ASH FALL

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

No. 57 January 8, 2004

Hello everyone! It's been too long between Ashfall issues – I was planning to wish everyone a Merry Christmas, an before that I had expected to simply welcome everyone back from the field! Your VIP executive finds itself *much* busier than usual, for various reasons. No matter, better a bit late than never!

First, I'm sure that those who attended the GAC-MAC Annual Meeting in Vancouver enjoyed the science, the fine weather, and the attractions in Vancouver. I had the opportunity to go on the Whistler corridor volcanology field trip after the meeting, and enjoyed it thoroughly. For those who missed it, the field guide is available through the GAC Cordilleran Section, PO Box 398, Station A, Bentall Centre, Vancouver, BC., V6C2N2. Two volumes are available, one for the transect of the southern Cordillera from Calgary to Vancouver (an awesome field trip, from what I hear) and the other for all other field trips run as part of the 2003 meeting.

Most of you missed our annual VIP awards and business lunch, although the turnout this year was a record high! The best reason to attend was to hear the citations for our Gelinas award winners, which are included in the issue of Ashfall. Read on!

Advancing pahoehoe lobe, Kilauaea Volcano. Photo by Wulf Mueller.

Report from the Chair

The GAC/MAC 2003 meeting in St. Catharines is looming imminently and should be fascinating. Our Division is sponsoring or cosponsoring two sessions: (1) SS 2: The Grenville – from type locality to global occurrences – what are the lithological connections to the Province? (2) SS 19: Molecules to planets: infrared spectroscopy in geochemistry, exploration geochemistry and remote sensing. We are also sponsoring a short course by the same name: SC 1, Molecules to planets: infrared spectroscopy in geochemistry, exploration geochemistry and remote sensing. **Abstract deadline is 19 January 2004, go to www.stcatharines2004.ca**

Georgia Pe-Piper and I are working hard to produce a series of papers on volcanology and igneous petrology for Geoscience Canada. These will be collected into a single volume akin to the famous "Facies Models" book. As such, these papers should make a lasting contribution. Stay tuned for developments.

I am working on producing an educational CD-ROM for the Division of field photographs of volcanic structures and textures from volcanoes in Canada and beyond. If you are interested in contributing photos or slides, please contact me.

John Stix
Chair

Léopold Gélinas Medals

Each year, the Volcanology and Igneous Petrology Division of GAC presents three medals for outstanding theses written by Canadians or submitted to Canadian universities and comprising material at least 50% related to volcanology and/or igneous petrology.

Now is the time to submit your completed thesis or have your supervisor submit the thesis on your behalf !!!

Deadline for Ph.D. and M.Sc. theses: **29 February 2004**

Deadline for B.Sc. theses: **15 April 2004**

Submit Ph.D. theses for Léopold Gélinas Gold Medal to:
John Stix, Department of Earth & Planetary Sciences, McGill University, 3450 University Street, Montreal, Quebec H3A 2A7; tel +1-514-398-5391, fax +1-514-398-4680, email stix@eps.mcgill.ca

Submit M.Sc. theses for Léopold Gélinas Silver Medal to:

Brian Cousens, Department of Earth Sciences, Carleton University, 1125 Colonel By Drive, Ottawa, Ontario K1S 5B6; tel +1-613-520-2600 x 4436, fax +1-613-520-2569, email brian_cousens@carleton.ca

Submit B.Sc. theses for Léopold Gélinas Bronze Medal to:

Wulf Mueller, Sciences de la terre, Université du Québec à Chicoutimi, 555 Boulevard de l'Université, Chicoutimi, Québec G7H 2B1; tel +1-418-545-5013, fax +1-418-545-5012, email wmueller@uqac.uquebec.ca

Bulletin of Volcanology Editorial Office moves to McGill University

Bulletin of Volcanology is the official journal of IAVCEI, the International Association of Volcanology and Chemistry of the Earth's Interior, and over the years has become one of the leading journals in Earth Sciences. As of 1 November 2003, the Editorial Office of the Bulletin of Volcanology moved from Clermont-Ferrand in France to McGill University in Montreal. With this move, Tim Druitt has stepped down as Executive Editor after five years of able leadership, and I have assumed this responsibility.

