

ATLANTIC GEOSCIENCE SOCIETY

NEWSLETTER

VOLUME 26 NO.1

JANUARY 23, 1997

Please forward newsletter items on disk to Susan Gower/Sharon McKinnon @ P.O. Box 50, Bathurst, NB E2A 3Z1

or email to Susan Gower.

Deadline for next newsletter is February 28, 1997.

25th ANNIVERSARY COLLOQUIUM

February 7-8, 1997, Amherst, Nova Scotia

PROGRAM

Workshop, meetings, technical sessions, luncheon, & banquet are all at the Wandlyn Inn, Amherst (902) 667-3331.

For Colloquium Registration Information contact Susan Johnson @ (506) 432-2010 or Mike Parkhill @ (506) 547-2070; email <mparkhill@gnb.ca>

Friday, February 7, 1997

- 10:00AM-7:00PM** Registration and Poster set-up - **Cumberland II and Hall**
- 11:00AM** Vehicles leave for mine tour, be at front desk of the Wandlyn by 10:45
- 12:30-4:30PM** Mine tour of Potash Company of Saskatchewan, N.B. Division underground potash mine in Sussex, NB. Pre- registration is required. A maximum of 18 participants. No beards allowed underground and please dress in field clothes. Safety boots will be provided. Arrival back @ Wandlyn at 4:30.
- 1:00-5:00PM** Short Course *An Introduction to Practical Lithogeochemistry* - **Cumberland I**
Chairman - Jim Walker
Scott Swinden - Nova Scotia Department of Natural Resources
David Lentz - New Brunswick Department of Natural Resources & Energy
- 3:00-3:20PM** **COFFEE** - *Sponsored by the Potash Corporation of Saskatchewan*
- 4:30-5:30PM** Atlantic Geology Editors Meeting - **Salon C**
- 5:30-6:45PM** AGS Executive and Council Meeting - **Salon C**
- 7:00-8:50PM** Special Session: Mineral Exploration and Recent Discoveries in Atlantic Canada - **Cumberland I**
- 9:00-10:00PM** General Session: Current Research in the Atlantic Provinces I - **Cumberland I**
- 10:00-Midnight** Poster Session and Cash Bar - **Cumberland II and Hall**

**Saturday,
February
8, 1997**

- 8:00AM-12:20AM** Special Session: Current Environmental Research in the Earth Sciences I - **Cumberland I**
- 8:00-11:20AM** General Session: Current Research in the Atlantic Provinces II - **Salon A-B**
- 12:20-2:00PM** Annual General Meeting and Luncheon - **Salon A-B**
- 2:00-3:20PM** Special Session: Current Environmental Research in the Earth Sciences II - **Cumberland I**
- 3:40-5:00PM** General Session: Current Research in the Atlantic Provinces III - **Cumberland I**
- 5:00-5:30PM** Poster Session - **Cumberland II and Hall**
- 5:00-7:00PM** Cash Bar - **Outside Cumberland I**
- 5:30-6:30PM** APICS Earth Sciences Committee Meeting - **Salon C**
- 7:00PM** Awards Banquet and Social: **Cumberland I and II**
Speaker Dr. Graham Williams
"Where have 25 years gone?"

Sunday, February 9, 1997

- 9:00AM** The Last Billion Years Meeting - **Salon C**

HOWARD STREET ROBINSON FUND LECTURE

GEOLOGICAL ASSOCIATION OF CANADA

Friday night 7:00 - 8:50 PM

The Mesoproterozoic Nain Plutonic Suite in eastern Canada, and the setting of the Voisey's Bay Ni-Cu-Co sulphide deposit (Mineral Exploration and Recent Mineral Discoveries in Atlantic Canada)

Bruce Ryan

*Newfoundland Department of Mines and Energy, Geological Surveys Branch,
P.O. Box 8700, St. John's, Newfoundland A1B 4J6, Canada*

In 1993, a world-class magmatic nickel-copper-cobalt massive sulphide deposit, containing probably in excess of 150 million tonnes, was discovered near Voisey's Bay, Labrador. The mineralization is hosted by rocks of the Nain Plutonic Suite (NPS), a 1350 Ma to 1290 Ma assemblage of coalesced basic and silicic plutons emplaced across an 1860 Ma collisional suture between the Archean Nain Province and the Paleoproterozoic Churchill Province. The NPS covers 20,000 square kilometres and encompasses a diverse group of rocks of which the main "families" are anorthosite, troctolite, diorite and granite. These rocks represent a significant magmatic contribution to a tectonically quiescent crust, probably generated in an intracontinental extensional zone above a mantle plume.

