GEOLOG

Volume 46
Number / Numéro 2
Summer / Été 2017

GEOLOGICAL ASSOCIATION OF CANADA
ASSOCIATION GÉOLOGIQUE DU CANADA

President's Preamble

It is a great honour to be your President, and I am looking forward to moving forward on a number of priorities and important issues to strengthen GAC®. The recent GAC-MAC Annual Meeting in Kingston was a tremendous success, and on behalf of Council, congratulations to the Local Organizing Committee for putting on a great conference! The technical content was outstanding, the social events were great and the logistics and organizational details were extremely well done. Also, many thanks to the volunteers who worked diligently to keep the sessions on track as they dealt with multiple logistics issues quickly and effectively.

I would also like to thank the Outgoing GAC® Councillors for their hard work and volunteer effort over the past three years. In particular, I acknowledge the tremendous efforts by Vicki Yehl and Ollie Bonham. Vicki showed great leadership navigating multiple issues as GAC's President and Ollie worked diligently with Sections and Divisions and on International Affairs as a Councillor. Both these individuals deserve heartfelt thanks for their hard volunteer work for the overall benefit of the Association.

As you know, GAC® has been in existence since 1947 and has a long and distinguished history as Canada's premier learned geoscience society. We should all be proud of GAC® as Canada's oldest and longest-serving geoscience organization, which continues to be a strong voice on a national scale and is recognized internationally. My last *Geolog* article raised some of the key challenges of ensuring that GAC® has a healthy long-term future. Some of these challenges were discussed at the Kingston Council meetings and as a result, the following are the priorities that will be driving GAC's agenda over the next year.

Key Priorities for GAC in 2017-2018

1. Improve the profile of geoscience across Canada.
   - At a time when there appears to be general "re-investment" of public funding in science, it is crucial that GAC® be involved in promoting the long term national benefits of increased funding for geoscientific research across the country.
2. Enhance communications across the GAC® Organization, including Sections and Divisions, Campus Representatives, Local Organizing Committees (LOCs), and the membership at large, as well as improve collaboration with other geoscientific associations.
   - There needs to be far more outreach and engagement across the GAC® organization, including Sections, Divisions, Campus Representatives and others. An active GAC® network across the country is essential for the successful operation of the organization. In short, communications need to improve.
3. Review and improve GAC's business model, examining how we plan to function as an Association in the future.
   - The GAC® business model needs to be up-dated and improved to ensure that we optimize our limited personnel and tight fiscal resources, providing good service to all members and the organization's network across the country.

Cont'd on p. 4

GEOLOGICAL ASSOCIATION OF CANADA

The MISSION of the Geological Association of Canada is to facilitate the scientific well-being and professional development of its members, the learned discussion of geoscience in Canada, and the advancement, dissemination and wise use of geoscience in public, professional and academic life. The VISION of the GAC® is to be a multidisciplinary scientific society supportive of the entire scope of the geosciences in Canada. The GAC® aims to be a geoscience community that is knowledgeable, professionally competent and respected, whose input and advice is relevant, widely sought and utilized, and whose vital contribution to the economic prosperity and social well-being of the nation is widely acknowledged.

La MISSION de l'Association géologique du Canada est d'aider au développement scientifique et professionnel de ses membres, de favoriser les échanges géoscientifiques au Canada ainsi que de promouvoir et de diffuser l'utilisation éclairée des géosciences dans un contexte public, professionnel et académique. La VISION de l'AGC® est de faire connaître une communauté géoscientifique de grand savoir, dont les compétences professionnelles sont respectées, dont les suggestions et les avis sont pertinents, recherchés et utiles, et dont la contribution largement reconnue est considérée comme vitale pour la prospérité économique et le bien-être de la nation.

GAC® Executive / Comité exécutif de l'AGC® 2017-2018

President / Président
Stephen Morison, Nanaimo, BC
Vice President / Vice Président
Dène Tarkyth, Vancouver, BC
Past President / Président sortant
Graham Young, Winnipeg, MB
Secretary/Treasurer / Secrétaire/Trésorier
James Conliffe, St John's, NL
Finance Chair / Responsable des finaces
Michael Michaud, Ottawa, ON
Science Program Chair / Responsable du programme scientifique
Deanne van Rooyen, Sydney,NS
Communications Chair / Responsable des communications
Hendrik Falck, Yellowknife, NT
Publications Chair / Responsable des publications
Chris White, Halifax, NS

GAC® Councillors / Conseillers de l'AGC® 2017-2018

Section and /et Division Liaison
Vacant
Short Courses / Programmes courts
Liz Stock, Vancouver, BC
Campus Liaison
Ihsan Al-Aasm, Windsor, ON
GAC® Lecture Tours / Tournées de conferences de l'AGC®
Alwynne B. Beaudoin, Edmonton, AB
Geoscience Canada Editor / Éditeur du Geoscience Canada
Andy Kerr, St John's, NL
Geolog Editor / Éditeur du Geolog
Alwynne B. Beaudoin, Edmonton, AB
Awards Co-ordinator / Coordinateur des Prix
David R. M. Pattison, Calgary, AB

GAC® Corporate Members / Membres corporatifs de l'AGC® 2017-2018

Platinum / Platine

Memorial University of Newfoundland

Gold / Or

Anglo American Exploration (Canada) Ltd.

Northwest Territories Geological Survey

Silver / Argent

British Columbia Geological Survey

Royal Tyrrell Museum of Palaeontology

Yukon Geological Survey

The atrium of the BioSciences building was the place to gather at coffee breaks during the Kingston GAC-MAC conference. Trees and a super-sized arachnid artwork emphasize the biology theme!
Photo: Jonathan Oliver

Delegates gather for the opening reception in the Main Gym at Queen's University. During the Kingston GAC-MAC meeting the gym was also the venue for the poster sessions.
Photo: Jonathan Oliver

GEOLOG

Vol. 46, No. 2, Summer / Été 2017

Publisher / Publié par
GEOLOGICAL ASSOCIATION OF CANADA
c/o Dept. of Earth Sciences, Memorial University of Newfoundland
St. John's, NL A1B 3X5
Tel: 709-737-7660
Fax: 709-737-2532
E-mail: gac@mun.ca
Web: www.gac.ca
Editor / Éditeur
ALWYNNE B. BEAUDOIN
c/o Royal Alberta Museum
12845-102nd Avenue
Edmonton, AB T5N 0M6
E-mail: Alwynne.Beaudoin@gov.ab.ca

GEOLOG (ISSN 0227-3713; 1712-3747) is the quarterly news-magazine of the Geological Association of Canada, St. John's, Newfoundland and Labrador. *GEOLOG* is published for the benefit of GAC® members and its content reflects the diversity of the organization. News items and short articles on topics of potential interest to the membership including public geoscience awareness are encouraged. Also encouraged are communications promoting interaction among academic, industry and government sectors. *GEOLOG* accepts and publishes contributions in both of Canada's official languages. Opinions expressed herein are those of the writers and do not necessarily represent the official positions of the GAC®. *GEOLOG* is one of several forums provided by the GAC® for scientists worldwide.

SUBSCRIPTIONS: *GEOLOG* is one of the privileges of GAC® membership. To become a member, application forms are available by mail or fax from the Geological Association of Canada, or can be printed from the website.

ADVERTISING: Paid advertising is accepted. Digital copy is preferred. Contact the Editor for more information or go to the GAC® website and click on Publications then *GEOLOG* and look for the Rate Card.

GEOLOG (ISSN 0227-3713; 1712-3747) est le bulletin trimestriel de l'Association Géologique du Canada, à St. Jean, Terre-Neuve-et-Labrador. *GEOLOG* s'adresse aux members de l'AGC® et son contenu reflète le caractère polyvalent de cette organisation. Nous invitons la soumission de nouvelles et articles courts pouvant intéresser les membres, incluant les thèmes de sensibilisation du public aux sciences de la Terre. Les articles suscitant des échanges d'opinions et d'informations entre les secteurs académique, industriel et ouvernementaux sont également la bienvenue. *GEOLOG* accepte et publie les articles dans les deux langues officielles du Canada. Les idées sont celles des auteurs et ne représentent pas nécessairement la position officielle de l' AGC®. *GEOLOG* n'est qu'un des nombreux forums offerts par l' AGC® aux scientifiques à travers le monde.

ABONNEMENT: L'abonnement à *GEOLOG* est un des privilèges don't bénéficient les membres de l' AGC®. On peut se procurer un formulaire d'adhésion par courrier ou par fax en communiquant avec l'Association Géologique du Canada.

PUBLICITÉ: Nous acceptons la publicité rémunérée. Une copie prête pour la reproduction est préférable. Veuillez communiquer avec le Rédacteur en chef pour des renseignements additionnels à ce sujet.

Contents / Table des matiéres

President's Preamble 1, 4, 5
Vice President's Remarks.....6
Past President's Report.....6
Medals and Awards.....8
Events and Happenings.....24
Milestones, Memories, and Tributes.....28
Reading on the Rocks.....30
Announcements.....31

Acknowledgements and Thanks

This *GEOLOG* benefits from the contributions and assistance of / Nous voulons souligner la contribution et l'assistance de: Erin Adlakha, Donnelly Archibald, Sandra Barr, Dennis Braman, Jaclyn Cockburn, James Conliffe, Karen Dawe, Mike Easton, Melissa Grey, Stephen Johnston, Steve Morison, Jonathan Oliver, Robin Riddihough, Iain Sampson, Holly Steenkamp, Dène Tarkyth, Alison Thomas, Deanne van Rooyen, James White, Jane Wynne, Vicki Yehl, and Graham Young. Apologies to any contributors that have been missed. This *GEOLOG* was produced with support from the Royal Alberta Museum. Your contributions for future editions are welcome / Désolé pour ceux qui auraient été involontairement oubliés. Cette copie de *GEOLOG* a été produite grâce à l'assistance du Royal Alberta Museum. Nous sollicitons vos contributions pour les publications à venir.

Contributions for next issue

Please send items for the next issue of *GEOLOG* by e-mail to Alwynne.Beaudoin@gov.ab.ca on or before **September 1 2017**.

Eva Bernth Castonguay (MAC) and Karen Johnston-Fowler (GAC® HQ) hanging out at the GAC® booth and bookstall at the Kingston GAC-MAC conference. It's always good to drop by the GAC® booth during the conference to chat with our friendly HQ staffers and pick up some GAC® publications.
Photo: Jonathan Oliver

Cont'd from p. 1

4. Increase the revenue stream of the Association through new membership strategies, more diversified funding sources and other strategies to ensure GAC® has a healthy long-term future.
   - GAC® needs to improve the long-term funding of the organization. The following are GAC's principal sources of revenue: membership fees, profits from annual conferences, publication sales and sponsorships. These revenue streams will continue to be foundational for GAC® but we need to find ways of maintaining and improving revenue to maintain the fiscal health of the organization.
   - A key issue is declining membership. There are many factors associated with this trend but one critical component is the number of geoscience-related associations across Canada. We need to think strategically about how many associations the geoscience community in Canada can realistically support. We also must continue to establish strong partnerships and strategic alliances where possible, for the long-term benefit of geoscience across the country.
   - GAC® Council has established a "Revenue Task Force" to seek other funding ideas and mechanisms to improve our current fiscal situation.
5. Active participation in the organization and coordination of the Resources for Future Generations (RFG 2018) conference in Vancouver. This conference is our GAC-MAC meeting, and will be a showcase for all aspects of geoscience research in Canada.
   - RFG 2018 is a very important conference for GAC®. It will showcase to the world our national geoscience community and is a wonderful opportunity.
   - GAC® is completely committed to the success of this event and I encourage you to attend this conference.

After business meetings before the GAC-MAC conference in Kingston, GAC® Council members, past and present, and GAC® HQ staffers gather on the steps of Miller Hall, Queen's University campus. Smiling faces indicate the successful conclusion of their deliberations (or perhaps just anticipation of dinner!)
Front row, L-R: Alwynne Beaudoin (*Geolog* editor), Vicki Yehl (Past President 2016-2017), Karen Dawe (Publications Manager, GAC® HQ), Dène Tarkyth (Finance Chair). Middle row, L-R: Karen Johnston-Fowler (Finance and Administration Manager, GAC® HQ), Graham Young (President 2016-2017), Ihsan Al-Aasam (Campus Liaison), Steve Morison (President 2017-2018), Sandra Barr (Special Advisor). Back row, L-R: Michael Michaud (Councillor), Ollie Bonham (Sections and Divisions Liaison), James Conliffe (Secretary-Treasurer), David Pattison (Awards Coordinator), and Chris White (Publications Chair).

In June 2017, Karen Johnston-Fowler will be retiring from GAC® staff after 32 years. This is a significant change for the association given Karen's unwavering support and hard work. Karen has been the consistent factor throughout all our challenges and has provided leadership, clear thought and abundant common sense throughout her career at GAC®. We had a retirement party for Karen during the Kingston conference. It was a very special evening as shown below in the photo with Karen and nine Past Presidents. We will all miss Karen but we also sincerely wish her all the best in her retirement and future endeavours.

The retirement of Karen Johnston-Fowler has resulted in changes in GAC® Headquarters. Karen Dawe has taken on the role as Association Manager and Eleanor Penney has taken on the role as Member Services Administrator. Please feel free to contact either Karen or Eleanor if you require support or have any questions about GAC®.

Finally, membership engagement is crucial for the future of our Association. If you have any ideas or wish to pass along your thoughts in regards to any of my above comments, please contact me at gac@mun.ca.

Stephen Morison
President
Geological Association of Canada

During GAC-MAC 2017 at Kingston, Council had the opportunity to celebrate Karen Johnston-Fowler's long-service to the Association and this generated an unique moment. This photo captures Karen with nine presidents of GAC®, all gathered for this year's GAC-MAC which also celebrated GAC's 70th anniversary. From left to right: Frank Blackwood, Stephen Morison, Brian Pratt, Sandra Barr, Karen Johnston-Fowler, Victoria Yehl, Graham Young, Stephen Johnston, Chris Barnes, and Fred Longstaffe.
We wish Karen all the best for a happy retirement!

