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PRESIDENTIAL PREAMBLE

Navigating the "Change Game"

In the modern world we are often told to embrace "change". Not bad advice given that things do change a lot nowadays and there is not much that we can do about it. Reading this sentiment again last week in the Financial Post magazine reminded me of a comment made by a member of my Ph.D. supervisory committee years ago. He said, "Just remember, there are usually winners and losers with change so the real trick is to be on the winning side". A truer statement could not have been made in my mind. This gets to the real reason why we frequently resist change. *The proposed change is not in our best interest or that of our fellow travellers.* We are not afraid of change – it happens all the time - but we recognize that we may be worse off by the proposed change. Our resistance to change is commonly portrayed by the modern media like some sort of disease that must be treated by hip leadership gurus who make a good living writing books and delivering seminars on why change is a good thing. They are peddlers of the "change game"

Some insights into how to view change is given by Pulitzer Prize-winning author Jared Diamond in his 2005 book *Collapse: How Societies Choose to Fail or Succeed.*
("Navigating the Change Game" *continued on Page 4)*

Inside This Issue

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.

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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.

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GEOLOG s'adresse aux membres 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 gouvernementaux 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.

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Features/Articles

This issue of GEOLOG benefits for the contribution and assistance of /Nous voulons souligner la contributions et l'assistance de: Karen Dawe, Steve Rowins, Stephen Johnston, John Greenough and Alwynne Beaudoin.

Apologies to any I have missed. Your contributions for future editions are welcome/Désolé pour ceux qui auraient été involontairement oubliés. Nous sollicientons vos contributions por les lublications à venir.

Presidential Preamble "**Navigating the "Change Game" is continued – from page 1)**

Diamond is a professor of geography and physiology at the University of California, Los Angeles. His central thesis is that certain activities that made us successful in the past will, if continued, lead to our eventual ruin. The trick is identifying when to stop an activity that has worked well in the past, but is probably no longer a viable option for the future. The premise to abandon something that has lead to past success may seem counter-intuitive. Why stop doing a good thing? If you score hockey goals because you have an accurate shot, then further practice to achieve even better accuracy would seem to be a logical step. However, we often do modify our game and adapt to changing circumstances without really noticing. I experienced this not long ago when I was moved from left wing to centre on our ice hockey team. As I dressed, someone mentioned that we were going to try me at centre - okay. Sometime later it occurred to me that I had gotten old and slow, so the team unilaterally bumped me to center where my declining speed was not such a handicap to my play. I expect to be relegated to the defense soon, then to goal, and finally to the bench as some sort of coach! The lesson here is that change was imposed and accepted, so I kept playing hockey and the team got better (well maybe). In this example, change was good for everyone.

What is an example of bad change wrapped up as good change? Karen Somerville, a former Carleton University business professor lead a study examining the reforms that were supposed to change the culture of the public service. She found that senior bureaucrats changed jobs so frequently that they eroded the very progress that departments had made changing their risk-averse and rules-bound culture! Her 2008 study, *The Key Drivers of Organizational Culture Change in the Federal Government*, found that 77% of the senior management teams in 51 federal departments changed over the six years between 1999 and 2005. These teams included deputy minister, associate deputy minister, assistant deputy minister, and director general. The Federal government's idea here was that a change in leadership is normally the best way to drive cultural change in an organization. Good idea, but they clearly got a little carried away and ended up with constant change in the executive suite, but little progress with changing the culture of the public service.

So how do we evaluate change and decide on whether to accept or reject it? Well, Diamond

Information for Contributors	Directives aux Auteurs
Submissions are preferred as digital files sent as e-mail attachments to Raylett@shaw.ca or on a disc via the post to the Editor. Discs will be returned if sent with self-addressed mailer. Documents should be sent as unformatted text (*.doc, *.txt or *.rtf) files. Graphics should be as CorelDraw 10(*.cdr) or Acrobat (*.pdf) file types, and images should be at 300 dpi, RGB colour without internal compression (preferably *.tif). Files greater than 2MB should be compressed or zipped before sending via e-mail. Additional information on other file formats can be obtained from the Editor. Hard copy text, graphics and photo images are also welcome. All contributions may be edited for clarity or brevity. Contribution deadlines are February 27, June 5, September 4 and November 30.	Nous préférons que les articles nous soient soumis sous forme de fichiers numériques, annexés à un courriel, ou sur disquette, par courrier conventionnel adressé au Rédacteur en Chef. Les disquettes seront retournées si elles sont accompagnées d'une enveloppe affranchie avec adresse de retour. Les documents doivent nous parvenir en version texte non formaté (*.doc, *.txt ou *.rtf). Les graphiques doivent avoir un format CorelDraw 10 (*.cdr) ou Acrobat (*.pdf), et les images doivent avoir ne résolution de 300 dpi dans un format non comprimé (préférablement *.tif). Les fichiers de dimensions supérieures à 2 Mo doivent être comprimés avant envoi par courriel. Veuillez communiquer avec le Rédacteur en chef en ce qui concerne la possibilité d'utiliser d'autres formats. Nous acceptons aussi une copie imprimée sur papier du texte, graphiques et images. Le Rédacteur en chef se réserve le droit de modifier l'article à des fins de clarification ou de brièveté. Contribution délais sont Février 27, Juin 5, Septembre 4 et Novembre 30.

gives us no panacea or quick answers, and Somerville has caught our own Federal government playing the “change game”. Clearly, you need to think carefully about change and “do your own due diligence” as if you were picking junior mining stocks for investment. The GAC is starting work on its next 5-year business plan and how the Association adapts and changes to the new realities of 2012 and beyond will determine our future success. I invite all members of the GAC to look at the 5-year business plan (it’s on the GAC website) and comment back to me on where we might go. As we have seen, not changing our ways can lead to trouble, but too much change is also bad. I am confident that we’ll figure this out together and have some fun along the way.

Steve Rowins: President, GAC and Chief Geologist, BC Geological Survey

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From your Editor - This Space is NOT to Lett

Sorry for the play on words, but something rather similar mysteriously appeared when I switched on my GPS one day (this GPS won’t Lett you down!). Seriously, as your new editor I found the invitation from Steve Rowins to join the GAC team rather daunting. True, I’ve edited several local technical and community news magazines in the past, but GEOLOG is a National Newsmagazine and reaches a far wide readership than Victoria. As your new Editor I will also try to maintain the high quality of past GEOLOG issues produced by my most recent predecessors, Karen Dawe and Karen MacFarlane.

