



ATLANTIC GEOSCIENCE SOCIETY
NEWSLETTER

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This year's winner of the AGS award at the Photographic Guild of Nova Scotia is by John William Webb. His image, entitled "Gliding Rock", is from Death Valley, California. Can readers offer suggestions as to why this rock glided --- was it magic, divine intervention, visitors from outer space, or some subtle geological process?

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The deadline for submissions to the next issue is ,
15 June 2008 Please send articles or feedback to:

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Production of this newsletter is by Nelly Koziel.

EDITORIAL

Unsung Heroines and Heroes

Newsletters are a vital source of communicating within any society but they do not magically appear without any effort. I was reminded of this when working on the present issue, in the absence of the editor, John Shimeld, who is enjoying life in the north. He’s lucky since when I last heard from him the temperature was a balmy -40° Celsius (although at that temperature it doesn’t matter what scale you use).

John and Nelly Koziel produce four AGS newsletters each year, regardless of all their other responsibilities. That, as I can attest from my limited experience, is a lot of work, which I and many others take for granted. But that’s the nature of the beast in all societies, including the Atlantic Geoscience Society. To rectify our taking volunteers for granted, I would like to highlight some of the individuals who make AGS such a successful operation and, at the same time, apologise for those I inadvertently omit.

Recognising volunteers in AGS gained tremendous momentum with the introduction of the Distinguished Service Award, now fittingly called the Laing Ferguson Award, after one of the Society’s most distinguished members. All the recipients of this Award have made outstanding contributions to the growth of the Society. By growth, I do not mean an exponential increase in membership but something much more important. And that is the vitality of the Society and its impact on the health of geology in the Maritimes and in raising the general public’s awareness of our science.

Apart from the recipients of the Laing Ferguson Award, there are numerous other unsung AGS heroines and heroes, who have not received any recognition but whose continuing involvement is essential. Let’s start at the beginning. Without Council’s guidance, very little would take place of a meaningful nature. This last year, the Society has been especially fortunate in having a committed Council ably directed by Mike Parsons. Council is also fortunate to have such stalwarts as Ken Howells, who has served as treasurer for as long as I can remember (and that’s a long time), and Rob Raeside, who continues to be its conscientious secretary.

The modern era has led to some significant changes in how societies operate, especially in the field of communications. AGS is no exception. It has a superb website that is regularly updated and provides a record of all the Society’s activities and products, including the latest newsletter and earlier issues. I’m surprised at how often I refer to the newsletters and, now that I don’t need to file them, I can’t lose them. I would like to thank Joe MacIntosh and all his helpers and contributors for the excellence of the AGS website and for the continual updates.

Next in line for recognition, but often toiling in the shade, are the various committees that provide much of the momentum for the Society’s outreach activities. The first that springs to mind is the Education Committee, which has produced an impressive series of outreach products over the 18 years of its existence. But this Committee is not the oldest of the AGS quintette. That honour goes to the Video Committee, on which Dave Frobel and David Hopper have served for over 23 years. Other active committees are the EdGEO Committee, the Products Committee and the Publicity Committee. In 1994, AGS ran its first EdGEO Workshop for teachers, which necessitated setting up the

EdGEO Committee that continues to organize yearly gatherings. The Products Committee beavers away quietly without making too many waves, but keeps a close watch on AGS funded activities. This is one of the reasons the Society has remained solvent over the years. Now helping to raise the profile of AGS is the Publicity Committee, whose responsibilities are constantly expanding with each passing year.

Recognizing the role of the formal committees in a society is relatively easy but an informal group can toil in a vacuum. One such includes the enthusiasts, who organize the “Beyond The Last Billion Years” talk series. This series, now in its seventh year, has been an outstanding success. The talks, which are usually held at the Nova Museum of Natural History, regularly attract a crowd of more than 50. And what is most rewarding is that many of those attending are not geologists. Much of the success is due to the Nova Scotia Museum, which does an excellent job of advertising the talks and provides the facilities at no cost to AGS. Dustin Whalen is now steering this program and deserves much of the credit for maintaining the enthusiasm.

Often overlooked in the AGS roll of honour is Atlantic Geology. Production of the journal has been an amazing accomplishment, both financially and in terms of quality of submissions. The present triumvirate of editors still includes Sandra Barr and Rob Fensome, but Ron Pickerill has decided to step down after 23 years. Fortunately an equally talented scientist, Simon Haslett, has agreed to serve as a co-editor.

Another major success of the Society has been the running of the annual meetings. The 2008 Colloquium is an example of the need that these fill in the geological community. What else explains the record turnout of almost 220? And who took care of all these registrations? As with many of the other tasks vital to AGS, the person responsible was Nelly Koziel. Nelly also coordinates the sale of all of the Society’s publications, no simple task.