Vice President's Remarks

For two years on Council as Finance Committee Chair I have enjoyed working with passionate, committed colleagues who truly value the role of the Geological Association of Canada in furthering geoscience and disseminating scientific knowledge. This year I am privileged to step into the role of Vice President. As VP I will be involved in reviewing the association's performance relative to the Business Plan (thanks Vicki, for all your hard work) and chairing the Safety Committee. (Liability insurance for field trips carried out under the GAC® banner and to GAC® safety standards is one of the benefits that the Association provides.) I am excited about the next three years, and working with the President and other Councillors on the GAC's challenges and opportunities.

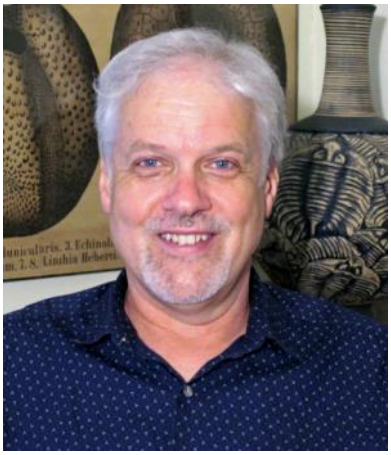
For those of you who do not know me, my background is in mineral exploration with brief forays into teaching, beekeeping and cattle farming. These excursions served as reminders that geology is the best profession in the world, even with the sometimes ruthless ups and downs of the industry. By necessity, an exploration geologist has to be a generalist and an integrator of information from many specializations. Perhaps this is one of the reasons why I so value the role of the Geological Association, and its sister organization, the Mineralogical Association of Canada in putting on the GAC-MAC conference every year.

In a landscape of specialized organizations, the GAC® stands out for its inclusiveness and the GAC-MAC meeting is a place where geoscientists from many disciplines, including academics, government geologists, students and industry participants come together in a fertile exchange of ideas on an incredible range of topics. Thinking of the Earth and the earth sciences as a systems sciences requires this kind of breadth. The boundary zones between silos are especially interesting areas for enquiry. The Kingston local organizing committee put together a great conference this spring, and I hope to see you at RFG in Vancouver next year.

Of course, the Geological Association of Canada is more than GAC-MAC. Many of you are involved with one or more of the sections and divisions, attend the Howard Street Robinson or Hutchison lecture tours, or read GAC® publications. All these activities take the work of volunteers and our enthusiastic HQ staff. We are always looking for volunteer help and welcome engagement from the membership. Please let us know if you would like to get involved!

Dène Tarkyth
Vice President, Geological Association of Canada

Past President's Report



Arriving here at the position of Past President of GAC® is rather like being set down again after being picked up by a tornado and whirled over the landscape for many kilometres. It has been a wild and crazy ride and I have seen many things, but they are somehow jumbled together in such a way that it would be difficult to reconstruct any one interval without some serious thought. For the past month I have been dusting myself off and wondering how I managed not to sustain serious injury, but of course this sort of experience does change a person. For the better, we can hope.

The tornado-like experience resulted partly from the fact that last year was not a typical one for GAC®. I am sure that every year is different, but 2016-17 was marked by the imminent retirement of Karen Johnston-Fowler, who had been the mainstay of our staff for decades. During the previous year, under the strong leadership of then-president Vicki Yehl, we came to grips with ideas on what the future governance of GAC® would look like, and how Council and staff would work together. In 2016, we knew we had to develop these ideas into a practical plan, and the Governance Committee worked very hard through the summer to flesh out what that plan would look like. This committee included Oliver Bonham, James Conliffe, Stephen Morison, Dène Tarkyth, Vicki Yehl, Sally

Pehrsson, and me. During the fall Council meeting, the ideals of our plan met the hard realities of the organization's current financial situation, and we then began to develop the structure that is now being put into place (see the President's Preamble by Steve Morison for further details).

At the Fall business meeting we also recognized that Council needed to have a much clearer focus on income. The Revenue Task Force was set up in response to this need, and met actively through the winter and spring to develop short- and long-term fundraising ideas. As with the Governance Committee, the volunteer and staff members of the committee put in a remarkable effort: James Conliffe, Steve Morison, Sally Pehrsson, and Karen Dawe brainstormed on many new ideas, resulting in development of publications and funding for an improved website, along with ongoing sponsorship "asks".

In addition to these special initiatives, GAC® carried on its usual business: preparing publications, organizing conferences, presenting awards, and facilitating the activities of our sections and divisions. I was, and continue to be, tremendously impressed by the amount of work carried out by the various Councillors, often quietly and without excessive hoopla; I wish I could write to specifically thank each of them, but then this would become a very long and unwieldy piece. I will, however, mention specifically two individuals who were no longer officially on Council in 2016-2017, but who nevertheless provided tremendous service to GAC® and to Canadian geoscience. David Corrigan had left Council in the spring of 2016, but graciously offered to return as unofficial Programs Chair in the fall when his successor had to step down for personal reasons. This was a critical interval for our conference planning, with the 2017 Kingston GAC-MAC mere months away and the 2018 Resources for Future Generations meeting requiring considerable efforts on the part of GAC®; David's remarkable efforts allowed us to keep our inputs on track. Former president Sandra Barr also did remarkable service; she continues to carry out the invaluable dual role of Book Editor and presidential advisor, providing invaluable advice as the *eminence grise* of the organization.

The President of GAC® has the opportunity to talk to many different people during the course of the years. My conversations with members emphasized to me the great passion of geologists for geology, as our members carry out so much voluntary service in support of the science. It is remarkable how hard people work on behalf of Canadian geology, their own subdisciplines, and GAC's sections and divisions. There is so much great effort and advocacy going on across the country, but we do need to better coordinate our efforts to make them more effective.

My whirl in the presidential tornado culminated at the very successful GAC-MAC conference in Kingston. The Local Organizing Committee did stellar work in planning this conference and the sessions and events went flawlessly, making this meeting a very easy one for me! Many thanks to Kurt Kyser, Dan Layton Matthews, and all the rest of the team for their efforts; those in attendance thoroughly enjoyed the time we spent in their beautiful town.

At the Kingston meeting, GAC® Councils, present and past, celebrated Karen Johnston-Fowler's long career at headquarters, during an evening reception in her honour. There was an excellent turnout of past presidents, perhaps the most ever gathered together in one place, evidence of the tremendous relationship Karen has maintained with Council over so many years. As Past President I look forward to continuing to work with Karen Dawe and Eleanor Penney as they adapt to their revised roles at GAC® HQ.

In Kingston I also said goodbye to the presidential tornado, passing the reins to Steve Morison (does a tornado have reins?). During the year, I thought at times that it might be better if the presidential term could be two years rather than just one; there is so much to learn, and the second year of a two-year term might allow a person to apply that knowledge. Among GAC® presidents, Steve is in the unique position of having a two-year presidency – though in his case the two years are almost two decades apart! I know that Steve will apply his substantial experience, focus, and organizational skill to this task, and I look forward to assisting him during 2017-18.

Graham Young
Past President, Geological Association of Canada

GeoFact: Jun 30 1817: Joseph Dalton Hooker, botanist, plant collector, and friend of Charles Darwin, born in Halesworth, Suffolk, England.

Medals and Awards

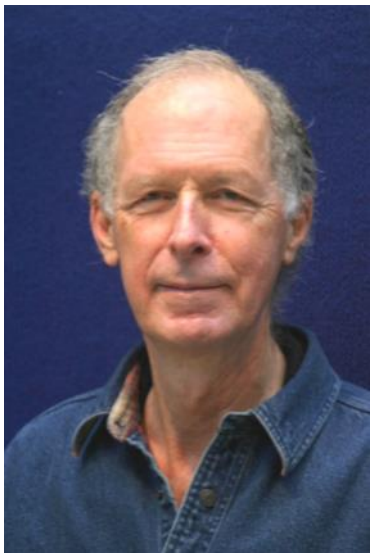
National Awards

Logan Medal
Roy Hyndman

The Logan Medal, the highest award of the Geological Association of Canada is presented to an individual for sustained distinguished achievement in Canadian earth science.

The 2017 recipient is **Roy Hyndman**, Geological Survey of Canada (Pacific). Roy Hyndman is one of Canada's most respected Earth scientists. His contributions to the science of tectonics and geodynamics cross the boundaries of land and ocean, geology and geophysics, and fundamental research and societal needs. He is well known for his ability to establish new conceptual frameworks from multidisciplinary observations.

Roy Hyndman is a world leader in subduction zone research. His theory of thermally controlled seismogenic zone of subduction megathrusts laid the foundation for assessing hazards of great Cascadia earthquakes in Canada and United States. His study of the serpentinization of the forearc mantle wedge strongly influenced the direction of subduction zone research worldwide. He led the establishment of a tectonic framework of the Queen Charlotte margin that involves very oblique plate subduction and slip partitioning, a theory that was dramatically verified by the 2012 M=7.8 Haida Gwaii thrust earthquake. Roy has also made important contributions to continental geodynamics. His thin-skin stress-transfer model for the northern Canadian Cordillera is a guiding model for the study of active deformation in this vast area. His tectonic framework relating back arcs, mobile belts, and cratons has had a transformative impact. Today, he is championing the provocative concept of widely distributed, thermally activated lower crustal viscous flow in the North America Cordillera. Roy has also guided other fundamental research, and at a variety of spatiotemporal scales. He is globally recognized for his studies of the thermal state of the lithosphere, heat and fluid flow processes in accretionary prisms, and electrical properties and fluid contents of the lower crust. One of the most popular models of gas hydrate formation in active margins is his contribution.



Roy Hyndman is not only an outstanding researcher but also a visionary scientific leader. He played a leadership role in many Canadian and international programs including LITHOPROBE, NEPTUNE-Canada, IODP, and SAFOD (a component of U.S. EarthScope). He was formerly Director of the Pacific Geoscience Centre of Geological Survey of Canada and President of the Canadian Geophysical Union (CGU). His expertise is frequently tapped for reviewing various institutional and national programs.

Roy's scientific productivity and influence are partially reflected in the ~250 peer-reviewed publications, >14,500 citations to his work, and an H-index of 55 (Web of Science) or 65 (Google Scholar). He is a Fellow of the Royal Society of Canada and a Fellow of the American Geophysical Union, and was the recipient of the CGU J. Tuzo Wilson Medal in 2001.

J. Willis Ambrose Medal
Stephen Johnston

The Ambrose medal, named after the first GAC® President, J. Willis Ambrose, is awarded to an individual for sustained dedicated service to the Canadian earth science community.

The 2017 Ambrose Medalist is **Stephen T. Johnston**, University of Alberta. His short citation reads: "For two decades of continued service representing the interests and advancement of Canadian earth sciences at every level on national and international committees, editorships and in the media".

Acceptance by Dr. Johnston: Words cannot convey how honoured and humbled I am to be receiving the Ambrose medal, especially to be receiving it here in Kingston at the University where J. W. Ambrose taught and worked. And it is a special honour to receive the award from Steve Morison who was my boss when I worked for the geological survey in Yukon, and it was Steve who approved of my request to join GAC® Council.

My links to Queen's University are many. My Ph.D. supervisor Philippe Erdmer did his Ph.D. here at Queens, and hence his supervisor, Herb Helmstaedt, is my scientific grandfather. And Queen's was the site of my first presentation as a Ph.D. student. The occasion was a Cordilleran tectonics workshop (an annual event started by Ray Price and still going strong to this day). Much to my chagrin, my parents, who lived in Oakville, Ontario, insisted in coming to see my talk. So as nervous as I was about giving my first talk as a Ph.D. student, I was more mortified by the presence of my parents in the audience. I managed to make it through my talk, but at the end of my presentation my work came in for harsh criticism by another student at the time who I won't name, except to say that her name rhymes with Vicki Hansen. So I was listening to Vicki and trying to fathom a response to her criticisms when my mother jumped up from her seat and quickly started across the room toward where Vicki stood. My Dad, who may have been sleeping, then jumped up and headed after my mom, trying to get to her before she got to Vicki. My mother is Irish. And in retrospect, I may have faced less criticism over the course of my career if I had brought my mother to more conferences. Finally, an Irish relative of mine was a Fenian terrorist who ended up incarcerated in Kingston Penitentiary. He died there and is buried here in Kingston …

Sticking with the Irish theme, It was suggested to me many years ago by an Irish relative, that the key to a fruitful life was to always surround yourself with people better than yourself. So I want to thank my nominators, Paul Hoffman, Brendan Murphy and Dante Canil. Having Paul, Brendan and Dante as friends is to be constantly challenged to be better. Brendan was one of my first TAs at McGill University, and I remember him advising me during my first field school that "you can't be a geologist if you can't drink all night and map all day". Now age has softened Brendan somewhat - he no longer insists on mapping all day. Dante and I were Ph.D. students together at the University of Alberta, and I was then lucky enough to end up as a colleague of Dante's for 17 extremely fruitful and challenging years at the University of Victoria. Dante was my friend and mentor, but more than that he was my geological spouse. We could spend a lot of time debating who was the husband and who was the wife. And regarding Paul - I want to thank Harvard for coaxing Paul to leave the University of Victoria for Boston, enabling me to join the Earth System Science team that Chris Barnes was busy building at UVic at that time.

The Ambrose medal is given out in recognition of contributions to the Earth Science community, but I don't think of my work on behalf of our community as anything other than seeking out opportunities to be challenged by people better than myself. Just one example - I remember being on council while Mary-Claire Ward was president. Mary-Claire was in the throes of dealing with cancer at the time, and despite being in the midst of a harsh program of chemo-therapy, she managed to preside over the longest meeting I have ever had to endure. Her stamina is something I will never forget, and something that inspires me every time that I feel overwhelmed. There are numerous other examples, but my point is clear: volunteerism isn't time subtracted from or taken away from your job. It isn't even a noble enterprise conducted by selfless people. No - volunteerism is an opportunity to work with and learn from some incredibly accomplished and inspiring people.

And so I humbly accept this award not as an accolade for my efforts, but as a reminder of all the talented and inspiring people that I have had the opportunity to work with.

My sincere thanks to all of you.

W. W. Hutchison Medal
Christie Rowe

The W. W. Hutchison Medal is named after Dr. William W. Hutchison in recognition of his many contributions to the Geological Association of Canada and to Canadian and international geoscience. The medal is awarded to a young individual for recent exceptional advances in Canadian earth science research.