As some of you know I have a geochemical background and until I retired last year I was Geochemist with the British Columbia Geological Survey. I’m not sure when I first became interested in geochemistry, but I think that it was because I was fortunate in having two outstanding mentors, Dr. Stephen Morel and Dr. Clifford James, when I was at University in England. Cliff James, a pioneer exploration geochemist who has sadly passed away, inspired many Leicester University geology students with his infectious enthusiasm and encyclopaedic geoscience knowledge. I was very lucky to have these mentors at an early stage of my career and I would urge anyone who has an opportunity to help mentor younger geoscientists.

In this Issue both GAC President and Past President have remarked on change, from the point of view of how it affects organizations and climate. There is also a comprehensive update on the *Canadian Journal of Earth Sciences* by its Editor, John Greenough; a review of *The Making of the Geological Society of London* by Lewis, C. L. E., and S. J. Knell (eds.) (2009) from Alwynne B. Beaudoin and much more. Some of the more regular reports from GSC Chapters and Sections will appear in the next Issue. Please send me articles, updates on local GAC activities, letters and general interest items for next GEOLOG by December 8th.

--- Ray Lett (Raylett@shaw.ca)

GAC Yves Fortier Earth Science Journalism award winners

Karissa Donkin and Hilary Paige Smith of the Telegraph-Journal received the Yves Fortier Earth Science Journalism award for their article entitled "Series on Stonehammer Geopark in Southwestern New Brunswick".

Karissa Donkin and Hilary Paige Smith receiving the Yves Fortier Earth Science Journalism award Photo credit Cindy Wilson/New Bruswick Telegraph-Journal

The award, presented at a reception held at the New Brunswick Museum, includes a $1,000 cash prize, and recognizes excellence in journalistic presentation of earth science in the newsprint media.

Karissa Donkin is a fourth-year journalism student at St. Thomas University, New Brunswick, School of Journalism. She has honed her community reporting skills as both a summer reporting intern and freelance reporter with the *New Brunswick Telegraph-Journal*, and is the news editor of The Aquinian, St. Thomas University's campus paper.

Hilary Paige Smith is a fourth year Journalism and English Literature double-major at St. Thomas University and is also the news editor of *The Brunswickan* at the University of New Brunswick. She is also Atlantic regional director of Canadian University Press and has spent the past three summers interning in the Greater Saint John section of the *Telegraph-Journal*.

Mary-Claire Ward Geoscience Award - Call for applications

Applications will be posted soon for the prestigious Mary-Claire Ward Geoscience award. The award honours the memory of Mary-Claire Ward, a passionate advocate for the geociences who died in 2004. It is intended to encourage and support a graduate in Canada whose thesis will contribute to our knowledge of the geological history of Canada.

Brett Hamilton, a PhD geology student at the University of Calgary, is the 2011 winner of the Mary-Claire Ward Geoscience Award, with his research project titled "Metamorphism and tectonics of Cumberland Peninsula, Nunavat".

The 2012 winner will receive $5,000 and a certificate to be presented at either the annual PDAC Convention in Toronto, March 2012 or the joint annual meeting of the GAC-MAC in St. John's, May 2012. The application can be found on the PDAC and the GAC websites. The application deadline is **December 15, 2011.**

For more information contact Krishana Narinesingh, Student Liaison knarinesingh@pdac.ca

Climate Change, Science and the GAC – Stephen Johnston

The Earth is characterized by a significant population of creationist, despite the overwhelming evidence consistent with evolution. Some creationistic thought is attributable to straight out ignorance; some to religious fervor; and some, no doubt, to people who know evolution to be correct but who would never be caught publicly admitting to such knowledge. Regardless of why they are creationist, creationists all have one thing in common: they are forced to ignore overwhelming evidence consistent with evolution. For most creationist this ignorance takes the form of simply not talking about or accepting the data that are best interpreted in terms of evolution. Others, more aggressively, will deny the data. A small minority have gone so far as to fabricate fraudulent data as a means of trying to bring down an idea that they simply know in the hearts to be wrong.

Embarrassingly for geologists, the tactics utilized, and arguments put forward by today's creationists are not unlike those put forward by a fixist geological community between 1912, when Wegener first published his treatise showing that the continents had moved both relative to one another and relative to the geographic poles, and the plate tectonic revolution of the late sixties. That sixty year period was witness to a growing amount of geological and geophysical data that was consistent with Wegener's model of Earth having been characterized by a supercontinent, Pangea, at the dawn of the Mesozoic. Most stunningly, the nineteen-fifties saw paleomagnetic studies confirm the mobility of the continents. And yet the geological community remained for the most part stoically rigid in its opposition to the prospect of drifting continents; mobilism was simply ignored. Papers addressing the topic through the thirties into the fifties are few. Data consistent with continental drift was denied and ignored. Facile arguments against mobilism were accepted with little debate, and road blocks were put in place against discussion of mobilism. For example, many accepted the shallow argument that there could be no debate over mobilism in the absence of an identified process. This tactic effectively cut short debate, but how ironic then that despite the fact that mobilism is today readily accepted, the processes responsible for plate motion remain a matter of debate. Is plate movement a response to top down or bottom up processes? Have you ever wondered why we haven't come close to generating a computer model that can re-create the break-up of Pangea and which can accurately predict our present day distribution of continents? It is because our understanding of what drives plate motion remains far from complete. None the less, we all understand that plates move. My point is that we geologists don't have to look very far for an analogue of a community (today's creationists) denying an overwhelming amount of data in support of a well defined interpretation (evolution).

It is, therefore, no surprise to find that there is a significant community of scientists who

continue to deny evidence and models that show significant, ongoing climate change. And as with creationists and fixists, evidence of significant ongoing climate change is being met with the same familiar tactics, tactics that range from: refusal to address, to straight out denial of, data and models; non-scientific road blocks; and the use of data of dubious merit. The GAC has been witness to these tactics. A symposium (Earth climate: Past, Present, Future) was convened at the 2011 Ottawa GAC meeting. An example of the kinds of statements published within abstracts for that symposium includes the following: "Climate models throw no new light on climate processes". This is straight out denial. The symposium also saw the presentation of flawed data: it was suggested that CO2 outgassing from volcanoes and mid-ocean ridges is significant and may account for much of the atmospheric budget of CO2. However, relative to anthropogenic CO2 emissions, natural emissions are not significant, amounting to about 1/135 of the amount annually produced by human activity (for the latest numbers, see http://volcanoes.usgs.gov/hazards/gas/climate.php). These are but two examples amongst the numerous flawed and unscientific arguments made during the Earth Climate symposium against climate change and against there being a significant anthropogenic contribution to climate change.

