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Newsletter of the Volcanology and Igneous Petrology Division
Geological Association of Canada

No. 77 December 28, 2013

From the Chair

Well it's all change in the VIP (almost) as we elected a new executive at the Annual Meeting in Winnipeg. I would like to thank the outgoing executive for all their hard work keeping the Division running smoothly over the last few years and am excited about the year to come. So please join me in welcoming your new officers:

Chair - Pete Hollings

Vice-Chair - John Greenough

Past-Chair - Jarda Dostal

Secretary/Treasurer - James Braid

Councillor West - Kevin Cameron

Councillor Central - Pierre-Simon Ross

Councillor East - David Lentz

You can find all our contact details on the VIP web site. We are taking on the Division at a time when our finances are in pretty good shape (see below) but when participation in Division activities is not quite as good. For the last few years the attendance at our annual meting has been dropping, as have submissions to Ashfall. This is your Division and the new executive is keen to hear from you as to what we can do to reinvigorate our group. So please get in touch and let us know what we can do to make things more relevant to you, our membership.

Cheers

Pete

From the Secretary/Treasurer

I am currently an adjunct and sessional lecturer at St. Francis Xavier University where I teach structural geology and tectonics. I am passionate about teaching and improving the undergraduate experience for students in the earth sciences.

Aside from understanding my three small children, my interests lie in the tectonic processes associated with the origin of mountain belts. I am particularly interested in the first-order orogenic processes related to the formation of the supercontinent Pangea in the Late Paleozoic. In this context, my past research has focused on the Late Paleozoic Appalachian-Variscan orogenic belts of eastern North America and Western Europe, because they directly record the collision and suturing of Gondwana with Laurussia in the Late Paleozoic. Remnants of this suture zone are exposed throughout the Variscan orogen from southern Iberia through the British Isles into Eastern Europe. I currently have two MSc students and one BSc honours student funded by my NSERC discovery grant working in various projects throughout Europe collectively attempting to better understand how this supercontinent formed.

I look forward to serving as the treasurer / secretary of the GAC volcanology and igneous petrology division.

Jamie

Workshop report: maar-diatreme volcanoes of the Hopi Buttes volcanic field, Arizona

Pierre-Simon Ross[1] and Stephen Moss[2]

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Monogenetic volcanism is a topic of increasing scientific interest. Maar-diatreme volcanoes, the phreatomagmatic equivalent of scoria cones, are the second-most common type of subaerial volcano. But their eruptive processes remain incompletely understood, which has implications for hazard studies and mineral exploration (in the case of kimberlitic diatremes).

A very well organized international field workshop entitled "Hopi Buttes volcanic field workshop: interpreting maar-diatreme volcanism using base to top exposures, syn-eruptive surface deposits and country-rock strata" was held in NE Arizona, on Oct. 21-27, 2012. The organizers were Nathalie Lefebvre and James White (U. of Otago), Michael Ort (Northern Arizona U.), Bruce Kjarsgaard (Geol. Surv. Canada), Jorge Vazquez (U.S. Geol. Surv.) and Greg Valentine (U. at Buffalo). The workshop was sponsored by the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI), the International Association of Sedimentologists (IAS), two IAVCEI commissions and the US National Science Foundation (NSF). Thirty participants including the authors of this report came from the Americas, Europe, and Australasia. The group included academics, graduate students, geological survey scientists and industry participants.

The Hopi Buttes volcanic field comprises ~300 volcanic landforms such as scoria cones, lava flows, tuff rings and maar-diatreme volcanoes, that erupted over ~ 2600 km^2. The field lies in an arid area lacking thick soils or lush obscuring vegetation. Deposits are young (~7 Ma) and structurally unmodified. It is possible to study crater-filling sediments, tephra rings, diatreme deposits and dikes in this field due to variable erosion levels (0-450 m from the paleo-surface). No single location in the Hopi Buttes has exposures of the entire presumed architecture of a maar/diatreme volcano, and "root zones" are apparently not exposed at the present erosional level. Nevertheless, the preserved exposures allow for an overall picture of the maar-diatreme system, and facilitate a variety of discussions about what can't be seen.

