/or Ottawa), to foster more active two-way communication between the Department and our alumni, as well as to organize activities that allow classmates to get together. As an example of this, the Geology Council in Calgary held the second annual Geology Reunion last October. More details of the Geology Council and the Reunion are provided elsewhere in the Newsletter.

In this Newsletter you will also find more information on our fund-raising activities and the usual compilation of news from alumni as prepared by Al Gorman. The series of articles on the History of the Department continues, with the Ninth Decade featured here. We also are starting a new feature that will provide you with profiles of people and research in the Department. To start this, we include here a brief synopsis of the research interests of our current faculty members.

We hope that you find this informative. If there are topics you would like to see covered, let us know.

Bob Dalrymple, Head

GEOLOGY COUNCIL

The Geology Council is a new initiative for the Department. It was created about a year ago and consists of a small number of prominent alumni and friends of the Department who are committed to making the Department the best in the country. The current members are: Roger Smith (B.Sc. ‘71, M.Sc. ‘78; Chair), Grant Bartlett (Queen’s Geology Professor, 1970-1980), Kathy Scales (B.Sc. ’78), Mike Rose (B.Sc. ’79), Bill Slavin (B.Sc. ’84), Dan Brisbin (B.Sc. ’79, M.Sc. ’86, Ph.D. ’97), JoYei Wei (B.Sc. ’94), Michelle Wright (B.Sc. ’95), and Kirsten Pugh (’02). All but Dan are based in Calgary; Dan commutes or teleconferences from Saskatoon to take part in Council activities.

The objectives of the Council are to:

- develop an effective two-way communication link between alumni and the Department,
- undertake fund-raising activities on behalf of the Department,
- act as advocates for the Department in industry, government, and the larger society, and
- provide advice on any topic deemed of value to the Department’s success.

The Council is only beginning to undertake a variety of actions; if you would like to be involved in any way, please contact Roger Smith RWSmith@Suncor.com. If you have an interest in helping to create an Ontario branch of the Council, please contact Bob Dalrymple dalrymple@geol.queensu.ca.

Therefore, part of the income from the endowment will be used to subsidize field schools and trips so that students do not have to bear so much of the cost. As with other endowments, a portion of the income will also be reinvested with the original capital to ensure long-term growth of the endowment. Many distinguished careers have opened with an education in geology at Queen’s University. Your contribution to this fund is a great way to show your appreciation for an experience that has done so much to shape your success.

For more information please contact any one of the members of the Geology Council (listed below) Jim Campbell, Manager of the Queen’s Western Regional Office, or Bob Dalrymple.

GEOLOGY COUNCIL CREATES FIELD STUDIES ENDOWMENT FUND

As you all appreciate, a high quality field-studies program is a critical element of a strong geology education. The Geology Council’s first fundraising initiative is to create a Geology Field Studies Endowment Fund with a ambitious but attainable goal of raising $2M! This endowment will ensure that Queen’s Geology students of today have the very best opportunity to become the outstanding professional geologists of tomorrow.

The purpose of this endowment is to provide the Department with the financial resources to maintain, improve, and even expand, where possible, the suite of field schools and field trips that are available to students. At the present time, we offer our undergraduates a wide variety of opportunities to go into the field, ranging in length from an afternoon to two weeks. However, students have to spend as much as $2000, or perhaps even more, from their own pocket to participate.

We hope that you find this informative. If there are topics you would like to see covered, let us know.

Bob Dalrymple, Head
QUEEN’S GEOLOGY REUNIONS

CALGARY

Calgary has the largest concentration of Queen’s Geology alumni anywhere in the world. Because of this, the Geology Council has instituted an Annual Reunion there. Two have been held since the last Newsletter was distributed (September 27, 2003 and October 1, 2004). Both were hosted by Roger Smith and his wife, Lorna, at their home in Springbank. The first reunion attracted more than 100 alumni and friends, while the second was slightly smaller. Attendees included graduates ranging from the 1950’s to the 2000’s. A number of Queen’s professors made the trip west to attend the reunions. Al Gorman, Bob Dalrymple and Mike Doggett attended both, while Herb Helmstaedt, Noel James and Gema Olivo each attended one of them.

In keeping with Queen’s tradition, they were BYOB affairs, but Roger and Lorna had a seemingly endless supply of hors d’oeuvres catered. People had a wonderful time reminiscing with old friends and new acquaintances. Al Gorman was clearly the center of attention: it continues to amaze one and all how much he remembers about almost every single person!! Stories were swapped until late into the evening, with the die-hards, including Al Gorman, not leaving until nearly midnight. For a selection of pictures, see below.

There will be another reunion in Calgary in 2005, probably on Saturday October 1st: keep your eyes open for announcements. If alumni in other locations would like to organize a Queen’s Geology Reunion in your area, let the Department know and we will do what we can to help.