Scientific skepticism is a welcome and necessary part of our occupation. We should be skeptical of climate models; they need to be subjected to the harshest tests possible. Biologists and paleontologists continue to debate and explore mechanisms, rates, timing and any number of additional aspects of evolution. The biological community recognizes the need to continue to test and improve the evolution model. Geologists continue to map, measure and test plate tectonics: we want to finally determine what drives the plates, and to turn our eye toward extracting the plate tectonic signal from ancient orogens. And climate modellers continue to probe, explore and quantify the processes and factors responsible for ongoing climate change. Their work is crucial. The central question regarding climate change is this: What is the anthropogenic contribution to ongoing climate change? Answering this question is vital to us all, and we are not going to move toward an answer without a full exploration of climate change through every means available to us, including computer modelling. As with any scientific question, an answer will not be found without trial and error, without skepticism and without a harsh scientific eye. Denial and flawed arguments based on data of questionable merit, are, however, not scientific approaches to the problem, and neither are they a way forward. The GAC is, first and foremost, a scientific forum: let's keep it that way.

Stephen T. Johnston. Past President, GAC & Professor and Head, School of Earth & Ocean Science, Victoria, BC.

News and Views from the Canadian Journal of Earth Sciences - John Greenough

It has been a long time since I wrote about developments at the *Canadian Journal of Earth Sciences* (CJES). In part, this reflects the dramatic changes that have been affecting the publication of science in Canada and the fact that it has not been clear how CJES would be affected. Things are becoming clearer and so this update will briefly review the changes, tell you about this year's Best Paper Award, and recount changes to the Editorial Board. Although this is coming from me, I want to express my appreciation to Jennifer Stewart, Suzanne Kettley and Mike Boroczki who made major contributions to the text.

The Transition to Canadian Science Publishing

On February 18, 2009, the National Research Council of Canada (NRC) announced its decision to transition the NRC Research Press group out of the government and into a not-for-profit company. This decision was made as a result of the Federal Government of Canada's Strategic Review process. NRC provided substantial support in the form of transition funding, transfer of intellectual property, licensing of the trade name "NRC Research Press" for its journals, and a lease arrangement for provision of physical space to ensure the success of the company and continued publication of all of the 15 NRC Research Press journals, including CJES.

Incorporation of the new company, "Canadian Science Publishing" (CSP), occurred in spring 2010, and the transfer of the journal titles and publishing operations followed on September 2, 2010. The mission and mandate of CSP remain largely unchanged. However, because CSP is no longer part of the federal government, its publications are no longer funded through the Depository Services Program (which allowed access to the journals to all Canadians), and access to its journals in Canada must now follow a traditional subscription model. That being said, an additional 100,000 back files are now open access in Canada. Subscriptions purchased by the library consortium Canadian Research Knowledge Network, the Federal Science e-Library (which includes the major science departments of the federal government), and many Canadian societies/associations, including GAC, have ensured continued access to Canadian researchers of the NRC Research Press journals.

Several changes have occurred as a result of the transition; one of which you are probably aware of is the move of the journals to an attractive new website hosted by Atypon (see www. nrcresearchpress.com). Two changes that affected the Editorial Board of CJES include (1) the centralization of the role of editorial assistant (who now reports directly to CSP rather than being an employee of a university) and (2) the switch from the online submission and peer review system OSPREY to the industry standard ScholarOne. These changes took effect in April 2011, and at that time the CJES Editorial Board started working with Lori Cayer (previously the editorial assistant of the

Canadian Journal of Physiology and Pharmacology) and the new peer-review system.

As would be expected in the face of such a large undertaking, some adaptations have been required, and bugs are being ironed out. Some tasks formerly carried out by the Editorial Assistant have been transferred to Jennifer Stewart (Managing Editor of the Physical Sciences Group at CSP), and it has been a pleasure working with her. Similarly, Suzanne Kettley (Director of Publishing Operations) and Kelly Bogh (Manager of Content Development) have been very helpful, understanding and supportive. Louis Lafleur (Manager Peer Review Group) has been exceptional in providing support for the new ScholarOne software.

There are many positive aspects to the transition to the private sector. First, without the transition, the journal would likely have been cancelled! Second, CSP is enjoying a freedom outside the government that results in enhanced exposure and promotion of the journal. Examples include a revamped Press Release Program, which opens the door to getting timely media exposure for articles of public interest; the ability to sponsor events to promote CJES; and the ability to have a world-class web site that is not restricted by federal government Common Look and Feel Guidelines. Third, CSP is being proactive and taking measures to ensure steady revenues: it has hired a Business Development Manager (Peter D'Amico), who is increasing the number of international consortia agreements and is working with marketing agents to capture more of the American market. All of these efforts will result in *your* CJES articles being seen and cited by a larger audience.

Special Issues and Accomplishments

We have published some remarkable Special Issues over the past 2 years, and the high caliber of the research in these "Specials" has dramatically improved the "impact" of the journal. In 2009, (CJES, Vol. 46, No. 8) Marcelo Santos (Guest Editor with J.-C. Mareschal as Associate Editor) put together a Geodesy Special that illustrated the immense potential of new satellite data to measure (for example) sea level changes, deformations of the Earth's surface, and variations in Earth's gravity field. Volume 47, Nos. 4 and 5 were Lithoprobe Special Issues with Ron Clowes (Guest Editor and Associate Editor) handling most of the papers and G. Spence and J.-C. Mareschal acting as Associate Editors on manuscripts where Clowes was an author. I expect that all of you can appreciate the potential impact of these papers, from renowned scientists, that wrap-up one of the most successful, three-decade, geoscience initiatives in the world. Subsequently, Phil Currie and Eva Koppelhus (Guest Editors with H. Sues as Associate Editor) created the Albertosaurus Special Issue (CJES, Vol. 47, No. 9) presenting research on scientifically important bone beds in Alberta with potential for public interest. The February 2011 issue of CJES (Vol. 48, No. 2; Guest Editors Sandra Kamo, Fernando Corfu, Larry Heaman, and Desmond Moser with Bill Davis as Associate Editor) remembers one of the most important Canadian geoscientists of our time, Tom Krogh, and contains a plethora of articles from the who's-who in geochronology today. Finally, I hope that you will look at the Cordilleran Intermontane Geoscience Special Issue (CJES, Vol. 48, No., 6; James Haggart,

Guest Editor; and Associate Editors J.-C. Mareschal, G. Spence, T. Fisher, and M. Colpron). It demonstrates the importance of CJES for publication of research of national interest and provides perspectives on how geoscientists can make contributions of social importance when natural disasters (e.g., the Pine Beetle infestation) impact human lives.