One or two volcanoes were visited each day over a five-day period in the field. One locality examined was Round Butte. It exposes a sharp transition between unbedded deposits (lower-right side of photo) and overlying diffusely bedded deposits. Especially interesting is the presence of subvertical "columns" of volcaniclastic material within the unbedded part of the diatreme. Such columns have been attributed to debris jets (White and Ross, 2011 and references therein) but research is ongoing as to the driving processes and nature of gas-solid-melt mixtures that are responsible for non-bedded volcaniclastic diatreme deposits, including some large-scale experiments (e.g. Valentine et al., 2012; Ross et al., submitted).

Another interesting area we visited is referred to as Castle Butte Trading Post. This one had many participants scratching their heads. According to Lefebvre and White (2012) the deposits represent "spatter dikes", i.e. spatter deposited within deep fissures opened to the atmosphere. The spatter fragments are not especially vesicular, contain abundant lithic inclusions, and may represent the products of a weak form of phreatomagmatic interaction, akin in intensity to littoral explosions.

During most evenings, oral and poster presentations were on the menu. The topics covered ranged from geophysical modelling of Australian maar-diatreme volcanoes (by T.N. Blaikie et al.) to the geology of the youngest kimberlite volcanoes on Earth (by R.J. Brown et al.). There were also talks on the Cenozoic diatremes in Chubut, northern Patagonia, Argentina (M. Haller and K. Nemeth) set in a strikingly similar landscape to the Hopi Buttes, as

Round Butte

Castle Butte Trading Post

well as the mysterious subsidence and deformation of lake sediments observed at the Rincon de Parangueo maar in Mexico (J.J. Aranda-Gomez et al). On the final day of the workshop, a valuable discussion period was held to sum up observations, discussions and interpretations, from which several major themes emerged that merit focus from the volcanology community in future research. The themes were as follows, along with some key outstanding questions:

1) Fragmentation of magma during maar/diatreme emplacement. Q's: What is definitive evidence for phreatomagmatic fragmentation in diatremes? Where and how is fragmentation occurring?
2) Problems with the available conceptual models. Q's: Do all diatremes have maars? Is a universal model good?
3) Interpretations of processes deriving from facies analysis. Q's: Where are unequivocal "root zones" observed, and what are the distinguishing criteria? What links, if any, can be drawn between diatreme and tephra ring deposits?
4) Hydrology. Q: Why would water go to magma? Can mud be a "coolant"?

Ideally such research will be multi-disciplinary in nature and will involve volcanologists but also petrologists, hydrogeologists, sedimentologists, geophysicists and modellers.

References

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Valentine, G.A., White, J.D.L., Ross, P.-S., Amin, J., Taddeucci, J., Sonder, I., Johnson, P.J., 2012. Experimental craters formed by single and multiple buried explosions and implications for volcanic craters with emphasis on maars. Geophysical Research Letters 39, Art. L20301.

White, J.D.L., Ross, P.-S., 2011. Maar-diatreme volcanoes: a review. Journal of Volcanology and Geothermal Research 201, 1-29.

