Acadia Geology Alumni/ae Newsletter

Issue 25 December, 2013

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VIEW FROM ACADIA

Hello all alumni and friends of the Earth and Environmental Science Department at Acadia University. After 18 years of guiding the department Rob Raeside has stepped down as head. For all us it has been a significant transition and we are grateful for all that he has done; we are now the 3rd largest department in science on campus.

I would also like to welcome a new faculty member to Earth and Environmental Science, Dr. Alice Cohen. With a background in the politics of cross-border water issues, Alice is teaching both the Environmental Science and the Environmental and Sustainability Studies students, as well as a course in Politics.

Our department continues to show increases in enrollment – in the 2013-2014 year we have 145 majors enrolled in our three programs and our second year field school will have more than 50 participants! This brings to mind our commitment to field studies at Acadia. In a recent faculty retreat we unanimously agreed to continue to support all field experiences including class field trips, field schools (we offer two) field excursions (Dr. Peir Pufahl's Bermuda Carbonates trip) and extra-curricular field trips to various locations. We feel that collectively these experiences define the Acadia E&ES graduate as distinct from graduates of other programs.

We are soliciting feedback and support on the field component of our program. Whether you are a practising Geoscience or Environmental Science professional or have pursued another career path we'd love to hear how those experiences affected you. Any suggestions would also be most welcome. Finally, any support would be gratefully received. Like most other post-secondary institutions in Canada, costs have risen but our budget has effectively been frozen for many years. Support for field studies would directly benefit students and would allow us to continue to offer the program (see the Cycle of Opportunity on our alumni web pages: http://ees.acadiau.ca/Alumni_pages.html).

As always please stay in contact with us and let us know how you are doing.

Dr. Ian Spooner,
Department Head

STAYING CONNECTED

We love to keep in touch with graduates from our programs. Whether you are working in the environmental or geological industries, or have used your degree to leverage a career in another area, or have discovered a completely different area to work in, or have retired – we like to know what you are doing. So do drop us a note to ees@acadiau.ca (that message goes to Ian Spooner), and help us update our files. As an added bonus, if you provide us with your email address, we will be able to provide you with our newsletters in a more timely manner than via Canada Post! Rest assured we will not distribute or sell your email addresses – we will use it exclusively for this type of communication.

HAPPENINGS

The new year 2013 began with the annual Atlantic Geoscience Society colloquium, this year held in Dartmouth. Over 20 students and most of the faculty attended the colloquium in early February. Four Acadia students presented the results of their research: Josh Caines provided a poster, co-authored with Ian Spooner and Brooke Nodding, on "Influence of hydrostratigrpahy on erosion of drumlin islands in Mahone Bay, NS"; Patrick Englehardt spoke on "Lead accumulation in open water wet ecosystems in the Border Marshes region, NS-NB" with co-authors from the E&ES and Biology departments at Acadia, Ducks Unlimited Canada, and the NS Dept. of Natural Resources; Nabil Shawwa gave a paper with Rob Raeside and David McMullin on "Employing contact metamorphism to assess the conditions of pluton emplacement in southwestern Kellys Mountain, Cape Breton Island, NS"; and Jason Willson gave a paper with Cliff Stanley and John Murimboh on "Fine grained gold analysis in soil samples: a strategy to avoid the nugget effect". Students also participated in the short courses on fluid inclusions or oil and gas exploration, and some were able to take in the Nova Scotia gold exhibit that was on display in the Art Gallery of Nova Scotia. At the AGM Cliff Stanley was elected to the position of vice president, launching him on a three-year trajectory through the elevated ranks of the presidency in the next couple of years, and at the closing banquet, Chris White (Acadia alumnus of 1984, and adjunct professor) was honoured with the Gesner Medal, the Society's highest honour, in recognition of his contributions to the geoscience of Atlantic Canada, most notably the recent release of over 50 map sheets of southern Nova Scotia.

In February, two Acadia students, Christiane

Theriault and Steven Kramar, joined the Dalhousie petroleum geology field course in Trinidad. Led by Dr. Grant Wach, they studied sedimentary depositional systems pertaining to petroleum exploration. Fieldwork during the day was reinforced by nightly assignments, relating outcrop scale sedimentary features to larger scale features to better understand the geology.

At the end of term, 22 students participated in the annual geology field school – although the weather was mixed for the first half at Acadia, the conditions at Camp Geddie on the Northumberland Strait shore were truly remarkable – 6 days of solid sunshine, and a nightly ritual of watching the sun set into the Gulf of St. Lawrence (with frisbees and football tossing on the beach). At the same time, third and fourth year students had the opportunity to participate in the Bermuda field course, joining others from the US, New Zealand, and Brazil to learn about the modern and Pleistocene carbonate sediments of Bermuda using the world-class facilities at the Bermuda Institute of Ocean Sciences.