The 2017 Hutchison Medalist is **Christie Rowe**, McGill University. Her short citation reads: "Dr. Christie Rowe is awarded the medal for outstanding contributions to Canadian earth science research on the geology and physics of earthquakes, the deformation of rocks caused by plate motions, fluid-rock interactions, and the formation of ore deposits".

Acceptance by Dr. Rowe: Thank you Victoria Yehl for that very generous citation, and to the nominators and the Awards Committee for this phenomenal honour. I've been incredibly lucky. I think that there are a lot of strong and creative young scientists working in Canadian earth sciences, the difference between the one getting the medal today and all the rest of them is the community of friends and colleagues and conference acquaintances who will do things like nominate you for a medal and write outrageous letters that vastly overestimate your future impact, many of whom are in this room.

I really want to thank especially my colleagues at McGill. It's such a supportive environment where I've been allowed to do whatever I want, and enabled me to empower my students to do the same. I want to thank my mentors who have encouraged me, especially Casey Moore, Chris Harris, Emily Brodsky and Andrew Hynes. My terrific grad students and postdocs: Nils Backeberg, Naomi Barshi, Sam Carruthers, Nick Harrichhausen, Ben Melosh, Noah Phillips, Christine Regalla, Catherine Ross, Tim Sherry, Matt Tarling, and Erik Young, who have done all the really heavy lifting. I want to thank Jamie Kirkpatrick, my partner in field work and in life. I want to thank the Structural Geology and Tectonics community who have welcomed me with open arms. I've only been in Canada for six years and I've already really enjoyed getting to know everybody and creating links at different Canadian institutions.

I'm very excited to embark on the Hutchison Lecture Tour this coming year, so I can get to know even more of the community and hopefully meet some very promising students from across the country who want to come work with me at McGill.

E. R. Ward Neale Medal
Guy Narbonne

The Neale Medal is named after the legendary E. R. Ward Neale. The award recognizes outstanding efforts to communicate and explain geoscience to the public through one or more of the following vehicles: public lectures, print or electronic media articles, school visits, elementary and secondary school educational materials, field trips, science fairs, and other public communications.

The 2017 Neale Medalist is **Guy Narbonne**, Queen's University. His short citation reads: "Through a unique combination of exceptional scientific discovery and commitment to public outreach, Professor Guy Narbonne, Queen's University, has brought the excitement of understanding the evolution of life to all Canadians, most notably through his promotion of the world-class fossil site at Mistaken Point".

Acceptance by Dr. Narbonne: I would like to thank the Geological Association of Canada, the first professional organization I joined nearly 40 years ago, and my nominators – Peir Pufahl at Acadia University, George Green at Parks Canada, and Andy Knoll at Harvard – for this award in earth science outreach. Just as the research isn't done until you've written the publication, the research isn't done until you've told all the stakeholders what they got out of it. I have been

blessed with 35 years of NSERC funding, and the people of Canada are the ultimate stakeholders in my research.

Thanks are due to my doctoral professor, Owen Dixon, who started me on the road to independent research, and my PDF supervisor and life-long mentor and friend, Hans Hofmann, who introduced me to the excitement, challenges, and rewards of Precambrian paleontology. On this important 175th anniversary of the Geological Survey of Canada, I want to thank Garth Jackson and Ray Thorsteinsson for giving me a chance to assist them in GSC helicopter-based arctic mapping programs (Operation Borden and Operation Devon) and Bill Fritz and Jim Aitken without whose field guidance the discoveries of early animal life in NW Canada that launched my Ediacaran research career would not have happened. Other colleagues worldwide who have been instrumental in different aspects of my professional development include Andy Knoll, Malcolm Walter, Jim Gehling, and Patricia Vickers-Rich. Peter Trusler is the artist of the spectacular fossil reconstructions that bring my paleontological studies to life.

Queen's University hired me in 1982 and has provided continual help in my teaching, research, and public outreach in the geosciences over many years. They also provided me with the best colleagues and students I could ever hope to meet, and this wonderful combination has kept me happily working at Queen's ever since. I owe an especially deep debt to my colleagues in Geological Sciences and Geological Engineering, in particular Noel James, Bob Dalrymple, and Kurt Kyser, with whom I wrote many papers and who changed my outlooks on sedimentary geology forever. I am also grateful to the incredible students I teach every year, ranging from excited students in my 1st year course in "History of Life" to graduate students and post-doctoral fellows who are rapidly establishing themselves as the next generation of the lineage that began with Hans Hofmann.

I am especially grateful to Richard Thomas, Sian French, and Jeri Graham at Parks and Natural Areas NL who encouraged my long-term scientific research at Mistaken Point. We then worked in partnership with Parks Canada and the local communities of Portugal Cove South and Trepassey to achieve World Heritage recognition for this tiny bit of coastline that spectacularly records "when life got big" 570 million years ago. Each group brought different perspectives to the table, but we shared a single vision and an immense respect for each other that was the envy of the many international visitors to Mistaken Point during our decade-long quest for UNESCO World Heritage status. We did it, and there is no one in the world I would rather have worked with than you! Advice provided by John Calder and Martin Gibling from their experiences in obtaining World Heritage status for Joggins Fossil Cliffs significantly aided our promotion of Mistaken Point, and now it will be my turn to provide a similar roadmap to geoscientists promoting other Canadian sites worthy of national and global geoheritage status.

Finally, and most importantly, thanks to my wife, Carolyn Greentree, who makes my life complete and is my constant companion in explorations of modern and ancient life on our planet.

CJES Best Paper Award

The *Canadian Journal of Earth Sciences* "Best Paper Award" is an annual award given jointly by the NRC Research Press and the Geological Association of Canada. The award is given to **Richard A. Glen**, **Elena Belousova**, and **W.L. Griffin** for their 2016 paper: "Different styles of modern and ancient non-collisional orogens and implications for crustal growth: A Gondwanaland perspective". *Canadian Journal of Earth Sciences* 53: 1372–1415.

Steve Morison (L) presents Steve Johnston with the Ambrose Medal at the GAC® Awards Luncheon, Kingston.
Photo: Jonathan Oliver

Sections and Divisions Awards

Canadian Geomorphology Research Group
J. Ross Mackay Award

Presented in recognition of a significant achievement by a young geomorphologist within Canada. Its purpose is to foster the development of geomorphology in Canada and to provide recognition of young scientists in this field. The recipient in 2016 was **Alberto Reyes** of the University of Alberta. Below, Dr. Nicole Couture (CGRG President) presents Dr. Reyes with his award at the recent CGU meeting in May 2017 in Vancouver, BC.

Canadian Tectonics Group
Jack Henderson Prize

The Jack Henderson Prize is given by the Canadian Tectonics Group for the best theses.

Jack Henderson Prize for Best Ph.D. thesis

Diane Skipton, University of Ottawa.
Title: *Paleoproterozoic Metamorphism, Deformation and Exhumation of Mid-Crustal Rocks of the Trans-Hudson Orogen on Hall Peninsula, Baffin Island*.
Supervisor: Dave Schneider

Jack Henderson Prize for Best M.Sc. thesis

Benoit Charette, University of Waterloo.
Title: *Long-lived Anatexis in the Exhumed Middle Crust from the Torngat Orogen and Eastern Core Zone: Constraints from Geochronology, Petrochronology, and Phase Equilibria Modeling*. Supervisor: Carl Guilmette.

Mineral Deposits Division
Duncan R. Derry Medal

The Duncan R. Derry Medal is the highest award bestowed by the Mineral Deposits Division. It is awarded annually to the outstanding economic geologist who has made significant contributions to the science of economic geology in Canada. The medal is awarded to **T. Kurtis Kyser**, Queen's University. He is recognized for "his utilization of isotopic fractionation in our understanding of mineral deposits".

Acceptance by Dr. Kyser: Thank you for this marvelous award. There are four "THMs" (take home messages) I would like to make in this humble thanks. The first is that there are few names mentioned because to list those really responsible for this award would require days—it is their award more than mine and they know who they are. The few must mention are Glen Caldwell who brought me to Canada, Noel James and Herb Helmstead who brought me to Queen's, and Dan Layton-Matthews, Gema Olivo, Ray Price and all my colleagues at Queen's, who have made it a pleasure to be there. My most sincere thanks to all those and the myriad of others who made this possible—this medal is really yours more than mine.

The second THM concerns Derry himself. Our geoscience community is greatly indebted to Duncan R. Derry, the namesake of this award, who lived the dream that most of us in Earth science have of working on a diversity of relevant and challenging applied geological problems in a spectrum of countries, especially Canada. He was a broad thinker who had a talent for integrating seemingly diverse data sets into significant results that ranged from a tectonic map of Canada to the classic book, the *World Atlas of Geological and Mineral Deposits*—exactly what we should all be trying to do. As professional, dedicated Earth scientists, many of us do this, although not to the

extent of the visionary Duncan. Research in ore deposits is a passion—those of us in ore deposits research are trying to understand the biggest mistakes nature makes, namely aberrantly high concentrations of elements, and predict why they occur where they do, but just as importantly, why they are absent from where they should be. Nature doesn't make too many mistakes, which makes economic geology exceedingly challenging as Duncan Derry, and many others, have taught us.

The third "THM" concerns passion. When I was six years old growing up in San Diego, CA, (don't worry—this is not my life story) I was fascinated with "the lack of weather" (that abruptly changed after arriving in Canada where weather is an obsession), but also with insects—entomology was surely in my future. We used to catch Monarch and Yellowtail butterflies in Mason jars. The lids had to have holes in them to allow the insects to breathe, so we would use a nail and hammer to perforate the lids. Little did I realize then that the hammer was in my future, not what was in the jar. With time, isotopes became my focus and their application to understanding processes in the geosphere has allowed my research group not only to examine ore deposits, but also the geosphere-biosphere interface, so we can study butterflies and their challenging migration habits and realize the dream I had as a kid and more. Realize your passions—real ones don't diminish with time, they only hibernate and then return again full circle.

The final "take home message" concerns recycling. Coming to Canada was one of the best serendipitous events of my life (and not just for my career). Canada is a place for integrating both pure and applied research, a division that is acceptable by most other countries, but in Canada there has to be, and should be, a benefit for your research and a broad application of the results. Just because you work in ore deposits does not make what you do applied—applied requires vision, just as does basic research. When I came to the University of Saskatchewan in 1982, I wanted to "give back" to the province and country from which I so aptly benefitted—hence a recycling of effort into potash and uranium that are so strategic to the people in the province. I was "mentored" (even though there was no such reference back then), meaning those from whom you learn both survival and thrival techniques in your profession and life, by a myriad of colleagues at the U of S, who helped me with HQP (another non-existence term at that time, but an entity every seemed to value despite its lack of label). Moving to Queen's was another serendipitous move, but one of great value in that new directions presented themselves, and "mentoring" and "HQP" continued with my colleagues. University and funding agency adapted these buzz words, despite the concept being much larger than their definitions and being there for a long time before they discovered the labels. Let us hope that their definition also includes "mentoring" by those younger or less experienced than you, including "HQP". If not, we may continue to understand "why" ore deposits form, but we will fail at understanding "why not". Dear colleagues, now something traditional—thanks oodles for this award and thanks for helping me achieve many of my goals in life.

William Harvey Gross Award

The William Harvey Gross Award is bestowed annually by the Mineral Deposits Division to a scientist less than 40 years of age who has made a significant contribution to the field of economic geology in a Canadian context. The medal is awarded to **John Hinchey**, Government of Newfoundland and Labrador. He is recognized for his "outstanding contributions to research on Canadian metallic mineral deposits, student field training, and demonstrating the critical role of detailed mapping combined with geochemistry in advancing knowledge of resources".

Acceptance by Dr. Hinchey: MDD executive, colleagues and friends, I am honored to be here today to accept the William Harvey Gross Medal of the Mineral Deposits Division (MDD) of the Geological Association of Canada (GAC®). After spending close to two decades studying geology, with a focus on mineral deposit styles and environments, acceptance of this award is quite humbling. I would like to thank my Ph.D. supervisor Keiko Hattori for my nomination, and colleagues for supporting the

nomination. As with many awards of this type, the merits on which my acceptance is based not only reflect on my past experiences and accomplishments, but more so reflect my collaborations with, and my learning from, others.

My early interest in geology was spurred on by my uncle Jim who worked with Falconbridge during my childhood, and who would always bring me interesting samples for my rock collections. This interest led to me taking earth science courses during high school and then at Memorial University.

Memorial University's undergraduate Earth Science program in the 1990's was exceptional. The program had a focus on teaching and providing hands-on field experience and techniques; techniques that are still the focus of my research today. During my undergraduate studies I was fortunate to obtain several jobs as a student assistant with the Geological Survey of Newfoundland and Labrador (GSNL). These jobs offered me the opportunity to do a B.Sc. honours thesis on a magmatic sulphide occurrence in Northern Labrador, under the direction of Dr. Derek Wilton (MUN) and Dr. Andrew Kerr (GSNL), as well as a M.Sc. thesis examining a newly discovered gold occurrence, under the direction of Derek and Mr. Cyril O'Driscoll (GSNL). These projects allowed me an opportunity to explore and develop field techniques, and it kick started my career in mineral deposit research. I am truly appreciative of the opportunities afforded to me by Derek and the GSNL in these early stages of my career.

After completing my M.Sc., I moved to Ontario to begin Ph.D. studies. As common in many of life's adventures, the process began on a bumpy road. However, I eventually contacted Dr. Keiko Hattori and I began a project working with Keiko at the University of Ottawa investigating the nature of the platinum group element mineralization at the Lac des Iles palladium deposit. Right from day one Keiko and I hit it off and we had an exceptional working relationship; even though it must have taken two to three months for each of us to understand each other's accents! Keiko's supervisory abilities and constant support were exceptional and made for a very enjoyable and very effective learning environment. Although the intricacies of the Lac des Iles deposit proved to be very challenging, Keiko's door was open at all stages of my project and she was available to discuss any aspect of the study at any time. When I began my thesis project I had the goal of finishing in less than four years, and with the help of Keiko's constant support and engagement I made my goal. I am truly grateful for my experience working with such an amazing supervisor.