Brief overview of the geology of Scotland

By Philippe Drouin, Université Laval, based on the Field Trip Guide

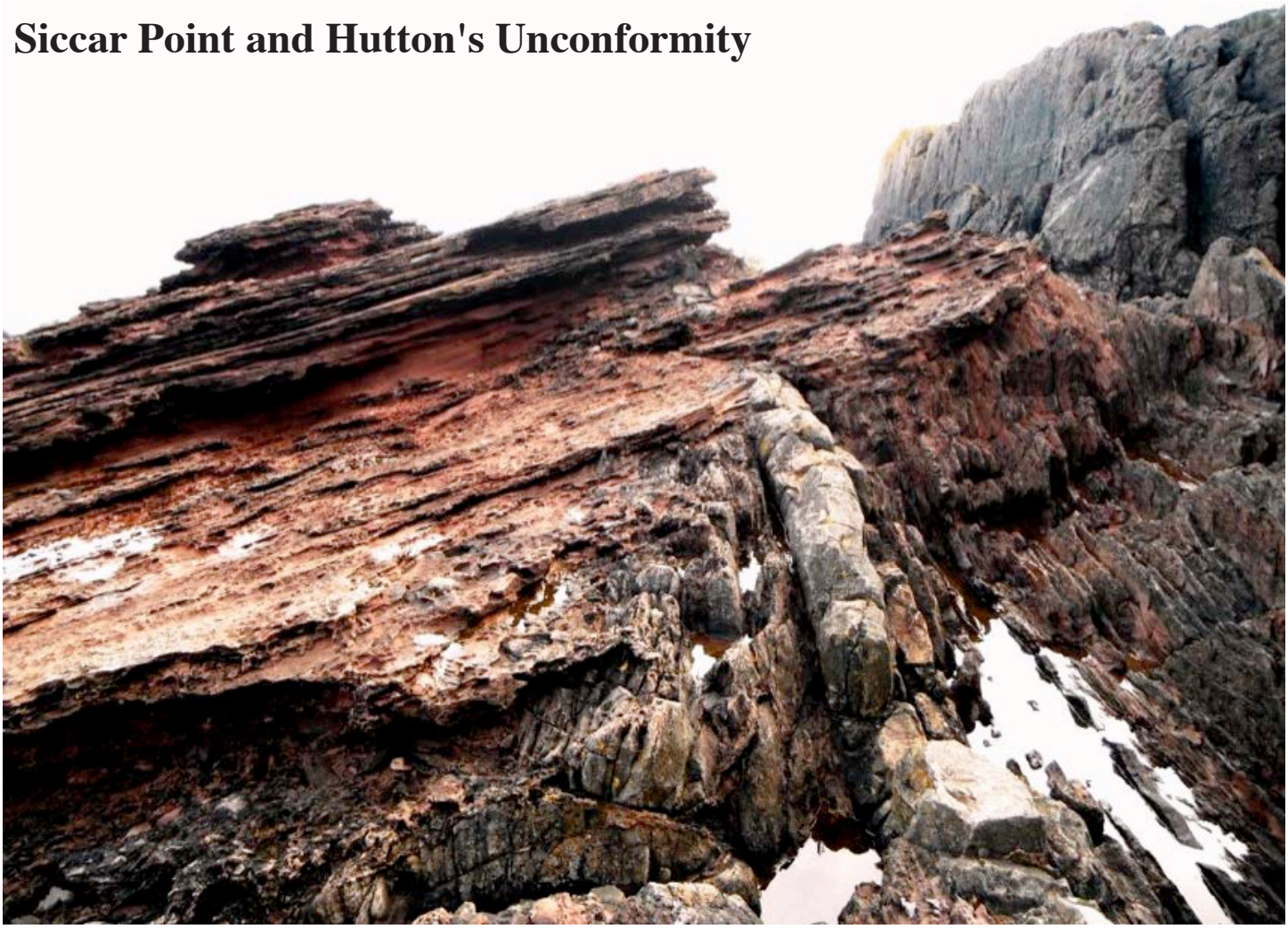
The team: Réjean Hébert, Robert Wares Caroline Wilson, Anne Slivitzky, Aline Leclerc Marie-Josée Girard, Émilie Gosselin, Audrey Goulet, Pierre-Hughes Lamirande, Fréréric Lessard, Sandra Veillette, Hubert Michaud, Janie B. Thibault, Philippe Drouin

This two-week trip in the mythical lands of Northern Great Britain was conducted as a part of the "Excursion Géologique" course offered by the Laval University to its bachelor students. Over almost two thousand kilometers of road, the participants had the chance to see many of Scotland's most interesting areas, including the infamous Siccar Point, often described as the birthplace of modern geology.

These twelve days only allowed the group a brief glimpse of the geology of Scotland, but the trip was planned strategically so that no important feature would be left behind. We were hence able to understand the evolution of this area over 3 billion years.

North America and Scotland split during the Tertiary, they therefore share part of their history (notably the Appalachian mountain range). On the other hand, Scotland has its own Precambrian and post Tertiary characteristics. It is usually subdivided in three geographical sections: the Northwest Highlands, the Central Lowlands and the Southern Uplands. The Highlands and Islands are located North West of the Highland Boundary Fault and hold a great diversity of rocks, including the Lewisian Archean Gneiss, among the oldest rocks in Europe. The Central Lowlands are characterized by Paleozoic rift geological formations. These rocks are igneous (volcanic and plutonic), sedimentary and metamorphic and were formed by the geodynamic processes that led to the Caledonian orogeny. The Southern

Siccar Point and Hutton's Unconformity



Sub horizontal Devonian Old Red Sandstone beds over vertical Silurian Greywackes, P.H. Lamirande

Uplands is located south of the Southern Upland Fault and holds mainly Silurian rocks that were uplifted from the seabed during the Baltica/Avalonia collision.