The publication of many high-profile articles in these Special Issues and in regular issues has yielded an increase in our impact factors over the past year from 0.824 (2-year I.F.) and 1.258 (5-year I.F.) in 2009 to 1.034 and 1.499 in 2010. We continue to have one of the longest half-lives (~15 years is required for half of the citations to an article to appear) in the industry, attesting to the fact that we do not publish flavor-of-the day research but work of long-lasting importance. The Best Paper Award continues to be a major success; so much so that CSP is attempting to develop similar awards for all of its journals (see below for an update on this year's award). The only down-side to all of this is that submissions are up and we must keep publishing costs in mind. To assist with the situation, CSP has agreed to increase our yearly page allotment from 1700 to 1850 pages, and I am working with CSP staff, the Editorial Board, and authors to conserve page space so that we can continue to publish all worthy articles.

Best Paper Awards

Although it is old news, the whirl-wind of CSP developments compromised reporting on the 2009 winner of the GAC/CSP *Canadian Journal of Earth Sciences* Best Paper Award. Thus I want to tell you about the 2009 and 2010 winners and place the results in context with the 2008 results (first award). For the 2008 award (presented in May 2009) there were four nominated papers voted on by nine Associate Editors (AEs). In 2010, six papers were nominated and evaluated by 13 AEs. In 2011, we had 9 papers nominated, and 14 AEs volunteered to help evaluate the papers. There are approximately 25 AEs on the CJES Editorial Board, thus the percentage of AEs involved in voting was ~ 36%, 52%, and 56%, respectively, for each of the 3 years. However, these numbers do not reflect the fact that some AEs could not vote due to conflicts of interest. I suggest, first of all, that the increasing number of nominations reflects an upswing in the number of excellent papers submitted to the journal. Secondly, the rise in the number of voting AEs reflects an appreciation for how prestigious this award has become. Another scholarly organization within Canada regards this type of award (best paper in their sponsored publication) as one of their most prestigious awards. Finally, the large number of AEs involved in the voting process provides support for the utility and rigor of the system put in place for deciding the winner. It would be hard to imagine any other process that could annually assemble such a large committee with such broad technical expertise and intimate knowledge of the published papers. I want to thank GAC for endorsing the award and the selection procedure.

The winner of the 2009 GAC/CSP CJES Best Paper Award was:

Elizabeth C. Turner, 2009. Mesoproterozoic carbonate systems in the Borden Basin, Nunavut

The nominating AE was Denis Lavoie and he wrote: This contribution will be of great interest

not only to those working in this specific area but also to the many who are interested in the nature and evolution of carbonate depositional systems through geological time.

Other nominated (exceptional) papers, in no particular order, included:

Charles T. Schafer and Franco S. Medioli. Pilot study of fossil evidence of onshore-directed storm events in estuarine sediments: Chezzetcook Inlet, Nova Scotia

Christine Rivard, Harold Vigneault, Andrew R. Piggott, Marie Larocque, and François Anctil. Groundwater recharge trends in Canada

John W.F. Waldron, Chris C.E. White, Sandra M. Barr, Antonio Simonetti, and Larry M. Heaman. Provenance of the Meguma terrane, Nova Scotia: rifted margin of Early Paleozoic Gondwana

Kenneth L. Buchan, Anthony N. LeCheminant, and Otto van Breemen. Paleomagnetism and U-Pb geochronology of the Lac de Gras diabase dyke swarm, Slave Province, Canada: implications for relative drift of Slave and Superior provinces in the Paleoproterozoic

Karem Azmy and Denis Lavoie. High-resolution isotope stratigraphy of the Lower Ordovician St. George Group of western Newfoundland, Canada: implications for global correlation

The winner of the 2010 GAC/CSP CJES Best Paper Award was:

R. A. Jamieson, C. Beaumont, C. J. Warren, and M. H. Nguyen. The Grenville Orogen explained? Applications and limitations of integrating numerical models with geological and geophysical data

The nominating AE, Ron Clowes wrote:
The paper by Jamieson et al. is one of the first, if not the first, to clearly demonstrate the efficacy of combining complex numerical models of tectonic activity, and the derived results, with detailed, data-based interpretations of full crustal structure extracted from geophysical and geological data, to help understand tectonic development. The paper shows consistency between crustal-scale geometry and structural and metamorphic histories as inferred from field observations with tectonic development predicted from the numerical models. The models account for both syn- and post-orogenic development of major parts of the Grenville Orogen. The paper is explicitly clear in its presentation; both text and illustrations are among the best in the two issues. Illustrations of the modeling comparisons with the interpretations are exceptionally well done. The authors have prepared an exceptional paper.