Geology major Kyle Graves was recognised as the Acadia Outstanding Male Athlete of the Year, and for the second consecutive season, the Atlantic University Sport most outstanding player. Kyle led the football team to another 7-1 record and was also named an AUS All-Star and CIS All-Canadian as both quarterback and punter. He wrapped up his five-year career in the top ten of every career AUS passing list; fourth in career completions, fifth in attempts and his 39 career TD passes are 10th all-time. Kyle has since moved on to join the Montreal Alouettes organization.

In total, 28 students graduated in the spring, about half from the Geology program and half from the Environmental Science program. Particular honour went to Patrick Englehardt, winner of the University Medal in Environmental Geoscience; Kat Voy, winner of the University Medal in Geology and Josh Caines,

recipient of the Mining Society of Nova Scotia Centennial Medal.

Through the year we hosted several visiting speakers. Wayne Goodfellow (CIM Distinguished Lecturer) discussed Sedex deposits; Penny Morrill, the Science Atlantic/Atlantic Geoscience Society visiting lecturer, took us on a journey to Mars to search for hydrocarbons produced by serpentinization of ultramafic rocks; and Galen Halverson, the GAC Hutchison Distinguished Lecturer examined the break-up of Rodinia and ensuing climatic catastrophes and biological changes in northwestern Canada.

July 1 marked the start of a new academic year and with it a change-over in the headship of the Department of Earth and Environmental Science. Ian Spooner took over from Rob Raeside, who has been head since 1995 (although with a few absences when he was acting Dean of Science). Ian has been teaching at Acadia since 1994, so is no stranger to the procedures, but no doubt it took him a few weeks to get used to the new office arrangements on the third floor of Huggins Science Hall.

A new face in the department in August was that of Alice Cohen, assistant professor in Environmental Science and Environmental and Sustainability Studies. Alice is adjusting to all the rock-talk, coming as she does from a background in Politics! With a background on cross-border water issues, Alice is teaching the Legal Issues in the Environment and Introduction to Environmental Science courses for us this year while Nelson O'Driscoll is on sabbatical, and seems to be adjusting well to the switch from BAC to Huggins.

In September, Cliff Stanley was appointed as a Fellow of Geoscientists Canada, in recognition of his volunteer service to the organization, and before that the Canadian Council of Professional Geoscientists. Cliff has been a member of the Canadian Geoscience Standards Board and a councillor for Geoscientists Nova Scotia (formerly the Association of Professional Geoscientists of Nova Scotia) since 2000, and a member of the admissions board for APGNS since 2001.

Fall term as usual seems to have flown past. It seems like no time since the Fletcher Club and ESSO (the Environmental Science Students Organization) organized a hike out to Cape Split, and then a weekend field trip to Parrsboro and Londonderry, to examine the old iron mines, the geology of the Cobequid-Chedabucto Fault Zone, and the spectacular fog-drenched cliffs of Cape d'Or.

The AUGC was held at St. F.X. University this year, and an enthusiastic crew of students accompanied by Sandra Barr attended the event, touring Silurian limestone beds, and Precambrian island arcs in Cape Breton Island on the first day, and soaking in the science on the second day. Lisa Mundry and Mike Reid, both honours students in Geology, represented Acadia with a talk and a poster, respectively. Mike's poster was on the petrology and geochemistry of the Stirling Belt, Cape Breton Island, and Lisa gave a talk on the comparison of the petrology, chemistry, and age of mafic sills in the Harlech Dome, Wales, and the Meguma terrane, Nova Scotia. Lisa won the Science Atlantic Prize for the best paper at the conference.

Lisa Mundry with the Science Atlantic award – hers will be the fifth Acadia name on this plaque, joining Kaesy Gladwin (2000), Amy Tizzard (2002), Robert Lodge (2004) and Dewey Dunnington (2011)

A number of Acadia students attended the Nova Scotia Department of Natural Resources "Geology Matters" conference in mid-November. Lisa Mundry, Mike Reid, and Vincent Beresford presented posters on their thesis research projects.

Finally we concluded the term with the annual year-end party in the Curling Club, where all things tasty and many with chocolate were on the table, followed by a hilarious video interview of many of the local geo-worthies. When Drake graduated last year, faculty breathed a sigh of relief – no more embarrassing videos, but, alas, Tom Bagley and Céline Porter have acquired the skills, and found even more awkward and difficult interview questions!

Lots more detail about these events and more photographs to accompany them can be seen on the department's web pages at http://ees.acadiau.ca.