Several others, including all of the members of the Local Organizing Committees and the various subcommittees, deserve recognition for the success of the 2008 Colloquium and previous Annual Meetings. At the 2008 Colloquium, although longer than previous annual meetings, no one complained about the length or the three concurrent sessions. And everyone seemed to enjoy the historical series of photographs, compiled as a PowerPoint presentation by Bill MacMillan. Bill, a long-standing member of AGS, invariably helps out with such tasks as the Society’s newsletters and EdGEO meetings. Many of the photographs shown at the Colloquium and all those taken of the presentations were by Howard Donohoe, who has been the photographer-in-chief and archivist for much of AGS’s existence.

Key volunteers are essential to a society but I have a somewhat broad definition of who are such contributors. I

count the 220 who attended this year’s Colloquium, even those who are not members of AGS. And I consider all subscribers and authors of papers submitted to Atlantic Geology as volunteers. But the most important are all the members, whose dues support the activities of the Society and make it, in my mind, the strongest, most active regional geological society in Canada. Let’s keep it that way.

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AGS ACTIVITIES

Record Attendance at 34th Colloquium of the Atlantic Geoscience Society

On 1-2 February 2008, about 220 earth scientists from the Atlantic Provinces and beyond gathered at the Holiday Inn Harbourview in Dartmouth, Nova Scotia, for the Atlantic Geoscience Society’s 34th Colloquium and Annual General Meeting. Interest in this conference continues to grow, necessitating an early start this year to accommodate 82 talks and 30 poster presentations, including more than one-third submitted by students. This year’s varied technical program consisted of six special sessions, a general session, a Climate Change panel discussion, and a post-conference geochronology mini-course held at Dalhousie University on Sunday, 3rd February. In keeping with AGS tradition, the meeting also featured a busy social program, including a celebration of the Society’s 35th birthday.

The scientific program began on Friday afternoon, with two special sessions, “Mineral Deposits Research”, organized by the Dalhousie-Saint Mary’s Student Chapter of the Society of Economic Geologists and, “Soil Geochemistry”, organized by Terry Goodwin (Nova Scotia Department of Natural Resources) and Michael Parsons (GSC-Atlantic). The latter session was a sequel to a soil workshop held at the 2007 AGS Colloquium in Moncton, New Brunswick. The Special Session provided updates on the extensive soil sampling surveys, which were completed in 2007 across the Maritimes: these were part of the North American Soil Geochemical Landscapes Project (http://ess.nrcan.gc.ca/eh-esh/trinat/index_e.php) and related studies. A general session on “Current Research in the Atlantic Provinces” rounded out the Friday afternoon technical program.

Friday evening featured a well attended Climate Change session with presentations on: the atmospheric perspective (Glen Lesins, Dalhousie); the geological perspective (David Piper, GSC-Atlantic); the coastal geoscience perspective (Don Forbes, GSC-Atlantic); and the importance of engaging the public in the climate change dialogue (Ian Spooner, Acadia). The talks were followed by a panel discussion. This generated

an interesting debate about the role of geoscientists in educating society on the consequences of rapid climate change, as recorded in the geologic record, and strategies that should be adopted to minimize impacts associated with rising sea levels. After the panel discussion, Godfrey Nowlan (GSC-Calgary) provided conferees with an overview of Canada's contributions to the International Year of Planet Earth (IYPE), and highlighted the important contributions by various AGS members in support of outreach initiatives. A celebration of the Society's 35th birthday capped off the evening, including an incriminating slide show of AGS members from the early 1970s to the present.

Saturday morning started off with high winds and rain, but this didn't deter about 30 students from turning up for a GAC®-AGS Student Breakfast prior to the technical sessions. While munching on eggs and bacon, the students were treated to a series of presentations regarding benefits of membership in both GAC® and AGS, NSERC scholarship opportunities (Catherine Vardy, NSERC-Atlantic), career prospects in the minerals (Marcos Zentilli, Dalhousie) and petroleum (Grant Wach, Dalhousie) industries, and the importance of professional registration (Howard Donohoe, Association of Professional Geoscientists of Nova Scotia).



Attendees at the 2008 GAC-AGS Student Breakfast held at the 2008 AGS Colloquium, Dartmouth. Amazingly, everyone was not only awake but extremely alert during this very informative event. Photograph: Howard Donohoe.