Archean and Proterozoic:

The oldest rocks in Scotland are the Lewisian gneisses, which are derived from rocks over 3 Ga. They form the basement of the Moine Thrust in many areas. The protoliths are mainly igneous but also marble, quartzite and schist. Felsic intrusions and basaltic dykes can be found locally. The Torridon Sandstones were formed during this period as well and contain the oldest fossils in Scotland. The mylonites found along the Moine thrust also date from this period. The term "mylonites" was used first by Charles Lapworth to describe lithologies formed by intense shearing, aligning it's grains along in the same direction.

Paleozoic:

Cambrian: A good variety of sedimentary rocks formed creating an unconformity between them and the Precambrian basement. They were then subjected to Dalradian grade metamorphism (a term proposed by

A gap of 500 Ma between Moine mylonites (top) and Durness limestone (bottom) at Knockan Crag, day 8, P.H. Lamirande

On the top of the Ballantrae ophilolitic complex next to a Trondhjemite outcrop, day 3, P.H. Lamirande

Archibald Geikie in 1981 to describe this same area) , we hence find micaschists, biotite gneiss, garnet, schisteous grit, meta arenites and quartzites. Suilven, one of the most distinctive mountains in Scotland, consists of Torridon Sandstones.

Ordovician: A fragment of Laurentia migrated towards North during this period. The sandstones, mudstones and limestones that were then created now form the Southern Uplands. These rocks were deposited in an environment of shallow tropical waters on the margin of the Iapetus Ocean. The ophiolitic complex of Ballantrae, remains of this seabed, has a similar composition to the Lizard complex in Cornwall even if they are very far away one from the other. The hiatus ended when the Gondwanian microcontinent Avalonia struck the Baltica and then the Laurentia continent during the Caledonian Orogeny (Caledonia: Roman name for modern Scotland). This collision formed a long mountain range that is seen from Norway to the USA and through Canada (respectively the Caledonian and the Appalachian). There is a rather interesting schematic comparison between the different outcomes of the Caledonian Orogeny in different areas of the world: http://www.earth.ox.ac.uk/~conallm/Caled.pdf (on p. 1152). The ice age in the Southern Hemisphere during this period led to a mass extinction due to the regressing ocean.

Silurian: During this period of marine transgression, the Laurentia-Baltica collision was still going on and joins Scotland to the UK and Europe, progressively forming the Pangea supercontinent. Major faults are active and give the shape to today's Scotland. The Highland Boundary Fault, the Great Glen Fault, the Upland Fault and the Iapetus Suture are all involved in the closing of this paleo-ocean. The Moine Thrust was also created during this event, putting older rocks over younger ones. This was the first case to be understood and its comprehension engendered a revolution of geology at the time. The term "thrust" was first proposed by Lapworth, Peach and Horne while describing the Moine Thrust at the end of the 19th century. The Greywackes of the bottom part of Hutton's Unconformity are also from this period.

Devonian: This period is characterised by the formation

Migmatites of the Ballachulish Igneous Complex on day 8 with Réjean Hébert, P.H. Lamirande

of the Old Red Sandstones as the continent moves from 25°S to 10°S. They result in the extensive erosion of the Silurian rocks exposed since the gathering of the Pangea. The lacustrian deposits are very important and can reach up to 11 km in thickness. They are very important sites for the study of paleontology and were the subject of many research projects. Some magmatic activity took place in this period as well, the Cheviot Ochill, and Sidlaw Hills were created during this period. The Devonian Ballachulish intrusion in the folded and metamorphised rocks of the Caledonian Orogeny was visited on day five of the field trip. At that time the Hutton's Unconformity formed between Devonian Old Red Sandstone beds and vertical Silurian Greywackes that we saw on day 1. James Hutton's work was not unanimously accepted at the time, but it is now seen as one of the greatest and most important discoveries in the history of geology, laying the ground for further important discoveries like plate tectonics.

Thick Old Red Sandstone beds on day 1, P.H. Lamirande

Carboniferous: Scotland was close to the Equator at that time. Many changes in the eustatic level and deposition of coal and limestone take place during this period. In the Lowlands, iron formations can be found and they were of great importance during the Industrial Revolution. Remains of Carboniferous forests can be seen in Victoria Park in Glasgow. Magmatic activity contributed to the formation of Arthur's Seat in Edinburgh and the nearby Bathgate Hills and of the Old Man of Storr, a stack of at least 24

Near the top of the Old Man of Storr on day 6, P.H. Lamirande

lava flows reaching great heights and eroding in an esthetic manner.

