

ASH



FALL

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

#34 March, 1994

MESSAGE FROM THE CHAIR

As I sit in my office and use my x-ray vision to see Mount Baker through the clouds, I realize that another field season is soon upon us -- as well as the Annual General Meeting of our parent body the GAC. I hope to see many of you there for what looks to be an exciting conference - one that will leave many of us frustrated over having to make difficult choices between simultaneous talks and sessions! Even if you don't attend the Division sponsored special session on Tuesday, please try to come to our Annual General Meeting Tuesday at lunch. We will stave off your hunger pangs with pizza (a tradition started by Les Coleman) and spend as little time as possible on Division business. But, we do want you there to honour the recipients of this years **Career Achievement Award** and the **Leopold Gelinus Award** for best thesis. We have had several nominations and the committee is deliberating.

You may notice a change from the past in the executive nominations. Usually the vice-chairman assumes the chair at the end of their term. Tom has however declined due to his upcoming sabbatical, but has agreed to stand for re-election as vice-chair. In response to this both Les and I have agreed to stand for re-election in our respective offices. If we are re-elected however, the Division will be seeking both a new vice-chair and chairman in 1996.

In November of last year I resigned from my management responsibilities in the GSC and am happy to say have been able to get some science done for a change! I have just completed the Canadian update for the Smithsonian Volcanoes of the World compilation which will be published in the not too distant future. In the meantime, the database (dbase compatible) which developed from this work now contains the most complete set of information on Quaternary volcanoes in Canada. The subset of information used in the Smithsonian compilation will be Open Filed by the GSC after review. Currently there are 257 features (i.e. distinct volcanic landforms) listed, but we seem to come up with new/revised ones almost daily. If you are interested in reviewing all, or your favourite part of the Cordillera, please get in touch with me. I will be bringing the data set to GAC/MAC. If you are interested in seeing it, please track me down.

On a sad note I must report the death of George Cumming, Department of Physics, University of Alberta on February 27 after a long fight with a rare and untreatable form of cancer. Though not directly involved in volcanology and igneous petrology, George's in work in geochronology and isotopes contributed to a better understanding of the timing of volcanism and plutonism in many parts of Canada. He will be sorely missed by his many friends and colleagues.

Cathie

EJECTA

Y'all may have noticed that, although it was clearly stated in the minutes of the last meeting (Ash Fall #33) that our name had been changed to the "Volcanology and Igneous Petrology Division", this change was not reflected in the title of that same newsletter. My thanks go to those who woke me up and drew my attention to this point - I'll catch up some day.

You might also have noted that the name change has been incorporated into this Ash Fall and admired our catchy new logo, to mark said name change. Our thanks go to Glenn Helmlinger, a non-member, for this elegant drawing of Monte Somma and Vesuvius which replaces the smoking and inverted mixing bowl that Cathie and I cobbled up last year. Glenn has been paid with two bottles of my home brew, but a full recovery is expected.

Here on the coast, Spring is springing, crocuses (?croci?) are out and the cherry trees are thinking about blossoming. Again, I hear screams from those of you in Winnipeg. I know - I was there for four winters. All this is to set the stage for the early summer and, of course, the AGM at the GAC May 1994 Annual Meeting, this year to be held in Waterloo. **The Division AGM is set for Tuesday, May 17th, 12:30 pm, in Room DC-1302**, the same one in which our special session is to be held. There's a rumour that we may have pizza and a video to show you.....

What else? Ah, yes; some of you may not have heard of *Volcano Quarterly*, published by Janet Tanaka out of Issaquah, in Washington State. This is available at an annual subscription of \$25 for the States, \$28 for Canada and Mexico and \$31 for "elsewhere" (all prices in U.S. dollars). The address is:

**P.O. Box 405
Issaquah, WA
98027 U.S.A.
Tel: (206) 392-7858
Fax: (206) 277-8780**

LE VOLCANISME AU QUEBEC

Jerry Rémick has written to us and sent us an extremely attractive and informative poster produced by the Québec Government, entitled "Le volcanisme au Québec". The poster is published exclusively in French and Jerry pointed out that this may make it less interesting to some members. I'm willing to believe better, even of a bunch of *maudits* anglophones; besides, the poster is available free of charge (which will appeal to the more parsimonious among us). The address and fax number are:

**Ministère de l'Énergie et des Ressources
S.I.S.E.M.
5700, 4eme Avenue Ouest, Local A-201
Charlesbourg, Québec
G1H 6R1
Télécopieur: (418)644-3814**

Better get 'em while they're still hot - Jerry also informs us that this is the last poster of its kind in the foreseeable future (government cutbacks) and that they may start charging for the poster as early as April 1st.

VICTORIA '95 EVENTS
(Not this conference; the next one.....)

Special Session at the Victoria GAC-MAC meeting
IGNEOUS ACTIVITY IN EXTENSIONAL ZONES AT CONSUMING PLATE
MARGINS

Tark Hamilton and Georgia Pe-Piper

The Volcanology and Igneous Petrology Division is sponsoring a one-day special session on "**Igneous activity in extensional zones at consuming plate margins**" at the annual GAC-MAC meeting in Victoria, B.C., May 17-19th, 1995. This session will include keynote addresses, short oral presentation and poster presentations. We plan to publish papers presented in this session, perhaps as a thematic set in the Canadian Journal of Earth Sciences. Abstracts will be due about December 1994.