Submission of manuscripts to the journal remains the same. Authors should submit manuscripts to BV by emailing (or faxing) me the title, abstract, acknowledgements, and either the introductory or concluding section (or both), as well as the number of pages and figures in the manuscript. In some cases I may ask the author to email or send me the full paper. I will then ask a member of the editorial board to handle the paper and, if he/she accepts, will inform the author to send three double-spaced copies of the manuscript to the editor concerned. Editors will be selected according to their expertise, as well as availability and manuscript load at the time. The editor will handle the review process before forwarding me the final version of the paper with a recommendation to reject or accept. I will then read the paper in detail and, if necessary, request further changes.

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This issue of Ashfall features contributions by three VIP members, Crystal Mann, Ben Mason, and Charlie Roots.

Education fans the flames of knowledge in the Pacific Ring of Fire

By Crystal Mann, McGill University
cpmann@eps.mcgill.ca

Field work is more than documenting observations and collecting samples. As scientists and in this case volcanologists, we go into the field with the purpose of collecting data to answer a scientific question regarding some aspect of volcanology. Once our observations are made and samples collected, we return to our respective places of study. We all know that during the field season there are numerous opportunities to educate the local population in some aspect of geology. As scientists, we have also assumed the role of educators and are obligated to take advantage of these opportunities.

In many cases our research takes us abroad to countries with active volcanoes and a fundamental lack of education in volcanic processes and associated volcanic hazards. Due to lack of infrastructure, emerging nations such as those in Central America are at a disadvantage and rely on monetary aid and educational assistance from countries such as Canada. As scientists we need to do our part and seize these opportunities to communicate with the population. Here I present an example where an opportunity was taken toward educating the local population in volcanic processes.

The Ilopango Caldera located in El Salvador (Fig.1), a lake-filled caldera 10 km from the capital city, was chosen to be the site of my M.Sc. thesis work. Ilopango has

Figure 1. Location map of the Central American volcanic arc in El Salvador. Structural failure at the end of the Pliocene or early Pleistocene resulted in a tectonic depression called the Median Trough, which includes the volcanic chain (Williams and Meyer-Abich, 1955). Ilopango is bordered by three large volcanic structures. Boquerón, a large composite volcano, borders Ilopango to the west-northwest. San Jacinto, a cluster of andesitic domes, borders Ilopango to the west. San Vicente, a large composite volcano, borders Ilopango to the southeast. From the MTU (www.geo.mtu.edu/volcanoes) web site.

a grim history comprised of catastrophic eruptions of pyroclastic material and dome growth events(Mann *et al*., in press; Richter *et al*., in press) While doing field work, I lived in the village of San Agustín located at the shores of Lake Ilopango. After a day in the field, I would come home, review my notes, draw sections and organize for the next day and a speak with the locals. Curious about the samples laid out on the floor and the Polaroid pictures I had taken, they wanted more information. The local people of San Agustín were a captive audience and genuinely interested in what I had to say. For this reason, I decided to take this a step further.

I designed a simple, colorful brochure (Fig. 2) which would educate the locals on the volcanic landforms they observe daily and give them an idea of the potential hazards due to volcanic eruption.