VANCOUVER

More than 40 Queen’s Geology grads turned out to meet with old friends and classmates at a gathering in Vancouver on January 23, 2005. This gathering marked the fifth consecutive year of Queen’s people meeting at the Cordilleran Mineral Round Up to enjoy pizza, beer and old stories. Mike Doggett represented the Department. Special thanks to Jane Wynne (B.Sc. ’77) for providing the local organization and motivation.

(Continued on page 4)
Queen's Geology Reunions (Continued from page 3)

TORONTO

The Department held its third alumni gathering in as many years at the Prospectors and Developers Association of Canada (PDAC) annual meeting in Toronto. More than 100 alumni and friends of the Department met in the Intercontinental Hotel, on Tuesday, March 8th, 6:30-8:30 pm, to reminisce. The group included a number of our current undergraduates, who were attending the PDAC in the hopes of finding summer and/or longer-term jobs. Several current and retired professors also attended. There was a cash bar; pizza was provided by the Department. A wonderful time was had by everyone. Thanks go to Mike Doggett for organizing this successful event.

RETIREMENT PARTY FOR ALAN CLARK AND HERB HELMSTAEDT

At the end of January, the Department held a party to honour Alan Clark and Herb Helmstaedt, both of whom retired at the end of June last year. They have 65 years of combined service to the Department and their involvement continues, as both have graduate students and will be involved in other ways, such as teaching graduate courses and taking a role in Departmental fundraising initiatives. More than 60 departmental colleagues and former students attended the party. Each retiree was feted with a light-hearted series of photos and stories that highlighted various aspects of their long careers, and received gifts from the Department. A Symposium entitled "From Cratons to Carats: A Symposium to Honour the Career of Herwart Helmstaedt" is being held at the GAC-MAC Annual Meeting in Halifax this coming spring (May 15-18) to honour Herb. There will undoubtedly be both formal and informal celebrations. If you are going to be there, be sure to join the fun!

"THANK YOU"

The Department extends a sincere "thank you" to those alumni and friends who made a donation over the last year. Nearly 75 individuals and/or companies made a donation to one or more of the Department's activities during 2004, for a total contribution of nearly $70,000. The largest single component consists of corporate donations to support our M.Sc. program in Mineral Exploration. Smaller donations by individuals (mainly in the range of $50-$1000) totaled more than $15,000 and were used mainly to support our field studies program and other educational activities, including minor upgrades of our teaching labs.

THANK YOU everyone!! Your generosity makes a big difference to the quality of the programs we offer our students.
TWO QUEEN’S PROFESSORS REACH 50-YEAR MILESTONES

Dr. Ray Price: A Special Session in honour of Dr. Ray Price was held at the 2004 Annual Meeting of the Geological Society of America. The session was entitled “Whence the mountains? New developments in the tectonic evolution of orogenic belts: Celebrating the dynamic career of Raymond A. Price at the 50-year mark”.

Dr. Al Gorman: 1955 was a very good year! That was the year that an eager young new Lecturer named Alan Gorman arrived at Queen’s. He still didn’t have his Ph.D. from McGill, but he completed that in short order. Right from the start, his irreverent attitude rubbed some of the more straight-laced professors (e.g. Ed Hawley) the wrong way, but the students loved him. Now, 50 years later, Al is still as mischievous and the students still love him. Over the years, he has taught more than 10,000 students. The most amazing thing is that he remembers most of them! Today, Al Gorman is still teaching his Airphoto Interpretation course (GEOL 333).

Remember that blurry field with the white dots in ordered rows... anybody should be able to deduce that it was obviously a cemetery! No apple trees on the nose of a drumlin... has to be clay till. The questions, and jokes, haven’t changed much; neither has Al's love of teaching. Al celebrated the approaching anniversary by going to the North Pole twice this past summer, as a geological interpreter on a Russian nuclear-powered icebreaker cruise ship.

The Department is grateful to have counted Al as one of its own for all these years. We are planning something special to honour him, probably in association with the 2005 Homecoming next September (23rd to the 25th), about the time of his 80th birthday. Stay tuned for more details.

AWARDS AND ACCOLADES

Drs. Mark Diederichs and Gema Olivo have each received a Premier’s Research Excellence Award (PREA). This award is given to outstanding young researchers by the Ontario Government, normally within the first eight years of their university appointment, and gives each of them $100K for the support of graduate students or post-doctoral fellows. The research projects for which they received their awards are: Dr. Olivo– “Genesis of hydrothermal gold deposits” and Dr. Diederichs– “Scaling of Applied Damage Mechanics and Yield Models for Brittle Rockmasses”.