We are seeking papers that deal with the relationship of volcanism and plutonism to extension within and behind arcs. Contributions are welcome that deal with petrology, geochemistry and petrogenesis of extensional arc magmas and the geological, geophysical, structural and tectonic evidence for extensional magmatism within arc settings. Specific topics to be considered include: the role of extension in permitting volcanism and plutonism; extension and the solutions to space problems to plutons; different extensional magmatic environments across arc systems (backarc-intraplate, backarc oceanic basins, arc axial grabens, arc transform offsets, forearc extensional settings); the role of extension in decompressive melting in arcs; local extension and rates of volcanism. Also welcome are case histories emphasising the role of extension in modern arcs and analogous ancient settings.

We would like to hear from anyone interested in contributing to this session at the meeting in 1995, or who knows of others who might have important new scientific findings to present.

Tark Hamilton
Pacific Geoscience Centre
9860 West Saanich Road
Sidney, B.C., V8L 4B2
phone: 604 363 6423
fax: 604 363 6565
email:tark.hamilton@pgc.emr.ca

Georgia Pe-Piper
Department of Geology
Saint Mary's University
Halifax, N.S., B3H 3C1
phone: 902 420 5744
fax: 902 420 5261

DIVISION FIELD TRIPS

For those of you who used your last *Ash Fall* for kitty litter without reading it first - this is to remind you, well in advance, of the two field trips planned for 1995.

SOUTH-CENTRAL NEOGENE TO HOLOCENE VOLCANISM IN THE CANADIAN CORDILLERA

Leaders: **Dr. Catherine Hickson, Dr. Paul Metcalfe,**
Geological Survey of Canada, Cordilleran Division
(604) 666-3955 (Cathie) or 666-1129 (Paul); Fax 666-1124
Premeeeting Trip: 5 days, May 12 - 16. Approximate cost \$400.00

This field trip will focus on the immense variety of volcanic rocks and processes found within the southern Canadian Cordillera. The trip will be run as a circle tour, starting in Vancouver. Heading east past Mount Baker

through the active Cascade Magmatic Belt the first stops will be to look at 22 Ma Coquihalla complex. The trip will head north to the Wells Gray Volcanic Field then swing west and south back through the Garibaldi Volcanic Belt, the northern part of the Cascade Arc. Localities visited will demonstrate sub- and intraglacial volcanism, volcano-glacial and volcano-fluvial interactions including secondary debris flows, slope hazards, various types of subaerial pyroclastic deposits and resultant volcanic hazards, all set against the spectacular backdrop of British Columbia's Interior Plateau and Coast Ranges. The trip will be of interest to researchers in volcanic processes, volcanic hazards, Cordilleran magmatism, and to those looking for a fun filled five days of volcanoes!

MOUNT SAINT HELENS: A 15 YEAR RETROSPECTIVE

Leader: **Dr. Catherine Hickson**

Geological Survey of Canada, Cordilleran Division

(604) 666-3955 Fax 666-1124

Postmeeting Trip: 3 days, May 19 - 21. Approximate cost: \$250.00

1995 will mark the 15th Anniversary of the May 18th eruption of Mount St. Helens. Catherine Hickson, a witness of this event, will guide participants around the mountain recreating events of 15 years ago as well as investigating the geomorphic changes that have occurred over the intervening 15 years. New access, due to open for the 15th anniversary will allow field trip participants to drive to Coldwater Ridge and give direct access to the Pumice Plains and debris avalanche deposits. Access to the dome may also be possible. The trip will also include a visit to magnificent interpretative centre opened May 1993. This trip will be of interest to physical volcanologists, geomorphologists and hydrogeologists as well as anyone interested in volcanoes.

IUGG XXI GENERAL ASSEMBLY

The international Union of Geodesy and Geophysics plans to hold its 21st General Assembly in Boulder, Colorado, from July 2nd-14th, 1995. The program committee member for the International association of Volcanology and the Chemistry of the Earth's interior is:

Stan Williams

Department of Geology

Arizona State University

Tempe, Arizona 85287-1404

U.S.A.

Tel. (602)965-1438

Fax (602)965-8102

Abstracts are invited on "any topics related to geophysics". Roughly translated, this includes "volcanology, geochemistry, planetology" (among others), plus, presumably, anything our fertile imaginations can cook up that's relevant. The deadline for abstract submission is February 1st, 1995.

AWARDS OF THE DIVISION OF VOLCANOLOGY AND IGNEOUS PETROLOGY

Nominations are now closed and committees in deliberation for the **Career Achievement** and **Leopold Gelinis Awards**, to be made at the annual meeting, to be held this year in Waterloo. Make sure you're at the AGM - Tuesday, May 17th, 12:30 pm, in Room DC-1302.

PROPOSED AGENDA
DIVISION OF VOLCANOLOGY AND IGNEOUS PETROLOGY
1994 ANNUAL GENERAL MEETING

1. Call to order in Room DC-1302; 12:30 pm, Tuesday May 17th, 1994.
2. Approval of the agenda.
3. Approval of minutes of the 1993 Annual General Meeting.
4. Business arising from minutes.
5. Report of the Chairman:
6. Report of the Secretary Treasurer:
7. **Leopold Gélinas Award(s)**
8. **Career Achievement Award**
9. Scheduled activities: Victoria '95.
Winnipeg '96.
10. New business:
 - b. Results from the election of officers for 1994:
Chairman
Vice-Chairman
Secretary-Treasurer
Councillor on Research
Councillor-East
11. Motion for adjournment.