Permian: The Old Red Sandstone continent unifies with the Pangea as the Proto Great Britain moves North. The climate of Scotland is arid according to the reptilian fossils dating from this period. The end of this period is marked by the greatest marine life extinction: 90% of species disappeared.

Mezosoic

Trias: The arid climatic conditions are still active and the Highland and Uplands are providing sedimentary material filling the adjacent basins. The Elgin and Arran Island sandstones took place during this period. Towards the end of the Trias, a marine transgression contributed to making the climate less arid.

Jurassic and Cretaceous: This very active period is marked by the beginning of the breakup of Pangea. This event splits North America and Scotland and is accompanied by a rise of the sea level. The UK and Ireland moved towards the Eurasian plate by 30-40°N. Northern Scotland was emerging, as the Southern part was progressively submerged. This period is crucial as the gas in the North Sea was created as bacteria and algae were buried under the pelagic mud of the seabed. The gas is now found in the overlaying sandstones that were formed in a further lowering of sea level. During the Cretaceous, North America and Eurasia split, the sea level rises and all the lower areas of Scotland are submerged.

Cenozoic:

Paleogene: The last magmatic rocks are formed. Labrador and Greenland split from Europe and North Atlantic opens up. This geodynamic process is responsible of the formation of a mountain range on the western part of Scotland that can be seen on Skye, Mull, Rum, the Small Isles, St. Kilda, the Island of Arran etc. Columnar basalts can be seen around these areas. The sea level lowers and the general appearance of the British Islands coastline is revealed for the first time. At first, the climate is sub-tropical and the erosion is controlled by chemical alteration creating the Scottish coastal scenery like the Howe of Alford basin close to Aberdeen.

Neogene: Uplift and subsequent erosion occured during the Miocene and Pliocene. Scotland is almost stable at its present latitude and the climate is similar to the actual climate. During the Pleistocene, Scotland lies under a thick layer of glaciers, leaving only some mountaintops free of ice. The Holocene is host to a lowering relative sea level due to the isostatic uplifting. It gave way to a very complex coastline in the Culbin and Moray regions, leaving

The Sands of Forvie, visited on the last day of our journey, P.H. Lamirande

elevated beaches. These interesting formations are called machair. The ice erosion can be well seen on the North Goatfell mountains on the island of Arran on young granites (60 Ma). Many landslides are worth mentioning, with the famous Quirang landslide on the North side of the Skye Island. The erosion and uplifting of Scotland left many elevated beaches and dunes, like the Sands of Forvie visited on the last day of the field trip.

To sum it up, it was an instructive and fun experience to travel around these magnificent lands. We had the chance to observe and understand (in most cases) phenomena we had seen from various angles in the classroom, but never had the chance to swing a rock hammer at. From the basics of ophiolites and grades of metamorphism to the plate tectonics and planning logistics, with a mandatory stop at some distilleries, we have been over a wide range of fields of geology to finally get an idea of what the long and fascinating geological history of Scotland holds. It most certainly is an excellent addition to the basic knowledge we had prior to the field trip.

The Logan chapter of the Geological Association of Canada would like to give a heartfelt thanks to accompanying geologists, for their frequent and interesting remarks, hints and teaching over different aspects of geology while on the field. We would like to thank you as well for the interest you put in our project and the contagious positive attitude you expressed throughout these awesome and memorable but sometimes long and tedious two weeks.

The GAC Logan Chapter (For more pictures go to: http://ecosse.gaculaval.ca/)

Farewell!

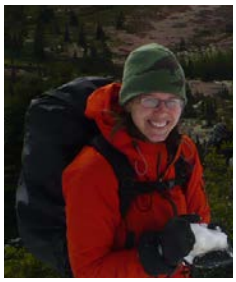
The Cuillins, leaving from the Isle of Skye, day 6, P.H. Lamirande

2013 AWARDS

GÉLINAS MEDALS

Every year the Volcanology and Igneous Petrology Division of the Geological Association of Canada 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 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. Nominated theses are evaluated on the basis of originality, validity of concepts, organization and presentation of data, understanding of volcanology and petrology, and depth of research.