Dr. Kurt Kyser has been awarded the prestigious Queen’s University Prize for Excellence in Research in 2003. This prestigious award is given to two people each year for major research contributions. Dr. Kyser received his award at the fall convocation and gave a public lecture on his research, highlighting how isotopes could be used for such diverse things as unravelling the events associated with the “Snowball Earth” global glaciation and tracking environmental change in southeastern Ontario using tree rings. Kurt Kyser has also been named as one of five new Queen’s Research Chairs, the internal equivalent of the national Canada Research Chair program. Dr. Kyser is considered one of the most innovative stable-isotope scientists in North America, and has established one of North America’s leading isotope research facilities in the basement of the Bruce Wing, called the Queen’s Facility for Isotopic Research (QFIR). Pictures were provided in the last Newsletter.

Dr. Mark Diederichs received the Colloquium Award from the Canadian Geotechnical Society. The Colloquium Award provides funding for a commissioned work financially supported by the Canadian Foundation for Geotechnique. It is awarded annually to a member of the Canadian geotechnical community and its purpose is to provide information of a particular interest to Canadian geotechnique and to provide encouragement to a younger member of the Society.

Dr. Jean Hutchinson received the John Franklin Award from the Canadian Geotechnical Society. The award is based on an outstanding technical contribution to the application of the principles of rock mechanics and/or rock engineering in civil, mining or petroleum engineering.

Dr. Mike Doggett has been named the 2005 International Exchange Lecturer by the Society of Economic Geologists. In an attempt to put the “economic” back in economic geology, the SEG has gone outside the usual academic sphere of economic geologists to focus on the mineral economics side of economic geology. During the year, Mike will give talks in Argentina, Australia, Brazil, Canada, Ireland, and the United States.

Dr. John Hanes has received the First Year Teaching and Learning Award from the Faculty of Applied Science. This award was given for his outstanding work in the course APSC 151 “The Earth’s Physical Environment”. John deserves special credit for the effort that he puts into this...
Awards and Accolades (Continued from page 5)

course because it is responsible for the relatively large size of our Geological Engineering program.

Dr. Vicki Remenda has received the Golden Pillar Award. Golden Pillars are given out annually by the Engineering Society, the campus organization representing all engineering students, to recognize faculty and staff members who have made an outstanding contribution to students’ educational quality.

Thomas Bissig (Ph.D. ’01), together with Drs. Alan Clark and Jim Lee received the Brian I. Skinner Award for 2003 from the Editorial board of the journal Economic Geology. This award is presented annually to the authors of the paper that is judged to be most innovative and is expected to have a significant impact on the science of economic geology.

Duncan MacKay (M.Sc. student with Dr. Bob Dalrymple) won the “Best Student Core Presentation” Award from the Canadian Society of Petroleum Geologists for his display entitled “The influence of antecedent passive-margin structure and stratigraphy on foreland-basin depositional systems, Peace River area, northwest Alberta”.

Suzanne Powell (B.Sc. ’02; now an M.Sc. student under the supervision of Dr. Vicki Remenda) has received the Educational Excellence Teaching-Assistant Award. This award is given out annually by the Engineering Society to recognize a teaching assistant who has "gone the extra mile," showing genuine enthusiasm and interest in their students.

Grant Bishop (B.Sc. ’04, Geological Engineering) has received the Tricolour Award from the University. This award, which is one of the most distinguished given to graduating students, is given to select students who have “made inestimable contributions to the University community in non-athletic extra-curricular activities”, as judged by their fellow students. In addition, Grant, who is now an M.Sc. student under the supervision of Dr. Vicki Remenda) has received the Educational Excellence Teaching-Assistant Award. This award is given out annually by the Engineering Society to recognize a teaching assistant who has "gone the extra mile," showing genuine enthusiasm and interest in their students.

Claudio Andrade (M.Sc. student under the supervision of Dr. Heather Jamieson) and his coauthors won First Prize for his poster display at the Annual Meeting of the Canadian Light Source, the new synchrotron research facility in Saskatoon. The title of his poster was “Synchrotron-based microXRF mapping, microXANES and microXRD of arsenic-rich subaqueous gold mine tailings and lacustrine sediments from Yellowknife Bay, NWT, Canada”.

Andrea Catley, Amanda Lockhart and Adam Shales (B.Sc., ’04, Geological Engineering) won First Prize in the Canadian Geotechnical Society's Undergraduate Group Design Project Competition. The title of their winning project was “Vimy Ridge Memorial Site, France: Void Detection and Subsidence Assessment”. The Faculty Advisors were Drs. Jean Hutchinson and Gerhard Pratt, with the assistance of Dr. Mark Diederichs. The industry sponsor was Dillon Engineering Limited. See more on the undergraduate design projects on page 10 in this Newsletter.

DEPARTMENTAL HISTORY: THE NINTH DECADE 1974-1984 (written by Al Gorman)
**Neoproterozoic Newsmakers** The Neoproterozoic Era (ca. 1000-542 Ma) has been the focus of intensive world-wide research in recent years because it is a time of some of the most important events in earth history, notably the extreme climatic changes that included the so-called “Snowball Earth” when glaciers covered all land areas on Earth, and the first known multi-celled animals appeared. The Queen’s Geology Department has one of the foremost groups of Neoproterozoic researchers in the world and their publications have been the subject of considerable media coverage over the last year.