**WATERLOO '94 SELECTED
TECHNICAL PROGRAMME HIGHLIGHTS**

* Denotes Speaker

MONDAY MORNING MAY 16 / LUNDI
MATIN LE 16 MAI

Symposia / Symposiums

**The Petrology, Mineralogy and Geochemistry of
Alkaline Rocks I**

Room:

Sponsor: Mineralogical Association of Canada

Organisers: R.H. Mitchell, G.N. Eby.

Chairpersons: R.H. Mitchell, K. Bell, A. Woolley.

08:00 **M. Arima***, **H. Yamashita**, **E. Ohtani**.

Melting experiments of kimberlite up to 8 GPa and its bearing on mantle metasomatism.

08:20 **S. Carrier***, **A.D. Edgar**. Melting experiments on kimberlites: a delicate approach in determining the magma source.

08:40 **D.J. Schulze***, **P.F.N. Anderson**. Indicator mineral chemistry of Kirkland Lake kimberlites.

09:00 **P.A. Vicker***, **D.J. Schulze**. Garnet peridotite xenoliths in Kirkland Lake kimberlite.

09:20 **J.D. Sheen***, **A.D. Edgar**. Experimental investigation of melts from a phlogopite harzburgite: implications for mantle low-degree melt sources of lamproite magmas.

09:40 **C.G. Gulliver***, **A.D. Edgar**. Alternate reservoirs for K, Ba, Ti, F and P in the enriched continental mantle.

10:00 *Coffee Break*

10:20 **A.D. Edgar***, **L.A. Pizzolato**. What is the role of fluorine in the genesis of lamproites and associated K-enriched magmas?.

10:40 **L.A. Pizzolato***, **A.D. Edgar**. Petrology and genesis of ultramafic lamprophyres and olivine melilitite rocks from Coral Rapids, N.E. Ontario.

11:00 **D. Muller***. Potassic alkaline lamprophyres with primary precious-metal enrichments.

Geochemistry

Room:

Chairperson: C.R. Stanley, S.E. Jackson.

08:20 **S.E. Jackson***, **H.P. Longerich**. *In situ* chemical and isotopic (U-Pb) analysis of minerals using a laser ablation microprobe with an ultra-high sensitivity inductively coupled plasma-mass spectrometer.

08:40 **J.K. Zachariah***, **G.N. Hanson**, **V. Rajamani**. Post magmatic disturbance of REE and Sm-Nd isotope systematics in metabasaltic rocks: Ramagiri Schist Belt, South India.

09:00 **C.R. Stanley***. Investigating geochemical variations in rocks using a Pearce element ratio strategy without a conserved element assumption.

09:20 **L.P. Bédard***. Petrography and geochemistry of accessory minerals in crustal melts and source rocks from the Opatika Belt, Canada.

09:40 **R.F. He***, **H.-Z. Lu**, **Y. Li**, **S.-Y. An**. Geochemistry of volcanic rocks in the east Qinling Orogenic Belt, China.

10:00 *Coffee Break*

10:20 **D. Bandyayera***, **S.-J. Barnes**, **M.D. Higgins**. Geochemistry of platinum-group elements in nickeliferous laterites of Musongati complex (Burundi).

10:40 **Y. Pan***, **M.E. Fleet**, **G.E. Ray**. Chlorine-rich scapolite in gold skarn and Cu-Au Porphyry deposits, B.C.

11:00 **A.C. Beisswenger***, **M.D. Higgins**, **L. Hoy**. Oxygen isotope geochemistry of the Canton Saint-Onge wollastonite deposit, Lac-Saint-Jean, Quebec.

11:25 **R.F. Blackwood**, GAC Presidential address: DC 1302

The following Poster presentations belonging to the General Session on Geochemistry will be given in the PAC Building. Presenters will be in attendance between 16:30 and 18:30.

A. Desrochers*, **I. Al-Aasm**, **M. Coniglio**. Formation of complex fibrous calcite veins in Upper Triassic basinal sediments of Wrangellia Terrane, B.C.: field, petrologic, and chemical evidence.

Y.V. Dublyansky*. Hydrothermal karst determined by fluid inclusion studies.

M.Y. Hobbs*, **E.J. Reardon**. Effect of pH on the coprecipitation of boron with calcium carbonate.

J.J. Pan*, **W.H. Maclean**, **T.J. Barrett**. Geological and geochemical characters of volcanic terrain in the D'Alembert-Cléricky area, Noranda district, Québec.

R. Stevenson*, **F. Breaks**. Archean evolution in the Sachigo Subprovince: a Sm-Nd study of the north Caribou Lake greenstone belt.

H.S. Swinden*, **M. Wilson**. Epidosites in pillow lavas from the Robert's Arm Group, central Newfoundland: geological, geochemical and oxygen isotopic evidence for multi-stage hydrothermal alteration.

W. Zang*, **W.S. Fyfe**, **Y. Chen**. Weathering of basalt from the Island of Kauai, Hawaii: geochemical behaviour of elements.

11:25 R.F. Blackwood, GAC Presidential address: DC 1302

The following Poster presentations belonging to the General Session on Igneous Petrology will be given in the PAC Building. Presenters will be in attendance between 16:30 and 18:30.

A.M. Abdel-Rahman*. Magmatic-tectonic stages of evolution of the northern Nubian Shield.

A.C.L. Larocque*. Petrographic and chemical characteristics of vitrified natural materials.