The Voisey's Bay deposit sits within a massive troctolite, the Reid Brook intrusion, interpreted to be the oldest pluton of this type within the NPS. The Voisey's Bay mineralization is disposed as intercumulus concentrations and as massive sulphide (pyrrhotite, pentlandite, and chalcopyrite) zones in several settings, including a steeply-dipping dyke, a bowl-shaped "ovoid", and a bifurcating lens ("Eastern Deeps") at the base of the intrusion. The Ni-Cu-Co mineralization represents gravitational accumulation and concentration of a sulphide liquid in the plutonic environment, coeval with formation of the Reid Brook intrusion. The sulphide liquid is interpreted to have been an integral part of the silicate magma at the time the Reid Brook intrusion was emplaced. The formation of the sulphide liquid is interpreted to be a result of contamination of the metal-laden Reid Brook magma by crustal-derived sulphur from underlying metasedimentary rocks.

SHORTCOURSE:

AN INTRODUCTION TO PRACTICAL LITHOGEOCHEMISTRY

Friday afternoon 1:00 - 5:00 PM

Dave Lentz¹ and Scott Swinden²

¹New Brunswick Geological Surveys Branch, P.O. Box 50, Bathurst, New Brunswick E2A 3Z1, Canada

²Nova Scotia Department of Natural Resources, P.O. Box 698, Halifax, Nova Scotia B3J 2T9, Canada

This 1/2 day course will cover some of the basics of using rock geochemistry for the non-expert. Sample selection, powder preparation, analytical considerations, use of standards, as well as precision and accuracy will be discussed. This is followed by a review of the various types of information that can be obtained from lithogeochemical studies including, petrogenesis, palaeotectonic, and depositional setting of volcanic and sedimentary rocks with due consideration of the effects of syngenetic hydrothermal alteration and syn-kinematic metamorphism/ metasomatism. The remaining half of the course will present examples of the use of mafic and felsic volcanic geochemistry in the determination of palaeotectonic and depositional settings of VMS deposits in the Phanerozoic, the purpose of which is to highlight the key geodynamic features that influence the lithogeochemical signature of volcanic and associated plutonic rocks.

TECHNICAL SESSIONS - FRIDAY EVENING

* Student Presentations

SPECIAL SESSION: Mineral Exploration and Recent Discoveries in Atlantic Canada - Cumberland I
Chairs: Susan Johnson & Michael Parkhill

7:00 -ALAN MORGAN -

Geological Association of Canada 50th anniversary celebrations

7:10 -STEVEN R. McCUTCHEON -

Mineral exploration and development highlights in northern New Brunswick

7:30 -RALPH STEA and PHIL FINCK -

Discovery of Cretaceous basins in Nova Scotia and the potential for kaolin mining

7:50 -BRUCE RYAN -

-Howard Street Robinson Fund Lecture Tour
The Mesoproterozoic Nain Plutonic Suite in eastern Canada, and the setting of the Voisey's Bay Ni-Cu-Co sulphide deposit

8:50 -10 minute break

GENERAL SESSION: Current Research in the Atlantic Provinces I - Cumberland I
Chairs: Susan Johnson & Michael Parkhill

9:00 -JOHN C. LENNON*, P.H. REYNOLDS, and
D.C. ROY -

⁴⁰Ar/³⁹Ar ages and the paragenetic sequences in a multi-staged hydrothermal breccia in central

Maine

Dating of alteration at the Radomiro Tomic porphyry copper deposit, northern Chile by the high-precision $^{40}\text{Ar}/^{39}\text{Ar}$ method

Facies correlations within the Ordovician Pointe, de La Martinière Formation, Orléans Group, Québec.