Other exceptional papers nominated for the award included:

Jounada Oueity and Ron M. Clowes. Paleoproterozoic subduction in northwestern Canada from near-vertical and wide-angle seismic reflection data

Luke P. Beranek, James K. Mortensen, Michael Orchard, and Thomas Ullrich. Provenance of North American Triassic strata from west-

central and southeastern Yukon: correlations with coeval strata in the Western Canada Sedimentary Basin and Canadian Arctic Islands

Frederick A. Cook, Donald J. White, Alan G. Jones, David W.S. Eaton, Jeremy Hall, and Ronald M. Clowes. How the crust meets the mantle: Lithoprobe perspectives on the Mohorovičić discontinuity and crust-mantle transition

Walfried M. Schwerdtner, Sheng J. Lu, and Jack F. Yang. Wall-rock structure at the present contact surfaces between repeatedly deformed thrust sheets, Grenville Orogen of central Ontario, Canada

René W. Barendregt, Randolph J. Enkin, Alejandra Duk-Rodkin, and Judith Baker. Paleomagnetic evidence for multiple late Cenozoic glaciations in the Tintina Trench, west-central Yukon, Canada

Alejandra Duk-Rodkin, René W. Barendregt, and James M. White. An extensive late Cenozoic terrestrial record of multiple glaciations preserved in the Tintina Trench of west-central Yukon: stratigraphy, paleomagnetism, paleosols, and pollen

Hans J. Hofmann and Eric W. Mountjoy. Ediacaran body and trace fossils in Miette Group (Windermere Supergroup) near Salient Mountain, British Columbia, Canada

Reed S. Lewis, Jeffrey D. Vervoort, Russell F. Burmester, and Peter J. Oswald. Detrital zircon analysis of Mesoproterozoic and Neoproterozoic metasedimentary rocks of north-central Idaho: implications for development of the Belt-Purcell basin

I want to thank all of the nominated authors and co-authors of these exceptional 2009 and 2010 papers for their submissions to CJES and note that just getting nominated is an honor.

Changes to CJES staff and the Editorial Board

As already mentioned, Astrid Blodgett has left CJES after 8 years of faithful service to the journal. I am sure that I speak for all of you in wishing her well with her new endeavors as a freelance editor and short-story author. I also want to express a warm welcome to Lori Cayer, our new Editorial Assistant, who has worked tirelessly getting the new “system” up and running.

We could not publish CJES without the conscientious help and support from our Associate Editors who do so much work finding reviewers, assessing reviews, and appraising the changes made to revised manuscripts. However, people move on and over the past year and a half there have been seven AEs step down. I want to thank these soldiers for their hard work and acknowledge their years of service (best estimates from available records) as follows: Louise Corriveau (16 years), Joe Desloges (8 years), Denis Lavoie (16 years), Jacques Martignole (20 years), Bill Davis (10 years), Victor Owen (3 years), and Anthony Harris (2 years).

Although some have now been with us for over a year, it is a pleasure to welcome George Spence, Boyan Brodaric, Sam Bentley, Konrad Gajewski, and Marie-Claude Williamson to the board. There are more

additions planned, however, it is too early to announce any names.

In closing, I am pleased to hear that GAC has renewed its Memorandum of Understanding with CSP, choosing the *Canadian Journal of Earth Sciences* as its principal medium of publication of scientific papers". Thus I look forward to seeing your latest and greatest research manuscript in the not-too-distant future!

John Greenough
Editor, *Canadian Journal of Earth Sciences*

Book Review: Lewis, C. L. E., and S. J. Knell (eds.) (2009) *The Making of the Geological Society of London*. Geological Society, London, Special Publication No. 317. xi + 471 pp. ISBN 978-1-86239-277-9

The Geological Society of London, the world's oldest geological society, was founded on November 13 1807 when thirteen men sat down to dine at the Freemasons' Tavern in Covent Garden, London. That simple (and inaccurate) statement conceals a more complex story. Only eleven men dined that evening; two founders didn't attend. Among the diners were some of the finest scientific minds of their time, including Humphrey Davy (best known for the invention of the safety lamp for miners) and James Parkinson (who recognized and described the disease that now bears his name). And this was hardly a tavern as we might visualize it in modern Canadian terms – seedy, grimy, and rough – but rather an exclusive gentlemen's dining club. Yet, as Simon Knell outlines, several myths have gathered around the early development of the Society, as the original members and later historians successively strove to re-invent or re-interpret events to fit their different visions of the past. Indeed, one myth is embodied in the title of his paper ("The Road to Smith"), which examines, among other matters, the changing attitude of the Society towards one of the pioneers of geological mapping and interpretation, William Smith. As geology is intrinsically an historical science, it was particularly appropriate that in its bicentennial year (2007) the Society should revisit its own past and seek to understand its own history.

The twenty-four papers in this exceptionally interesting volume provide the back-story and context for that famous dinner meeting. Following Knell's introduction, the remaining twenty-three papers are arranged in sections that provide a roughly chronological perspective of the Society and its early years, winding up with a record of the bicentennial events. An international group of scholars, many of whom are well known for their work in the history of geology, examine the background of "The Founders" (5 papers), "The Status of Geology" (6 papers), and the "The Nature of Geology" (9 papers) at the time of the Society's foundation, concluding with "The Bicentenary" celebrations and events (3 papers).

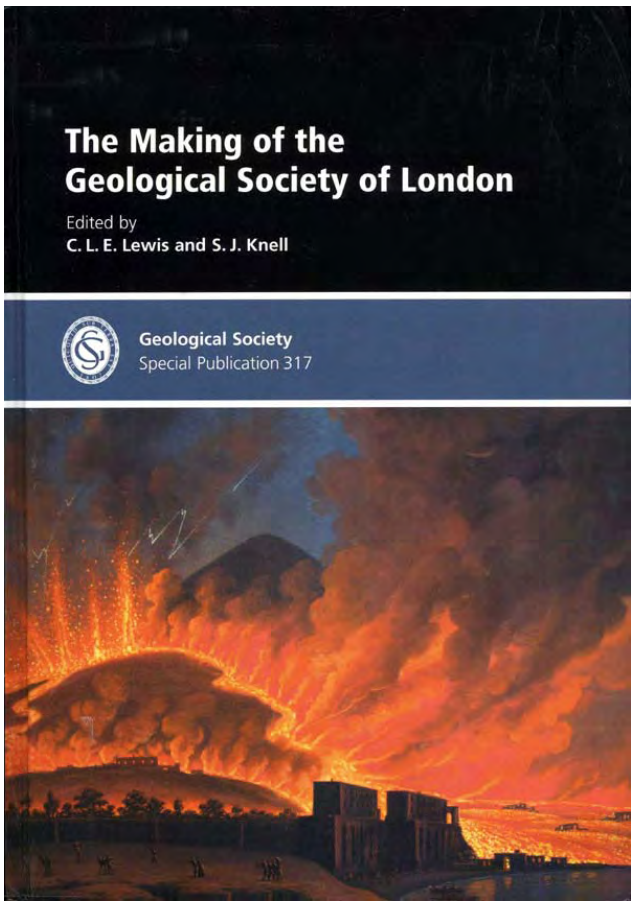
The founding members of the Geological Society came from varied backgrounds; most were relatively well off if not wealthy and had strong ties to London. Many had links to the medical profession (paper by Lewis) or were chemists or mineralogists (papers by Knight,