Special sessions on Saturday morning included, "Sediment Dynamics, Oceanography and Ecology of the Greater Bay of Fundy", organized by Elisabeth Kusters (Elisabeth Kusters Consultancy) and Gordon Fader (Atlantic Marine Geological Consulting, Ltd.), and, "Geochronology: Timing, Timescales, and Tempo of Crustal Processes", organized by Chris McFarlane, Paul Sylvester and Sabine Schwarz (all of the University of New Brunswick). The technical program wrapped up on Saturday afternoon with the special sessions, "Earth-based Studies of Planetary Surfaces", organized by

Marie-Claude Williamson (Canadian Space Agency) and Lawrence Plug (Dalhousie) and, "Education in the International Year of Planet Earth", organized by Jennifer Bates (GSC-Atlantic) and Heather Johnson (Halifax Independent School). A third, concurrent general session also ran throughout the day on Saturday, with presentations on a wide variety of topics ranging from dendrochronology to igneous petrology to tsunami hazards. Abstracts for all presentations are available online at http://ags.earthsciences.dal.ca/Colloquium_Abstracts/.

At the Annual General Meeting and Luncheon on Saturday afternoon, AGS formally recognized the outstanding contributions of two of its founding members. The membership voted in favour of renaming the Distinguished Service Award, the "Laing Ferguson Distinguished Service Award." Laing served as President of AGS in 1982-1983 and was the first recipient of the Distinguished Service Award in 1989, when he also became the Society's first Lifetime Member. The Society's second Lifetime Membership was awarded at this year's AGM to Graham Williams (GSC-Atlantic), for his outstanding contributions to AGS over more than 35 years. Graham is the author of the AGS's written history (available online at <http://ags.earthsciences.dal.ca/History.php>).



Graham Williams receiving the AGS Lifetime Membership Award from Mike Parsons, outgoing President, at the Annual General Meeting. Graham is considering purchasing an RRSP with his savings, now that he doesn't have to pay the Society's annual dues. Photograph: Howard Donohoe.

Student participation has always been a vital part of the AGS Colloquium. 2008 was no exception, with 24 talks and 16 posters presented by students. A team of judges spent most of the weekend with the unenviable task of trying to identify award winners from a field of exceptional talks and posters. The awards were presented at the annual Saturday night banquet, with the Graham Williams Award for Best Student Poster going to Kieran McDonald of Acadia University for his

display, “A Holocene sedimentary record of the Labrador Current” (co-authored with David Piper and Ian Spooner). The Rupert H. MacNeill Award for Best Undergraduate Student Paper went to Chris Yakymchuk of Dalhousie University for his talk, “Petrology and tectonic significance of coronitic mafic granulites, Southampton Island, Nunavut” (co-authored with Mary Sanborn-Barrie, Joyia Chakungal and Rebecca Jamieson). This year, the Society presented a new award for Best Graduate Student Paper to Samantha Jones of the University of Calgary for her talk, “Acoustic velocity and elastic moduli profiles and corresponding fracture density and orientation patterns in artificially shocked granite: preliminary results” (co-authored with Alan Hildebrand).



GRAHAM WILLIAMS AWARD: *Kieran McDonald, Acadia University, was the recipient of the Graham Williams Award for Best Student Poster. His poster, co-authored by David Piper and Ian Spooner, was entitled: “A Holocene sedimentary record of the Labrador Current”. Kieran is shown accepting the award at the 2008 AGS Banquet from incoming President David Mosher. Photograph: Howard Donohoe.*

A highlight of the annual AGS banquet is the presentation of the Society’s two major awards, the Distinguished Service Award for exceptional and altruistic contributions to AGS over a long period of time, and the Gesner Medal or AGS Distinguished Scientist Award. This year, the Laing Ferguson Distinguished Service Award was presented to Reg Wilson, New Brunswick Department of Natural Resources, for his outstanding contributions to AGS as a member of Council, as President, and as an organizer and general champion of various AGS events. The Gesner medal was awarded to Dr. Steve McCutcheon, New Brunswick Department of Natural Resources, in recognition of his authoritative studies and teachings on mineral deposits, particularly those in the Bathurst Mining Camp. In addition to these awards, the Michael J. Keen medal for contributions to Canadian marine geoscience, awarded by the Marine Geosciences Division of the Geological Association of Canada, was given to Michael

Lewis, emeritus scientist with the Geological Survey of Canada (Atlantic).



RUPERT H. MACNEILL AWARD: *Chris Yakymchuk, Dalhousie University, was the recipient of the Rupert H. MacNeill Award for Best Student Undergraduate Oral Presentation. His paper, co-authored with Mary Sanborn-Barrie, Joyia Chakungal and Rebecca Jamieson, was entitled: “Petrology and tectonic significance of coronitic mafic granulites, Southampton Island, Nunavut”. Becky Jamieson is shown here accepting the award on behalf of Chris at the 2008 AGS Banquet. Making the presentation is David Mosher. Photograph: Howard Donohoe.*



STUDENT GRADUATE AWARD: *Samantha Jones, University of Calgary, accepts the Student Graduate Award for Best Oral Presentation from David Mosher. Samantha’s paper, co-authored by Alan Hildebrand, was entitled: “Acoustic velocity and elastic moduli patterns and corresponding fracture density and orientation patterns in artificially shocked granite: preliminary results. Samantha is the first recipient of this award. Photograph.: Howard Donohoe.*



Steve McCutcheon (left), recipient of the AGS Distinguished Scientist Award (Gesner Medal) and Reg Wilson, recipient of the AGS Distinguished Service Award (Laing Ferguson Award), photographed holding their respective trophies. Steve and Reg work in the Bathurst office of the New Brunswick Geological Surveys Branch. Photograph: Howard Donohoe.