B. Mélançon* **R. Hébert**, **J.H. Bédard**. Geochemistry of trace elements in peridotites of the North Arm Massif, Bay of Islands ophiolitic complex, Newfoundland.

D.M. Tarnocai*, **K. Hattori**. Origin of the high-K calc-alkaline Lac Simard intrusive complex in the Pontiac metasedimentary subprovince: a product of magma mingling.

Igneous Petrology I.

Room:

Chairperson: D.R.M. Pattison.

08:40 D.R.M. Pattison*. Are 'reversed' Fe-Mg exchange and solid solution experiments really reversed?

09:00 U. Mok*. TPA, an *in-situ* technique for kinetic and phase equilibria studies in experimental petrology.

09:20 D.G. Durant*, **G.W. Fisher**. Magmatic orbicule formation.

09:40 P.A.H. Scowen*, **J. Lavoie**, **D. Francis**. Implications of the compositional polarity of troctolite-anorthosite intrusions across the Grenville Province in eastern Québec.

10:00 Coffee Break

10:20 A. Meldrum*, **A.M. Abdel-Rahman**, **R.F. Martin**. Geochemical-mineralogical features of the Cartier Batholith, Sudbury, Ontario.

10:40 T.M. Mensing*. Isotopic and geochemical evidence for alteration of Jurassic basalt in northern Victoria Land, Antarctica, during the Cretaceous Period.

11:00 A. Peccerillo*. The Roman comagmatic Province: compositional characteristics and inferences on magma genesis and evolution.

**MONDAY AFTERNOON MAY 16 / LUNDI
APRÈS-MIDI LE 16 MAI**

Symposia / Symposiums

The Petrology, Mineralogy and Geochemistry of Alkaline Rocks: II.

Room:

Sponsor: Mineralogical Association of Canada

Organisers: R.H. Mitchell, G.N. Eby.

Chairperson: A. Woolley.

14:00 N.D. MacRae*, **A.E. Armitage**, **A.R. Miller**. Diamond-bearing potential of alkaline dykes in the Gibson Lake Area, District of Keewatin, N.W.T.

14:20 B.C. Jago, **J. Gittins***. Solubility of water in carbonatite magmas and partitioning of F and Cl between Magma and Aqueous Fluid.

14:40 A.G. Bulakh. Carbonatites of Turi, Kola Peninsula, Russia - saga of magmatism and metasomatism.

15:00 K. Bell*, **E.A. Dunworth**, **A.G. Bulakh**, **V.V. Ivanikov**. Terskii Coast, Russia: from kimberlite to carbonatite?

15:20 **T. R. Riley***, **D.K. Bailey**, **F.E. Lloyd**. Variations in carbonatite melt parageneses: Rockeskyll Complex, West Eifel, Germany.

15:40 **R.E. Harmer***. The petrogenetic relationships between Mg- and Ca-carbonatites and their associated silicate rock types.

The following Poster presentations belonging to this session will be given in the PAC Building. Presenters will be in attendance between 16:30 and 18:30.

A.G. Doden*, **D.P. Gold**, **R. Walker**. Geochemistry of diatremes and dikes with lamprophyric/carbonatitic affinities from discrete alkalic intrusive centers in Montana.

L.G. Gwalani*, **B.J. Griffin**, **W-J. Chang**, **P.P. Roday**. Alkaline and tholeiitic dyke swarms of Chhota Udaipur Complex, Gujarat, India.

L.N. Kogarko*. The trends of evolution of ultramafic alkaline magmas (on the example of Kugda Massif, Maimecha-Kotui Province, Polar Siberia).

L.D. Krigman*, **L.N. Kogarko**, **I.V. Veksler**. Melilite-melt equilibria: review of experimental data.

C. Mbalu-Keswa*, **D.P. Gold**, **J.R. Tedeski**. Polymineralic "blebs" in pyroxene megacrysts from the Tonoma kimberlites, Indiana County, Pennsylvania, U.S.A.

G.R. McCormick*, **M.J. Le Bas**. Biotite-Phlogopite crystallization in carbonatite magmas.

J. Pell*. New kimberlite discoveries on Somerset Island, NWT.

V.S. Samoylov*. Carbonatite rock associations and their geochemical and ore features.

I.G.L. Sinclair*. The Le Tac Intrusion: kimberlite or lamproite?

W.R. Taylor*, **A. Zhang**, **B.J.A. Janse**. Leucitites and other potassic igneous rocks of the Yangtze Craton, South China, and their diamond-bearing potential.

M. Tikhomirova*, **B. Belyatzky**. Rb/Sr and Sm/Nd dating of the Proterozoic

Tiksheozero carbonatite massif (Karelia, Russia).

I.V. Veksler*. Effect of phlogopite crystallization on the evolution of ultramafic alkaline magmas.

**TUESDAY MORNING MAY 17 / MARDI
MATIN LE 17 MAI**

Symposia / Symposiums

The Petrology, Mineralogy and Geochemistry of Alkaline Rocks III.

Room: MC 4020

Sponsor: Mineralogical Association of Canada

Organisers: R.H. Mitchell, G.N. Eby.

Chairpersons: L. Corriveau, K.L. Currie

08:00 **D.S. Barker***. Implications from non-juvenile carbon in carbonatites.

08:20 **K. Bell***, **A. Simonetti**. Mantle signatures in carbonatites.

08:40 **J. Guo***, **S. Y. O'Reilly**, **W.L. Griffin**. Mid-crustal carbonatites: evidence from inclusions in corundum megacrysts.