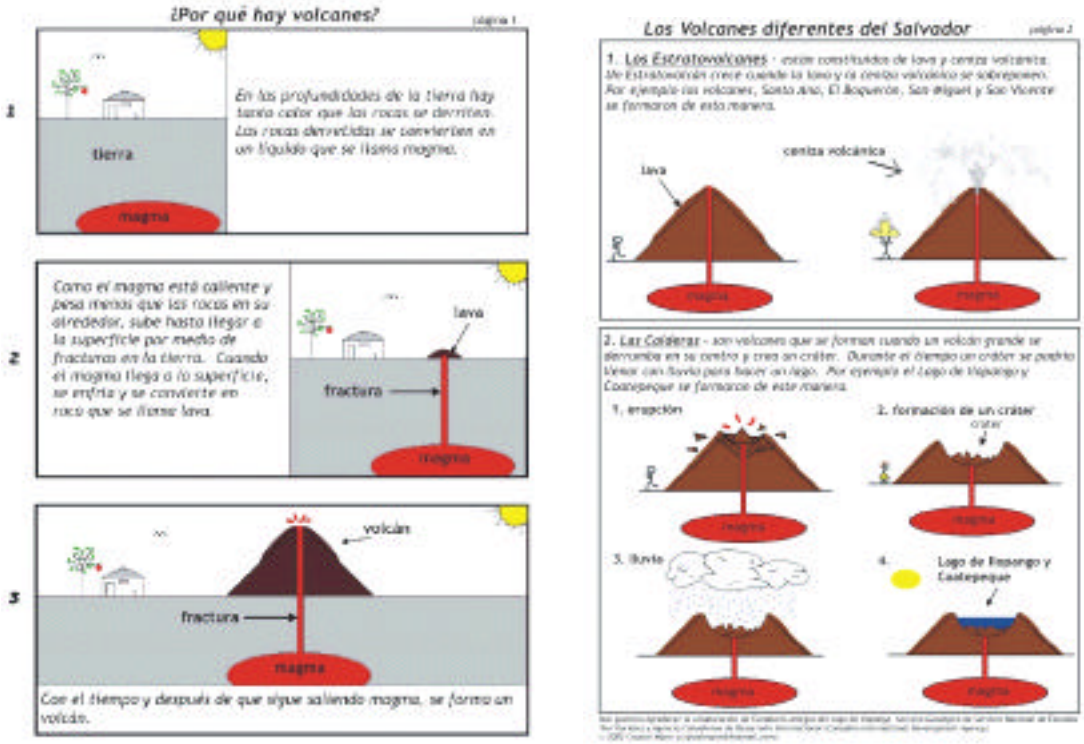


Figure 2. Two-sided educational brochure handed out to children in El Salvador.

I began by drawing pictures and getting the local kids to tell me when they understood. Eventually I came up with a design that the kids understood, and I knew they in turn would educate their parents. The Canadian International Development Agency (CIDA) sponsored the printing of 625 brochures. The brochures could be made for a reasonable cost, but dissemination was the problem. The solution came in a form of collaboration in which the United States Peace Corps, with over 100 volunteers located in various villages throughout El Salvador, agreed to give packs of approximately 30 brochures to the volunteers living close to volcanoes. I contacted the Servicio Geológico division of the Salvadorian Government and a non-profit organization, Fundación Amigos del Lago de Ilopango; both expressed an interest in keeping in contact with the Peace Corps and

improving the brochure. A working relationship was established between the two Salvadorian agencies and the Peace Corps, allowing the educational brochure to undergo constant improvement into a more effective educational tool.

I chose to do a brochure, but the possibilities are endless and the amount of involvement varies. Education can be in the form of an informal presentation at a local school, a display or presentation at the town center, or even simpler, in the form of a conversation with the locals recruited for field assistance or the curious person you meet at a bar or bus stop. If scientists conducting fieldwork abroad take the time to get involved, a difference can be made. There is a need to further education. We have a responsiblity, and I challenge everyone to do his or her part.

References:

Carr, M.J., Mayfield, D.G., and Walker, J.A., 1981, Relation of lava compositions to volcano size and structure in El Salvador: Journal of Volcanology and Geothermal Research, v. 10, p. 35-48.

Mann, C.P., Stix, J., Vallance. J., and Richter, M., Mann, C., Stix, J., Vallance, J., and Richer, M., *in press*, Subaqueous intracaldera volcanism, Ilopango Caldera, El Salvador, Central America, *in* Rose, W.I., Bommer, J.J., López, D.L, Carr, M.J., and Major, J.J., eds., Natural Hazards in El Salvador: Geological Society of America Special Paper.

Richer, M., Mann, C., and Stix, J., *in press*, Mafic magma injection triggers eruption at Ilopango Caldera, El Salvador, Central America, *in* Rose, W.I., Bommer, J.J., López, D.L, Carr, M.J., and Major, J.J., eds., Natural Hazards in El Salvador: Geological Society of America Special Paper.

Williams, H., and Meyer-Abich, H., 1955, Volcanism in the southern part of El Salvador with particular reference to the collapse basins of Lakes Coatepeque and Ilopango: University of California Publications in the Geological Sciences, v. 32, p. 1-64.

Database on large explosive volcanic eruptions

By Ben Mason, Cambridge Volcanology Group, University of Cambridge, U.K.

A working group from the IAVCEI Commission for Explosive Volcanism has established a website to collect and collate data on the sizes of large explosive volcanic eruptions. The aim is to develop a comprehensive database of all known events larger than 10 km3. This will enable quantitative assessment of the recurrence rates, potential sizes and impacts of the largest and rarest volcanic events. The database will allow improved quantitative estimation of the hazards posed by large eruptions, and will provide a wealth of information that will be made freely available to the scientific community for analysis.