Prior to finalizing my Ph.D., I was offered a job back in my home province of Newfoundland and Labrador working for the Geological Survey. Once my thesis was fully completed I returned to Newfoundland to begin my career with the survey. My first field assignment was to study the VMS deposits and mineral potential of the Victoria Lake supergroup in central Newfoundland. With the Duck Pond Mine beginning production shortly after my appointment and with new discoveries causing a buzz in my new study area, my lack of hands-on field experience in VMS systems meant I had a steep learning curve to get prepared for a field program. With the assistance of numerous survey, industry, and academic personnel I quickly learned the ropes regarding VMS systems and the geology of the area. I extend thanks to many colleagues from the survey, as well as numerous industry personnel, for many helpful discussions. However, my initiation into VMS mineralization styles and field work was most greatly aided by the fortuitous return of my great friend and colleague Dr. Stephen Piercey to Newfoundland. Steve and I have been collaboratively working on VMS mineralized systems in central Newfoundland for many years. We have shared field camps where the evenings were full of stimulating discussions regarding local geology and mineralization as well as world-wide examples of VMS mineralization. I thank Steve for all his assistance over the years and for his willingness to entertain all my inquiries regarding VMS systematics.

While working with the survey as a project geologist I was also given the opportunity to work on numerous other types of deposits including magmatic sulphides, magmatic Ti-V deposits, and sedimentary hosted copper deposits. The survey has been a great place to work. Newfoundland and Labrador's diverse geology affords an economic geologist a wide open slate of mineral deposit types to study. The survey has had an exceptional group of scientists, past and present, all of whom are very engaged and work extremely well as a team. I owe a special thanks to many colleagues including Andy Kerr, Hamish Sandeman, Brian O'Brien, Greg Sparkes, James Conliffe, and numerous others for the many years of great field excursions and open dialogues on the mineral deposits and potential of the province.

Finally, I owe a huge thank you to my family. My parents have supported me throughout my education and career, and they have always prompted me to strive to be my best. My wife Alana, also a geologist with the Geological Survey of Newfoundland and Labrador, has been my biggest supporter throughout my career. Being a geologist she not only understands the importance of field work, but she also understands the sacrifices associated with maintaining a work/life balance. Finally I would like to thank my three kids for their ever expanding interest in what mom and dad's careers are about, which makes it a little easier for them to understand and accept the times that we are away from home for fieldwork. Thank you.

Paleontology Division
Elkanah Billings Medal

The Billings Medal is awarded to an individual in recognition of an outstanding long-term contribution to any aspect of Canadian paleontology or by a Canadian to paleontology. The Billings Medal is named in honor of Elkanah Billings, Canada's first paleontologist. The 2017 winner is Dr. **George Pemberton** of the University of Alberta.

Citation: The Elkanah Billings Medal is awarded to Dr. S. George Pemberton, in recognition of his outstanding contributions to Canadian paleontology as an ichnological researcher, an educator, and a mentor. Dr. Pemberton's research has elevated the field of Ichnology from an obscure and fringe discipline of paleontology to an integral element of any multi-disciplinary sedimentologic and stratigraphic analysis of the rock record. George introduced the use of Ichnology to identify brackish-water depositional systems, was instrumental in the application of trace fossil analysis to the developing field of sequence stratigraphy, pioneered combining ichnology with sedimentology and stratigraphy to build complex, multi -disciplinary geologic and reservoir models, and investigating the role of trace fossils and bioturbated fabrics on the petrophysical properties of conventional and unconventional siliciclastic and carbonate reservoirs. He has published over 250 technical papers and given approximately 300 scientific presentations. George is the Editor and co-founder of the international journal *Ichnos*, the official journal of the International Ichnological Association.

Dr. Pemberton is a gifted teacher who inspires the deepest respect from his students and fellow scientists. He has graduated 53 M.Sc. and 16 Ph.D. students, 7 of whom are now professors in Canadian universities, and mentored 8 post-doctoral fellows. His dedication to the education of young paleontologists has been recognized by receiving the Distinguished University Professor designation from the University of Alberta (2009), the Killam Award for Excellence in Mentoring (2009), the Grover E. Murray Memorial Distinguished Educator Award (2008), and the Killam Annual Professor Award (2005-06). In addition to academic teaching, he has conducted over 120 short courses for petroleum companies and professional societies around the world, responsible for the training of 2800 professionals. Based on his exceptional record of distinguished achievement in Canadian paleontology, Dr. George Pemberton is a most deserving recipient of the Elkanah Billings Medal.

GeoFact: Apr 21 1821: At a meeting of the Geological Society in London, William Conybeare and Henry de la Beche describe a new fossil animal and name it Plesiosaurus. The animal was described from specimens almost certainly collected by the Anning family.

Volcanology and Igneous Petrology Division Career Achievement Award

Awarded to **Barrie Clarke** for his lifetime scientific contribution to the fields of Volcanology and Igneous Petrology.

Nomination by Marcos Zenilli and Jaroslav Dostal: We wish to nominate Dr. D. Barrie Clarke for the Career Achievement Award of the Volcanology and Igneous Petrology Division. We both have known Barrie for more than 40 years and had the chance to witness his excellent contributions to igneous petrology and volcanological science both in Canada and abroad.

His ground-breaking research on the Tertiary basalts of Baffin Bay and their counterparts in Greenland, on which he started publishing in 1967, made a significant impact on the then burgeoning theory of Plate Tectonics and the evolution of the North Atlantic, and continues to be cited in the literature. Although with a strong background and interest in experimental mineralogy and basalt petrology, his research took an important turn when he realized the monumental size and complexity of the South Mountain Batholith (Nova Scotia) in his backyard, the largest granitoid batholith in the Appalachians. His supervision of student theses starting with the M.Sc. by Colin B. McKenzie (respected geoscientist in government and industry) and the B.Sc. Honours thesis by Rebecca Jamieson (Professor, Depart -ment of Earth Sciences, Dalhousie), both completed in 1974, initiated an almost continuous chain of SMB studies involving students, which continued to his retirement. In 1980 he published an examination of plutonic rocks in Nova Scotia (in Virginia Polytechnic Institute Memoir) and in 1981 Barrie felt he had learned sufficiently to publish a review of peraluminous granites in the *Canadian Mineralogist*. Although he continued to do research and publish profusely on the mineralogy and petrogenesis of mafic and ultramafic rocks (for instance on the occurrence of a potassium – iron – nickel sulphide in nodules in kimberlite), he started to write numerous refereed journal publications on Nova Scotia granitoids. In fact, Barrie has brought these rocks from pink blobs on maps to arguably some of the best studied igneous rocks on the planet. This legacy of work on peraluminous granites has made the South Mountain Batholith a familiar name throughout the world, and attracted countless geoscientists to Nova Scotia, including international participants in various field excursions and workshops led by Barrie. Beyond the plutonic rocks themselves, he has added fundamental knowledge about the makeup of the Meguma Lithotectonic Zone.

Peraluminous granites pose particularly difficult petro-genetic puzzles, because of the need to consider both mantle and crustal melting processes and the difficulty of separating the petrological signature of the magma from that of its source and/or host rocks. Barrie has demonstrated that it is possible to work systematically through the intricacies of the problem to arrive at robust answers that offer general insight into the underlying processes. Barrie is not only an acknow-ledged expert on the igneous petrology of Nova Scotia but is unquestionably among the world leaders in granite petrology particularly of aluminous ("S-type") granites.

Barrie has been first and foremost an inspired and inspiring teacher. He was one of the most demanding teachers we have known, not tolerating anything less than a superior and timely performance, yet this stand has won him the indisputable respect and admiration from generations of students. We value in particular Barrie's "multiplier effect": he has shared his knowledge with enthusiasm and dedication, motivating hundreds of Atlantic Canada's students to wanting to know more about igneous rocks in general and Nova Scotia's igneous rocks in particular, and many of his former students continue to spread his legacy. And there is no indication that he is slowing down, as shown by his recent forensic study on the source of Titanic victims' headstones.

Acceptance by Dr. Clarke: I am exceedingly grateful to the Volcanology and Igneous Petrology (VIP) division of GAC® for its recognition of my petrological work. That work began 53 years ago when the incomparable Tuzo Wilson and I went to Baffin Island to investigate a possible link between its early Tertiary basalts and those of West Greenland, with a view to making a case for (pre-plate tectonics) "continental drift". With Tuzo

Wilson as my tectonics mentor, and with Wils Moorhouse and Jeff Fawcett in Toronto, plus Brian Upton, Keith Cox, and Mike O'Hara in Edinburgh, as my petrological mentors, I could not have had a more inspiring, and firmly grounded, start to my scientific career.

I was so incredibly fortunate that my career spanned the heyday of modern igneous petrology, which began with the epic basalt paper by Hatten S. Yoder and Cecil E. Tilley in *Journal of Petrology*, published in 1962 while I was still an undergraduate student. Following in the footsteps of Canada's (and Kingston's) own Norman L. Bowen, Yoder and Tilley set the new gold standard for integrating field, petrological, geochemical, and experimental evidence to solve petrogenetic problems. To varying degrees, the next generation of igneous petrologists tried to emulate what Yoder and Tilley had done, and in the following half century, our discipline made exponential gains in the understanding of the origin and evolution of magmatic systems.

Personally, it's been an exciting journey, and I am most grateful to Mike Keen who provided an opportunity for me to ply my trade at Dalhousie University. My petrological work began with those "terrestrial MORBs" in Baffin Island and West Greenland, then logically moved on to more conventional MORBs from Davis Strait, Labrador Sea, and Mid-Atlantic Ridge, through Kimberlites in Canada and southern Africa, and eventually culminating in peraluminous granites primarily in Nova Scotia. The stimulation from the petrogenetic challenges that this wide variety of igneous rocks presented, and the enormous sense of satisfaction derived from doing research with so many talented graduate and undergraduate students, have been the mainstays of my career. Now this Career Achievement Award is the ultimate highlight.

Also, much gratitude to my longstanding and esteemed colleagues, Jarda Dostal and Marcos Zentilli, who kindly took the time and trouble to nominate me for this award.

Leopold Gélinas Medal

The Volcanology and Igneous Petrology Division annually presents three medals for the most outstanding theses, written by Canadians or submitted to Canadian universities, which comprise material at least 50% related to volcanology and igneous petrology. A gold (plated) medal is awarded for the best Ph.D. thesis, a silver medal for the best M.Sc. thesis and an antique copper medal for the best B.Sc. thesis. Theses are evaluated on the basis of originality, validity of concepts, organization and presentation of data, understanding of volcanology, and depth of research.

Gélinas Award (Gold, Best Ph.D. Thesis)

Nomination by John Greenough: This year's winner of the Volcanology and Igneous Petrology (VIP) Gelinas Gold Medal award for the best Ph.D. thesis goes to **Donnelly Brian Archibald** for his remarkable thesis entitled: *The Stenian-Cambrian Tectonic Evolution of Central Madagascar*, supervised by Professor Alan Collins and Emeritus Professor John Foden at the University of Adelaide, Australia.

The thesis examines the composition of five magmatic suites emplaced between *ca.* 1100 and 500 Ma at a critical location in the East African Orogen for constraining the assembly of Gondwana. The project involved two field seasons in Madagascar, U-Pb geochronology, collection of oxygen and hafnium isotopic data and whole-rock major and trace element analysis of hundreds of rock samples. Together, this massive data set revealed a previously unrecognized active continental margin that lasted for *ca.* 500 Myr and resembled the present-day Pacific Ocean margin. A remarkable seven papers (published, submitted or in prep.) came out of the project and the VIP is pleased to acknowledge this major scientific accomplishment by awarding Dr. Archibald the Léopold Gélinas Gold Medal for 2017.

Acceptance by Dr. Archibald: I am honored to be named the 2017 recipient of the Léopold Gélinas Gold Medal for my Ph.D. research project. Firstly, I would like to thank the Volcanology and Igneous Petrology Division of the Geological Association of Canada for selecting my thesis for this prestigious award.

I would like to extend my gratitude to Professor Alan Collins (University of Adelaide) for his guidance and encouragement during the course of my Ph.D. Most of all, I would like to thank him for the opportunities to

experience exotic cultures while completing my project. These opportunities helped me develop as a geoscientist by providing me with the opportunity to travel throughout Australia and the world. I would also like to thank my co-supervisor Emeritus Prof. John Foden (University of Adelaide) for his guidance and support. This project would not have been possible if not for Theodore Razakamanana (University of Toliara, Madagascar). His upbeat personality, knowledge of the Madagascan geology and technical assistance made for two perfect field seasons. I would also like to thank those who assisted with the multitude of data collected in this project including Dr. Justin Payne (University of South Australia), David Bruce (University of Adelaide), Dr. Peter Holden (Australian National University), Dr. Richard Taylor (Curtin University), Dr. Diana Plavsa (Curtin University) and Dr. Chris Clark (Curtin University). Finally, I would like to acknowledge the staff at Adelaide Microscopy, in particular, Dr. Ben Wade, Ms. Aoife McFadden, and Mr. Angus Netting.

I was extremely fortunate to have been given the opportunity to study in Australia at the University of Adelaide for three years and to visit Madagascar twice. Madagascar is a beautiful country with wonderful, friendly people and exceptional geology. This fantastic experience has prepared me for what I hope to be a long and successful career in geosciences. Again, thank you to the GAC-VIP Division for selecting my thesis as the winner of the 2017 Léopold Gélinas Gold Medal.

Gélinas Award (Silver, Best M.Sc. Thesis)

Nomination by Dave Lentz: The 2017 Léopold Gélinas Silver Medal was awarded to **Michael Reid** for his thesis entitled *Direct observation of crystallization in the system $LiAlSi_4O_{10}$-H_2O: Implications for late stage crystal growth in lithium-rich pegmatites*. The research project was supervised by Alan Anderson at St. Francis Xavier University. The thesis was extremely well-written, organized and cutting edge academically. The results of the hydrothermal diamond anvil cell (HDAC) experimental study challenges current models for the formation of Li-bearing pegmatites. The role of aqueous fluids in pegmatite genesis is controversial with some authors suggesting they do not play a role at all. The HDAC experiments conducted by Mike demonstrated that lithium aluminosilicate minerals, commonly found in the interior zones of pegmatites, can, in fact, crystallize from a hydrous silicate melt in the presence of a separate, co-existing aqueous fluid. The aqueous fluid acts as a transport medium; supplying nutrients from the silicate melt to growing crystals. This study opens the door for future HDAC studies into other mineral systems and their behavior in the presence of aqueous fluids in pegmatite systems.