09:00 **M.D. Druecker***. Mineralogy, mass transfer reactions and intensive parameters associated with fenitization at the Chiriguelo carbonatite complex, Paraguay, South America.

09:20 **L.S. Potter***. Influence of the North American Craton margin on chemical and isotopic variation along strike in the Eastern Alkalic Belt, Trans-Pecos Magmatic Province, Texas and New Mexico.

09:40 **K.L. Currie***, **O. van Breemen**. Tectonics and age of the Kipawa Syenite Complex, Western Québec.

10:00 **Coffee Break**

10:20 **R.R. Miller***. Differentiation of a peralkaline rare-metal pegmatite - the Strange Lake Deposit, Labrador-Québec.

10:40 **C.S.J. Shaw***. Geochemistry of the Eastern Gabbro, Coldwell Alkaline Complex, N.W. Ontario.

11:00 **G.T. Shore***, **R.H. Sutcliffe**. Evidence for an early layered gabbroic body and magma mingling within syenites of the

Coldwell Peninsula area, Coldwell Alkaline Complex, N.W. Ontario.

11:20 **E.C. Walker***, **R.H. Sutcliffe**.
Fractionation of syenite suites and formation of rare-metal occurrences within the Coldwell Alkaline Complex, Marathon, Ontario.

11:40 **B.A. Lueck***, **J.K. Russell**. Zoned, silica-undersaturated plutons from the British Columbia Cordillera: insights from the Zippa Mountain intrusion.

(11:00) **P.L. Roeder**, MAC Presidential address: (DC 1302):-

Chromite: from the fiery rain of chondrules to the Kilauea Iki Lava Lake.

Special Sessions / Séances Spéciales

Physical and Chemical Volcanology: Ancient and Modern Regimes: I

Room: DC 1302

Sponsor: Volcanology and Igneous Processes Division, GAC.

Organisers: C. Hickson, J.K. Russell.

Chairpersons: C. Hickson, J.K. Russell.

08:00 **J.V. Ross***, **M. Raudsepp**, **J.K. Russell**.
Grain boundaries in the mantle - wet or dry? Observations and inferences on ultramafic nodules from N.E. China.

08:20 **T.C. MacCuaig***, **R. Kerrich**. HFSE/REE fractionations in high-MgO magmas as indicators of mantle source characteristics and melting depths.

08:40 **J.H. Bédard***. A procedure for calculating the equilibrium distribution of trace elements among the minerals of cumulate rocks, and the concentration of trace elements in co-existing liquids.

09:00 **T. Skulski***, **J. Ludden**, **J. Carrigan**, **D. Francis**. Tracing slab inputs in southeastern Wrangell volcanoes (Yukon, B.C.).

09:20 **S. Hauksdóttir***, **J.K. Russell**. Assimilation-crystallization reactions in recent Basalts of the Iskut-Unuk River area, Northwestern British Columbia.

09:40 **A.M. Abdel-Rahman***, **R.R. Miller**. Extreme Na-depletion in peralkaline

volcanic rocks of the Flowers River Cauldron Complex, Labrador.

10:00 *Coffee Break*

10:20 **T.H. Pearce**, **S. Chapman***, **V.L. Bannister**. Volcanic plagioclase zonation from Mt. St. Helens and Mt. Pelee (Martinique).

10:40 **T.H. Pearce**, **V.L. Bannister***, **S. Chapman**. Spatiotemporal dynamics of volcanic plagioclase zonation.

11:00 **M.D. Higgins***. Population density (CSD) of plagioclase crystals in lavas from Taranaki Volcano, New Zealand: Comparison with those from Kameni, Greece

11:20 **W. Mueller***, **J. Gauthier**. Characteristics of an Archean subaqueous central volcanic complex, Abitibi Greenstone Belt, Canada.

11:40 **M.B., Lambert***. Chronicle of an Archean stratovolcano, Slave Province, N.W.T.

(11:00) **P.L. Roeder**, MAC Presidential address: (DC 1302):-

Chromite: from the fiery rain of chondrules to the Kilauea Iki Lava Lake.

**TUESDAY AFTERNOON MAY 17 / MARDI
APRÈS-MIDI LE 17 MAI**

Symposia / Symposiums

The Petrology, Mineralogy and Geochemistry of Alkaline Rocks: IV.

Room: MC 4020

Sponsor: Mineralogical Association of Canada

Organisers: R.H. Mitchell, G.N. Eby.

Chairpersons: G.N. Eby, R.H. Mitchell.

14:00 **D. Francis***, **J. Ludden**, **L. Shi**. Tertiary olivine nephelinite intrusions of the Mount Llangorse Alkaline Volcanic Field of northern British Columbia.

14:20 **L. Corriveau***, **Y. Amelin**, **M.P. Gorton**, **D. Morin**. Geochemical constraints on Proterozoic K-rich alkaline and Shoshonitic magmas evolution in the S.W. Grenville Province.

14:40 **R.K. Stevenson***, **B.G.J. Upton**, **K. Currie**. Sm-Nd isotopic evolution of the

peralkaline Red Wine and Iimaussaqa intrusive complexes.

- 15:00 **A.R. Woolley***, **G.N. Eby**, **R.G. Platt**. The North Nyasa Alkaline Province, Malawi.
- 15:20 **R. Black**, **B. Bonin***, **J-P. Liégeois**. The Permo-Jurassic carbonatite-bearing alkaline province of Tadhak, Mali, West Africa.
- 15:40 **B. Bonin***, **R. Yobou**. The Proterozoic quartz syenite - nepheline syenite association of Ninakri, Côte D'Ivoire, West Africa.