The website enables the submission of data in three forms:

- Volumes of pyroclastic deposits (greater than 10 km3)
- Caldera information (all calderas greater than 5 km)
- Information on distal volcanic ash (for example from sediment core samples)

We seek the participation of volcanologists with data pertaining to large volcanic eruptions from Canada, or any other volcanic regions and actively encourage the submission of information on the deposits of any eruptions with suspected volumes of over 10 km3. The website can be found at:

http://www-volcano.geog.cam.ac.uk/database

Preliminary results will be posted on the Internet shortly and a full presentation will be made at the IAVCEI general meeting in Pucon, Chile in November 2004. Please contact the Canadian Regional Representative Crystal Mann (cpmann@eps.mcgill.ca) or browse the website for further information.

Columnar jointed basalt is the subject of a Yukon art show

Submitted by Charlie Roots, Yukon Geology Program

Miles Canyon was created since the last Ice Age by the Yukon River eroding through a series of Late Miocene olivine basalt flows (e.g. Hart and Villeneuve, 1999). All river travelers were forced to pay homage to the ferocious flume – it was glorified by writers and photographers during the Klondike stampede in 1898. Although tamed by rising waters behind a hydroelectric dam built downstream in 1958, the canyon is now the centre of a popular recreation area: viewed from the quaint suspension footbridge the large columns of dark brown rocks contrast nicely with the swirling blue green water below.

Charcoal on canvas, 76 x 50 cm

"Facing Miles Canyon", an exhibition by Neil Graham at the Yukon Arts Centre Gallery in Whitehorse this spring, celebrated the walls of the canyon from a less common vantage point. His drawings and paintings, including a gently undulating wall of suspended paintings 10 m long and 4 m high, depict the rocks as if from water level. He portrayed the rock faces with charcoal, gesso and acrylic paint as they are in reality.

Volcanologists will recognize the classic joint architecture of cooling basalt: an entablature succeeded by an upper colonnade, and curved columns radiating from topographic irregularities of the underlying surface. In these paintings, however, artist Graham has tried to reveal the rock gods – the totemic forms that appear etched in the columns.

For Graham sees in the Canyon a mythic force: for migrating salmon and all people before the arrival of the Alaska Highway, Miles Canyon was both a barrier and a passageway, and its walls have witnessed countless dramas. He sensed there was "something trying to get out… that faithful reproduction was not enough". To communicate this feeling he has inscribed his poetry on the reverse side of the wall of paintings. His poems use straightforward language to communicate his own life-experience: birth of a daughter, raising kids, the death of a parent. He has struggled to capture the elusive spirit within a rock formation - too often missed by those just passing by – and even he is not always certain what it is. In one of his poems he ponders, "Do I dare be a hero for rocks?". I think he is, and geologists who think they understand the mechanisms of their formation might gain further insight by asking the same question.

Neil Graham has earned an appreciative audience in Whitehorse. Accompanied by a 12 minute video and an informative tri-fold catalogue, he hopes to present this show at other galleries in Western Canada. He can be reached at 41 Takhini Ave., Whitehorse, Yukon Y1A 3N5; neagg@internorth.com.

Reference:

Hart, C.J.R. and Villeneuve, M. 1999. Geochronology of Neogene alkaline volcanic rocks (Miles Canyon basalt) southern Yukon Territory, Canada: the relative effectiveness of laser $^{40}A/^{39}Ar$ and K-Ar geochronology. Canadian Journal of Earth Sciences, **36**:1495-1507.

Spectacularly jointed lava, Whistler Corridor Field Trip, May 2003 GAC-MAC Meeting. Photo by Brian Cousens.

2003 Volcanology and Igneous Petrology Annual Meeting
May 28, 2003, Vancouver, B.C.

The annual VIP business meeting and luncheon was held at the Sheraton Centre during the 2003 GAC-MAC meeting in Vancouver. Attendance totaled 21 members – clearly a record for recent years! – who happily munched on tortilla wraps.

The Report from the Chair included a summary of preparations for the 2004 GAC-MAC meeting in St. Catherines, Ontario, that will include two VIP-related special sessions on the Grenville and IR Spectroscopy (more details follow this report). For the 2005 meeting in Halifax, proposed special sessions include the CAMP (including a field trip?), the South Mountain Batholith, ODP petrology, and possibly a "big idea" session reviewing major advances in igneous petrology. Proposed field trips include the CAMP, the South Mountain Batholith, and the North Mountain basalts. The 2006 GAC-MAC will be held in Montreal, where possible sessions/field trips include the Monteregian Hills, anorthosites, and greenstone belts. If you have any suggestions for sessions/field trips for future GAC meetings, please contact the VIP executuve.