In a break from tradition, AGS incoming President David Mosher had the honour of presenting the Michael J. Keen Medal to Michael Lewis, Emeritus Scientist with the Geological Survey of Canada (Atlantic). The Keen Medal is awarded by the Marine Geosciences Division of the Geological Association of Canada for contributions to Canadian marine geoscience. Photograph: Howard Donohoe.

The AGS banquet concluded with an after-dinner presentation by Godfrey Nowlan, Past-President of the GAC®, and Program Chair for the Canadian National Committee for the IYPE. His talk entitled, “Earth to Canadians: Communicating Earth Science in the International Year of Planet Earth”, provided a detailed overview of projects designed to raise awareness of the Earth Sciences across Canada.

The success of the 2008 AGS Colloquium can be attributed to the dedication of all individuals on the Local Organizing Committee, including Graham Williams (Technical Program Chair), John Shimeld and Nelly Koziel (Registration), Chris White (Abstracts Volume), Mike MacDonald (Sponsorship), Rob Naylor (Posters and Booths), John Gosse, Lawrence Plug, and Charlie Walls (A/V), Dave Mosher (Awards), Anne-Marie Ryan (Student Judging), Ian Spooner (Social), and Elisabeth Kosters, Deborah Skilliter, Reg Wilson, and Grant Ferguson (Promotion). The organizers would also like to thank members of the technical program committee (Sonya Dehler, Martin Gibling, Mike Parsons, Georgia Pe-Piper and Chris White), Nancy Muzzatti, and the many student volunteers, session chairs, and judges who helped throughout the weekend. All photographs in this report were taken by Howard Donohoe, who graciously served as official photographer for the AGS Colloquium. Finally, AGS is grateful to the corporate sponsors that helped keep our fees as low as possible, including the Nova Scotia Department of Energy, the Canadian Space Agency, PotashCorp, the Geological Survey of Canada (Atlantic), the Nova Scotia Department of Natural Resources, Corridor Resources, Inc., the Geological Association of Canada, the Mining Association of Nova Scotia, the New Brunswick Department of Natural Resources, and the Natural Sciences and Engineering Research Council of Canada. We thank all participants for joining us in Dartmouth for the 2008 AGS Colloquium, and invite all members of the Canadian geoscience community to attend the 2009 Annual Meeting in Moncton next February.

*Michael Parsons and Jennifer Bates
2008 AGS Colloquium Co-Chairs*

Gesner Medal Citation for Dr. Steve McCutcheon

For almost 40 years Steve McCutcheon has been one of New Brunswick’s most innovative and prolific contributors to regional stratigraphic interpretation and mineral deposits’ geology. In addition to authoring numerous maps and publications, he has had a catalytic effect on the large number of students and professionals, representing many subdisciplines, with whom he has collaborated, helped supervise, or otherwise aided and abetted in miscellaneous studies, all of which have served to advance geoscientific knowledge of our region.

Another measure of Steve’s impact on New Brunswick geoscience is his remarkable versatility, as demonstrated by publications dealing with a broad spectrum of geoscience, from stratigraphy, structure, tectonics, and volcanology, to geochemistry, paleontology and environmental geology. This has covered rocks ranging in age from Neoproterozoic to Carboniferous and in all parts of the province. A common theme is economic geology, however, and his comprehensive

knowledge and interests have led to papers on granite-related porphyry, vein and skarn deposits, gold mineralization and volcanic-associated massive sulphide deposits. In addition to those listed, he has contributed to or edited at least 23 field trip guidebooks, authored or co-authored 55 maps and at least 32 government-published reports, and submitted almost 50 conference abstracts. The many field trips he has led during his career, have had a powerful influence in expanding and disseminating our knowledge of New Brunswick geology and in promoting mineral exploration.