FACULTY AND STAFF NEWS

Sandra Barr had another busy year in 2013, which included two short visits (in July and December) with son Eric and family in Unity, SK, and a somewhat longer visit with son Colin and family in Oxford, England. The latter visit was combined with a trip to Wales with honours student Lisa Mundry to collect samples for Lisa's project and also see, for the first time, a bit of Welsh geology for comparison with Meguma terrane. The conclusion was yes, similarities, but also major differences. She was also excited to see the famous "limestone" megaclasts in mélange in the Gwna Group in Anglesey – yes, it could be the Green Head Group but then again, one marble surely looks much like another? During the summer she also spent time in the field with MSc student Vincent Beresford, mapping Neoproterozoic plutons and their host rocks in the southern Cobequid Highlands, with the question still unresolved as to whether the area is part of Avalonia or not. She also spent time in the field with Martha Hild from Flatrock, NL, with whom she is writing a field guide on the Geology of Nova Scotia, to be published (in 2014 we hope) by Boulder Publications as a companion to Martha's already-published book on the Geology of Newfoundland. Sandra presented and co-authored talks and/or posters at the annual colloquium of the Atlantic Geoscience Society in Dartmouth in February, at the annual meeting of the Northeastern Section of the Geological Society of America in New Hampshire in March, at the GAC-MAC in Winnipeg in May, and at the NB and NS reviews of activities in November in Fredericton and Halifax. She was co-author on presentations at a Geofluids conference in Tübingen, Germany, in September and at the GSA National Meeting in Denver in October. Sandra also continued in her roles with the Atlantic Geoscience Society as editor of the journal Atlantic Geology and with the Geological Association of Canada as Presidential Advisor and Book Editor. In addition, in what was no doubt an ill-advised moment, she took on the role of President-Elect of the Canadian Federation of Earth Sciences, an umbrella organization for 15 earth science organizations in Canada.

Pam Frail Pam has continued to make changes in the Rock Room. More old equipment has been removed and some has been brought out of the mothballs to see another day. A steady flow of work from professors and students has kept her busy. New teaching sections get made to keep up with the increased enrollments in classes. Record keeping methods were created with Excel files to track work flow, maintenance of equipment and inventory of consumables.

Lynn Graves still manages to stay on top of registering students, filing (never ending), plotting posters and maps; keeping lists up to date and trying very hard not to nag the new department head as he settles into his office. They say change is as good as a rest but I am not sure Dr. Spooner would agree with that; I don't see much rest happening in HSH 325!! Dr. Raeside is not far away when his expertise is required, but I believe he is enjoying the slower pace. As always, I spent as many summer days as I can at Big Island, including a weekend family reunion with 51 relatives! Four cottages overflowing, several tents, one large trailer and we all had a place to sleep! I look forward to meeting the challenges that 2014 brings!

David McMullin continues in his largely teaching role. In the winter David continued to teach the labs and paleontology portion of the lectures in Earth History (1023). When Peir went on paternity leave, the remainder of GEOL 2043, Petrology and Stratigraphy, was taught by Sandra, David and Rob, each taking a few weeks. David also taught the labs and managed the course as a whole. David once again took on Metamorphic Geology (3503), his area of specialization. The course continues to grow and change as David makes it his own. David also continues his role as overall manager and teacher of much of the Field Methods course. Once again the course was "full", with 22 GEOL students and another 14 ENVS doing the first 3 days. This coming year will see more than 50 students in the field methods courses!!! Even with huge enrolments in the Fall, there is a continuing demand for an intersession Natural Disasters class, which this year David taught in the late spring. The rest of the summer David spent doing some upgrades to GEOL 1023 lab materials. In the fall he continued to teach the Intro labs (GEOL 1013), which increased to 4 sections to accommodate increased enrolments. In the fall David and Ian once again co-taught Natural Disasters. This year marked a renewed investment in course response systems. With 280 students in the class, getting student involvement and interaction has always been difficult. The Top Hat course response system was, in David's estimate, a success. David felt it changed the tone of the class making it a warmer and more interactive experience.

David plans to use it again in Metamorphic Petrology in the coming term. David enjoyed his experience co-supervising Nabil Shawwa's honours thesis with Rob. He has some plans to investigate some implications of work he did with Sandra and some of Nabil's thesis. On a personal note, David has had a busy year of travelling, with two trips to visit his family in Ireland.

Nelson O'Driscoll renewed his Discovery Grant this year for another 5 years and his group had another busy year. Graduate student Gordon McArthur (MSc) graduated this year with a thesis examining mercury movements in coastal wetlands. In March (shortly after co-chairing the Science Atlantic conference at Acadia) Nelson travelled to Resolute Bay with PhD student Erin Mann and Dr. Mark Mallory to take some of the first mercury flux measurements on Arctic snow near Resolute Bay where temperatures reached -40^{o}C. PhD student Sara Klapstein continued her work in Kejimkujik National park on mercury and carbon dynamics and presented this work at the AGU in San Francisco this December. Nelson also began his year-long sabbatical in Lisbon, Portugal with a short stop in Edinburgh, Scotland for the Global Mercury Conference. He is enjoying research at his host institution (IST, U Lisbon) and is working with two Portuguese graduate students (Sara Justino and Rute Cesario) on mercury flux in the Tagus Estuary. He and his family are adjusting to the new climate, new food, and new language but are loving the experience. More details of his work and adventures will appear in next year's newsletter.