A series of papers on igneous petrology and volcanology for *Geoscience Canada*, originally proposed and organized by Georgia Pe-Piper three years ago, is progressing slowly. Two papers are in press, 2 papers are near-ready for submission, but the remaining nine manuscripts are not yet ready. A proposal was put forward to move directly towards publishing a book, rather than wait for all the papers to appear in *Geoscience Canada*.

A CD-ROM atlas of field photographs is proceeding, thanks to a student hired at McGill University to coordinate collecting the photographs. Please contact John Stix if you have photographs that you would like to be included on the CD.

Next on the agenda was the awarding of the **Career Achievement Award** to **Don Francis** of McGill University. The following citation was prepared by Dante Canil:

It is my great honour and pleasure to introduce the winner of the 2003 GAC Igneous petrology Career Achievement award to Don Francis.

The citation for this award was made by John Ludden who highlights some of Don's achievements from studies of mantle rocks on Nunivak Island, to Cordilleran magmatism to the chemical evolution of basaltic magmas over time. As I've been asked to present the award but was not the citationist, I would like to share some very personal views that I hope capture Don's persona and the impact of his work in petrology and on others.

For me, when you put two words together like "play guitar" they might speak to you as a name as say "Eric Clapton". To me the two words "Igneous Petrology" come to the name "Don Francis". His name embodies excellence to many in this subject area, and he is a leading light in Canada and beyond.

One measure of one's career in academia is the timelessness or significance of their published work. Don has offered us so many things and presented them in such simple way. His approach - detailed field studies, followed by state of the art analyses (usually hundreds of samples) to quantitative modeling. This all presented in the shadow of impressive literature compilation of rock analyses or experimental phase equilibria. Don will turn just another sequence of igneous rocks into some greater comment on magmatic process, lithosphere structure or greater signal from a slowly evolving mantle. His papers

might start with only a hawaiite flow in British Columbia, but end up speaking volumes about hawaiites, magmatic processes, or mantle composition the world over.

When I think of Don's mark on the field I think of cation units, the Al-Si diagram, picrites, Precambrian magmas and mantle xenoliths. Let us start with cation units. Nobody plots in these but the utility of doing this simple task is evidenced in so many of Don's works. Through compilation of literature data in the light of experimental melting studies Don has shed light on the picrite problem, the pyroxene paradox in MORB and the possibility of an Archean mantle composition very different from that of today. He has mapped and told us about the petrologic structure of the Canadian Cordillera and the magmas so derived from it.

His breadth petrologically is paralled geographically. Never one to come up short on anything. If there's a rock or xenolith to be sampled Don, his students (and dogs) went there. If an analysis to be made, it was done twice in the McGill lab. I suspect Don craves trucking home more dark black, green or gemmy green rocks and becomes nervous when their MgO content comes back below 5wt%. He can be seen many summers in small towns of B.C. or Yukon chartering a plane or helicopter or tasting many a black fly on Canada's Precambrian shields.

There is yet another less appreciated dimension of one' career. That is the extent to which one's career has spawned or influenced that of others. Don has educated a bevy of graduate students who bring their training to industry, government and academia. I'd hire any employee who knows what a norm is, is able to plot in cation units and who could convince Don of the story for their graduate thesis.

Though I have never worked with Don, his career has influenced my own in very deep way. Don is a petrologic icon for me, and a strong influence on me and the work of

others. I highlight one personal anecdote, and I hope many of you will recall your own. When I was looking to go to grad school I wrote Don for interest. He sent back reprints, one of which was this one – "Magma Evolution in Proterozoic Rifting Environment" co-authored with Ludden and Hynes. This paper changed my life, in that I knew then I wanted to become an igneous petrologist. This paper amazed me. It took a sequence of greenstones in what seemed an amazingly remote part of the world, and turned it into an opening and closing ocean, all recorded by the composition of magmas being filtered by the lithosphere. Don showed me state of the art chemical analyses in cation units, incredibly detailed calculations of the fractionating assemblage and its mass, and in my opinion the first barometer for magmas, the Al- Si cation diagram. This little known diagram is the first compilation of experimental melting data to estimate P of melting, it proceeded Klein and Langmuir by five years and sadly is unmentioned in their since oft-quoted analysis of mantle melting. For some today this diagram this would have been published on its own, but Don hid it in an Appendix to his paper interpreting Proterozoic magmas. This is likely a measure of Don's modesty.