The early part of Steve's career was spent as a bedrock project geologist and Assistant Regional Geologist in the Sussex office of the New Brunswick Geological Surveys Branch. During this time, he investigated the Neoproterozoic rocks of the Caledonian Highlands, refined and synthesized the observations of numerous geologists working in the Annidale-Nerepis Belt, and carried out some of the early detailed studies on complex plutonic systems such as the Pokiok and St. George batholiths. He was responsible for major revisions of existing maps and delineation of many new units, and became well known for his expertise in the structure and stratigraphy of Cambrian to Silurian rocks throughout south-central New Brunswick. For many years, this work provided guidelines for gold and base metal exploration in these rocks. His comprehensive study of Windsor Group stratigraphy and paleogeography in southern New Brunswick, represented a giant leap in our understanding of Windsor depositional environments and earned him a Masters degree at Acadia University in 1981. He introduced several formation names, correlated these with well-established sequences in Nova Scotia, and predicted their subsurface distribution based on his paleogeographic reconstructions. His work provided a solid basis for subsequent exploration for base metals, high calcium limestone, and potash and salt deposits in the Carboniferous of southern New Brunswick.

In 1987, Steve became Regional Geologist in the Bathurst office of the New Brunswick Geological Surveys Branch. Shortly afterwards, he completed his Ph.D. thesis at Dalhousie University, with a detailed description of the Mount Pleasant caldera complex in southwestern New Brunswick. This stratigraphic, lithogeochemical and mineralogical study established an up-to-date model for the development of the Mount Pleasant volcanic/subvolcanic complex, and the geological setting of associated tin-tungsten-molybdenum-indium-base metal mineralization.

In Bathurst, he found himself immersed in the complexities of Bathurst Mining Camp geology at a time when our knowledge of the stratigraphy and structure of that area grew at a rapid pace. Despite his administrative duties, Steve's love of hands-on geology ensured his active participation in field mapping projects. His contributions to the revised interpretation of Bathurst area geology, and in documenting the geological setting and origin of its base-metal deposits, have been substantial. As testament to this, Steve was co-editor of (and

co-authored several papers in) a prestigious Economic Geology Monograph, which described the results of the EXTECH II multi-disciplinary research project in the Bathurst Mining Camp. As co-leader of EXTECH-II, he also organized a number of field trips and conferences, and contributed to and edited the accompanying guidebooks.

In addition to his membership in AGS, Steve is a member of the Geological Association of Canada, the Canadian Institute of Mining, Metallurgy and Petroleum (CIMM), the Prospectors and Developers Association (NB Branch), the Society of Economic Geologists, and the Association of Professional Engineers and Geoscientists of New Brunswick (APEGNB). He is also an Adjunct Professor at the University of New Brunswick. Steve's contributions to his profession are exceptional by any standard. A long-time member of GAC, he has served as Councillor, Finance Committee Chairman, co-editor of the Mineral Deposits Division newsletter (*The Gangue*), and is currently co-editor of GAC's flagship journal, *Geoscience Canada*. These years of service were recognized with the GAC's Distinguished Service Award in 2004.

With CIMM, Steve has been President of the Geological Society, associate editor of that organization's technical journal (*Exploration and Mining Geology*), Chairman of the CIMM '93 Field Conference, and a member of the Ad Hoc Committee on Reserve Definitions, leading to internationally accepted standard terminology. His varied and numerous activities with CIMM have been recognized by several awards, including: the Dr. W.J. Wright Award (1995) from the New Brunswick Branch of CIMM, presented for significant contributions to New Brunswick's mineral industry; the Julian Boldy Memorial Award (1999) from the national CIMM, in recognition of his involvement in the Field Conference Program and establishing *Exploration and Mining Geology* as the society's journal; and the District Proficiency Medal (2003) from the national CIMM. In 2006, the APEGNB presented Steve with the L.W. Bailey Award, the most prestigious award a professional geoscientist can receive from the Association.

We submit that Steve McCutcheon's 40 years of hands-on geology, his multi-disciplinary geoscience knowledge and interests, and his eagerness to share his knowledge to promote the advancement of geoscience, are in the best tradition of great Canadian geologists as far back as Abraham Gesner. Steve has built an enviable reputation for dedication, enthusiasm, technical proficiency, and unflinching congeniality in sharing his time and knowledge with everyone, be they prospectors, exploration geologists, mining executives, colleagues, co-workers or summer students. For his outstanding record of achievement, Steve McCutcheon is a most deserving recipient of the 2008 Gesner Medal.

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Citation for Laing Ferguson Distinguished Service Award to Reg Wilson

I would like to nominate my colleague Reginald A. Wilson of the New Brunswick Department of Natural Resources, for the Atlantic Geoscience Society's Distinguished Service Award. Reg has been a member of the Atlantic Geoscience Society since its inception. He hails from Black River New Brunswick and graduated from the geology program of the University of New Brunswick in 1973. Prior to taking a position with the Geological Surveys Branch of New Brunswick Department of Natural Resources in the mid 1980s, he worked in the private sector with Atlantic Coast Copper in various parts of Atlantic Canada.