Gold medal - Kate Souders



Dr. Souders' PhD thesis is quite simply the best thesis that I have seen over the 15 years that I have served as a faculty member at Memorial University. It is a remarkable example of how the development and application of new analytical methods can solve long-standing problems in igneous petrology. In her thesis, Dr. Souders addresses the critical issue of determining the nature and ages of the sources of magmas using isotopic ratios. She uses a microanalytical (LA-MC-ICPMS) rather than bulk rock approach, as is increasingly common today, but for the first time, combines three isotopic systems, U-Pb and Lu-Hf of zircon and Pb-Pb of plagioclase, to identify a previously unknown ancient (Hadean to Eoarchean) mafic crustal source for Archean anorthosites. Kate has already published three papers based on her thesis. *Citation by Paul Sylvester and Jarda Dostal*

Kate's response

I am extremely grateful to be the recipient of the Leopold Gelinas Gold Medal. Thank you to the Volcanology and Igneous Petrology Division of the Geological Association of Canada for recognizing my work and awarding me with this honor. None of my thesis work would have been possible without the support, guidance and encouragement of the many people who contributed to the completion of my project. I would especially like to thank my supervisor, Paul Sylvester. Paul believed in my project and was always there to provide support and inspiration throughout my time at MUN. Working with Paul made me a much better scientist and I owe him a big part of this award. Thanks so very much!

Silver medal - Melissa Anderson

The Gélinas Silver Medal was awarded to Melissa Anderson from the University of New Brunswick, who was supervised by Dave Lentz and Chris McFarlane. Her thesis is entitled "Evolution and Mineralization of the Moose II Lithium-Tantalum Pegmatite Deposit, NorthwestTerritories, Canada". Melisa's thesis used a wide variety of analytical methods to generate a detailed description of the pegmatite suite and so far has lead to two manuscripts. Congratulations Melissa! *Citation by Pete Hollings*

Melissa's response

I am writing to express my sincere gratitude to you for selecting my M.Sc. thesis "Evolution and mineralization of the Moose II lithium-tantalum pegmatite deposit, NWT" for the prestigious Leopold Gelinas Silver Metal. The completion of this thesis was the result of having wonderful mentors, particularly Prof. David Lentz and Prof. Chris McFarlane at the University of New Brunswick, and Hendrik Falck at the Northwest Territories Geoscience Office (NTGO), as well as the support of my family, friends, and colleagues. Funding for this research was provided by the NTGO and an NSERC Canadian Graduate Scholarship (CGS-M), with access to the property granted by International Lithium Corp.

I am currently pursuing a Ph.D. in Earth Sciences at the

University of Ottawa with Prof. Mark Hannington, examining the origin and distribution of metal in the ocean crust, with an emphasis on the role of deeply convecting hydrothermal cells. I am passionate about mentoring young geoscientists, and hopefully my career path will give me ample opportunities to give back to the geoscience community.

I am very excited to be chosen for this honour, and I am deeply appreciative of your support. Thank you!

Bronze medal - Michael D'Angelo

The 2012 Bronze Gélinas Medal for the best B.Sc. thesis in Volcanology and Igneous Petrology goes to Michael D'Angelo, Lakehead University for his thesis "Igneous textures and mineralogy of the Steepledge Intrusion, Northern Ontario".

Michael's response

I would like to thank the Institute for Volcanology and Igneous Petrology for awarding me the 2013 VIP Bronze Gélinas in recognition of my undergraduate thesis. Receiving this award is an amazing honour, one that I never envisioned when I started working on this project. This would not have been possible without the support of Panoramic PGMs Canada Limited, who provided me with an outstanding project and funding, as well as the SEG Canada Foundation for their support through their 2013 undergraduate scholarship. I would also like to acknowledge the contributions of my supervisor Dr. Peter Hollings and Geoffrey Heggie who both provided valuable support and guidance over the course of the project. Finally, I would like to thank my parents for always being there for and encouraging me, my friend and fellow student Chris Yip for allowing me to bounce ideas off his head, and everyone else who helped to make this possible.

CAREER ACHIEVEMENT AWARD

The Career Achievement Award is made by the Volcanology and Igneous Petrology Division of the Geological Association of Canada in recognition of career achievements in the field of volcanology and/or igneous petrology. Candidates will be judged on their lifetime scientific contribution

Citation for Réjean Hébert

It is a distinct pleasure for me to nominate Prof. Réjean Hébert for the Volcanology and Igneous Petrology Division "Career Achievement Award".

Réjean is a petrologist of high reputation, who made and is still making significant contributions to our understanding of the characteristics and origin of the oceanic lithosphere both in situ and in ophiolites.