Lastly, Don is a tremendous orator. Some of the best lectures I've seen. He captures the audience, feeds us the story out of his hand, leaves the petrologic jargon behind and convinces all of us, including geophysicists, of the ground truth in rocks. After his lectures I feel we really know what the hell we're doing in petrology. He is a great advocate for our discipline. Students, go see his talks. Others emulate his approach and good nature. And all of you please join me in celebrating and appreciating this career award for Don Francis, a career which is far from over. Thank you.

Next came the awarding of the **Gold Gelinas Medal** for the best Ph.D. thesis of 2002-2003 to **Patricia Corcoran** by John Stix:

It gives me great pleasure to award the 2003 Léopold Gélinas Gold Medal for Best Ph.D. Thesis in Volcanology/Igneous Petrology to Dr. Patricia Corcoran of the University of Western Ontario for her thesis entitled, *"Physical Volcanology, Geochemistry, and Tectonic Evolution of Three Selected Areas in the Point Lake and Beaulieu River Volcanic Belts, Slave Province, Northwest Territories, Canada"*. Her thesis was supervised by Professor Jarda Dostal of St. Mary's University.

In her thesis, Patricia takes on the daunting task of unraveling the geology, geochemistry, and tectonics of three distinct field areas in the Slave Province, so in a sense her Ph.D. thesis comprises three theses! By carefully studying the physical volcanology of these different areas, she has been able to reconstruct the evolution of an arc system in both a spatial and temporal sense. She has elegantly combined the geology with trace element geochemistry to convincingly demonstrate that plate tectonics played a fundamental role in this area at ~2.7 Ga. Patricia is upholding an important tradition in Canada of developing scientifically significant and lasting tectonic models of ancient rocks based on careful fieldwork, laboratory analyses, and detailed comparisons with modern environments. This thesis is a lasting contribution, already published in several important papers, and fully deserving of the 2003 Léopold Gélinas Gold Medal.

The **Silver Gelinas Medal** for the best M.Sc. thesis of the past year was awarded to **Craig Stanley**, with the citation by Brian Cousens:

It is a great pleasure to announce that the winner of the 2003 Silver Gelinas Award is Craig Stanley for his outstanding thesis, "Petrology of mantle xenoliths hosted in Tertiary lavas of the Vogelsberg, Germany: Implications for mineral-melt reactions and a comparison to mantle xenoliths from the Hessian Depression and Rhon". Craig's supervisors at the University of Western Ontario were Neil MacRae and Cliff Shaw, and the thesis was dedicated to the late Alan Edgar.

The goals of the project were to document the petrography and composition of the xenolith suite, to compare this suite with suites at nearby volcanic fields, and to distinguish between metasomatic reactions that occurred in the mantle versus those that occurred during xenolith transport to the surface. Ultimately, the data lead to a snapshot of the petrography and composition of the upper mantle beneath central Germany during Tertiary rifting and volcanism. This is a project that required a lot of painstaking textural and mineralogical examination, something that I lack the patience for. For this reason I especially admire the work that Craig has done, and amongst the four excellent theses submitted this point ended up being the deciding factor.

First, Craig traveled to Germany to collect his xenoltih suite from three locations within the Vogelsberg volcanic field, including spinel lherzolites, wherlites, and rare pyroxenites. Craig was able to determine equilibrium temperatures using a variety of geothermometers. Although compositional variations amongst the xenoliths are consistent with primary control by partial melting, cryptic metasomatism has enriched the xenoliths in the light rare earth elements. Craig proposes that this metasomatic agent was

a silicate melt rather than a hydrous fluid. In addition, pre-eruption interaction of the xenoltihs with an SiO_2-undersaturated melt produced mineral reactions yielding a spongy texture along grain boundaries. From his data, Craig proposed a geologic history for the mantle beneath central Germany during the Tertiary, which includes intrusion and crystallization of tholeiitic magmas near the crust-mantle boundary.

I would like to acknowledge the other three competitors for this award, Ryan Weston at Laurentian University, Katrin Breitsprecher at Simon Fraser University, and David Andrews at the University of Toronto. All three theses were of the highest quality, and the choice of the "best" thesis was difficult. My congratulations to all of you on a job well done.