The following Poster presentations belonging to this session will be given in the PAC Building. Presenters will be in attendance between 16:30 and 18:30.

- G.N. Eby***, **S.G. Maher**, **L.J. Poland**. Petrology and geochemistry of the Beemerville Nepheline Syenite Complex, Northern New Jersey, U.S.A.
- S. Brunet***, **J. Martignole**. Nepheline-bearing rocks of the reservoir Cabonga Area, Grenville Province, Quebec: a possible carbonatitic origin.
- V.T. McLemore***. Petrology and mineral resources of alkaline rocks on the Cornudas Mountains, New Mexico and Texas.
- J.H. Wittke***, **R.F. Holm**. Phaneritic feldspathoidal rocks from House Mountain Volcano, Central Arizona: product of liquid immiscibility?.
- D. Morin***, **L. Corriveau**, **M. Tellier**, **O. van Breemen**. A 1070 Ma ultrapotassic breccia dyke in the Central Metasedimentary Belt of Québec.
- J.M. Pearson***, **M.E. Barley**, **W.R. Taylor**. Alkaline rocks and fenites of the Proterozoic Gifford Creek Complex, Gascoyne Province, Western Australia.
- L.G. Gwalani***, **S.S. Fernandez**, **W-J. Chang**. Petrographic and geochemical study of trachytes from Chhota Udaipur Carbonatite-alkalic Complex, Deccan Igneous Province, India.
- LE.M. Smith***. The monzonite alkaline association.
- S.A. Prevec***, **R.K. Stevenson**, **R.F. Emslie**, **M. A. Hamilton**. Evolution of the

mid-Proterozoic Flowers River peralkaline granite, Labrador: geochemical and Sm-Nd isotopic evidence.

- J.D. Landoll***, **K.A. Foland**, **J-F. Chen**, **C.M.B. Henderson**. The role of crustal contamination in the formation of silica oversaturated rocks in the Monteregian Hills province, Québec.
- S.V. Sokolov***. Formation conditions of the Oka complex carbonatites.

Special Sessions / Séances Spéciales

Physical and Chemical Volcanology: Ancient and Modern Regimes II.

Room: DC 1302

Sponsor: Volcanology and Igneous Processes Division, GAC.

Organisers: C. Hickson, J.K. Russell.

Chairpersons: C. Hickson, J.K. Russell.

- 14:00 **C.H. Simonds**, **S.W. Kieffer***. Mount St. Helens volcano (Washington) and Manicouagan impact crater (Quebec): Impact and volcanism revisited.
- 14:20 **H.A. Sandeman***, **A.H. Clark**, **E. Farrar**, **G. Arroyo**. Petrographic characteristics and eruption styles of peraluminous, rhyolitic pyroclastic rocks of the Quenamari Group, Puno, southeastern Peru.
- 14:40 **B.R. Edwards***, **J.K. Russell**. Preliminary stratigraphy, petrography and melt compositions of volcanic rocks from Hoodoo Mountain, northwestern British Columbia, Canada.
- 15:00 **C.J. Hickson***, **M.V. Stasiuk**, **J.K. Russell**. Processes and nature of the 2350 B.P. eruption, Mount Meager, B.C.
- 15:20 **D.B. Dingwell***, **M. Wilding**, **S.L. Webb**. A relaxation geospeedometer for volcanic glasses. (**NOTE CHANGE**)
- 15:40 **J. Stix***, **M. Heiligmann**, **W.H. Morrow**, **C. Hickson**. Gas monitoring at active volcanoes.

The following Poster presentations belonging to this session will be given in the PAC Building. Presenters will be in attendance between 16:30 and 18:30.

J. Nicholls*, **M.Z. Stout**. Chemical mineralogical and petrographic variation in the Aiyansh Lava Flow, B.C.

M. Shore*, **A.D. Fowler**. Cooling and crystallization of thin komatiite flows.

P. Orr*, **M. Shore**. Ultramafic metavolcanics in the Slave Province: Are they komatiites?.

P. Metcalfe*, **C.J. Hickson**, **S. Higman**. A possible Tertiary caldera in the Clisbako River Area, central British Columbia.

J.K. Russell*, **M.V. Stasiuk**. Preliminary studies of recent volcanic deposits in southwestern British Columbia with ground-penetrating radar. (***NOTE CHANGE FROM ORAL***)

in felsic, peralkaline rocks: an experimental study.

10:00 Coffee Break

10:20 A. Kerr*, **R.R. Miller**, **B.J. Fryer**, **G.A. Jenner**. Proterozoic and Paleozoic A-type granite suites in Labrador and Newfoundland: Sm-Nd isotopic evidence for the importance of juvenile sources.

10:40 B.N. Turbeville*. Applications of boron systematics to chemical dynamics at a magma chamber's margins: examples from the Potassic Roman Province.

11:00 R.H. Mitchell*, **N.V. Vladykin**. Composition variation of pyroxenes from the Little Murun ultrapotassic complex, Aldan Shield, Siberia.

11:20 A.R. Chakhmouradian*. Perovskites: their behaviour during the formation of carbonatite massifs.

11:40 B.A. Lueck*, **J.K. Russell**. Phenocrystic and cumulate melanite garnet: substitution mechanisms and petrogenesis.