Reg became an AGS Councilor in 1991 and served on council for over 10 years including a term as president (2003-2004), and is presently a member of the AGS communications committee. He has been on the organizing committees of several AGS Colloquiums (1996, 2001, 2004, and 2007), and was responsible for introducing the conference call format now used for AGS council meetings. As a sitting Councilor I am particularly thankful for this innovation as it makes the 5 hr drive from Bathurst to Halifax to attend meetings a thing of the past.

In addition to his work on council and on organizing committees, Reg has also contributed to the AGS colloquiums through his own presentations and through his diligent efforts in judging oral and poster presentations. Reg has also contributed to our journal, *Atlantic Geology*, as reviewer and through his own submissions and he was a contributor to the highly successful "The Last Billion Years". Reg never turns down a request to do school presentations which are part of the AGS Education Committee's outreach goals. He also organized and led the 2004 AGS field trip on the volcanology of northern New Brunswick.

The numerous and varied contributions made by Reg to the Atlantic Geoscience Society over the years together with his promotion of the AGS to the larger geoscience community and to the public makes him a deserving nominee for the Atlantic Geoscience Society's Distinguished Service Award.

Jim Walker
New Brunswick Department of Natural Resources

REGIONAL NEWS AND UPDATES

Acadia University

More than 10% of the attendees at the Atlantic Geoscience Society's Colloquium in early February were staff and students from Acadia (about 25 of us, I think). Many of our students had posters on display and congratulations are due to Kieran McDonald, whose poster (co-authored with David Piper and Ian Spooner) entitled, "A Holocene sedimentary record of the Labrador Current", won the Graham Williams Award for best student poster at the conference. In addition, Kara-Lynn Scallion's poster (co-authored with Peir Pufahl and Sandra Barr) entitled, "Phosphate deposits in Cambrian rocks of Avalonia in the Saint John area, New Brunswick", received the "honourable mention".

The Environmental Science part of the department was well represented by students and faculty at the APICS Environmental Studies Conference at St. Francis Xavier University, 1-8 March. Kieran McDonald received the best presentation award. Other Acadia students making presentations were Katherine Dugas, Emma Vost, and Kaitlin Almack; and Brendan McNeill presented a poster.

Acting Department Head, Linda Lusby, was chosen by Uniterra as one of eight women who are making a difference in Canada and the world, in honour of International Women's Day. You can see Linda's profile at: <http://www.uniterra.ca/uniterra/en/index.html>. Linda also has been invited to join the ECO Canada (Environmental Careers Organization) National Steering Committee (NSC), which is developing a national accreditation system for post-secondary environmental education programs. The accreditation system attends to the needs of educational institutions that offer environmental programs. Linda's participation will ensure that ECO Canada's accreditation project will not only have a voice from Acadia, but also an experienced campaigner for environmental science education since its inception at Acadia.

In January, the department welcomed a new graduate student, Edwin Escarraga, from Bogota, Colombia. Edwin will be working with Sandra Barr on Devonian-Carboniferous(?) plutons in the Antigonish Highlands. Graduate student projects on-going in geology at Acadia can be viewed on the departmental website (<http://ace.acadiau.ca/science/ees/>).

During the mid-term break, Stephanie Anderson, an MSc student in Geology, participated in a field school investigating the geology and petroleum industry of Trinidad, which was organized by Dr. Grant Wach of Dalhousie University. Much appreciated financial support was provided by the Nova Scotia Department of Energy; this allowed students from universities in the province to participate in energy-related training opportunities elsewhere.

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New Brunswick Museum

Our project funded by a SSHRC (Social Science and Humanities Research Council)-CURA grant (Community University Research Alliances) will be coming to an end this year. We have been looking at the science culture that developed in Saint John in the 1800s, based in large part on the study of geology. The research has been a mix of geology and palaeontology, geoscience history and geotourism. We have been able to hire a number of students to work on different aspects of the project, offering them a variety of geoscience experiences. Our hope is to have a chapter in a book that will bring together much of the CURA project research, collectively called “Saint John: Industrial City in Transition”.

One of the major outcomes of the project has been to set up a community group to examine the potential for geotourism in the Saint John area. Community support for the idea has been very encouraging. Anyone who has worked in the Saint John area knows it presents a few geological puzzles and people seem quite interested in all that has gone on here. Beginning with Abraham Gesner in 1837, there has been an impressive number of scientists working on the local geology. In 1936, almost 100 years after Dr. Gesner began to study the geology of the city, the Geological Survey of Canada’s geologist, F.J. Alcock, began his Memoir on the geology of Saint John by writing: “*Perhaps no other area of similar size in Canada has presented so many geological problems as has that which includes and immediately surrounds the city of St. John, New Brunswick*” (Alcock 1936, p.1). We are optimistic that this might translate into an opportunity to present geology to the public in some interesting ways. It should help to improve our ability to preserve significant geological places for future geologists.