Herries Davies, and Veneer) and many were already members of other scholarly societies, such as the British Mineralogical Society or the Royal Society (Veneer). Although most were what we might call Establishment figures, a notable group of the founders were Quakers (Torrens) and were therefore not from the social mainstream. Other early members were drawn from the military (papers by Rose, Kölbl-Ebert, and Bowden). Among these was George Bellas-Greenough, first president of the Society, who is best known for compiling a geological map and for his role in the Smith imbroglio (Kölbl-Ebert). Even in the early nineteenth century, geology was an international enterprise (Rudwick) and geology, although not necessarily under that name, was already a significant activity in France (Taquet), Germany (Guntau), Italy (Vai), and Russia (Khain and Malakhova). The Society soon acquired members as far afield Australia and New Zealand (Branagan). Geology, and Society membership, got off to a slower start in the United States (Newell), being driven by a rather different, and more utilitarian, dynamic.

Several founding and early members of the Society were already involved in various geology-related projects but the interchange of ideas and connections made through the Society encouraged further work. From its nucleus in London, the Society grew rapidly and soon acquired members and correspondents from the regions. One of the Society's earliest activities in 1808 was an attempt to pull together what was already known about the geology throughout Britain by sending out a questionnaire, the *Geological Inquiries*, to every member and correspondent (Knell, p. 9; Appendix 1). Recording and information dissemination has always been an important aspect of the Society's activities, through its *Transactions* (Knell) and also through books and publications intended for the wider, if educated and relatively well off, public (O'Connor). For some years after its founding, the Society had no real official status, until it became more formalized and obtained a Royal Charter in 1825, a milestone for which then-President William Buckland claimed much credit (Boylan). As with many other scholarly societies and institutions, however, the Geological Society remained exclusionary throughout the nineteenth century and it was not until 1919 that women were admitted as Fellows (Burek).

Some flavour of early nineteenth century geology can be gained by two interesting pairings of papers in this volume. Smallwood examines the work of John Playfair at Schiehallion in Scotland between 1801-1811. Playfair is remembered as the popularizer of James Hutton's ideas on geological time. When the Geological Society was founded, he was already well known for this work and was voted an Honorary Member at its first meeting in 1807 (Smallwood, p. 279). Playfair was a talented mathematician with broad scientific interests. His work at Schiehallion repeated an experiment carried out by the Astronomer Royal Nevil Maskelyne in 1774 and was an attempt to measure gravity deflection caused the large mountain mass, in order to produce an estimate for the average density of the earth. This geophysical work was confounded by the lithologic complexity of the mountain, which Playfair investigated but was unable to completely resolve. Somewhat later, as Bowden explains in his lengthy biographical portrait, John MacCulloch spent the years between about 1811 and 1830 carrying out geological survey

work in Scotland, eventually producing a geological map that was published in 1836. Initially employed by the Ordnance Survey, MacCulloch was tasked with finding a more suitable mountain than Schiehallion where Maskelyne's and Playfair's experiments could be repeated (Bowden, p. 257). MacCulloch was heavily involved with the Geological Society between 1808 and 1821, serving two terms as President and participating in many committees.



The second pair of papers focuses on the geology of the Isle of Wight. Heringman examines the geological narrative compiled by Thomas Webster, a professional geologist employed for some years by the Geological Society as secretary and curator. His work was included in an account of the antiquities of the island by Sir Henry Englefield, a member of the Society of Antiquaries with a particular interest in local history and architectural preservation. Heringman is especially concerned to situate Webster's descriptions within the discourse of the picturesque and sublime, a predominant mode of viewing the landscape throughout the nineteenth century. In 2007, Martin Rudwick led a fieldtrip to the Isle of Wight, a "Walk with the Founding Fathers", that visited some of the classic sites originally described by Webster, including The Needles and Alum Bay with its famous multicoloured stripy cliffs. The fieldtrip notes include some of Webster's descriptions and engravings, and provide a fascinating glimpse into this primary descriptive work.

Although this volume is not an easy read, it is certainly an enlightening and worthwhile study for anyone interested in the history of geology and its relationship to the development of early nineteenth century science. The insights into the social networks and connections involved in the development of the Geological Society are also most revealing. As with all scholarly societies, including the Geological Association of Canada, the people stories are as interesting as the science!

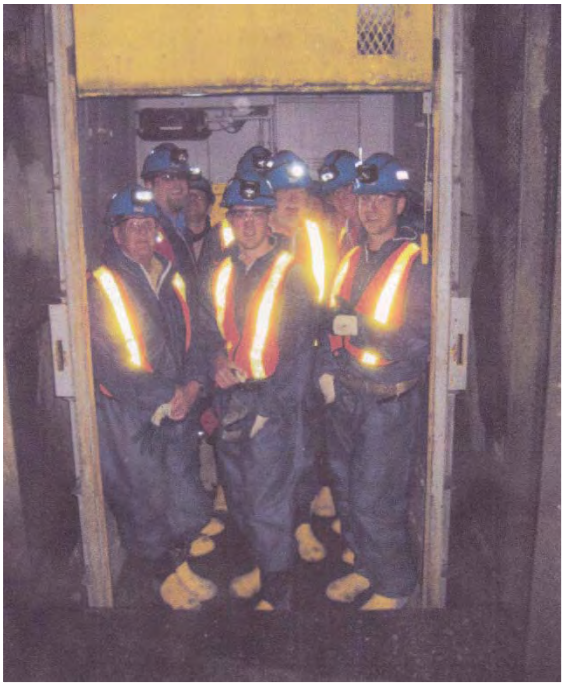
Alwynne B. Beaudoin, Edmonton, Alberta (abeaudoi@ualberta.ca)

Student-Industry Minerals Exploration Workshop,

S-IMEW, or the Student-Industry Minerals Exploration Workshop, began five years ago as an initiative to introduce university geoscience students to the mineral exploration industry.

Each year, the opportunity is given to universities and colleges throughout Canada to select a representative student to attend the workshop, which is held in Sudbury, Ontario. Like any student I am learning the trade so that I can find a job once I graduate. The value of taking what seemed, after reading the description, to amount to an introductory course in mineral exploration, was very high. I applied and was lucky enough to be chosen.