Peir and Christa Pufahl have had an eventful year. February saw the birth of their son, Euan. Their elder son, Callum, is elated to finally have a sibling. In the days just before Euan's birth Peir's students eagerly awaited the cancellation of his classes. Following Euan's arrival, Peir took parental leave. Peir and Christa thank everyone who helped teach his classes for the rest of the term.

Christa has become a permanent fixture in the department. This fall she once again taught geomorphology and continues to teach her online oceanography course through Open Acadia. Christa is also in the midst of creating an online version of her geomorphology course and preparing a proposal to create mobile exploratorium carts to help grade school classes discover the Earth sciences. The year ended with Christa breaking her arm; a painful but effective way to get out of diaper changing!

Peir welcomed two new M.Sc. students to his research program, Renee Delisle and Laura MacNeil. In July Peir returned to Brazil with Renee, where she is investigating the Neoproterozoic phosphorus cycle and its link to the evolution of early animals. Laura's thesis research focuses on the sedimentology and oceanography of the Paleozoic Windsor Group in Nova Scotia and New Brunswick. Existing MSc students, Justin Drummond and Mariana Carvalho, are making excellent progress. Justin will defend his thesis on the sedimentology of economic phosphorites in central Brazil in April, and Mariana continues her research on phosphorite geochemistry. Peir's two postdoctoral fellows, Urmi Raye and Estelle Ricard, will submit manuscripts on the geochemistry of iron formations early in the New Year.

In addition to his regular teaching duties, Peir taught his Bermuda Field Course in April. The course explores the sedimentology and diagenesis of tropical limestone through the eyes of a petroleum geologist. Since the course began in 2006 it has grown rapidly and now attracts international participants, requiring it be offered annually. Three of the 17 participants this year were from Brazil. Their only complaint was they were too cold!

Peir has also kept busy as an Associate Editor for the journals *Sedimentology* and *Sedimentary Geology*. He just recently joined the editorial board of the *Journal of African Earth Sciences* with a promise to handle no more than five papers a year! He also found time to attend the International Association of Sedimentologists meeting in Manchester and the Geological Society of America's Annual Meeting in Denver this fall.

Peir is most proud of Sara Akin's paper published in *Sedimentology* on the deposition of Paleoproterozoic iron formation in central Western Australia. Sara is one of Peir's past MSc students and is now employed fulltime with ExxonMobil in Houston. Other papers include a co-authored paper published in *Gondwana Research* on secular changes in sedimentary systems, and a first-authored paper in *Geology* on a new type of iron formation that he and his colleagues discovered.

Rob Raeside finished his final term as department head in June. After 18 years in that office, it took quite a bit of cleaning up – and finally the 17-times postponed promise to organize the filing cabinet was fulfilled! He now enjoys the much smaller office next door, but as he has retained the job of student advising, still has a lot interaction with all the majors in Geology and Environmental Science.

Rob is secretary to the Council of Chairs of Earth Science Departments, which involves gathering the statistics on geoscience enrolments in Canada, maintaining communications with all the department heads and chairs, participating in meetings in Ottawa and writing a paper on student enrolment trends for

Geoscience Canada. He is also chair of Science Atlantic, the regional group that oversees many of the student conferences in the Atlantic provinces, as well as other initiatives to ensure networking and collaboration among the universities, but mostly seems to involve monthly videoconferences with the deans at the other universities in the region. Rob also continued as coordinator and editor of the Mineralogical Association of Canada's short course series, producing a text "Uranium: Cradle to Grave" for the May meeting in Winnipeg, and almost finishing a text on the "Geology of Gem Deposits" for the Tucson Gem and Mineral Show, Arizona, in February. Diamond, sapphire, ruby, chrysoberyl, topaz, and jade are all done, just waiting to finish emerald and tanzanite. A third book on cathodo-luminescence will keep him busy through the rest of the winter for the GAC-MAC conference in Fredericton in May.

In July he and his wife, Wendy, took off for a week to revisit many of the sites last seen in the infamous 1983 fall field trip with the Fletcher Club, this time going all the way to St. Anthony. Then in August he went to Rotterdam, Netherlands, to take part in the 25th International Vexillological Congress.