**Dr. Guy Narbonne** has been in the news extensively for two significant discoveries and a major synthesis. In the first, Guy reported on what are the oldest-known complex organisms so far discovered anywhere in the world, with a well-constrained age of 575Ma. These metre-long, bottom-attached fronds occur on bedding planes near the world-famous Mistaken Point area in eastern Newfoundland (which is on its way to becoming a World Heritage Site as a result of these fossil discoveries). Soon after, he published a description of exquisitely preserved Ediacaran fossils from the northern part of the Avalon Peninsula, Newfoundland. The spectacular preservation of these fossils demonstrates that these earliest animals had a modular construction composed of at least three orders of self-similar frond-like elements (see photo below). This morphology is unlike anything else ever seen and suggests that these early animals are an extinct line from which all other animals evolved. In addition, Guy was part of an international group of researchers who have been working for more than a decade to establish a new geological period in the latest part of the Neoproterozoic. Their proposal to establish the Ediacaran Period, which occurs immediately before the Cambrian Period, has now received formal approval. This is the first new addition to the Geological Time scale since the naming of the Ordovician Period in 1879! (We can hear the groans of all those students who have to learn one more name). *Discovery Magazine*, which produces an annual list of the 100 Most Important Scientific Discoveries ranked the publications relating to the Ediacaran Period and the exquisitely preserved fronds as 42nd and 46th on the list. Guy’s work has been the subject of an article in *Canadian Geographic* and numerous television, radio and newspaper reports. The delicate fronds were also featured on the cover of the influential magazine *Science.*

**Dr. Noel James**, together with Drs. Guy Narbonne, Bob Dalrymple and Kurt Kyser, have also received publicity for their discovery of the rare mineral ikaite (a hydrated form of calcium carbonate) in Neoproterozoic rocks that predate the Snowball Earth glaciation. This mineral, which only forms at temperatures below 7°C, occurs in shallow-water deposits that formed in equatorial latitudes and indicates that the global ocean must have been abnormally cold. This discovery has important implications for any theory that attempts to explain the cause of the global glaciations that occurred sometime later. Although the cause of this glaciation is not yet known, it is clear that the Earth had cooled significantly for a long period in advance of the actual glaciation.

**Isotopes and Birds** Dr. Kurt Kyser and the Queen’s Isotope Research Facility (QFIR) have been working with Ph.D. student Ryan Norris and Dr. Laurene Ratcliffe of the Biology Department at Queen’s to determine where small songbirds called “redstarts” moult and spend their winter. This is done using the carbon isotopes in the birds’ blood and feathers, because of latitudinal fractionations of carbon isotopes. These studies are providing unprecedented new insight into the factors that control reproductive success and will have important implications for the protection of bird habitats.

**Mining News** Dr. Mike Doggett was interviewed by the MiningNews on the value of flow-through shares in the stimulation of the mineral industry. He has also been quoted in the Northern Miner about the shortage of geology graduates, which is a serious problem for the mineral industry as mineral prices rise and aging staff is not being replaced by younger geologists.

**Dinosaurs in BC** Mike Boddy (B.Sc. ’04) appeared on CBC Radio in connection with a discovery of fossilized dinosaur tracks that he made in the area north of Terrace, British Columbia, during a routine survey with the British Columbia Ministry of Energy and Mines. These trackways are the first evidence so far indicating that dinosaurs were able to spread westward from Alberta through the Rocky Mountains.

**Miller Museum Improvement** Museum Curator Mark Badham (B.Sc. ’86; M.Sc. ’97) has been featured in two local Kingston newspapers, in reports marking the unveiling of a large new display “The Geology of the Kingston Area” that replaces the 30-year-old display along the main corridor in
The Department has seen a substantial turnover of faculty in the last ten years. Fifteen faculty members have retired or moved elsewhere over this period, while ten new people have arrived. Consequently, there has been a substantial reduction in the number of faculty members, and the research and teaching specializations of faculty have evolved. Overall, we have lost expertise in our traditional strengths (petrology and economic geology), but we have gained expertise in environmental geology and geotechnical engineering. All of our recent appointments have been made with an eye to retaining a coherent focus, by hiring individuals who can collaborate with others in the Department. As a result, the Department remains a vibrant research community, which allows us to offer exceptional undergraduate and graduate programs in a wide range of fields.