On behalf of the GAC-VIP Division, I would like to congratulate Mike on receiving the 2017 Léopold Gélinas Silver medal.

Acceptance by Michael Reid: I am very grateful to receive the 2017 Léopold Gélinas Silver Medal. First and foremost, I would like to thank the Volcanology and Igneous Petrology Division of the Geological Association of Canada for recognizing my graduate research by awarding me this medal. I am grateful to Dr. Alan Anderson (St. FX University) for his guidance throughout this research project. I would also like to acknowledge Dr. Jacob Hanley (St. Mary's University) and Dr. Chris McFarlane (UNB) for their assistance with analyses that proved to be essential to this study.

I am extremely fortunate to have conducted this research with Dr. Anderson, gaining invaluable experimental petrology experience. This medal not only serves as a reminder of the hard work and perseverance that went into this study, but highlights the importance of experimental research in the field of igneous petrology. I am truly honored to receive this award.

Gélinas Award (Bronze, Best B.Sc. Thesis)

Nomination by Dave Lentz: The 2017 winner of the Léopold Gélinas Bronze Medal is **Amy Cleaver** (Lakehead University) for her thesis entitled: *Mineralogy and Petrology of the Good Hope Carbonatite Occurrence, Marathon, Ontario*. She was supervised by Dr. Shannon Zurevinski. On behalf of the GAC-VIP Division, I would like to congratulate Amy on receiving the 2017 Léopold Gélinas Bronze medal.

Mineral Deposits Division
Howard Street Robinson Medal

The Howard Street Robinson Medal recognizes a respected and well-spoken geoscientist that will further the scientific study of Precambrian Geology and or Metal Mining through a presentation of a distinguished lecture across Canada. The medal is named in honor of Howard Street Robinson, a founding member of the GAC® whose bequest to GAC® in 1977 of approximately $100,000 makes the lecture tour possible. The bequest was "for the furtherance of scientific study of Precambrian Geology and Metal Mining". Thus the GAC's Mineral Deposits Division awards the medal in odd years, and the Precambrian Division awards it in even years.

The winner, representing the Mineral Deposits Division, is Dr. **Peter Hollings** of Lakehead University. He is recognized "for his outstanding contributions to understanding the tectonics, petrogenesis, and genesis of mineral deposits, including porphyry Cu-Mo-Au, orogenic Au, and magmatic Ni-Cu sulfide deposits". Dr. Hollings will undertake a lecture tour during 2017 – 2018.

Marine Geosciences Division
Michael J. Keen Medal

The Michael J. Keen Medal of the Marine Geosciences Division is awarded to a scientist who has made a significant contribution to the field of marine or lacustrine geoscience. It is awarded to Dr. **John Shaw**, Geological Survey of Canada (Atlantic).

Citation: This year the Marine Geosciences Division congratulates Dr. John Shaw of the Geological Survey of Canada as the winner of the 2017 M. J. Keen Medal. Dr. Shaw is an internationally renowned earth scientist who has made significant contributions to Canadian marine geoscience in three major themes. (1) He has used meticulous field work to document the details of Holocene sea level rise in Atlantic Canada and built on that knowledge to define and visualize the changing paleogeography of the region. This led to the unravelling the complex sea level and tidal range history of the Bay of Fundy and important contributions to the understanding of archeological sites. Through his long and varied experience, he has become the leading expert on the impact of rising sea level on the varied coastlines of Canada. (2) As the new technology of multibeam bathymetry became available, Dr. Shaw was among the first to fully recognize its potential for revolutionizing marine geoscience mapping. He developed the method of integrating multi-beam bathymetry and backscatter with core samples and high-resolution seismic profiling to map the surficial geology of nearshore areas. (3) Glaciation was the most important influence on seabed morphology and geology in the inner shelf areas where Dr. Shaw has mostly worked. Dr. Shaw succeeded in bridging the gap between marine and terrestrial geology and developed a clear understanding of the role of ice streams in the glacial evolution of the shelves of Atlantic Canada.

Dr. Shaw is highly respected by his colleagues as multitalented interdisciplinary scientist, good colleague and mentor to the younger generation of marine geoscience researchers at GSC and in Canada.

Service Awards
50-year Members

This award is presented to those members who have consistently paid membership in the GAC® for 50 years. The first time the award was presented was in 1997, on GAC's 50th Anniversary. The award consists of a special certificate and a gold pin. This year, the award is given to **Marcus H. Waring**, **John T. Andrews**, **Christopher R. Barnes**, **James E. Christopher**, **James M. Franklin**, **Robert J. Fulton**, **H. Leo King**, **John L. Kirwan**, **John W. Kramers**, **C. F. Michael Lewis**, **Raymond A. Price**, **Denis A. St-Onge**, **Phillip C. Thurston**, and **Gordon D. Williams**.

Certificates of Appreciation

The award recognizes those dedicated members of the Organizing Committees of our Annual Meetings who have made a significant contribution through voluntary service to both the Geological Association of Canada and the Mineralogical Association of Canada.

This year we are awarding Local Organizing Committee Members of both the Fredericton 2014 GAC-MAC and the Montreal 2015 Joint Assembly.

Fredericton 2014: **Dave Lentz**, **Chris McFarlane**, **Ann Timmermans**, **James Whitehead**, **Reg Wilson**, **Bruce Broster**, **Kay Thorne**, **Jim Walker**, **Sean McClenaghan**, **Adrian Park**, **Robin Adair**, **Ven Reddy**, **Crystal Laflamme**, and **David Keighley**.

Montreal 2015: **Galen Halverson**, **Normand Goulet**, and **Heather Short**.

Student Awards

Mary-Claire Ward Geoscience Award

The award is given annually and honours the memory of Mary-Claire Ward who died in 2004. At the time of her death Mrs. Ward was the chair of the PDAC's geoscience committee, chairman of Watts Griffis McOuat Ltd., and a past president of the Geological Association of Canada. She was a passionate advocate for the geosciences in Canada.

The intent of the award is to encourage and support a graduate student in Canada whose thesis contributes to our knowledge about the geological history of Canada. Mapping is a significant component of the winning thesis. The award is administered by the Geological Association of Canada (GAC®), the Prospectors & Developers Association of Canada (PDAC), the National Geological Surveys Committee, the Canadian Geological Foundation, and Watts, Griffis and McOuat Ltd.

This year, the award goes to **Holly Steenkamp** of the University of Laval for her Ph.D. thesis entitled *A tectonometamorphic history of the Tehery Lake–Wager Bay area, northwestern Hudson's Bay, Nunavut*.

Acceptance by Holly Steenkamp: Thank you, Dave Pattison, for the introduction. Thank you to the Geological Association of Canada and Prospectors and Developers Association of Canada for this great honour of receiving this award.

Thanks to the National Geological Surveys Committee and Canadian Geological Foundation and Watts, Griffis & McOuat Ltd. Thank you to Karen Johnston-Fowler and Eleanor Penney for making the arrangements so I could be here today.

For the past four years I have lived in Iqaluit, Nunavut, working for the Canada-Nunavut Geoscience Office. This has been an exceptional experience, especially for someone just starting a career in geoscience and field-based geology.

Two years ago, the Canada-Nunavut Geoscience Office was wrapping up a regional mapping project (the Hall Peninsula Integrated Geoscience Project) and looking to start something new.

When the opportunity to partner with the GSC on one of the GEM-2 projects was offered, it was a perfect fit for our office. In Nunavut, we know that the best way to accomplish such large-scale projects is through collaborations and partnerships.

However, when the opportunity to do a Ph.D. on the metamorphic history of the Tehery-Wager area was

offered, I admit, I was a little hesitant - I knew this would be a big challenge and I'd have to juggle work and my studies - but I had a lot of support from my managers, supervisors, and family, so I decided to jump in.

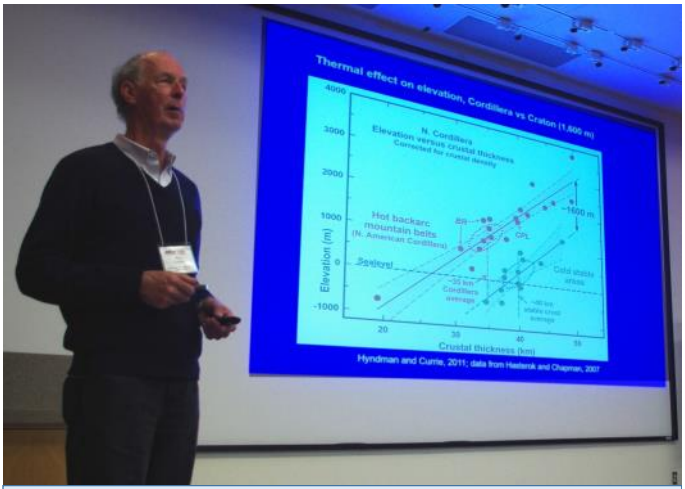
Throughout the past two years, I have been a part of a team that has modernized the bedrock and surficial geological mapping over the 45,000 km^2 area from the Tehery Lakes to Wager Bay.

Together, we are breaking new ground and discovering so much about an area that has been overlooked since the original reconnaissance mapping work of Lord, Wright, and Heywood from the 1950s and 1960s.

I am personally very proud of our work so far and know that there is still so much to discover.

Having lived and worked in Nunavut for over four years, I can honestly say that the Canadian Arctic is the last frontier in Canadian geoscience. There are still so many places with knowledge gaps and outdated or low-resolution mapping that need to be evaluated again. Knowing this, I would not be surprised to see this award go to more Nunavut-based projects in the future!

So again, I sincerely thank the award organizers for this honour, and Mary-Claire Ward for encouraging graduate students to learn more about Canada's geological history through mapping.



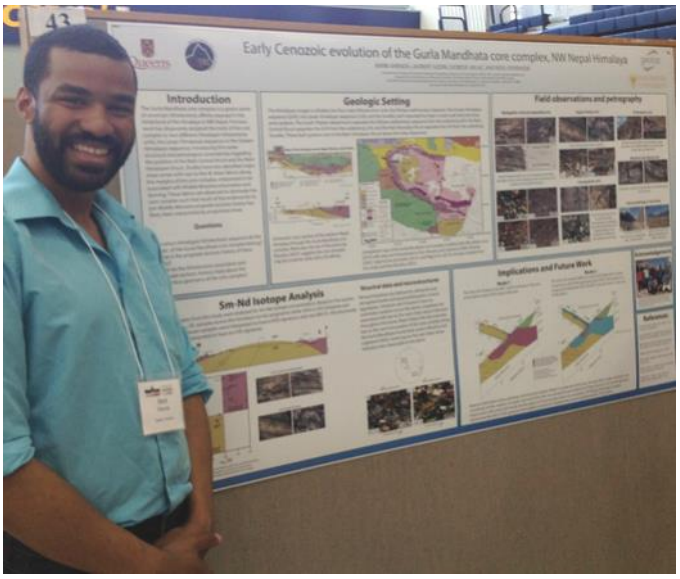
Roy Hyndman giving his Logan Medal Address in the BioSciences Auditorium, Queen's University, May 17. His lecture was entitled "What do mountain belts, mobile belts, lower crust detachment, regional seismicity, regional volcanism and regional metamorphism, have in common?"
Photo: Jonathan Oliver

Jerôme H. Remick Poster Awards

The purpose of the Remick Poster Awards is to acknowledge the growing use of posters as a legitimate geoscience communication vehicle, and to encourage higher standards by recognizing the best posters at any given meeting. The following awards were presented for posters at the GAC-MAC meeting in Kingston.

Gold (1st place)

Mark Ahenda, Queen's University, "Early Cenozoic evolution of the Gurla Mandhata core complex, NW Nepal Himalaya"

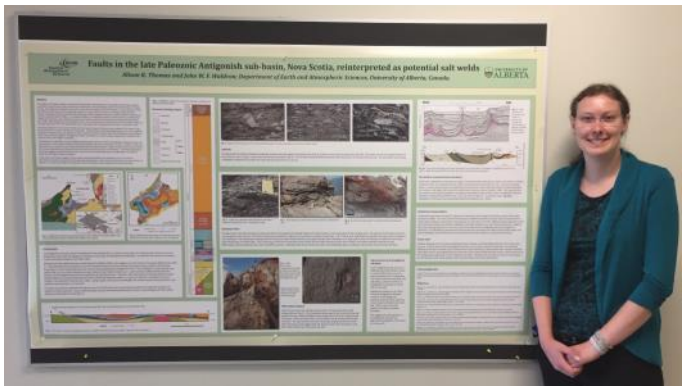


Silver (2nd place)

Cameron Drever, University of Waterloo, "The Bissett Creek flake graphite deposit: Hydrothermal or metamorphic?"