One of the most intriguing, as well as intimidating, qualities of geology is its multifaceted nature. This is specifically true in mineral exploration where a broad knowledge is necessary to be able to find a deposit and see it all the way into a producing mine. The truly great characteristic of SIMEW was its goal to teach students everything from grassroots exploration to mineral production. This ranged from guided tours through the geology of Sudbury, Timmins, and Val d'Or, which host several significant deposits; lessons on bedrock mapping; as well as tours through two mines and a smelter. Exploration, however, is not only a geologist hammering on rocks. It takes many other tools such as geophysics and geochemistry to be able to run a successful exploration program. SIMEW provides lectures on both of these disciplines with an opportunity to use them in the field, like creating seismic waves to find the depth of bedrock beneath overburden, or collecting silt from the bottom of a lake for geochemical analysis.



S-IMEW participants standing in the shaft at LaRonde gold mine in Van d'Ore, Quebec

The business side of mineral exploration is one aspect of the industry I felt was neglected in my academic career. Consequently it was highly advantageous to have speakers who are CEOs and presidents of exploration companies talk about their experiences. It is interesting to find that many of these people began their careers as geologists. The non-technical side of mineral exploration is itself multifaceted. Not only business, but things such as aboriginal relations and environmentalism are crucial to the exploration industry and the opportunity to hear from experts in these fields is invaluable. Networking with all of these industry members at the end of each day is a rare chance to make contacts that could lead to a future career. Additionally, making friendships with a group of exceptional students who will someday be your colleagues was certainly a highlight of the S-IMEW experience.

The impressive amount of organization that went into S-IMEW is evident by the accommodations, meals, transportation, and venues, which are all provided for. The fact that this is run entirely for the students benefit depicts an industry that cares for its workforce and hopes to promote positive growth in mineral exploration. This sort of education is something I hope I, as well as any future attending New Brunswick student, can bring back to the province and utilize in an attempt to support the local mineral exploration industry.

Dan MacIsaac, UNB, Geology Student.

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Exploration Undercover Workshop – October 12 to 14th 2011, Vancouver, BC.

Geoscience BC and the BC Geophysical Society recently hosted a 2 day workshop focusing on BC Porphyry deposits and the challenges of exploring for these mineral deposits undercover. Moving exploration under cover requires new approaches in the way prospective areas are selected; target models are defined, and geoscience data are acquired, processed and interpreted, with increased emphasis on understanding geology and geophysics in a 3-D environment.

The "Exploration Undercover" workshop involved one day of presentations by experts in the geology, geophysics and geochemistry of porphyry deposits and one day devoted to a practical targeting exercise. Presenters included: Ken Witherly (Condor Consulting Inc.), John Thompson (Teck Resources Ltd.), Tim Baker (Geological Survey of South Australia, PIRSA), Paul Schiarriza (BCGS), Jim Logan (BCGS), Fionnuala Devine (Merlin Geosciences), Colin Barnett (BW Mining), Dave Heberlein (Heberlein Geoconsulting), Peter Kowalczyk (Geoscience BC), Dianne Mitchinson (Mira Geoscience), Nigel Phillips (Mira Geoscience) and James Siddorn (SRK Consulting Inc, Canada).

The participants in the practical exercise were divided into groups based on their expertise and experience (which ranged from zero to over 45 years). They were provided with Geoscience BC's QUEST datasets, were given a budget and a GIS expert to undertake a targeting exercise over a specified area. The results were presented to the entire group at the end of the day. Many of the presenters from the first day of talks were available for consultation and guidance.

Workshop participants working hard to find the next British Columbia Mine –

The workshop benefitted from the generous sponsorship from the following companies: Teck Resources Ltd., Aeroquest, Rio Tinto, SJ Geophysics, Coast Mountain Geological, Fugro, Mira Geoscience, Ocean Floor Geophysics, Sander Geophysics, Geotech, Happy Creek Minerals and ESRI. The quality of the presenters, diversity of talks and the practical targeting component made for a highly successful workshop.
(Geoscience BC is an industry-led, not-for-profit, applied geoscience organization that partners with industry, academia, government, First Nations, & communities to fund applied geoscience projects aimed at attracting mineral and oil & gas exploration to British Columbia. Although the GAC did not sponsor this workshop many GAC members participated-Editor)

Future Geoscience Meetings

28 November-2 December 2011. Northwest Mining Association: Annual Meeting, Exposition and Short Courses. Sparks, NV, USA. Website: www.nwma.org/convention.asp; Contact Pat Heywood pheywood@nwma.org

December 2nd, 2011: Society of Economic Geologists (SEG). CSM-SEG Rare Earth Element Geology, Colorado School of Mines, Golden, Colorado UNITED STATES; www.segweb.org/activities/

23-26th January 2012. Association for Mineral Exploration British Columbia Mineral Exploration Roundup 2012. Vancouver BC Canada. Website: www.amebc.ca/roundup/overview-2012/2012-contact-us.aspx, Contact email: roundup@amebc.ca.

24-26th 2012 Cordilleran Tectonics/Metallogeny Workshop 2012, Victoria, British Columbia, Canada, Contact - JoAnne.Nelson@gov.bc.ca

4-7 March 2012. Prospectors and Developers Association of Canada Annual Convention. Toronto ON Canada. Website: www.pdac.ca/pdac/conv/

27-29 May 2012. GAC-MAC Annual Meeting, St. Johns NL Canada. Website: www.stjohns2012.ca; Contact: Alana Hinchey, alanahinchey@gov.nl.ca

11-15 June, 2011. AGU Chapman Conference on Volcanism and the Atmosphere, Selfoss, Iceland**,** Web Site: www.agu.org/meetings/chapman/2012/bcall/ Contact: Alan Robock, robock@envsci.rutgers.edu.