We recognize five primary research groupings in the Department:

**ECONOMIC GEOLOGY AND MINERAL EXPLORATION**
- M.S. Diederichs, P.Eng., Assistant Professor
- M.D. Doggett, Associate Professor
- T.K. Kyser, Professor
- G.R. Olivo, P.Eng., Assistant Professor

**PETROLOGY AND STRUCTURAL GEOLOGY**
- J.M. Dixon, Professor
- L. Godin, Assistant Professor
- R.C. Peterson, Professor

**SEDIMENTOLOGY, SEDIMENTARY GEOCHEMISTRY AND PALEOBIOLOGY**
- R.W. Dalrymple, P.Geo., Professor
- N.P. James, Professor
- T.K. Kyser, Professor
- G.M. Narbonne, Professor

**GEOPHYSICS AND GEOCHRONOLOGY**
- J.A. Hanes, Associate Professor
- J.K.W. Lee, P.Eng., Associate Professor
- R.G. Pratt, P.Eng., Professor
- C.J. Thomson, Professor

**APPLIED GEO-ENVIRONMENTAL SCIENCE AND GEOTECHNIQUE**
- M.S. Diederichs, P.Eng., Assistant Professor
- D.J. Hutchinson, P.Eng., Associate Professor
- H.E. Jamieson, Associate Professor
- V.H. Remenda, P.Eng., Associate Professor

The following paragraphs provide brief synopses of the research interests of our faculty members. Additional details can be found on the Departmental web site—http://www.geol.queensu.ca.

Dr. Bob Dalrymple is a clastic sedimentologist and sequence stratigrapher whose primary interest is coastal and shelf depositional systems, with particular emphasis on tide-dominated environments. Current projects include modern tidal depos-
The Department Today
(Continued from page 8)

its in South Korea and Miocene incised valley successions in southern France. Student projects are examining the influence of subtle structural movement on sandbody locations in the Cretaceous of Alberta. He also works closely with Drs. James and Narbonne on Neoproterozoic paleoenvironments and their associated Ediacaran fossils.

Dr. Mark Diederichs is a geotechnical engineer specializing in the mechanics of tunnels and natural rock faces. Ongoing research projects include work on the longest, deepest, and most expensive tunnel in the world (between Switzerland and Italy) and a superhighway in northern Greece. Together with Jean Hutchinson of our Department, he has published the definitive book on the technique of cablebolting, the standard technique for the stabilization of tunnels and rock faces. More information on Mark’s research can be found at http://www.geoeng.ca/Newsletter.htm.

Dr. John Dixon, who is currently serving as Associate Vice Principal (Academic), is a structural geologist who specializes in the use of centrifuge models to understand crustal-scale geological structures, focusing particularly on the development of foreland fold and thrust belts. His research is directed at providing aids for hydrocarbon exploration and is well funded by the petroleum industry.

Dr. Mike Doggett is a mineral economist and policy analyst who does research on the economic, demographic and regulatory factors that influence decision-making in the mineral industry. Recent projects include such topics as demographic studies of Canadian exploration geologists, the influence of acquisitions and mergers on the profitability of the mining industry, and the relationship between mineral policy and taxation legislation.

Dr. Laurent Godin, our most recent appointment, is a structural geologist. His primary research is in the Himalaya, attempting to understand the processes responsible for the rapid extrusion of high-grade metamorphic rocks from depth. He is also involved in a multi-university initiative that is investigating the linkage between the present-day stress distribution in the North American plate, deep-seated structures in the Grenville basement beneath Ontario, and the potential for neotectonic fault movement.

Dr. John Hanes is a geochronologist whose research utilizes ⁴⁰Ar/³⁹Ar geochronology to determine the tectono-thermal history of Precambrian orogens, including the Superior and Grenville Provinces of the Canadian Shield. He is in the process of developing a systematic set of new radiometric dates for the Superior Province that will provide new insights into this important area.

Dr. Jean Hutchinson is a geotechnical engineer with a specialization in the mechanics of both unconsolidated materials ("soils") and rock faces. With Mark Diederichs, she wrote the industry-standard text on cable-bolting technology. Ongoing research includes investigation of the stability of the tunnels at the Vimy Ridge site (WW1) in France and the development of a GIS-based approach to monitoring slope stability and landslide occurrence in the Canadian Cordillera. More information on Jean’s research can be found at http://www.geoeng.ca/Newsletter.htm.

Dr. Noel James is a world-renowned carbonate sedimentologist and holds a Queen’s Research Chair. His recent and current research has focussed on three main topics: the nature and controls on the accumulation of carbonate sediments in non-tropical settings; the origin of carbonate reefs in the Precambrian; and the record of environmental changes that lead up to and followed the global glaciation that occurred in the latest Proterozoic (“Snowball Earth”).

Dr. Heather Jamieson, who has a half-time appointment in the School of Environmental Studies, is an environmental geochemist specializing in the low-temperature aqueous reactions that occur within mine tailings (both sulfide ores and those related to the diamond mines in northwestern Canada). She explores the mineralogical and chemical reactions that occur, including examination of the speciation of potentially toxic elements using synchronton radiation. More information on Heather’s research can be found at http://www.geoeng.ca/Newsletter.htm.

Dr. Kurt Kyser, who holds a Queen’s Research Chair, is an isotope geochemist with very broad interests that focus on the use of isotopes as tracers and indicators of (bio) geochemical processes. He is an active collaborator with a wide range of individuals and has made important contributions to such diverse fields as the origin of uranium deposits, the chemical oceanography of the Cretaceous western-interior seaway, and environmental issues such as bird migration and the use of tree rings as environmental monitors.