He started his career in the early 1980's, tackling the origin of the Thetford Mines ophiolite by challenging the accepted dogma on as being formed in a mid-ocean ridge setting. He soon recognized the benefits of focusing simultaneously on field and petrological aspects of ophiolites as well as on the lithosphere found in the major ocean basins (Pacific, Atlantic and Indian). This lead to the publication of several papers, particularly in the 1990's, that demonstrated the subduction signature of several ophiolite complexes of the Appalachians, nourishing his models with petrological evidences found in the ocean basins.

Starting in late 1990's, he focused on unexplored ophiolite complexes of Tibet which mark suture zones of the greatest collision of tectonic plates during the Cenozoic. Since that time he led several field expeditions in remote locations, accompanied by Chinese colleague with which he can communicate in mandarin.

Sought after by students which appreciate his open-mindedness, support and in extensive petrological knowledge, Réjean has supervised and brought to completion 30 M.Sc. and Ph.D. students and more than 30 B.Sc. theses. He published 66 papers, several fieldtrip guidebooks and conference abstracts. He also took on administrative duties being Chair of the department for 7 years while pursuing his research projects and supervising several graduate students as well as teaching 3 courses (metamorphic petrology, geodynamics, thermodynamics) per year !

As an important contribution to the mission of GAC, he was president of the 1998 Annual GAC-MAC meeting in Quebec City and vice-president of the 2008 edition.

In summary, Réjean has made outstanding contributions to the field of igneous petrology both nationally and internationally. He is truly deserving the "Career Achievement Award".

Marc Constantin. Laval University

Réjean's response

Merci M. le Président pour la présentation de cette médaille de la Division de Volcanologie et Pétrologie Ignée.

Je souhaite remercier, les membres du comité d'évaluation pour le temps qu'ils ont mis à consulter ma candidature et particulièrement Jaroslav Dostal qui m'a encouragé à résumer mes 30 ans de carrière. Je remercie aussi tous les collègues et les étudiants gradués de tous les horizons qui m'ont aidé à un moment ou à un autre, à tâcher de comprendre la formation des ophiolites et de la lithosphère océanique et contribué, je l'espère, à réduire l'écart entre la géologie de terrain et le travail en mer.

Thank you Mr. President for offering the award of the Volcanology and Igneous Petrology Division.

I wish to acknowledge the members of the evaluation committee for spending their time reading my candidacy and particularly, Jaroslav Dostal who encouraged me in pursuing the completion of the summary of 30 years of career. I thank as well all the colleagues and graduate students from diverse provenance, who helped me, here and there, to try to better understand the genesis of ophiolites and oceanic lithosphere, and contributed, I hope, to reduce the gap between field and marine geologists.

2012 Volcanology and Igneous Petrology Division Financial Summary

Balance January 1, 2012	**4190.82**	
	Credits	**Debits**
Dues	920.00	
Publication sales	220.04	
Support for shortcourse		
Annual Business Meeeting , lunch		
Newsletter		
Postage, Copying, Miscellaneous Office		
Web page charges		16.74
VIP Award Medal Engraving & new medals		273.46
Profit from shortcourse		
Bank Charges		
Bank interest		
Totals	**1140.04**	**290.20**
Balance December 31, 2012	**5040.66**	

Meeting Announcements

Institute on Lake Superior Geology

The 60th Annual meeting of the ILSG will be held in Hibbing, Minnesota in May, 2014 with field trips both before and after. Visit the ILSG website for more details.

GAC-MAC 2014

The organisers of the 2014 GAC-MAC meeting in Fredericton are still accepting proposals for Technical Sessions. Please send a bried description, names of co-chairs and their affiliations to Jim Walker (Jim.Walker@gnb.ca).

VIP reminders

The **Career Acheivement Award** - the deadline is ***31 January 2014*** and nominations should be sent to Pete (peter.hollings@lakeheadu.ca)

The **Gold Gelinas medal** for an outstaning PhD thesis in the fields of volcanology and igneous petrology - the deadline is ***28 February 2014*** and nominations should be sent to Pete (peter.hollings@lakeheadu.ca)

The **Silver Gelinas medal** for an outstaning MSc thesis in the fields of volcanology and igneous petrology - the deadline is ***28 February 2014*** and nominations should be sent to James (jbraid@stfx.ca)

The **Bronze Gelinas medal** for an outstaning Honours thesis in the fields of volcanology and igneous petrology - the deadline is ***15 April 2014*** and nominations should be sent to John (john.greenough@ubc.ca)