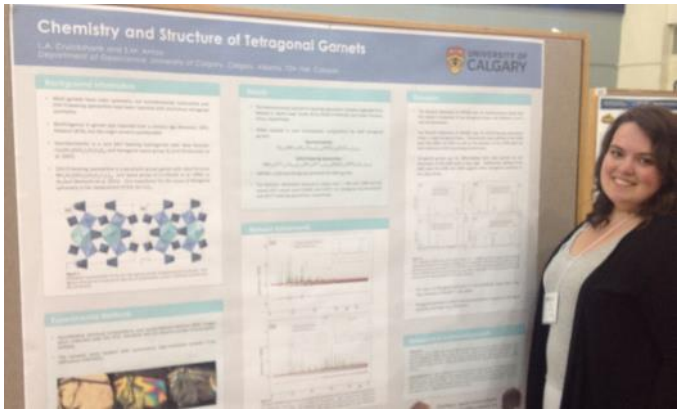
Bronze (3rd place)

Alison K. Thomas, University of Alberta, “Faults in the late Paleozoic Antigonish sub-basin, Nova Scotia, reinterpreted as potential salt welds”

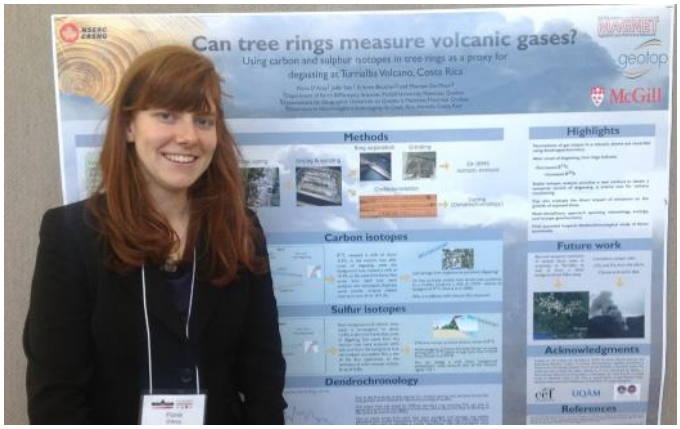


Honorable mentions:

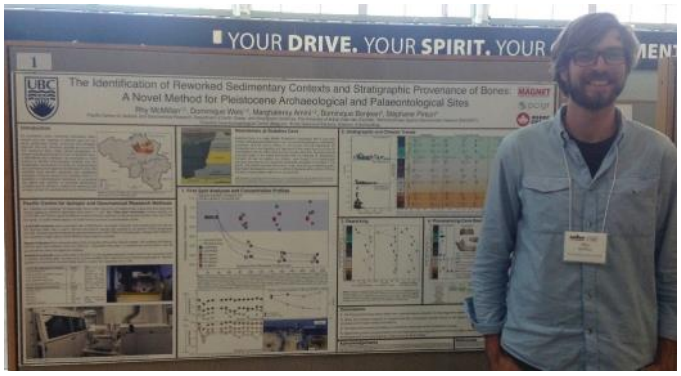
Laura Cruickshank, University of Calgary, “Chemistry and structure of tetragonal garnets”



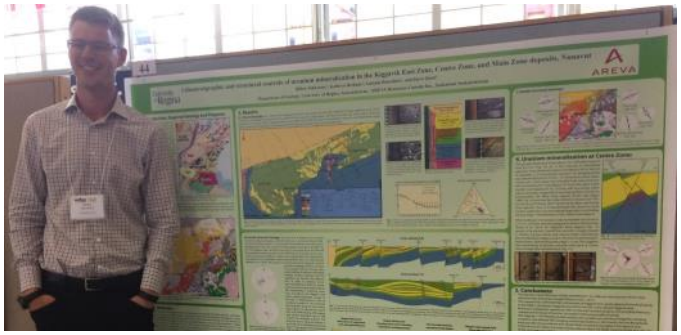
Fiona D’Arcy, McGill University, “Sulfur and carbon isotopes in tree rings as a record of volcanic activity: A new approach to studying the gases at Turrialba volcano, Costa Rica”



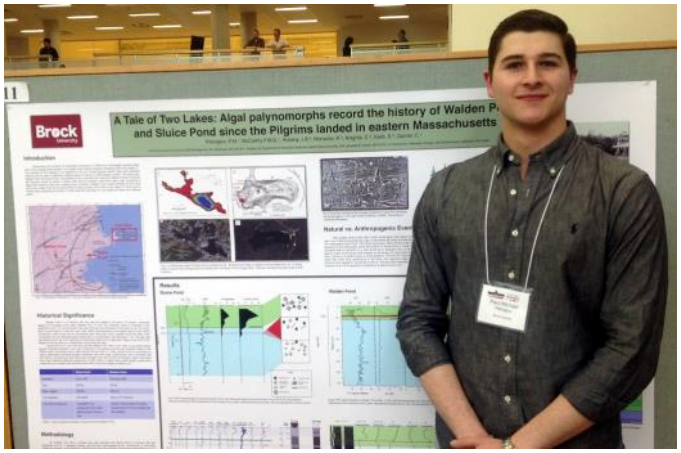
Rhy McMillan, University of British Columbia, “The identification of reworked sedimentary contexts and stratigraphic provenance of bones: A novel quantitative method for Pleistocene archaeological and palaeontological sites”



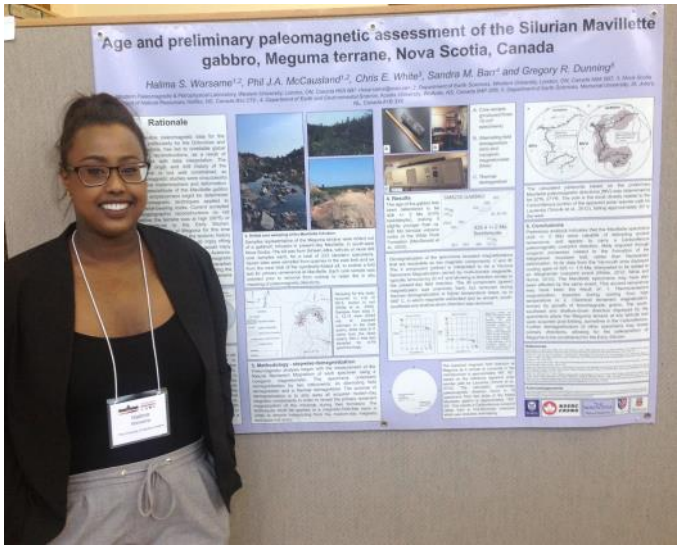
Dillon Johnstone, University of Saskatchewan, “Litho-structural controls of U mineralization in the Kiggavik Main and Centre zones, north-central Rae craton: A record of long-lived tectonism and ground preparation for U ore systems”



Paul Michael Pilkington, Brock University, “A tale of two lakes: Algal palynomorphs record the history of Walden Pond and Sluice Pond since the Pilgrims landed in eastern Massachusetts”



Halima Warsame, Western University, “Age and preliminary paleomagnetic assessment of the Silurian Mavillette gabbro, Meguma terrane, Nova Scotia, Canada”



Charlene Duffett, Carleton University, “Metamorphism of mafic metavolcanics at the Ore Chimney Mine, southwestern Grenville Province”

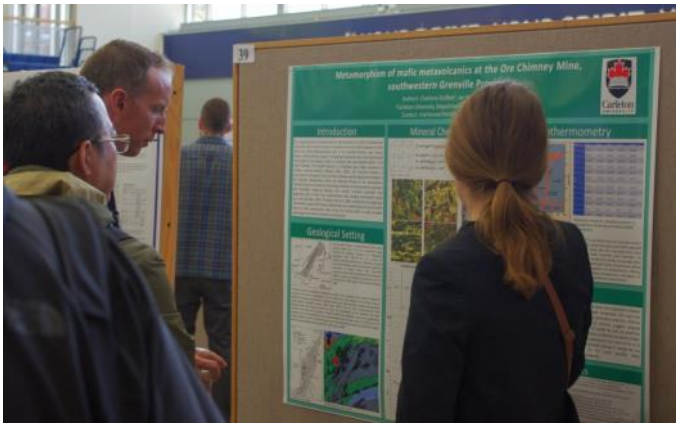


Photo: Jonathan Oliver

Iyse Randour, Université du Québec à Montreal, “Effects of marine inundation on till composition in permafrost terrain South of Wager Bay, central Mainland Nunavut”

Events and Happenings

CFES FCST
Canadian Federation of Earth Sciences | Fédération Canadienne des sciences de la terre

CFES Annual Meeting Summary and Overview 2017

The 18th Annual CFES Council Meeting and General Meeting was held in Ottawa on April 21 and 22, 2017. In addition to representatives of the various member organizations, Geoscientists Canada, Resources for Future Generation (RFG), the Partnership Group for Science and Engineering (PAGSE), and the Science Media Centre of Canada (SMCC) were all represented, providing a broad forum for the discuss-on of issues of national and international scope.

The last four years have been a period of rebuilding for CFES and the organization now has a solid foundation for the future. The Board worked hard throughout the past year to achieve that foundation, and CFES is now well-positioned to build further towards the key strategic goal of being the coordinated voice for Earth Sciences in Canada; this includes being a coordinator of public policy advocacy, a promoter of public awareness of Earth Science and Earth Science literacy, international representation of Canadian Earth Sciences, a forum for its member organizations, and a supporter of professional and academic Earth Science organizations in Canada. A key objective has been to develop the relationship between the member organizations and CFES, and this has improved over the past year, and will continue to be developed and extended to the general membership such that they have a better understanding of the important role that CFES plays in Earth Science in Canada.

Changes to the Board

CFES ***is*** the member organizations, and CFES Council comprises representatives of every organization. The CFES Board is the group of volunteers who run CFES on behalf of Council. The achievements of the past four years are in large part due to the significant efforts of Scott Swinden and Sandra Barr, who, in the past year, served as Past-President and President, respectively. A big thank you goes to Scott and Sandra. Iain Samson and Graziella Grech are the new President and President-Elect, respectively, and we have a dedicated board of directors who have responsibility for the various strategic priorities of CFES (www.cfes-fcst.ca/board-of-directors).

Education, Outreach and Advocacy

The Canadian Geoscience Education Network (CGEN)
CGEN (www.cfes-fcst.ca/cgen-edgeo) continues to be very active, including in its key program of EdGeo workshops. CGEN is always seeking new members and ideas, and interested people are encouraged to contact Lesley Hymers, CFES' outreach director (lhymers@miningmatters.ca). CGEN will play a significant role at the RFG 2018 conference, on engaging the public in matters related to Earth Sciences and resources. CGEN is also the lead in developing a new initiative on having geoscientists integrated into Canadian National Parks. More information is available at earthsciencescanada.com/cgen/index.php?page=home and Facebook: @CGEN2CanadianGeoscienceEducationNetwork.

PAGSE (*Partnership Group for Science and Engineering)*
PAGSE (pagse.org/en/main.htm) is a key mechanism for bringing expert opinion to the federal government, and CFES has representation on PAGSE. This is achieved through briefs written for the federal government, meetings with prominent people in funding agencies, and through their Bacon and Eggheads breakfast series of talks held on Parliament Hill in Ottawa and given to MPs, Senators, and staffers. The CFES Board, on behalf of its members, contributed over the past year to PAGSE documents on climate change, the pre-budget consultations, and the fundamental science review. Further discussion of the science review will occur in June. At the CFES annual meeting, we had a discussion with Maria DeRosa, the chair of PAGSE, which developed a better understanding of how CFES can represent the Earth

Science community. This will be most effective with input from member organizations on key issues, such as the pre-budget consultations. While this is a broad-brush document, it is important that CFES members understand themes of importance to the Earth Science community. PAGSE is also always looking for nominations for the Bacon and Eggheads series.

Science Media Centre of Canada (SMCC)
We had an interesting discussion with Jim Handman, Acting Executive Director of the Science Media Centre of Canada (www.sciencemediacentre.ca). This led to a much better understanding of how science journalism operates, and how we can help member organizations engage with the media. An additional aspect is that we can help enhance their database of experts.

Communication and Coordination

Website and Communications
The CFES website (www.cfes-fcst.ca) underwent a major redesign this year and we now also have a French version (www.cfes-fcst.ca/fr). We would like to see the website as a place for cross-fertilization among the various member organizations and we encourage you to place items on our news and announcements page, as well as links to your newsletters. We are also actively seeking people to blog about what they do and to write about perspectives on Earth Science. We also post all such items to Twitter (@CFESciences) and Facebook (@CFESciences). We also ask that member organizations place links to CFES on their websites, to help engage individual members in the broader Earth Science scene. We can supply a summary of CFES and its mandate for your websites and newsletters. The CFES website calendar now aggregates all events and meetings for the member organizations, and other groups. Please contact our Communications Director, Sarina Cotroneo, regarding any of the items mentioned above (sarinaec@gmail.com).

We recently undertook a member organization survey to better understand the priorities of the member organization representatives, especially regarding the CFES strategic priorities, on communication among the members of council, and between the member organizations and the CFES Board. This formed the basis for a productive discussion in Council of these issues. It is clear that the success of CFES is predicated on engaged member organization representatives, and several suggestions arose that are designed to enhance that, including focused teleconference council meetings through the year that address specific issues, and where various representatives from MOs can contribute to a discussion. The CFES Board need to hear from its member organizations about issues that are of high priority and that would benefit from a national discussion. A challenge that remains is timely response from member organizations on matters that come to our attention and that require broad input.

Resources for Future Generations

Several of our member organizations, as well as CFES, are engaged in the organization of the Resources for Future Generations conference (RFG 2018; www.rfg2018.org/en.aspx), which is designed as an international venue to address questions around supply and management of resources of all kinds (water, minerals, energy), including the societal impact. The objective is to "*Bring industry, academia, governments and civil society together to examine future demand for resources and our ability to deliver these resources with the highest environmental standards consistent with global sustainability goals".* As noted above, CGEN is heavily involved in the public engagement aspects of this conference and communicating Earth Science in education, and CFES has proposed a session on the nature of national geoscience communities and the benefits and challenges of speaking with one voice. John Thompson, Chair of RFG, gave an update at the annual meeting, and emphasized the need to get Canadian Earth scientists involved in the conference, something that is best achieved through our member organization channels. Promotional materials can be downloaded at www.rfg2018.org/en/RFG/2018/Rfg-Highlights/Promoting-RFG.aspx.

International

CFES continues to represent Canadian Earth Science internationally through its representation with IUGS and UNESCO. Two Canadians are currently on the IUGS Executive: Stephen Johnston, CFES' International Director, and Dr. Qiuming Cheng, who we are pleased to note is now the President of IUGS. Canadian involvement in UNESCO occurs through IGCP and the Global Geoparks program (see below). Any questions on international activities can be directed to Stephen Johnston (stjohnst@ualberta.ca).

Canadian Initiatives

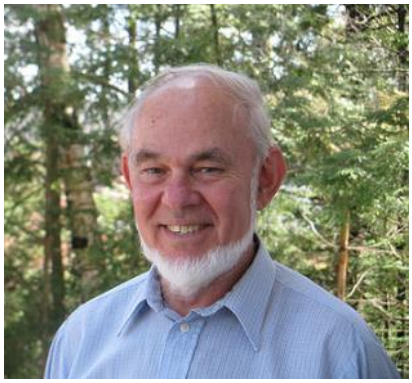
CanGeoRef
The CanGeoRef database continues to grow (www.cfes-fcst.ca/cangeoref). This is a Canadian subset of GeoRef for smaller organizations, companies, and individuals, allowing lower-cost access to literature on Canadian geoscience. A significant objective was to add data on publications of the provincial and territorial surveys. The catalog for most provinces and territories have been added and we are mostly moving to update mode. This is a tremendous opportunity for these organizations to make their publications known to anyone searching CanGeoRef or Georef.