**WEDNESDAY MORNING MAY 18 /
MERCREDI MATIN LE 18 MAI**

Symposia / Symposiums

The Petrology, Mineralogy and Geochemistry of Alkaline Rocks: V.

Room: MC 4020

Sponsor: Mineralogical Association of Canada

Organisers: R.H. Mitchell, G.N. Eby.

Chairpersons: A. Lalonde, D. Baker

08:20 D. Ohnenstetter*, **C. Moreau**, **D. Demaiffe**, **B. Robineau**. The Los Archipelago nepheline syenite ring-structure: a magmatic marker of the central Atlantic evolution.

08:40 K.A. Foland*, **J.D. Landoll**, **C.M.B. Henderson**, **J.-F. Chen**. Some consequences of interaction between mantle magmas and crust in the formation of epizonal alkaline complexes.

09:00 J.G. McHone*. The mantle origin for alkaline intrusions: arguments for and against the "hotspot" model in northeastern North America.

09:20 D.R. Baker*, **J. Valliancourt**. Viscosities of F + H₂O-bearing granitic melts.

09:40 R.A. Marr*, **D.R. Baker**, **A.E. Williams-Jones**. The role of halogens in the speciation of alkali zirconosilicate minerals

**WEDNESDAY AFTERNOON MAY 18 /
MERCREDI APRES-MIDI LE 18 MAI**

Symposia / Symposiums

The Petrology, Mineralogy and Geochemistry of Alkaline Rocks: VI.

Room: MC 4020

Sponsor: Mineralogical Association of Canada

Organisers: R.H. Mitchell, G.N. Eby.

Chairperson: G.N. Eby.

14:00 A.E. Lalonde*, **D.G. Rancourt**, **G.Y. Chao**. Fe-bearing trioctahedral micas from Mont Saint-Hilaire, Quebec.

14:20 T.C. Birkett*, **W.E. Trzcienski Jr.**, **J.A.R. Stirling**. Sodium-titanium silicates from the Strange Lake Pluton, Quebec-Labrador.

14:40 P.J. Modreski*, **T.J. Armbrustmacher**, **W. Ryka**. Mineralogy of magmatic and metasomatic rocks of the Elk Massif, Northeast Poland.

15:00 General Discussion.

General Sessions / Sessions Générales

Igneous Petrology II: The Mantle, Oceanic Crust and Related Rocks.

Room: MC 4060

Chairpersons: J. Malpas, I. Gibson.

- 14:00 J. Malpas*, J. Saunders.** Magmatic processes at oceanic spreading centres: evidence gathered by the Ocean Drilling Program.
- 14:20 M.H. Salisbury*, N.L. Christensen.** The nature of the layer 2/3 transition in the oceanic crust based on rock properties of core from ODP leg 148.
- 14:40 I.L. Gibson*, K.E. Seifert, M.-O.A. Beslier, G. Comen.** Cretaceous sea-floor alteration of mantle rocks beneath the Iberia abyssal plain, ODP leg 149, site 897.
- 15:00 J.H. Bédard*.** Boninitic cumulates and pyroxenitic digestion products from the lower crust of the Bay of Islands ophiolite, Newfoundland.
- 15:20 W.E. Stone*, J.H. Crocket, A.P. Dicken.** The Boston Creek flow ferropicrite, Abitibi Greenstone Belt, Ontario: a partial melting product of LREE-enriched "shallow" mantle.
- 15:40 V. Varfalvy*, R. Hébert, J.H. Bédard.** Melt-upper mantle interactions in the north arm massif, Bay of Islands ophiolite, Newfoundland: implications for the genesis of boninitic magmas.
- 16:00 M-f. Zhou, P.T. Robinson*.** Petrogenesis of podiform chromitites in the Luobusa ophiolite, Tibet: a melt-rock reaction model.

WATELOO '94 EVENTS
MAY 17th MORNING, ROOM DC-1302
"PHYSICAL AND CHEMICAL VOLCANOLOGY"