On the research front, we have ‘completed’ a few more projects with the publication of three more papers in the most recent volume of *Atlantic Geology*. The papers deal with early Devonian eurypterids, late Devonian fish, and a Mississippian trackway. We have also moved ahead with some additional studies on the sharks of the Campbellton Formation. Working with John Maisey at the American Museum of Natural History in New York and Sue Turner of the Queensland Museum, Australia, we have submitted a paper dealing with the braincase of the chondrichthyan *Doliodus*. The work is a result of a study of a new CT-Scan performed at The High Resolution X-ray Computed Tomography Facility at the University of Texas at Austin (UTCT). A second paper, submitted with Sue Turner, tries to resolve the other Campbellton Formation shark, *Protodus jexi*, so far known only from its teeth.



New Brunswick Museum Public tour: Pennsylvanian rocks at Gardner Creek.

The 2008 NBM George Frederic Matthew Research grants in geology have been awarded to three researchers. Dr. Sören Jensen of the Universidad de Extremadura, Badajoz, Spain will examine acritarchs in the Cambrian Saint John Group in southern New Brunswick. Arden Bashforth, a Ph.D. candidate at Dalhousie University, will be working on the paleoecology of vegetation in the Pennsylvanian Tynemouth Creek Formation, along the Bay of Fundy coast in southern New Brunswick. Erin Powe, an undergraduate student working with Dave Lentz, the University of New Brunswick, is studying the petrology, petrogenesis, geochemistry and distribution of the Cu-zone at the Brunswick No. 12 volcanogenic, massive sulphide deposit, Bathurst Mining Camp, New Brunswick.



Protodus jexi, Campbellton Formation, NBMG 11983.

These projects were awarded in the 21st year of the grant program. We have now funded 35 projects resulting in 25 papers, abstracts and theses (and counting). When we started this program, my benchmark was always “Would George Matthew be pleased with the work funded under his name”? I think the answer is yes.

Recent conference presentations:

Miller, R.F. 2008. Geotourism in Saint John, New Brunswick. Atlantic Geoscience Society 34th Colloquium and Annual Meeting, Program and Abstracts, Dartmouth, Nova Scotia, February 1-2, 2008, p.38.

Recent publications:

Wood, N.J. and Miller, R.F. 2007. A Mississippian trackway (*Pseudobradypus ichnosp.*) from the Enragé Formation, New Brunswick, Canada. *Atlantic Geology* 43:180-186.

Miller, R.F. and Brazeau, M.D. 2007. A Late Devonian Porolepiform fish (*Holoptychius*) and the age of the Kennebecasis Formation, southern New Brunswick, Canada. *Atlantic Geology* 43: 187-196.

Miller, R.F. 2007. Nineteenth century collections of *Pterygotus anglicus* Agassiz (Chelicerata; Eurypterida) from the Campbellton Formation, New Brunswick, Canada. *Atlantic Geology* 43: 197-209.

Randall F. Miller

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Silver Standard-McAllister Field Trip 2008

Robert Quartermain graduated from the University of New Brunswick (UNB) Geology class of 1977 and then went on to complete a Masters Degree at Queen's University. With over 30 years experience, Mr. Quartermain is now President and CEO of Silver Standard Resources Inc. Recognizing the importance of field study for geologists, an endowment fund was established in June 2006. This was named the Silver Standard-McAllister Field Trip Fund, after the company donating the funds and a very influential educator here at UNB, Professor Arnie McAllister (Emeritus). This fund was to enable student field trips to economic mineral deposits and world-class geological sites, thus providing key field experience in resource geology. In March 2008, the first Silver Standard-McAllister Field Trip took 7 undergraduate and 2 graduate students to the southwest United States, led by Professor David Lentz.

Students from UNB spent five days driving through economically rich ranges and desert-like basins, covering the four states Arizona, California, Nevada, and Utah. Flying into Las Vegas, Nevada, students also had the opportunity of seeing the vast basin and range topography, which characterizes the American southwest.

After landing, we immediately travelled 30 minutes southwest to the Hoover Dam, which borders Arizona and Nevada. The dam rises 700 feet above the Colorado River in the Black

Canyon and boasts the 34th largest, hydroelectric generating station in the world, with enough concrete to pave a road from coast to coast. Considered one of the greatest engineering feats of its time, the dam was built during the Great Depression and brought electricity and water to millions, transforming the American Southwest.



Mineral Park. From left to right: Jillian Craig, Angela Page, David Shinkle, Caroline Richer, Melissa Murphy, Kim Klausen, Megan Trites, Michelle McKeough, Sarah O'Brien. Photograph: Angela Page.