Geoparks
The Canadian National Committee for Geoparks have been busy (www.cfes-fcst.ca/geoparks). Global Geoparks is a UNESCO program. A Geopark is a "single, unified geographical area where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development". Canada now has two Geoparks: Stonehammer, NB, and Tumbler Ridge, BC. There are two additional advanced "aspiring geoparks": Percé Aspiring Geopark, QC, which has submitted a formal application to UNESCO, and Discovery Aspiring Geopark, NFLD. There are another nine aspiring geoparks in Canada (www.canadiangeoparks.org/main.html).

Geoscience for Society Brochure
CFES in partnership with Geoscientists Canada is creating a non-partisan brochure that will highlight the importance of geoscience, and the work of geoscientists in a Canadian context. This is well on its way to completion and is funded by a grant from the Canadian Geological Foundation.

Recognizing Excellence

Mentorship Medal



The 2017 CFES Mentorship Medal recipient is Professor A. E. (Willy) Williams-Jones of McGill University (www.cfes-fcst.ca/mentorship-medal). This will be presented to Dr. Williams-Jones at the SGA (Society for Geology Applied to Mineral Deposits) meeting in Quebec City in August.

A Concluding Note

As I noted above, CFES ***is*** the member organizations. Its future success will rely on the ability of the organizations to effectively use CFES to raise issues of broad and national or international scope at the council table, both physical and virtual. The board will do its utmost to facilitate the message, and the importance and relevance of Earth Science to the government and the public. Communication with member organization representatives is coordinated by Graziella Grech (now President-Elect; cfes.presidentelect@gmail.com), but do not hesitate to contact me at cfespresident@gmail.com or ims@uwindsor.ca.

Iain M. Samson
President, CFES (Canadian Federation of Earth Sciences)
May, 2017

Percé Rock, Gaspésie–Îles-de-la-Madeleine, Québec, a prominent feature and tourist attraction in the Percé Aspiring Geopark.
Photo by Tango7174, Wikipedia. Used under GNU Free Documentation License

New Insights into the Tectonic and Metamorphic Architecture of the Composite Arc Belt and the Frontenac-Adirondack Belt near Perth, Ontario, Grenville Orogen

The Maberly shear zone is one most accessible structural features in the Grenville Orogen. It is also one of the oldest (*ca.* 1162 Ma) and represents the boundary between the Composite Arc and the Frontenac-Adirondack belts. A one-day pre-meeting field trip at GAC-MAC Kingston 2017 highlighted the results of recent detailed mapping, geochemistry, petrology and new geophysical data collected along this boundary by the Ontario Geological Survey. The fieldtrip examined key outcrop exposures and included stops in the Sharbot Lake domain, Frontenac terrane, and the shear zone itself. Field trip discussion focused on evidence for higher metamorphic pressures than previously thought, the character of the pre-Frontenac intrusive suite (*ca.* 1178-1160 Ma) rock units in the area, and metasomatic mica-apatite-pyroxenite rocks of the Frontenac-Adirondack Belt. The trip was designed to complement the session on the Metamorphic Architecture of Orogenic Belts at the meeting.

Mike Easton
Ontario Geological Survey

GAC-MAC Trip A-1 briefing: Leader Michael Easton explains the trip route and regional geology along the route to participants prior to departure from Miller Hall at Queen's University. *Photo: C. Gordon.*

Field trip participants smile for the camera during lunch at Last Duel Park in Perth by the Tay River. Fortunately for the trip leaders, discussions did not necessitate a re-enactment of the duel during the trip! *Front row, left to right.* George Gilchrist, Jingru Tang, Caroline Gordon (co-leader), Michele Markley, Dave Lentz, Kathy Bethune, Steve Dunn. *Rear row, left to right.* Songhai Peng, Michael Easton (leader), Chris McFarlane, Dave Craw, Danielle Beaton, Toby Rivers, Fried Schwertdner, Dennis Waddington, Eric Duesterhoeft (hiding in back), Tim Pharaoh, Manuel Duguet (co-leader). *Photo: C. Gordon*.

Milestones, Memories, and Tributes

Arthur (Art) Richard Sweet (1942-2017)

Dr. Arthur (Art) Sweet passed away peacefully at his home on March 5, 2017 at the age of 74. Art was one of Canada's gifted geologists and palynologists and his death is a loss to the country and the scientific community. He will be missed by all of those whose lives he touched.

Art was born in Lloydminster, Saskatchewan, in November 1942. Berry picking, grouse hunting and fishing during his childhood on the family farm by Gull Lake, Alberta, stimulated his active interest in the natural world. Plowed fields yielded interesting rocks, and traditional farming gave him knowledge that informed his future life in urban Calgary.

Art started his education, to Grade 6, in a one-room schoolhouse, later earning a B.Sc. from the University of Alberta, Edmonton, in 1963. He worked as a geological assistant and science teacher until completing his Ph.D. in 1972 at the University of Calgary, majoring in palynology under the guidance of Dr. Len Hills. From 1969 to 1971, he was granted the Izaak Walton Killam Memorial Award for doctoral students of outstanding calibre, while completing his thesis on *Azolla* and *Azollopsis*. In 1972, Art started as a Research Scientist at the Geological Survey of Canada, for a year in Ottawa and then in Calgary at the Institute of Sedimentary and Petroleum Geology (now GSC-Calgary), where he remained throughout his career. Art married his wife, Alberta, in 1966 and they have three children, David, Patrick and Karilynn, and seven grandchildren.

At the GSC, Art first worked on Late Jurassic and Early Cretaceous terrestrial palynofloras for the coal group. He was soon drawn to study the incredible diversification of angiosperms in the Cretaceous, and the post 'K-T' boundary flora of the Paleogene. His objective was to understand angiosperm pollen phylogenies and to develop more refined biostratigraphies for western and northern Canada, often with synergistic collaboration from paleomagnetic studies. Art's encyclopaedic memory, for both literature and for pollen and spore specimens that he had seen, made him a scientist well suited to explore this diverse and formative interval of angiosperm development. The 'Cretaceous-Tertiary' boundary and contiguous strata particularly fascinated him. Many end-of-hallway coffee conversations dealt with the perturbations of floras around the world-changing Cretaceous-Paleogene boundary event. The iridium anomaly provided a precise correlation, and Art made detailed investigations of many sections in western and northern Canada, including co-leader of a Canadian Continental Drilling Project, while he meticulously documented palynological evidence of floral transitions preceding, and following the boundary. He elucidated both stratigraphic and latitudinal changes in flora and vegetation. In later years, his biostratigraphic knowledge was applied to derive a record of now-eroded sedimentary rock that once covered the Slave Craton, evidence being derived from fossiliferous sedimentary clasts within kimberlites. His most recent focus was the Albian through Paleogene strata of Bylot Island and the Yukon and Northwest Territories. From 2002-2008, he served as GSC's Chief Paleontologist and Paleolab Leader.

A contributor of geologically essential age and environmental information, Art authored or co-authored at least 119 professional publications and 127 abstracts and/or posters at scientific meetings. GSC paleontologists support the research of GSC's stratigraphers and mappers by reporting on referred samples. Art authored 390 GSC internal Paleontology Reports on some 4700 samples. These internal reports are substantial research documents in their own right. Art recorded the slide and microscope coordinates of important specimens from his research, leaving a detailed record of evidence for the future. Art personally collected

12,516 outcrop and well samples between 1967 and 2015. The tally of publications, reports and samples documents his contribution to Canadian geology, to 'K-T' boundary studies, and to the research and careers of his collaborators and colleagues, inside and outside the GSC.

Art's office was located opposite the palynology laboratory and he was the principal scientist supervising the palynology lab. Working with lab technicians, he always aimed for the optimum preparation of samples; often having samples reprocessed a number of times.

Art Sweet's scientific career is shown by his bibliography, but this misses the personal side of Art. Clearly, he was immensely dedicated to his discipline of palynology and geology. At the start of the working day, it was routine to find Art already in his office, having arrived at 3 or 4 am; likewise, if chance had one driving by the GSC in the evening, one would regularly see his office light on. Evenings at home were often spent writing papers, or reviews for journals. He seemed to pack two careers of dedicated work into one lifetime. He continued to work past formal retirement age until ill-health began to limit him.

In spite of his scientific accomplishments, Art was self-effacing. He was generous to others with his time and expertise, and invariably kind and thoughtful to colleagues, students, and newcomers. He helped many people start their careers. His open office door was pasted with jokes and a sign, "A clean desk is a sign of absolutely nothing else to do". Hospitality was often extended to out-of-town visitors. Art wanted to make sure that people were comfortable, had a place to stay, a home-cooked meal, perhaps even a pit roasted pig.

Few days went by when Art did not have a colleague or visitor seeking advice from his extensive knowledge of Mesozoic and Cenozoic stratigraphy and palynology, or an application of his expertise. He was gracious and kind through innumerable interruptions, the best sort of mentor students, or junior colleagues, could have. For students, "Art….created a story with every pollen grain and made even a lack of evidence exciting… every student/casual [employee] over 15 years gain[ed] an appreciation for the science….he did this in such a subtle and humble way." (K. Boyce, 27 March 2017). Art developed particularly long lasting, fruitful relationships in science. He is honoured by the naming of two species: a fungal spore, *Diplodites sweetii*, (Kalgutkar *et al*., 1993. *Review of Palaeobotany and Palynology*, v 77, p. 107-118) "in recognition of his outstanding contribution to Tertiary palynology and his significant role in the understanding and interpretation of the K-T boundary"; and the pollen *Parviprojectus sweetii* (White, 2009. Geological Survey of Canada, Bulletin 594), dedicated for his "career-long fascination with triprojectate pollen".

Art loved making 'flower power' posters for scientific meetings, and had a strong artistic aptitude in their creation. And he seemed to thrive on the pre-meeting pressure of poster preparation, still sitting at his microscope mere days before departure, interacting with a student doing the computer graphics. Work and discussions were fuelled by frequent cups of instant coffee, his drunk from a blackened melamine mug ("One shake or two?" he would ask when preparing a visitor's instant coffee).

Self-sufficiency was a core value derived from Art's childhood, and he bought a prairie pioneer knowledge to his food growing and storage. Alberta, Art and children had a rich, productive garden in Calgary - it was more than a hobby. They understood the need to nourish the soil. In the fall Art often had a truckload of leaves, collected by the landscaper from the GSC grounds, delivered to his driveway. Dug into the garden, the leaves produced a deep, friable, fertile soil. And who but Art would think of leaving potatoes out on the ground for a prairie winter, covered only by a blanket and a pile of leaves; lift the blanket and grab a potato.

Art and Alberta also had a 30-year-long bee-keeping business. Coffee conversation often turned to bees, with a hint of competition between Art and John Utting, over whose bees were most productive, and whose honey was best.

Art said that he would like to think his as a "life of service and a life of science". His children list values that he instilled in them: "family first, work hard, be self-sufficient, be kind and humble, sit up straight and smile".

James M. White and Dennis R. Braman

[Editor's note: This tribute was originally published in *CAP Newsletter* 40(1): 5-7. It is reproduced here with permission.]

Reading on the Rocks

Darwin's Mentor: John Stevens Henslow, 1796 - 1861
By S. M. Walters and E. A. Stow. Cambridge University Press. 2009 reprint. 338 pages.

Botanist and sometime Cambridge professor John Henslow is best remembered today mainly for writing what is arguably the most famous recommendation letter in history.

In 1831, he responded to an inquiry from George Peacock, another Cambridge man, asking Henslow if he could recommend someone to accompany Captain Robert Fitzroy on a survey voyage to South America as a naturalist. "What a glorious opportunity," enthused Peacock, "for forming collections for our museums". On August 24, Henslow wrote excitedly to Charles Darwin, telling him about the opportunity to go on the voyage, and rather disingenuously informing Darwin that he had recommended him "not on the supposition of yr. being a *finished* Naturalist, but as amply qualified for collecting, observing, & noting any thing worthy to be noted in Natural History".

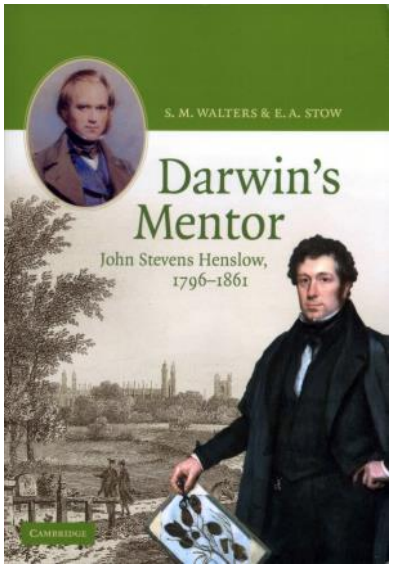
Despite this faint praise, Darwin did secure the position, rushing to prepare his field gear and personal kit before the ship set sail. Darwin set off from Shrewsbury to join the *Beagle*, leaving England on December 27 1831 and sailing into scientific history.

For the next five years, Henslow served as the custodian of Darwin's collections and scientific correspondence. Darwin sent packages of specimens, especially plants, to Henslow who looked after them until Darwin's return in 1836. Henslow shared some of Darwin's observations on his travels, reading a compilation of extracts from Darwin's letters to the Cambridge Philosophical Society in 1835.

This is how history has seen John Henslow: as a footnote to Darwin's career. Was there more to him than that? Walters and Stow have set out to redress the balance and feature Henslow as a character in his own right. They write his biography in three parts—Origins, Cambridge, and Hitcham—reflecting the divisions of Henslow's life: youth, academic, clergyman.

Henslow's main accomplishments and legacy are his efforts to get a new Botanic Garden established at Cambridge University, his work on establishing a museum at Ipswich, and his devotion to teaching both at Cambridge and later at the village school at Hitcham. Indeed, perhaps his most salient characteristic is his deep concern for public education as shown by his support for museum development and the provision of free access to all people.

Henslow's life was driven through by a strong sense of duty, as is evident in so many contemporaries. In this account, he comes across as a thoroughly decent and likable man, sweet-natured, and with a knack for encouraging others (Charles Darwin being the most famous example), capable of hard work but lacking a streak of originality. He seems to have dissipated his talents in a variety of endeavours and lacked that single-mindedness that makes a great scientist. There is no doubt that he was intelligent and earnest.