Ian Spooner: three honours students completed work on water-related projects: Patrick Englehardt, Drake Tymstra and Josh Caines who spent last winter analyzing the data obtained from buzzing about in boats and stomping around in waders installing thermistors, taking lake sediment samples and measuring erosion on coastal sea cliffs.

This year, Ian students working in on-going studies in the Tantramar Marshes (Amanda Loder) and Sackville lakes (Ben Misiuk), as well as co-supervision with Biology professor Mark Mallory on biological agents of chemical transfer in the Eastern Shore Wildlife Management Area (Lewis Mahon).

Outside of Acadia, Ian keeps busy with his music (google the "Mud Creek Boys"), and hockey, although now it is his daughter Kate who is on the ice, not Ian himself.

Cliff Stanley continued his teaching endeavours, presenting Economic Geology, Mineralogy, and Geochemical Material Transfer. In addition, he taught about two-thirds of Oceanography to 290 students last winter, an experience he found most interesting, while Peir took leave to help out with the arrival of the newest Pufahl.

On the research front, Cliff supervised the honours thesis research of Jason Willson, who studied strategies for avoiding the nugget effect in soils over the Fifteen Mile Stream saddle reef gold deposit on the Eastern Shore of Nova Scotia, a project supported by Acadia Mining Corp. (now LionGold Corp., Ltd.). Jason measured the Au concentrations of numerous replicate and size fraction samples using an aqua regia digestion and ICP-MS analysis in the Centre for Analytical Research in the Environment (CARE) laboratory of Dr. John Murimboh (Chemistry). As part of his thesis, Jason was able to discover eight high quality datasets in the literature that describe the size distribution of gold in ores, stream sediments, and soils, and was able to add an additional dataset using his thesis Au analyses. He was also able to develop a numerical method to standardize this diverse information, allowing it to be compared on a common scale. Results provide, for the first time, a quantitative understanding of the overall size fraction distribution of gold nuggets in auriferous materials down to a micron scale.

This past summer, Dr. Stanley spent time in the field visiting the McIlvenna Bay volcanic-hosted massive sulphide deposit in Saskatchewan, a property owned by Foran Mining Corp. of Vancouver. While there, he provided support to his graduate student, Steven Kramar, who is studying the chemostrati-graphy of part of the Flin Flon greenstone belt. Steve collected over 300 samples to augment and 'calibrate' seven other lithogeochemical datasets containing over 1300 samples collected by mining companies and government geologists from the same area over the years. When combined, these datasets will provide a high quality and high density lithogeochemical survey of the volcanic stratigraphy, allowing Foran and Copper Reef Mining Corporations, two of the project sponsors, to understand the rocks they encounter in drill core better when they explore for additional VHMS deposits to the south under Paleozoic cover.

Dr. Stanley also completed research into how to sample drill core in duplicate properly without exhausting the core and at the same time providing geostatisticians with the data quality information they require to undertake proper resource estimates. This method will likely become a standard procedure in mineral exploration because it successfully addresses a problem that has frustrated exploration geologists for years.

Finally, Dr. Stanley was active in presenting the results of his research, as he attended the 26th International Applied Geochemistry Symposium (IAGS) in Rotorua, New Zealand this past fall presenting two talks, one on the lithogeochemistry of host rocks to the Bisha and Harena VHMS deposits in Eritrea with former M.Sc. student Ronald Massawe, and a second on the geochemistry of pediment over the Toki Cluster porphyry Cu deposit in Chile with

former honours student Leah Chiste, and a poster on Jason Willson's honours thesis research. He also attended the Saskatchewan Geological Survey Open House in Saskatoon in December with Steve Kramar. There, Steve presented a poster describing the preliminary results of his M.Sc. thesis project. Lastly, Dr. Stanley presented two one-day short courses on lithogeochemistry at the Large Meteorite Impacts and Planetary Evolution Conference in Sudbury in August, and the IAGS in Rotorua, and has been busy supervising co-op Computer Science student Tyler Corbin, who is writing software to undertake molar element ratio analysis for use in evaluating lithogeochemical data.