Finally, the **Bronze Gelinas Medal** for the best B.Sc. thesis went to **Mathieu Richer**, and the citation was given by Sandra Barr (for Wulf Mueller):

The Gélinas Bronze Medal winner for 2003 is ***Mathieu Richer*** of McGill University. His BSc-thesis entitled 'Mafic magma injection triggering eruption at Ilopango caldera, El Salvador, Central America' is an excellent process-response study. This research is important because it shows that magma injection into a pre-existing chamber may trigger an eruption. The first part of the study identifies phenocrysts from the host dacite magma affected by the injection of the mafic magma. The plagioclase and hornblende phenocrysts display reaction and overgrowth rims, but also a dusty zone at the margin of the phenocryst; these attributes are considered to be the result of new magma injection. Magma wisps of basaltic andesite are also contained in the dacite and support the inference of magma mingling. Based on these petrographic observations, and supported by additional geochemical analyses, a model is proposed. Mr. Richer suggests that mafic magma injection caused heating of the dacite and magma mingling. Heating of the dacite enhanced magma buoyancy, which in turn caused the dacite to rise and vesiculate, thus generating an overpressure that resulted in an eruption. I congratulate Mr. Richer and wish him all the best for the future.

I would like to comment on two excellent theses that should receive honorable mention. Both deal with the geochemistry and show that significant conclusions can be drawn by careful examination of phenocrysts / xenocrysts, and phenocryst-poor volcanic rocks :

1) *Pétrologie des laves porphyiques de la dorsale Explorer et de la zone de fracture Sovanco: origine des phénocristaux et des xénocristaux.* A strong petrological study, with identification of olivine and plagioclases xenocrysts in tholeiitic basalts that were used to identify a chemically heterogenous mantle source. BY **Anne-Aurelie Sappin**, U. de Laval; thesis director, Marc Constantin.
2) *Geochemistry of Mio-Pliocene Carson Range volcanic suite, California/Nevada: implications for transitional magmatism.* A sound geochemical study of basaltic andesites to trachyandesites that are probably part of the Kate Peak Formation. The Carson Range lavas come from a heterogenous subduction-related source with ascent facilitated by extensional structures. BY **Julie Prytulak**, Carleton University; thesis director, Brian Cousens.

Report of the Secretary Treasurer:

2002 Financial Statement, GAC Volcanology and Igneous Petrology Division

		Credits	Debits	Comments
Opening Balance	**3171.59**			
Bank Interest		0.44		
Dues		192.00		
Sales		479.78		Field Guides
Donations		1389.50		CGU Grant for medals
Annual Mtg			169.60	Luncheon, GAC Meeting
Ash Fall			98.49	photocopy, postage charges
Office/misc			1389.50	new Gelinas medals
Awards			144.02	medal engraving
Bank Charges			47.99	
Total Credits	**2061.72**			
Total Debits	**1849.60**			
Closing Balance	**3383.71**			

Please note that the VIP Division has on the order of $2500.00 that should be spent on some function or product of benefit to our membership. If you have any suggestions, please contact a member of the executive.

Announcements

Mineralogical Association of Canada Short Course

INFRARED SPECTROSCOPY IN
GEOCHEMISTRY,
EXPLORATION GEOCHEMISTRY,
&REMOTE SENSING

GOALS .....To update graduate students
researchers & professional geologists
on the current theory & practice
in infrared spectroscopy (IR)
from the molecular to planetaryscale.

TOPICS .....

> Fundamentals & instrumentation used in IR spectroscopy
> IR spectroscopy of minerals & glasses
> IR spectroscopy in ore deposit exploration
> IR spectroscopy in environmental remediation
& much more....

WHEN?.....May10-11,2004
WHERE?.....University of Western Ontario
London, Ontario,Canada

OPPORTUNITIES TO PRESENT YOUR RESEARCH....
A special session at the GAC-MAC annual meeting (St. Catharines, Ontario, May12-14) will complement the short course.

For further information please contact:
P. King, University Western Ontario, London ON, Canada
penny.king@uwo.ca.
M. Ramsey, University of Pittsburgh, Pittsburgh PA,USA
ramsey@ivis.eps.pitt.edu
G. Swayze, USGS, Denver CO, USA
gswayze@usgs.gov
Additional information will be posted on the MAC website:
www.mineralogicalassociation.ca

Preliminary Schedule for the MAC Short Course
(Updated 7 Oct. 2003)