Dr. Jim Lee is a geochronologist with special interest in the ⁴⁰Ar/³⁹Ar and U/Pb systems. His research has three main aspects: measuring diffusion rates of radiogenic elements in geochronologically important minerals, examining the mechanisms of atomic transport other than solid-state diffusion, and the application of the principles of diffusion to geologic problems. He works closely with our mineral-deposits geologists to determine the nature and timing of the geochemical processes that lead to the formation of ore deposits, and with tectonists to deduce the thermal history of orogenic terrains.

Dr. Guy Narbonne is a paleontologist and sedimentary geologist who specializes in the paleobiology of the Earth’s oldest animals (the Ediacaran fauna), focusing particularly on superbly exposed successions in NW Canada and Newfoundland. He has demonstrated that complex ecological interactions (e.g., tiering) evolved very early, and he has made fundamental contributions to our understanding of the taxonomic affinities of these enigmatic organisms. He has also worked closely with James and Dalrymple to explore the evolution of the Neoproterozoic world.

Dr. Gema Olivo is a mineral-deposits geologist with particular interest the processes that produce hydrothermal ore deposits, within special attention to precious-metal deposits (e.g., gold and the platinum-group elements). She has research projects in a wide range of geologic settings, ranging from Archean greenstone belts, through Proterozoic example. (Continued on page 10)
The Department Today (Continued from page 9)

gles, to more recent deposits in Cenozoic mineral belts. Her ideas on the timing of metal mobility (late vs. early) are beginning to gain wide attention in both academe and industry.

Dr. Ron Peterson is a mineralogist whose research is currently focused on complex and unstable sulphate minerals that occur in mine tailings and coal mines. Because of the extreme geochemical environments in which some of these minerals occur (including negative pH values!), he has developed a novel environmental chamber that mounts on our X-ray diffraction instrument so they can watch crystal structures change as environmental conditions are altered.

Dr. Gerhard Pratt is an exploration-scale seismologist with extensive experience in the petroleum industry. He has pioneered the use of inverse methods for the analysis of seismic data, which allows computationally inexpensive modeling of exploration-seismic data. He has utilized this approach to investigate a wide range of geological situations, including the complex case of deformed strata around salt domes. One of his most recent projects has been the analysis of seismic data collected during the Mallik gas-hydrate production tests in the Mackenzie Delta.

Dr. Vicki Remenda is a groundwater geologist. In the past, her research concentrated on understanding the hydrogeology of clay-rich tills (aquitards) in western Canada. These supposedly impermeable units aren't so everywhere because of the occurrence of brittle fractures. She is investigating the possibility that the fractures are caused by hydro-fracturing caused by high sub-glacial pore pressures. At the present time, she is shifting her research to an investigation of the role that wetlands play in mediating the exchange of water between lacustrine and groundwater reservoirs.

Dr. Colin Thomson is principally a theoretical seismologist specializing in the geometrical properties of waves in inhomogeneous, anisotropic and dissipative media. His ultimate goal is to understand at the most fundamental level the way in which energy is propagated through natural rocks. In addition, he has been one of the principals in the formulation and development of the POLARIS/POLO seismic monitoring network that is designed to investigate the structure and stress state of the crust in Canada.

In addition, several of our Emeritus Professors continue to be active in research:

Dr. Dugald Carmichael (metamorphic studies),
Dr. Alan Clark (metallurgy of the Andes),
Dr. Herb Helmstaedt (structural evolution of the Superior Province; diamonds),
Dr. Tom Pearce (volcanic rocks),
Dr. Ray Price (evolution of Canadian Cordillera and the Siberian connection) and
Dr. Peter Roeder (the geochemistry of spinels).

We are also in the process of searching for a Canada Research Chair who would further strengthen our economic geology, petrology and/or sedimentary clusters.

FOURTH-YEAR GEO-ENGINEERING DESIGN PROJECTS

For the last few years, approximately two thirds of our undergraduates have been in the Geological Engineering program. Several years ago, the Department revamped the curriculum to meet the expectations of the Canadian Engineering Accreditation Board. One of the innovations was the introduction of two "engineering design" courses in the fourth year. All GeoEng students must take these courses that continue throughout the fall and winter terms. In these courses, the students work in small groups to design a solution to a geological-engineering problem, based on extensive research about the subject in question. The course is designed to mimic the situation that would occur in a real-world work environment. The Department thanks alumnus Steve Rose (B.Sc. '81; Malroz Engineering, Kingston), who works with faculty to oversee part of the course. Last year, the titles of the projects that were completed were:

- "Designing a Framework for Evaluating Long-term Anthropogenic Impacts on Local Wetlands" by Grant Bishop, Debbie Lin and Jessica MacIlvineen
- "Oak Ridges Moraine: Excavating in Artesian Conditions" by Denise Cleverdon, Stephanie Grell, Karianne Taylor and Ricky Wasfy
- "Vinny Ridge Memorial Site: Void Detection and Subsidence Assessment" by Adam Shales, Andrea Catley and Amanda Lockhart
- "Royal Vault Ni-Co-PGE Project" by Kate McCutcheon, Katie Anne MacInnis and Victoria Sterritt
- "Subsurface Structure and Groundwater Investigation of the Belle Park Wetland" by Lesley Minty, Jennifer Stanners and Alexa Ranson
- "High-speed Train Bridge at Kingston Mills" by Andrew Bandler, Zachariah Boerner and Hugh Southee
- "Long-term Water Quality Prediction at the Ekati Diamond Mine" by Natalie Maurer, Jackie Shaw and Greg Siiskonen

Students do first-rate jobs on their projects, to the satisfaction of the companies and/or individuals who propose the project and to whom the results are delivered. The quality of the student's work was recognized by a first place award from the Canadian Geotechnical Society for the report prepared by the team comprising A. Catley, A. Lockhart and A. Shales. If you have ideas for future projects, please let us know.
Al Gorman writes:- Most of this update was prepared in late 2003, so some of the news is out of date. Also, I had a computer crash that wiped out most of the news collected in 2004. I apologize to anyone who sent me news, but does not find it recorded below. And yes, I would like to get news from several hundred alumni, so that I have several items for every year from 1935 on.

1947

Donald H. Yardley, B.Sc., Mining, 1941; M.Sc., Geology, 1947; Ph.D., 1951, Minnesota, is now living in St. Paul, MN. He supports Queen's with an annual contribution to the Science Technical Equipment Fund.

1957


Malcolm Wright, B.Sc., Eng., M.Sc., 1958, Queen's, Ph.D., 1961, on graduation worked for 5 years for Cerro de Paso in Peru. After two years with Kennecott evaluating Mexican prospects, he returned to Cerro de Paso evaluating prospects worldwide. Malcolm joined Manito Hall, 1971, became CEO in 1982, and retired in 1992 to pursue other varied interests, including a major effort in wine making. He and Millie live in Winnipeg, close to 2 of their 4 grandchildren. Noticing that there was no class picture of Science '57, he copied and mounted one he owned, and sent it in to hang with the other owners in Miller Hall.

Rick Herzer, B.Sc., Hon., M.Sc., U.B.C., Ph.D., Victoria U., Wellington, N.Z., has been with the N.Z. Geological Survey, and it's successor, the Institute of Geological and Nuclear Sciences, since 1979, working in marine geology and geophysics in the area, and lately on continental shelf claims by New Zealand. Pleas for news are being heeded, first I've heard from Rick in 35 years.

1966


Bob Thompson, B.Sc., Hon., Ph.D., 1972, Queen's, has been with the GSC since 1974, doing bedrock mapping in B.C., and is presently located at the Sidney Office. Although Captain of the hockey Gaels in 1970, he was taking it easy riding his bike (to win the 2003 Masters road cycling event).

1969

Bob Cochrane, B.Sc., Eng., recognized me in a hotel lobby in Hamilton on Boxing Day. He reports that he is working in southern Ontario with Pete George. B.Sc., Hon., 1964.

1970

Bruce Downing, B.Sc., Hon., M.Sc., 1974, Toronto, worked in exploration till 1983, when he co-founded Geonomic Systems, a software company specializing in explorator land mining. He has published papers on a wide range of geology-associated subjects. He has been involved in education as "geologist in the school", and was awarded the Chris Westerman Award in 1997 by the BC Professional Engineers and Geoscientists.

1971

Roger Smith, B.Sc., Eng., M.Sc., Hon., 1978, and his wife Lorna hosted, for the second year in a row, a Calgary Get-Together for the Queen's geology crowd, at his home west of the city. About 70 people were present. Attending from Queen's to meet alumni were Bob Dalrymple, Mike Doggett, Gemma Oliveira, and yours truly.

1972

George Pemberton, B.Sc., Hon., M.Sc., 1976, Ph.D., 1979, McMaster, was awarded the Research Chair in Petroleum Geology by NSERC. He also received the R. C. Moore Medal for Excellence in Paleontology from the SEPM at its Salt Lake City meeting. He is presently a Professor at the University of Alberta.

1973

Mike (Cowboy) Stewart and Bruce Jeffrey, B.Sc. Eng., represented geology on the Science '73 committee organizing their 30-year home-coming. Cowboy has been taking things easy since Westcoast Energy was bought out in March, 2002. Bruce is with RBC Dominion Securities in Kingston, awaiting the resurgence of the stock market.

1974

Bob Moore, B.Sc., Eng., reports his son Brian (Civil, '05) is playing centre for the Queen’s Golden Gaels Hockey Squad. Memory says Brian must be a lot more talented than his old man!