24-29th June 2012. 22nd Goldschmidt Conference; 2012, Montreal, Canada. Website /www.goldschmidt2012.org/

5-15th August 2012. 34th International Geological Congress, Brisbane Australia. Website:www.34igc.org/ Contact: Carillon Conference Management Pty Limited info@34igc.org

9- 13th September 2012. Planet Earth-from Core to Surface: First European Mineralogical Conference. Frankfurt, Germany. Website: http://emc2012.uni-frankfurt.de/ Contact: info-EMC2012@uni-frankfurt.de

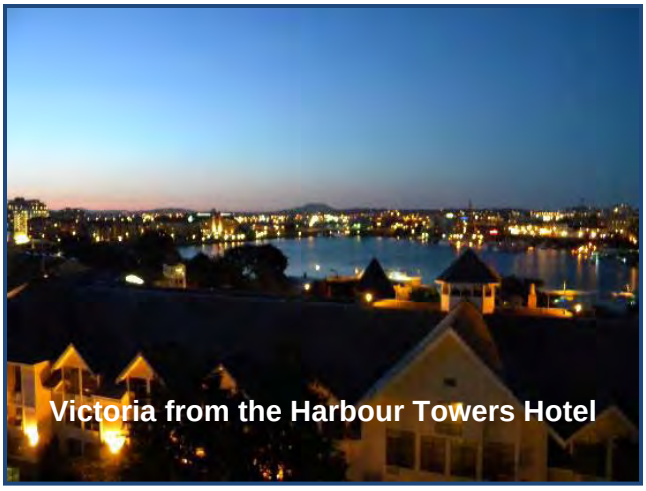
17 – 20th September 2012. Geoanalysis 2012: 8th International Conference on the Analysis of Geological and Environmental Materials; Buzios Brazil. Website: www. geoanalysis2012@ige.unicamp.br

4-7th November 2012. Geological Society of America Annual Meeting, Charlotte NC USA. Website: www.geosociety.org/meetings/2012/

You are invited to the 5th **Cordilleran Tectonics/Metallogeny Workshop 2012,** February 24 - February 26, **Victoria BC, Canada**

Organizers - Pacific Section of Geological Association of Canada and BC Geological Survey (JoAnne Nelson, Janet Riddell, and Melanie Mitchell)

Who's invited?: Anyone doing research in the North American Cordillera. Students are strongly encouraged to attend, as are university and government based researchers and interested industry geologists. The purpose of the CTW is to provide a forum for presenting and discussing new ideas and research taking place within the North American Cordilleran community. We also invite studies focused on metallogeny and hydrocarbon generation related to tectonics of the Cordillera.


Victoria from the Harbour Towers Hotel

Workshop Time Line
Late November –Second Circular – Formal Call for Attendance
Mid January - Confirmation of attendance in the form of title and abstract submission
Friday, February 24th -> Ice Breaker and poster set up
Saturday, February 25th -> Oral and poster presentations
Sunday, February 26th -> Oral and poster presentations
Monday, February 27th -> City of Victoria geology fieldtrip (optional)

Conference venue: We are fortunate this year to enjoy the hospitality of Harbour Towers Hotel and Suites, located two blocks from the Inner Harbour in downtown Victoria. We have a special conference rate (Pacific Section of GAC Cordilleran Tectonics Workshop) of $85 for a double room booked prior to January 25th). Contact them at http://www.harbourtowers.com/ or **1.800.663.5896**

For all questions, comments and queries please contact JoAnne Nelson JoAnne.Nelson@gov.bc.ca

Pacific Section Geological Association of Canada

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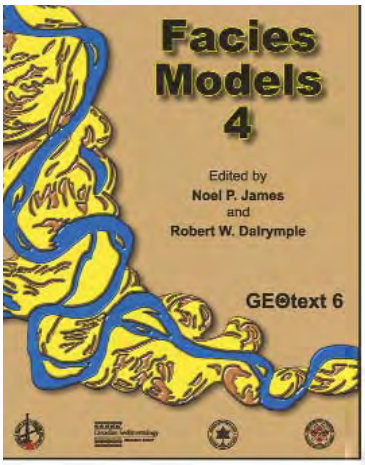

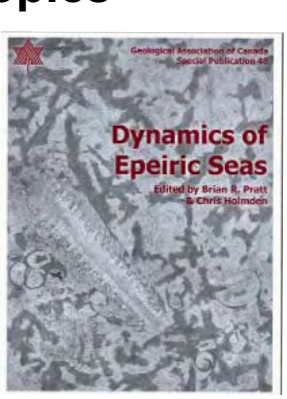

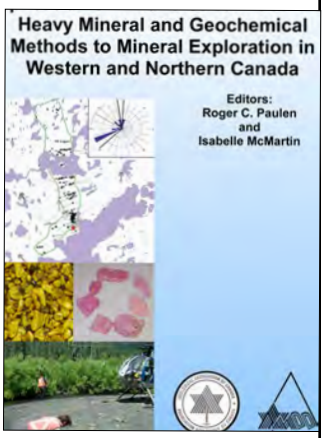

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The Geological Association of Canada (GAC®) and the Mineralogical Association of Canada (MAC) are returning to North America's oldest city, St. John's, Newfoundland and Labrador, in 2012 for their Joint Annual Meeting – *Geoscience at the Edge*. The venue is situated on the edge of the North American continent and the technical program promises an array of topics on cutting-edge geoscience. The meeting will feature over forty symposia, special and general sessions, short courses and field trips. The Local Organizing Committee for GAC®-MAC 2012 proudly invites you to attend this exciting conference, to experience the rich culture, stunning natural beauty and dynamic nightlife that the City of Legends boasts.

En 2012, à l'occasion de leur réunion annuelle conjointe « Géosciences de pointe », l'Association géologique du Canada (AGC®) et l'Association minéralogique du Canada (AMC) reviennent à St. John's de Terre-Neuve, la plus ancienne ville d'Amérique du Nord. « Géosciences de pointe » parce que l'événement aura lieu à la bordure du continent nord-américain, et parce que le programme des présentations techniques portera sur les dernières réalisations en géosciences. Cette réunion comportera plus d'une quarantaine de symposiums, de séances générales ou spécialisées, de cours intensifs et d'excursions. Tous les membres du Comité d'organisation de l'AGC®-AMC 2012 vous invitent cordialement à assister à cet événement passionnant qui vous permettra de goûter la riche culture, l'étonnante beauté du paysage et les soirées animées de la Ville des légendes.

ON-LINE : Registration, abstract submissions and more information

PAR L'INTERNET : Inscription, soumission de résumés et information

Contact / Pour Nous Joindre : Alana Hinchey, Steering Committee Chair / Présidente du comité directeur
Geological Survey, Department of Natural Resources, Government of Newfoundland and Labrador
alanahinchey@gov.nl.ca

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