GRADUATE STUDENTS

Continuing MSc (Geology) students in 2013 were **Vincent Beresford**, who came from Juniata College, Pennsylvania, and is working with Sandra Barr on plutons in the Cobequid Highlands, and **Justin Drummond**, who stayed on at Acadia after his BSc degree to work with Peir Pufahl on phosphorite in the Sete Lagoas Formation, Bambuí Group, Brazil and the Neoproterozoic phosphorus cycle. Two students began their MSc (Geology) programs in January, 2013: **Renee Delisle**, from Connecticut via the University of Wellington (NZ), who is working with Peir Pufahl on phosphogenesis and economic phosphorite in Neoproterozoic peritidal limestone cycles in the Salitre Formation, Brazil, and **Steven Kramar**, from the University of Alberta, who is investigating lithostratigraphy of the Hanson Lake block in the Flin Flon Greenstone Belt, Saskatchewan, with Cliff Stanley. An additional two students joined us in September: **Laura MacNeil** from Queen's University, working with Peir Pufahl on the Windsor Group in Nova Scotia, and **Lisa Slaman** from McMaster University, working with Sandra Barr on the petrology, age, and tectonic significance of the Cheticamp pluton in western Cape Breton Island. In the Applied Geomatics MSc program, **Charity Mouland** from Memorial University and CoGS is devising an integrated water quality forecasting model to restrict the harvesting of shellfish following extreme weather events and **Alicia Daniel** (Mount Allison University and CoGS), who began the program in September, is working on salt marshes in Prince Edward Island. Both of the MScAG students are co-supervised by Ian Spooner at Acadia and Tim Webster of the Applied Geomatics Research Group, Middleton.

HONOURS STUDENTS

Four students submitted their honours theses in Geology in the spring of 2013. **Josh Caines** worked with Ian Spooner on the factors influencing the erosion of drumlin islands in Mahone Bay, NS; **Patrick Englehardt** also worked with Ian Spooner on lead accumulation in open water wet ecosystems in the Border Marsh region of New Brunswick and Nova Scotia; and **Nabil Shawwa** employed contact metamorphism to assess the conditions of pluton emplacement in southwestern Kellys Mountain, Cape Breton Island, Nova Scotia; and **Jason Willson** worked with Cliff Stanley to detect fine-grained gold in pedogeochemical samples from the Fifteen Mile Stream gold property, Nova Scotia. In addition two students completed theses in Environmental Science: **Drake Tymstra**, worked with Ian Spooner to document the paleolimnological record of anthropogenic impact on water quality in First Lake, Lower Sackville, NS; and **Adam Godfrey** worked with Nelson O'Driscoll on the impact of salt marsh restoration on mercury fate and biogeochemistry in the Tantramar Marsh area.

On-going thesis work is being done by **Amanda Loder**: Examination of trace metals in gastropods to determine the potential for accumulation in the Border Marsh region; **Lewis Mahon**, Biotransport of trace elements by colonial birds to the various islands in the Eastern Shore Wildlife Management Area; **Ben Misiuk:** A multi-proxy comparative paleolimnological study of anthropogenic impact at Second Lake, Lower Sackville, Nova Scotia; all supervised by Ian Spooner. Sandra Barr has two students working on theses: **Lisa Mundry,** petrological comparison of sills and dykes in metasedimentary rocks of the Harlech Dome, Wales, and the Meguma terrane, Nova Scotia, and **Mike Reid,** petrology and geochemistry of drill core from the Taylors Brook property in the Stirling Belt, southeastern Cape Breton Island, Nova Scotia; and Peir Pufahl is supervising a thesis by Melanie Plante on paleoenvironments of the Devonian-Carboniferous Blue Beach Member of the Horton Bluff Formation, Nova Scotia, Canada. Finally, Monica Reed is completing an Environmental Science thesis on the use of intertidal weirs to monitor fish and marine mammals under the supervision of Anna Redden in the Acadia Tidal Research Institute and Department of Biology.

FLETCHER GEOLOGY CLUB

The Fletcher Geology Club, often in collaboration with the Environmental Science Students Organization (ESSO) has been very active this past year, participating in conferences, field trips, and service events. With help from the GAC/PDAC Logan Grant, members attended the AGS conference in Dartmouth in February, including a workshop on fluid inclusions and in March several members attended the PDAC meeting in Toronto (thanks to profs running weekend labs so participants could catch up).

FGC field trip at Londonderry fly wheel.

In the fall term we began the year with a hike to Cape Split – always a good chance to get first year students and new transfer students involved – and then a weekend trip to the Parrsboro shore. Highlights included the off-roading to the iron mines where Don collected iron ore to smelt into arrow heads (we gather it didn't work all that well, but it wasn't the fault of the ore), the promise of the dramatic setting of Cap d'Or that we missed as it was totally enveloped in fog about 10 minutes before we arrived, the long haul up from the Economy River Falls, and the Clarke's Head beach – spectacular cliffs and a different rock type every 50 m.

Patrick Englehardt (president of ESSO 2012-13) and Christiane Theriault (president of Fletcher Club)

In October, club members took in the AUGC at St. FX, where Lisa was winner of the best paper award. Several club members also attended the annual "Geology Matters" conference in Halifax organized by the Nova Scotia Department of Natural Resources.

Non-scientific events are also a very important aspect in the club's success. We participated in the Elderkin Brook clean-up, movie nights, the biannual blood donor clinic, and ended the year with the annual Christmas Dinner Potluck.