9:20 -GREG PEMBERTON* -

9:40 -LINDSAY A. DUNN* and RON K. PICKERILL -

NOTES

1. Poster space is 4'x 4' unless other arrangements are made and presenters must bring their own pins. Set up posters as soon as possible after arrival. The student poster award will be presented at the Banquet. Student presenters will be notified of a time to present their posters to the judges. Please be at your poster to answer questions during the scheduled times. Please take your posters down by 5:30PM on Saturday.
2. Speakers will have 20 minutes including time for questions, and the sessions will be kept on schedule by the Chairs, as it is required to allow judging of the high number of student presentations. The Rupert MacNeil student award will be presented at the Banquet.
3. Speakers will have two slide projectors, one overhead projector and a laser pointer available. There will be a slide preview room available (**Salon A-B** on Friday and **Salon D** on Saturday). Have your slides to the projectionist ASAP.
4. The Wandlyn has asked for some notice for the meals. Buy your Luncheon and Banquet tickets by 11:00PM on Friday, February 7th.

SATURDAY MORNING - Cumberland I

SPECIAL SESSION: Current Environmental Research in the Earth Sciences I

Chair: Don Fox

8:00 - DARRYL A. PUPEK* and BRUCE E. BROSTER -

An occurrence of perchloroethylene and implications to groundwater resources at Sussex, New Brunswick

8:20 - KEVIN J. DOYLE*, KATE MORAN, TOM MARTEL, and GARY ELLERBROK

-Determination of bulk permeability within the Morien Group using the forcing of ocean tides in the Sydney Basin in Cape Breton, Nova Scotia

8:40 - JENNIFER M. VAN DER GAAG*, A.T. MARTEL and K. MORAN -

Characterization of outburst channel sandstones in the Phalen Colliery, Cape Breton, Nova Scotia

9:00 - ANGELA M. KENNEDY*, A.T. MARTEL and J. SHIMALD -

Compartmentalization of formation waters in the Prince Colliery, Cape Breton, NS

9:20 - TOM MARTEL, A. KENNEDY and M.R. GIBLING -

Saline brines of the Sydney Basin: origin as evaporative Windsor residues?

9:40 - PRASANTA K. MUKHOPADHYAY, G. LAJEUNESSE, and A.L. CRANDLEMIRE -

Speciation of elements in the feed coal and combustion residues from the Lingan Power Plant, Sydney, Nova Scotia

10:00 - COFFEE -

Sponsored by Noranda Mining and Exploration

Chair: Cathy Ryan

10:20 - RACHEL A. JONES* and DON FOX -

Relative chemical and biological oxidation of sulphides in the Meguma Supergroup, Nova Scotia: the role of mineralogy, texture and composition

10:40 - DON FOX* -

First reported occurrence of schwertmannite related to acid rock drainage (ARD) from the Halifax slates, Nova Scotia

11:00 - JOANNA C. SPENCER BROWN* and DON

Sustainable development and the precautionary

FOX -

11:20 - TOM AL -

11:40 - PRASANTA K. MUKHOPADHYAY, M.A. KRUGE, and C.P.M. LEWIS -

12:00 - HUGO BELTRAMI -

12:20 - 2:00

SATURDAY MORNING - Salon A-B

GENERAL SESSION: Current Research in the Atlantic Provinces II Chair: David Piper

8:00 - PAUL W. DURLING and FRANÇOIS J.Y. MARILLIER -

8:20 - JOHN H. CALDER, M.R. GIBLING, A.C. SCOTT and D.M. SKILLITER -

8:40 - DAVE G. KEIGHLEY and RON K. PICKERILL

9:00 - RICHARD J. HORNE, ROBERT C. BOEHNER, M. STEPHEN KING and PAUL HARVEY -

9:20 - JOHN W.F. WALDRON and W. BLEEKER -

9:40 - DOROTHY I. GODFREY-SMITH, ALEXANDER GRIST, and PATRICIA SCALLION -

10:00 -COFFEE

Chair: Ron Pickerill

10:20 - DAVID R. LENTZ -

10:40 - GEORGIA PE-PIPER -

11:00 - DANIEL J. KONTAK, RICHARD J. HORNE, HAMISH A. SANDEMAN and DOUGLAS A. ARCHIBALD -

SATURDAY AFTERNOON

SPECIAL SESSION: Current Environmental Research in the Earth Sciences II - Cumberland I