Henslow's personal life seems to have been singularly free from emotional turmoil or friction. He was well connected in scientific circles, although he was certainly not a self-promoter. One of his daughters, Frances, married Joseph Dalton Hooker, who was also a botanist, director of the Royal Botanical Gardens at Kew, and Darwin's close friend. One gets the impression that in middle-age Henslow had rather gotten left behind by the pace of scientific developments.

Walters and Stow conclude that Henslow's skills were valuable to science: "a flair for teaching which releases genius in others may be as important as genius itself. Without Henslows there are no Darwins" (p. 260). And, we might add, without Darwin, who now would even remember Henslow? His importance to modern history of science lies in his relationship to Darwin and not on his own achievements, valuable though they were.

Despite his biographers' best efforts, Henslow does present as a generally bland personality. Henslow's character was summarized in a letter written in 1857 by Sir Charles Bunbury to his brother: "[Henslow] is one of those men of great ability (and there are not a few such in our time) who devote themselves rather to the spread than the advancement of science" (p. 35). Bunbury was in a position to judge; he was a geologist and botanist—he named and scientifically described 22 plant species—and a Fellow of the Royal Society.

This biography is valuable for the insights it gives into the scientific community and networks of mid-19th century England. It is fascinating to trace the connections between scholars of the day. It is also a salutary reminder than most of us are Henslows, not Darwins. And, further, that a judicious and well-crafted letter of recommendation can have far-reaching consequences.

Alwynne B. Beaudoin
Edmonton, Alberta

Announcements

Canadian Geological Foundation Grants

The following is a list of grants approved in May 2017 in Kingston by the Canadian Geological Foundation. A total of 22 grants were funded ($209,500) this year. People are invited to visit the CGF website at www.canadiangeologicalfoundation.org for details of how to apply and what sort of projects are supported. The next application deadline is March 31, 2018.

2017 CGF Grant Summary - Kingston

#	Project Title (Applicant)	Award amount
17-1	Cretaceous Land Exhibit (Wayne Haglund)	$22,000
17-2	Reprint of "Okanagan Geology South" (Murray Roed)	$4,000
17-3	Geotourism Book "Geological Tour through Banff, Yoho, and Jasper National Parks" (Dale Leckie)	$10,000
17-4	150 Rocks (Port Moody Rock and Gem Club)	$3,900
17-5	Four Good Eyes..On Fogo Island (Jack Botsford)	$3,350
17-6	Inaugural International Conference of the Geobiology Society (Kurt Konhauser)	$10,000
17-7*	Beyond Classrooms Kingston Student Bursary 2017-2020 (Ann Blake)	$1,500
17-8	Atlantic Universities Geoscience Conference 2017 (Laura Sinclair)	$2,000
17-9	Fortune Head Geology Museum: Petrographic Microscope and Thin sections (Linda Collier)	$5,000
17-10	Biography of Robert William Bell (Ian Spooner)	$2,000
17-12	CCArray: Education and Outreach Materials (Katherine Boggs)	$10,000
17-13	New Cabinets, Fundy Geological Museum (Tim Fedak)	$15,000
17-14*	EdGEO Teacher Education Workshops (EdGEO Workshop program)	$23,000

17-15	Virtual Field Guide, Stonehammer UNESCO Global Geopark (Gail Bremner)	$9,000
17-16	Children's Book, Stonehammer (Gail Bremner)	$13,000
17-17	TerraLab Imaginarium (Neil Banerjee and Diane Mitchell)	$13,000
17-18	Saskatchewan Geological Society Annual School Lecture (Kate MacLachlan)	$1,900
17-19	New association management system and website for GAC (Karen Dawe)	$28,750
17-20	Grant in aid of publication GAC Special Volume "Geology and tectonic evolution of the Slave Province" (Karen Dawe)	$6,100
17-21	TDCHS Geological School Supplies (David Robinson)	$1,000
17-22*	Geoscience kits Francophone School commissions of Quebec (Christopher Brooks)	$25,000
	Total	**$209,500**

- New multi-year grants (17-7 Beyond the Classroom, $1,500 for each of 4 years; 17-14, $23,000 for each of 3 years; 17-22, $25,000 for each of 2 years).
- Grant 17-4 will be funded by the Thayer Lindsley Endowment Trust Fund and the remaining will be funded by the Jérôme H. Remick III Endowment Trust Fund.

Canadian Geology on Social Media!

McMillan is a leading creative agency that occupies the heritage building at 541 Sussex Drive in Ottawa, home of the Geological Survey of Canada (GSC) from 1880 to 1911 - with small sections still in the building until 1959. Working with a group of retirees from the GSC History Committee, McMillan is launching a unique and imaginative social media program that will help promote the contribution of 175 years of geological exploration to the history of Canada.

Beginning on June 3, when anyone on Instagram tags a photo with a location *anywhere in Canada that has a connection to the history of the GSC*, the History Committee will respond in the comment section with a geological fact or historical story that is *specific to that location or area*. Behind this process is an Instagram account called @GeoStories that will tell some of the story of geoscience exploration in Canada and act as a vehicle that we hope will reach thousands of people across the country. Individual Instagram pages will also exist for prominent, historical GSC geologists and link to their Wikipedia entries, revised by the History Committee.

We want to make sure that as many people as possible read these stories. Please help by distributing this information and encouraging fellow workers, families, students, friends, clubs, and networks to participate and learn something about Canadian geology and the GSC. Encourage them to follow @GeoStories, and tag their locations on Instagram posts from June 3 onwards to receive, we hope, unique, and often amusing, geological insights.

There will be a major campaign, sending out thousands of comments, on launch day on June 3. However additional activity will follow for the rest of the month and will continue for the course of the summer.

Thanks for your help!

The Friends of the GSC History Committee

Remembering Ross Mackay

The Royal Society of Canada has agreed to honour the memory of Ross Mackay, the world's pre-eminent permafrost scientist of his generation, by striking a medal in his name that will recognize major, career-length achievements in Arctic research. The medal will be awarded in any field of Arctic research, whether natural science or social science. Contributions are sought to establish the medal, to be awarded annually or biennially.

Ross's field research in the western Arctic began in 1951 and continued without interruption from 1954 to 2011, even though he officially retired from the University of British Columbia in 1981. The distinction that characterized Ross Mackay's research was recognized through numerous awards and medals. He was the first recipient of the International Permafrost Association's Lifetime Achievement Award (2010), of Canada's Centenary Medal for Northern Science (1984), of the Roger J. E. Brown Award of the Canadian Geotechnical Society (1986), and of the Award for Scholarly Distinction of the Canadian Association of Geographers (1972). He was made an Officer of the Order of Canada in 1981 and received the Massey (1967), Miller (1978), Vega (1986) and Logan (1991) medals; five honorary doctorates, including one from the University of Helsinki; and he was elected to eight societies and academies, including the Russian Academy of Natural Sciences. He was the first Canadian to be recognized as an Honorary Fellow of the International Association of Geomorphologists (1993). The Geological Survey of Canada named its inland waters geophysical research vessel MV *J. Ross Mackay*. Ross was one of only two people to have been elected President of both the Canadian Association of Geographers and the Association of American Geographers. During its formative years from 1983 to 1993 he served as Secretary-General of the International Permafrost Association.

Ross's life was his work. He did not court publicity nor engage in self-promotion. His record is due to single-minded pursuit of excellence, meticulous planning, strategic selection of observations and unfettered curiosity. His work was received with excitement across a spectrum of disciplines in northern science, from biology and Quaternary studies to physical geography and engineering. His arguments were precise and exhaustive. He was also keenly interested in the welfare of the inhabitants of northern settlements. He will be remembered fondly by all who knew him and with the utmost respect.

The Chair of the Medals and Awards Committee of the Royal Society of Canada estimates that $75,000-$150,000 (depending on the frequency and venue of the award) will be needed to make this project viable. Contributions to this fund will be received by the Royal Society of Canada and should be mailed to the following address:

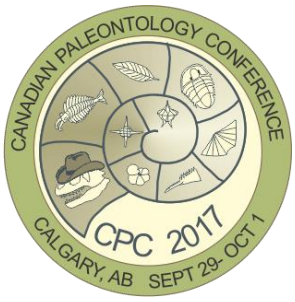
Linda M. Clauson, Comptroller
The Royal Society of Canada
282 Somerset West, Ottawa, ON K2P 0J6

Those who donate should ensure that their cheque include the following words: "donation restricted to the Dr. J. R. Mackay medal". A receipt for income tax purposes will be issued.

Announcement circulated by
Dr Olav Slaymaker
Professor Emeritus
Department of Geography, UBC

Canadian Paleontology Conference

Sept 29—Oct 2 2017



The 26th Canadian Paleontology Conference will be held in Calgary, Alberta, a city surrounded by great geology and paleontology. This year, the Calgary office of the Geological Survey of Canada (GSC-Calgary) has a double reason to celebrate – it being the GSC's 175th anniversary and GSC Calgary's 50th anniversary. And so, together with our colleagues from the Alberta Palaeontological Society, Mount Royal University and the University of Calgary, it is our pleasure to invite you to a meeting that will both honour the past and look to the future of Canadian paleontology.

For more details, please see:
canadianpaleoconference2017.wordpress.com

Howard Street Robinson Fund

The Robinson Fund was established in 1977 by the Geological Association of Canada, using a bequest from the estate of Howard Street Robinson. The fund is dedicated to the furtherance of scientific study of Precambrian Geology and Metal Mining by:

- sponsoring an annual Distinguished Lecturer Tour whose focus alternates between Precambrian research and economic geology (lecturer alternately chosen by the GAC®'s Precambrian and Mineral Deposits divisions)
- supporting Special Projects including publications, symposia and conferences.

Proposals for special projects on Precambrian Geology or Metal Mining should be submitted to the Robinson Fund Committee. Projects should be sponsored or organized through the GAC® or one of its Divisions or Sections. Proposals that have a wide appeal or degree of accessibility to the GAC® membership are preferred.

For further information and proposal submissions, please contact: Patrick Mercier-Langevin, Chair, Robinson Fund, c/o Geological Survey of Canada, 490 rue de la Couronne, Québec G1K 9A9, Tel: 418-654-3101, E-mail: pmercier@nrcan.gc.ca

The Last Word

In May, I was fortunate to attend two conferences back-to-back: the Canadian Archaeological Association (CAA) 50th Annual Meeting in Gatineau-Ottawa followed by the GAC-MAC meeting in Kingston celebrating GAC's 70th year. The conferences were very different in their subject matter yet both had common approaches: business meetings, parallel spoken presentations sessions, poster sessions, fieldtrips, social events, and gathering spaces for networking and conversation. The format is extremely successful in providing an effective forum for the exchange of scientific ideas and information. I arrived home tired but with my mind buzzing with new research possibilities! Alwynne B. Beaudoin, *GEOLOG* Editor

Information for Contributors

Contributions should be submitted by e-mail to Alwynne.Beaudoin@gov.ab.ca, with GEOLOG in the subject line. Contributions are welcome in either of Canada's two official languages. MS Word (.doc or .docx) is the preferred format for contribution but generic word processing (.rtf or .txt) files are also fine. Please do not submit PDF files. Up to four hi-res images may be submitted per contribution: preferred format is .jpg, RGB colour, with a minimum 300 dpi resolution at 5" x 3" size. Please ensure that images are cropped and colour-corrected, and provide a caption for each image, and an image credit line if needed. Contributors are responsible for securing permission to publish for any third-party images or images of living recognizable people. Diagrams (vector graphics) may also be submitted. Preferred format for graphics is Adobe Illustrator (.ai); make sure that the file is saved with "save text as lines" option enabled to ensure no font substitutions. Additional information on other file formats can be obtained from the Editor. Please do not embed images or graphics in your text document; images or graphics should be submitted as separate files. In your text, use a call-out in parentheses to indicate the approximate placement of each image and graphic. If files are larger than 10 mb, please contact the Editor for alternate delivery arrangements. Your contribution will be copy-edited to ensure consistent spelling and orthography and to correct any obvious typos or errors. Contributions may also be edited for clarity and length. If the Editor has questions about specific information in the text, she will contact contributors for clarification. Contribution deadlines are March 1, June 1, September 1 and December 1.

Consignes aux auteurs

Les contributions d'auteur doivent être soumises par courriel à Alwynne.Beaudoin@gov.ab.ca, en indiquant GEOLOG à la rubrique Objet. Les articles seront acceptés dans l'une des deux langues officielles du Canada. Les fichiers de format MS Word (.doc ou .docx) sont préférables, mais les formats génériques (.rtf ou .txt) sont aussi acceptables. Veillez ne pas soumettre de fichiers au format PDF. Par article, jusqu'à quatre images haute résolution peuvent être soumises; format préféré est .jpg, couleurs RVB, avec un minimum de 300 PPP en taille 5 po x 3 po. Veillez vous assurez que les images sont recadrées et leurs couleurs corrigées, qu'elles sont accompagnées d'une légende ainsi que des informations de référence le cas échéant. Il est de la responsabilité des auteurs d'obtenir la permission de publier toute image de tiers ou de personne reconnaissable. Des diagrammes (graphiques vectoriels) peuvent également être soumis. Le format préféré pour les diagrammes est celui d'Adobe Illustrator (.ai); assurez-vous que le fichier est sauvegardé avec l'option « Sauvegarder le texte comme ligne » activée pour éviter toute substitution de police de caractère. On peut obtenir des informations sur d'autres formats de fichiers en communicant avec l'éditrice. S'il vous plaît ne pas incorporer d'images ou de graphiques dans votre texte; ces images ou graphiques doivent être soumis sous forme de fichiers distincts. Dans votre texte, veillez utiliser des notes numérotées entre parenthèses pour indiquer l'emplacement approximatif de chaque image et graphique. Dans le cas de fichiers dépassant 10 Mo, veuillez contacter l'éditrice pour convenir des modalités de téléchargement. Vos articles seront révisés afin d'en assurer la cohérence orthographique et corriger les fautes de frappe ou erreurs évidentes. Les articles pourront aussi être corrigés pour plus de clarté et éviter des longueurs. Dans les cas où l'éditrice aurait besoin d'informations particulières concernant le texte, elle communiquera avec les auteurs. Les dates limites pour soumettre des articles sont le 1 mars, le 1 juin, le 1 septembre et le 1 décembre.