Day two took us through the Mojave Desert, part of the larger stretch of transitional land between the Sonora Desert and the Great Basin in southwestern California and parts of Nevada, to the Mountain Pass Rare Earth Mine, in the historical Clark Mining District of northeastern San Bernardino County, California. Currently operated by Molycorp, a division of Chevron Mining Inc., the Mountain Pass Mine is in an area of silver and gold deposits, which were exploited until the 1950s. In 1949, radioactive material was discovered in a neighboring mine, the Sulphide Queen Deposit, and later identified as bastnäsite (Ce, La, Y)CO₃F. The world-class Mountain Pass deposit lies within basin and range topography, in a series of foliated gneisses and schists, which are intruded by granitic gneisses. There are also cross-cutting, gneissic pegmatite dykes, which were metamorphosed prior to the emplacement of the alkaline complex that hosts part of the mineralized carbonatite. The ore of the carbonatite consists of 60% carbonate (calcite, dolomite, siderite and ankerite), 20% sulfate (barite and celestite), 10% bastnäsite (rare earth fluoro-carbonate), and 10% silicate phases (mainly quartz). The best approximation of the rare earth, fluoro-carbonate elemental breakdown of the ore was given by Warhol (1980), who determined it consisted of 50.0% cerium, 34.0% lanthanum, 11.0% neodymium, 4.0% praseodymium, 0.5% samarium, 0.2% gadolinium, 0.1% europium, and 0.2% others. These rare earths are used in common items like color televisions (europium and yttrium), magnets in headsets (neodymium and samarium), fluorescent lights (europium, yttrium, cerium, and terbium), and lighter flints (cerium), just to name a few.

The third day took us to Canadian-owned (Mercator Minerals Ltd.), Mineral Park Mine that is geographically located between Chloride and Kingman, Arizona. A unique aspect of Mineral Park's porphyry Cu-Mo deposit is the presence of turquoise in its supergene zone rather than malachite or azurite; this reflects the absence of limestone and the presence of phosphorous enriched magma. Turquoise in this region has been mined for over a thousand years, first by the Aztecs and Mayans, then the Native Americans and, lastly, pioneers in the 1900s.



Fe-Skarn. Back row from left to right: Angela Page, David Shinkle, Kim Klausen. Middle row from left to right: Megan Trites, Sarah O'Brien, Caroline Richer, Melissa Murphy, Jillian Craig, Michelle Keough. Kneeling (appropriately) in front is David Lentz. Photograph: Angela Page.

Day four brought students to the Iron Country of Utah, where we examined an Fe-skarn near Cedar City, Utah and enjoyed Zion National Park. The Palladon Fe-skarn deposit is being reopened due to the high demand for iron. This deposit is physiographically located in the transition zone between the Basin and Range and Colorado Plateau provinces. In this area Paleozoic, Mesozoic, and Cenozoic rocks all outcrop, with an aggregate thickness of more than 16,000 feet (4877 m).

The region witnessed episodes of high-level, calc-alkaline magmatism and coeval volcanism during the late Eocene, Oligocene, and early Miocene. Then came a period of more passive volcanism beginning in the mid-Miocene; this magmatic event was responsible for the formation of the Fe-skarn and magnetite and hematite mineralization. Zion National Park consist of nine formations, which make up the rock sequence, known as The Grand Staircase, stretching south from Bryce Canyon National Park through Zion National Park and into the Grand Canyon. It represents about 150 million years of predominantly Mesozoic sediments, with

several different environments, and subsequent uplift of the Colorado Plateau capped by Pleistocene basaltic lava.

The final day of our field trip allowed everyone to be wowed by the grandeur of The Grand Canyon.



On behalf of the students of the University of New Brunswick who took part in the first annual Silver Standard-McAllister Field Trip, I would like to thank Robert Quartermain for his generous donation to the university, which gave us the trip of a life time. We all leave with fond memories, sunburns, and a collection of rocks that would make any geologist jealous.

Reference

Warhol, W.N., 1980: Molycorp's Mountain Pass operations. In: Fife, D.L. and Brown, A.R. (Editors), p.359-366, *Geology and Mineral Wealth of the California Desert*, South Coast Geological Society.

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UPCOMING EVENTS

April 23

Beyond the Last Billion Years 2008 Talk Series:
 "Linkages between geology, the environment and society"
 by Terry Goodwin (Nova Scotia Department of Natural Resources).

May 26-28

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ABSTRACT SUBMISSION DEADLINE

March 1, 2008
 All abstracts must be submitted through the conference website

PROGRAM INFORMATION

David E. Brown
 dbrown@cnsopb.ns.ca

EXTENDED ABSTRACT DEADLINE

May 1, 2008
 Extended abstracts for accepted papers must be submitted by this date

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