Christiane Theriault, President 2013-14

WHERE ARE THEY NOW?

Lynn Calder

Each year we ask a graduate to write an article on his/her past and current activities since leaving Acadia. This year we invited Lynn Calder, who studied at Acadia from 1977 to 1981

Still Exploring

It seems like every time I change jobs, it gets harder to fit my title into the space on my customs form, much less explain to the border guard what I do for a living. Although I've worked for Shell Canada for the last 24 years, I'm pretty sure I have one of the more eclectic resumes in the company, having worked in Environment, Retail Marketing, Human Resources, Regulatory (Public Consultation), Community Relations, Real Estate, Non-Government Organization (NGO) Relations, and now Social Performance, otherwise known as Corporate Social Responsibility (addressing social concerns and providing opportunities to the communities in which we operate). I currently support Shell's assets in southern Alberta as well as our new off-shore exploration play in the Shelburne Basin, the latter of which has had the added bonus of allowing me to get back to Nova Scotia regularly and reconnect with friends and

colleagues from my past.

So how did a hard rock geologist from Acadia end up working on the softer side of the business? I'd like to say it was all part of my master plan, but I've never been one of those people who always knew where they were headed and systematically plotted the path to get there. I've always been more of a "now, that looks interesting, why don't I give it a try?" kind of person – an explorer at heart, you might say. I can, however, trace the roots of my current career to my first summer job in Nova Scotia - the job I got, rather than the one I really wanted.

Back in the 1970s there were still not a lot of women in geology. Even though summer field jobs were plentiful, it was hard for women to get work with mining companies, who were pretty old-school. I still remember one interview in which the hiring manager said they wouldn't hire me because they didn't want to build a second washroom. After a few annoying interviews like this, I'd finally had enough, and when another interviewer challenged my ability to walk through the bush carrying rock samples, I smiled and said in as ladylike a manner as I could muster, "Oh, I'm sorry, I thought you were looking for a geologist, not a donkey." (No, I didn't get that one either ☺).

Fortunately, the Government of Nova Scotia was a more equal opportunity employer and in my second year I managed to land a summer job with the Department of Environment (DoE). I'd always considered myself an environmentalist (one of the main reasons I went into geology was that I wanted to work outdoors rather than in an office) so it was a good fit and a good job, even if it barely paid my rent and living expenses in Halifax. I vaguely recall returning to Acadia that Fall with $300 in my pocket – less than I'd have had if I'd gone back home to Montreal to my previous summer jobs as a lifeguard.

Nevertheless, that work experience set the stage for a job as a "real" geologist the following summer exploring for uranium for the now defunct Shell Minerals near Kentville, and then another summer job back with the DoE upon graduation. I had hoped to stay on with them or get work in environmental consulting in Halifax, but when I wasn't able to land a permanent job, I decided to pursue one of my other interests, renewable energy. Even though I had no particular qualifications, I contacted Nova Energy, a tiny renewable energy company in Dartmouth that did R&D on ultra-low flow water turbines for run-of-river and tidal energy production to see if they had anything. They ended up creating a job just for me, with the help of a NS government grant to hire new graduates in the energy sector, which still exists today. The President, Barry Davis, said that my degree and resume showed that I was smart and capable of learning and that was enough for him. I really did learn a lot that year and I loved working for a small business where it was literally "all hands on deck," even to the point of all doing our tour of duty at the warehouse to sandblast our first turbine.

Ultimately, I realized I'd need an engineering degree to do anything other than grunt work, so on the advice of my last supervisor at DoE, Dave McFarlane (also an Acadia geology grad, if I recall correctly) I went to University of Waterloo to get an MSc. in contaminant hydrogeology, as he had recently done. It turned out to be one of the better choices I made. I learned a lot in my two years there and times were good for hydrogeologists in the early eighties. I ultimately accepted an offer from Golder Associates in Toronto, where I worked on an assortment of site assessment and remediation projects in Ontario, Quebec and New Brunswick: landfills, sewage lagoons, chemical plants and petrochemical marketing facilities and refineries.

That was how I met Shell (again), as they were one of my biggest clients. When they decided to hire in-house environmental specialists, I jumped at the chance to work on that side of the table. I figured spending 5 years understanding how a client operates would make me even more valuable as an environmental consultant. Never in my wildest dreams would I have imagined I'd still be there so many years later. I spent my first eight years at Shell supervising site assessment and clean-up at gas stations, marketing terminals and refineries from BC to Labrador, initially based in Toronto and then in Calgary.

After that, I decided to spread my wings and see what else Shell had to offer. That's one of the advantages of working for a large company – once you get in and prove yourself, there are lots of paths you can take. Leaving the comfort of my technical specialty was a big risk for me, but one I've never regretted, as it's opened many doors and given me a chance to try many jobs I'd never have been able to get off the street. I always figured I could go back to being a hydrogeologist if it didn't work out, and although I've been tempted to go back to my technical roots from time to time, so far I seem to prefer going for the "new and different" rather than the "tried and true."