Talks are assumed to be 50 mins total including time for questions

TIME	TOPIC	SPEAKER(S)
Monday May 10		
I. Introduction		
8.30 – 9.20	1. Fundamentals of IR spectroscopy	Carol Hirschmugl- Univ. Wisconsin Milwaukee
9.20-10.10	2. IR spectroscopy instrumentation and data processing	Penny King, Gregg Swayze, Mike Ramsey
10.20-10.35	Coffee break	
II-A. Methods in Mineralogy & Petrology		
10.35 – 11.25	3. IR spectroscopy of minerals	Vladimir Khomenko, Ukrainian Acad. Sci.
11.25 - 12.15	4. IR spectroscopy of glasses	Gordon Moore- Arizona State Univ. Penny King- Univ. Western Ontario
12.15-13.00	LUNCH	
13.00-14.20	The group breaks into two subgroups and each has two sessions, switching topics after 40 minutes: a) Laboratory-based spectroscopy b) FLIR cameras	
14.20-15.10	5. IR at high P & T & determining transport properties of materials	Anne Hofmeister - Washington Univ. St.L.
15.10-15.25	Coffee break	
II-B. Methods in Exploration Geochemistry		
15.25-16.15	6. IR spectroscopy in ore evaluation	Benoit Rivard- Univ. Alberta Ann Gallie- Laurentian Univ.
16.15-17.05	7. IR spectroscopy in ore deposit exploration	Sandra Perry- Perry Remote Sensing
18.00	Conference dinner	

Tuesday May 11

II-C. Methods in Environmental Geochemistry

9.00-9.50	8. IR spectroscopy in environmental geochemistry	Gregg Swayze - USGS Denver
9.50 -10.05	Coffee break	
10.05-10.55	9. Infrared spectroscopy of urban environments	(Roger Clark- USGS Denver)
10.55-11.45	10. IR spectroscopy in geohazards	Jim Crowley- USGS Reston
12.00	LUNCH	
13.00-14.20	The group breaks into two subgroups and each has two sessions, switching topics after 40 minutes: a) hand held spectroscopy b) remote sensing spectroscopy	Gregg Swayze - USGS Denver
14.20-14.35	Coffee break	

II-D. Methods in Planetary Geology

14.35-15.25	11. Infrared spectroscopy of continents	Mike Ramsey- Univ. Pittsburgh
15.25-16.15	12. Infrared spectroscopy of other planetary bodies	Jeff Johnson- USGS Flagstaff
16.15-17.30	Discussion over beer/wine (cash bar) / Early dinner What is needed to improve the international IR spectroscopy community?	
18.00	Vans depart for St. Catherines GAC-MAC meeting	

Preliminary Logistics for the MAC Short Course

Location: Conron Hall, University of Western Ontario, London

A/V equipment: Powerpoint data projector, lap top, overhead projector, black board, video etc.

Registration costs: $200 - students, $350 - professionals

Registrations costs intended to cover:

Conron Hall rental, A/V, coffee breaks, lunch, costs for speakers (travel, accommodation, food), salary for student help, advertisements, name tags, bags, 2 van rentals, table cloths, delivery charges, short course volume.

Registrants pay for their own

Travel & registration

Accommodation: Student residences $50.60 per day
Windemere Manor: $117 per day

Food: breakfast $8, dinner $30, drinks

Speakers: We will try to cover as much of their travel, accommodation and food etc. as possible.

Wednesday May 12 (we need confirmation of this date)

An oral and poster **Special Session** are scheduled at GAC-MAC, Brock University, St. Catherines, Ontario (May 12-14).

TITLE: Infrared spectroscopy in geochemistry, exploration geochemistry and remote sensing.

CONVENOR: Mike Ramsey, University of Pittsburgh

AdamsClubGraduate StudentSymposium2004

Montréal,Québec
March11-13th

FIRSTCALLFORABSTRACTS

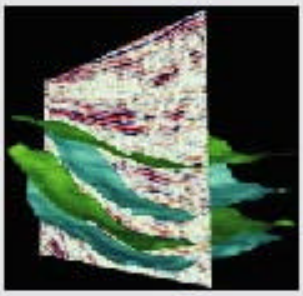
ALLGEOSCIENCEDISCIPLINESWELCOME
DEADLINE:FEBRUARY1st,2004



MARCH11th
Evening:IcebreakerParty

MARCH12th
Morning:KeynoteSpeakers
Afternoon:GradStudentPosterSession
CASHPRIZESFORBESTPOSTERS

FREE SEISMICSHORT COURSEONMARCH13th
TaughtbyProf.BruceHart
Givenforoilcompaniesin
Calgary,Houston,Cairoetc...



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http://eps.mcgill.ca/groups/adams/

McGill Earth & Planetary Sciences

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