1976

Pat (Wanless) Watson, B.Sc., Hon., M.Sc., 1980, U.B.C., and her husband Ken Watson, Eng., '76, are now living along the Rideau. They started working in the Yukon, Pat with the government, Ken as a mine geologist. Then to Timmins and Falconbridge in 1989. In 1995, a final move to the Rideau, to avoid a transfer to Toronto (that I can understand, mes amis). Ken now constructs web pages commercially, does volunteer work with the Rideau Canal system, and writes books about the canal. Pat is very active in the Girl Guides, locally and nationally.

1978

Gary Gauthier, B.Sc., Eng., spent 13 years with Denison Mines before the ore ran out, then switched to aerospace in 1991 with Spar (now MD Robotics) of Brampton, working on projects associated with the Space Station. Last year, with the Shuttle fiasco, the project stalled, and senior engineers were laid off. In August, 2004, Gary, Joan and family moved to Calgary.

Peter Richards, B.Sc., Hon., M.Sc., 1982, runs a groundwater consulting firm in Sudbury. In January, 2005, he started teaching a groundwater course to Laurentian University students for the 11th time.

1979

Neil Stalport, B.Sc., Hon., L.L.D., 1990, Dalhousie, after starting in the oil industry, then moved to the Alberta Energy Resources Conservation Board. After a decade of organizing conferences for industry, he is the Calgary "Program Developer" for the Conference Division of the Conference Board of Canada. He is a non-practicing member of the Alberta Bar.

1980

Isobel (Wolstone) Tucker, B.Sc., Hon., M.Sc., Dalhousie, and husband Greg are homesteading in the wilds of Prince George, B.C. She's been kept busy keeping up with events involving their daughter Sarah, and also in the increase in her petrographic consulting business. On the slack side, fewer bears left calling cards on their lawn, which makes mowing less distasteful.

1981

Greg Tucker, B.Sc., Eng., when not keeping things running at Northgate's Kemness mine, exercises his talents at home. Isobel reports that
he is skilled at mangling wood in the garage in woodworking projects.

1982

Lyn Anglin, B.Sc., Hon., M.Sc., Memorial, Ph.D., Carleton, is now Associate Director, Pacific Division, GSC, in Vancouver. She recently obtained her pilot's licence.

Bruce Evans, B.Sc., Hon., has started his own airborne geophysics company, Firefly Aviation, in Calgary. I hear he flies and owns a Cessna 172.

1983

Chris Thompson, B.Sc., Eng., was with Chevron through 2001, working in California, California and Norway on computer studies of 3-D data sets and multi-component seismology. He then joined 4C Exploration, a small oil and gas start-up, working mainly in the Gulf of Mexico.

Mike Young, B.Sc., Hon., has taken up the position of Exploration Manager with Cazaly Resources Ltd. in Leererville, West Australia.

1994

Lynn Bailey, B.Sc., Hon., and her husband Kent Carter, have a son, Wesley James, born in May, 2004, in Brazilia, Brazil, according to a report from Ron Peterson.

Katherine (Hopkinson) Roblin, B.Sc., Eng., married Darren Roblin, B.Sc. Eng., in August, and also got linked to the internet at home, something I have yet to do. She is still working for O'Connor Associates in Calgary.

1997

Laurence Arcand, B.Sc., Eng., has moved to Whitby, where he is working for TSH Consulting Engineers and Architects. He is project manager for their Subsurface Utility Engineering service, which locates and maps out buried utility lines. His company works in a partnership with the major supplier of these services in the U.S., TBE Group of Clearwater, Florida.


Shelley Nix, B.Sc., Eng., had been working for Slumberger in Texas, then moved to New Orleans. She hopes to move to Denver to work alongside her fiancé, Jeff Cyre, a U. of A. grad

1998

Ryan Fraser, B.Sc., Hon., M.Sc., Calgary, is using his knowledge of structure to solve the Central Foothills "Dejeuner de chien" for Shell. With a new home and a hungry Great Dane named Fernie, Kim and Ryan are not throwing money around needlessly.

Rob MacNaughton, Ph.D., 1998, and his wife Colleen report the arrival of their first child, Georgina Winnifred. Rob is still at the GSC Calgary office, working along the Mackenzie and contributing to educational outreach in Northern Canada.

2000

Robin Faququier, B.Sc., Eng., is working for Golder in Calgary, and working part-time on an M.Sc. at the University of Calgary. He married classmate Erin Lamb.

Erin (Lamb) Faququier, B.Sc., Eng., is working in Calgary for EnCana. She married Robin in August, 2002.

2002

Darrelle LeHouillier, B.Sc., Eng., reported that he is in second year Law at UBC.

Amy Kerckhoff, B.Sc., Hon., is working for Hunter Dickinson at the Pebble CuAu deposit in Alaska. She is ably assisted by Dr. John Payne, B.Sc., Eng., 1961.