So if there is a moral to my story, I guess it's that when it comes to your career, keep an open mind, because you never know where it might take you and there are many things you can do with a geology degree and the transferable skills you pick up in university that don't necessarily relate to rocks. It could even be that NOT getting the job of your

dreams is the best thing that could ever happen to you.

One of the side-benefits of my career is that as a result of a three year stint at Shell's Waterton plant in the extreme southwest of Alberta near Waterton Lakes National Park, my husband Mark and I decided to set roots in this beautiful part of the country with our two terriers. That's now become our home base, while I continue to commute to Calgary for work during the week.

In my spare time I write musicals – another love I developed at Acadia through the MusicAdians (Brigadoon – Kiss Me Kate - Kismet – Oklahoma). I produced my first show at the Calgary Fringe Festival in *2008 (Eve: The True Story*) and will be doing another one in 2014. I also write a musical theatre blog (http:// calgarymusicals.com) and run a Meetup Group in Calgary for people who like to go to the theatre. If you google me (add my middle name, "Marie") you'll find a LOT more about that side of my life than the professional side. I hope to be spending more time in that arena in the years to come.

You can easily reach me on Facebook, LinkedIn or through my blog.

Lynn Calder

KEEPING IN TOUCH

If you have an item of interest, or any news of your activities (or those of your classmates), please let us know. We will try to incorporate as much as possible into future newsletters. Send details to Dr. Barr or Dr. Raeside at the Department of Earth and Environmental Science (sandra.barr@ acadiau.ca, rob.raeside@acadiau.ca).

Chris Helmer (BSc 1997) married Susan Irving at a beachfront ceremony in Punta Cana in January before 27 of their friends and family, then headed to Belize for their honeymoon. He has been working for LVM Inc. (formerly Naylor Engineering Associates Ltd.) in the field of hydrogeology, but as of this May received his Practicing Professional Geoscientist license and can now officially call himself a hydrogeologist. They live in the picturesque town of Elora, Ont., and spend much time constantly renovating their house and trying to find space in the driveway for all the toys.

Robert Lodge (BSc 2005) and **Cassie (Gaudet) Lodge** (BSc 2010) let us know of the arrival of their daughter Hillary June in August and the completion of Robert's PhD at Laurentian University in October.

Peter Luke (BSc 1985) is senior regional sales manager for the textbook publisher Pearson Canada, and lives, virtually surrounded by geologists in Halifax. He gets his fix of Geology from talking with the neighbours. He writes that "I am not in the Geology departments with my sales reps often but you will be glad to know that I do extol the virtues of one book on our list: the Deer/Howie/Zussman, Guide to Rock Forming Minerals." Apparently it was highly recommended by a certain professor in the 1980s (and still is!)

Scott Oldale (BSc 82) dropped by in November together with his son who was scoping Acadia as a possible university for next year. Scott has had a successful career in the energy business and is VP Exploration for New Star Energy Limited in Calgary.

Carl Richardson (BSc 08) has been working with SGS Canada as a Geometallurgical Geologist in Toronto for the past two years. He will be moving to Quebec City to join the SGS GeoStats group for a year before returning to his role in Toronto in 2015.

Nabil Shawwa (BSc 13) dropped by while we were writing this letter, so gets included here! He has been working in the environmental field in Calgary, and had the (hopefully unique) opportunity to watch the environmental effects of the Calgary flood, one block away from his house. When he returns to Calgary he is switching jobs to be a core monitor/geological supervisor with Serpa Petroleum Consulting Ltd. Six months in industry seems to have convinced him he really wants to go to grad school.

Paul Ténière (MSc 2002) stayed in Christchurch, New Zealand, long enough to say he lived through the earthquakes, then moved to Brisbane, working on coal exploration projects in central Queensland for Vale. He returned to Canada, first to Dartmouth with his wife, Jen, and daughter, Caroline, before moving to Edmonton to work as Chief Geologist with Sherritt International Corp in their coal division.

Amy Tizzard (BSc 2003) wrote at length to us last year, relating her troubles with snakes in Australia, bees in Nova Scotia, but this year has moved on to new trials, coping with spiders in Namibia. In between her ventures with stinging and biting animals, she works as a geologist in Namibia and seems to be spending a fair amount of time exploring the lands of southern Africa.

Raymond Yip Choy (BSc 1982) teaches in the School of Justice & Business Studies at Fleming College and at Trent University. He and Suzanne recently built a house outside of Peterborough surrounded by cows and fields of barley and soya and love every minute of it.