- 8:00 am GRAIN BOUNDARIES IN THE MANTLE - WET OR DRY? OBSERVATIONS AND INFERENCES ON ULTRAMAFIC NODULES FROM N.E. CHINA
Ross, J.V.*, Raudsepp, M. and Russell, J.K., Department of Geological Sciences, UBC
- 8:20 am HFSE/REE FRACTIONATIONS IN HIGH-MGO MAGMAS AS INDICATORS OF MANTLE SOURCE CHARACTERISTICS AND MELTING DEPTHS
McCuaig, T.C.*, and Kerrich, R., Dept of Geological Sciences, U. of Saskatchewan
- 8:40 am A PROCEDURE FOR CALCULATING THE EQUILIBRIUM DISTRIBUTION OF TRACE ELEMENTS AMONG THE MINERALS OF CUMULATE ROCKS, AND THE CONCENTRATION OF TRACE ELEMENTS IN COEXISTING LIQUIDS.
Bedard, Jean H., Geological Survey of Canada
- 9:00 am TRACING SLAB INPUTS IN SOUTHEASTERN WRANGELL VOLCANOES (YUKON-B.C.)
*Skulski, Thomas, Geological Survey of Canada, Ludden, John and Carrignan, Jean Dept. de geologie, Universite de Montreal, and Francis, Don, Earth and Planetary Sciences, McGill University
- 9:20 am ASSIMILATION-CRYSTALLIZATION REACTIONS IN RECENT BASALTS OF THE ISKUT-UNUK RIVER AREA, NORTHWESTERN BRITISH COLUMBIA
Stenunn Hauksdottir* and J.K. Russell, Department of Geological Sciences, University of British Columbia
- 9:40 am EXTREME NA-DEPLETION IN PERALKALINE VOLCANIC ROCKS OF THE FLOWERS RIVER CAULDRON COMPLEX, LABRADOR
Abdel-Rahman, *A.M., Department of Geology, Concordia University and Miller, R.R., Department of Mines & Energy, Geological Survey Branch
- 10:00 Caffeine
- 10:20 am VOLCANIC PLAGIOCLASE ZONATION FROM MT. ST. HELENS AND MT. PELEE (MARTINIQUE)
Pearce, T.H., Chapman,*S., and Bannister, V.L., Department of Geological Sciences, Queen's University
- 10:40 am SPATIOTEMPORAL DYNAMICS OF VOLCANIC PLAGIOCLASE ZONATION
Pearce, T.H., Bannister, *V.L., and Chapman, S. Department of Geological Sciences, Queen's University
- 11:00 am POPULATION DENSITY (CSD) OF PLAGIOCLASE CRYSTALS IN LAVAS FROM TARANAKI VOLCANO, NEW ZEALAND: COMPARISON WITH THOSE FROM KAMENI, GREECE
Higgins, Michael Denis, Sciences de la Terre, Unviersite du Quebec a Chicoutimi
- 11:20 am CHARACTERISTICS OF AN ARCHEAN SUBAQUEOUS CENTRAL VOLCANIC COMPLEX, ABITIBI GREENSTONE BELT, CANADA
Mueller, W., Sciences de la terre, Universite du Quebec a Chicoutimi, Gauthier, J., Explorations Noranda
- 11:40 am CHRONICLE OF AN ARCHEAN STRATOVOLCANO, SLAVE PROVINCE, N.W.T.
Lambert, M.B. Continental Geoscience Division, Geological Survey of Canada
- 12:00 pm **Lunch - DON'T FORGET THE DIVISION AGM!! Same room (1302) 12:30 pm**

MAY 17th AFTERNOON, ROOM DC-1302
"PHYSICAL AND CHEMICAL VOLCANOLOGY"

- 2:00 pm MOUNT ST. HELENS VOLCANO (WASHINGTON) AND MANICOUAGAN IMPACT CRATER (QUEBEC): IMPACT AND VOLCANISM REVISITED
Simonds, Charles H., Lockheed Missiles & Space Company, *Kieffer, Susan W., Dept Geological Sciences, U. of British Columbia
- 2:20 pm PETROGRAPHIC CHARACTERISTICS AND ERUPTION STYLES OF PERALUMINOUS, RHYOLITIC PYROCLASTIC ROCKS OF THE QUENAMARI GROUP, PUNO, SOUTHEASTERN PERU.
*Sandeman, H.A., Clark, A.H., Farrar, E., Department of Geological Sciences, Queen's University and Arroyo, G., Instituto Peruano de Energia Nuclear
- 2:40 pm PRELIMINARY STRATIGRAPHY, PETROGRAPHY AND MELT COMPOSITIONS OF VOLCANIC ROCKS FROM HOODOO MOUNTAIN, NORTHWESTERN BRITISH COLUMBIA, CANADA
Edwards, B.C.* and Russell, J.K. Department of Geological Sciences, U. of British Columbia
- 3:00 pm PROCESSES AND NATURE OF THE 2350 B.P. ERUPTION, MOUNT MEAGER, B.C.
Hickson, *C.J., GSC, Cord. Division, Stasiuk, M.V. IPG, U. of Paris and Russell, J.K, Department of Geology, U. of British Columbia
- 3:20 pm A RELAXATION GEOSPEEDOMETER FOR VOLCANIC GLASSES
Dingwell, D.B., Wilding, M., Webb, S.L., Bayerisches Geoinstitut, Universitat Bayreuth
(Note change from GAC program book)
- 3:40 pm GAS MONITORING AT ACTIVE VOLCANOES
Stix, John*, and Heiligmann, Martin, Departement de geologie, Universite de Montreal, Morrow, William H., Resonance Ltd., Hickson, Cathie, Geological Survey of Canada

POSTER SESSION

PRELIMINARY STUDIES OF RECENT VOLCANIC DEPOSITS IN SOUTHWESTERN BRITISH COLUMBIA WITH GROUND-PENETRATING RADAR

Russell, J.K.*, Department of Geological Sciences, U. of British Columbia and Stasiuk, M.V., Laboratoire de Physique de Magmatique, U. of Paris

(Note change from GAC program book)

COOLING AND CRYSTALLIZATION OF THIN KOMATIITE FLOWS

*Shore, Mark and Fowler, Anthony D., Ottawa-Carleton Geoscience Center, Department of Geology, U. of Ottawa

CHEMICAL, MINERALOGICAL AND PETROGRAPHIC VARIATION IN THE AIYANSH LAVA FLOW, B.C.

Nicholls, J. and Stout, M.Z., Department of Geology & Geophysics, U. of Calgary

ULTRAMAFIC METAVOLCANICS IN THE SLAVE PROVINCE: ARE THEY KOMATIITES?

Orr, Pauline and Shore, Mark, Ottawa-Carleton Geoscience Center, Department of Geology, U. of Ottawa

A POSSIBLE TERTIARY CALDERA IN THE CLISBAKO RIVER AREA, CENTRAL BRITISH COLUMBIA

Metcalfe, Paul, Hickson, Catherine J. and Higman, Shelley, Geological Survey of Canada