Chair: Tom Al

2:00 -SCOTT LISTER* and IAN S. SPOONER -

2:20 -KELLY A. JANSSENS* and TOM A. AL -

2:40 -LISA KELLMAN* and CLAUDE HILLAIRES-MARCEL -

principle: implications for acid rock drainage regulations in Nova Scotia

The hydrogeology of a tailings impoundment formed by central discharge of thickened tailings: implications for tailings management

Fingerprinting natural and anthropogenic organic matter in recent sediments from Lake Ontario

Ground temperature histories from geothermal data: evidence of recent climatic change

-LUNCHEON AND AGS ANNUAL GENERAL MEETING - Salon A-B

Overview of seismic reflection results from the western Maritimes Basin

The Carboniferous Joggins section reconsidered: recent paleoecological and sedimentological research

-A reassessment of ichnofacies, with emphasis on those present in nonmarine strata

Geological and geophysical interpretation of the Rawdon Fault, central Meguma Zone, Nova Scotia

Late Archean turbidites in the southern Slave province: very like the Meguma

ESR and OSL geochronology of the East Milford, Nova Scotia, Canada, mastodon locality, and the timing of the Illinoian-Sangamon transition

High-phosphorus, S-type Middle River rhyolite, Tetagouche Group, northeastern New Brunswick: chemostratigraphic and petrogenetic implications

Origin of zeolites in zoned amygdales from the North Mountain Basalt, Nova Scotia

A $^{40}\text{Ar}/^{39}\text{Ar}$ study of whole rock slate samples from Meguma gold deposits, Nova Scotia: implications for the timing and duration of auriferous quartz vein formation

A proposal to judge environmental change on Bon Portage Island, Nova Scotia using landsat thematic mapper imagery

Geochemical changes in the soil profile due to deforestation

Nitrate dynamics in a heavily fertilized agricultural watershed: identification of sources and reduction

3:00 -CATHY RYAN -

3:20 -COFFEE -

GENERAL SESSION: Current Research in the Atlantic Provinces III - Cumberland I Chair: Bruce Broster

3:40 -EMILY K. GESNER*, P. REYNOLDS and R.A. JAMIESON -

4:00 -JO PRICE* -

4:20 -IAN S. SPOONER -

4:40 -PETER S. GILES -

POSTERS: Current Research in the Atlantic Provinces - Friday 6:00PM-12:00PM; Saturday 8:00AM-5:30PM, Cumberland II and Hall

ALAN J. ANDERSON and ROBERT A. MAYANOVIC -

JENNIFER L. BATES, HOWARD V. DONOHOE JR., IRIS HARDY, HENRIETTA MANN, KATHY SILVERSTEIN, GRAHAM L. WILLIAMS -

CRAIG BURNS* -

KEVIN COFLIN, JOHN SHIMELD, MARK WILLIAMSON and ZEHUI HUANG -

LORI A. COOK* -

TAMMY L. CRAWFORD* -

CRAIG DOUCETTE* and GEORGIA PE-PIPER -

LESLIE R. FYFFE -

LESLIE R. FYFFE, STEVEN R. MCCUTCHEON and REGINALD A. WILSON -

CODY S. GARLIE and TREVOR BELL -

SUSAN J. GOWER -

BILL GRAY* -

processes using natural abundances of N-15
Groundwater contamination by agricultural nitrate: A 'multi-point source' conceptual model
Sponsored by Brunswick Mining and Smelting

40Ar/39Ar thermochronology of the southeast Central Gneiss Belt, Grenville Province, Ontario
Geology of the Belle Côte Road orthogneiss, Cape Breton Highlands, Nova Scotia

An investigation of late-glacial lacustrine sediments from western Nova Scotia: evidence of ice-free conditions during Younger Dryas time

Windsor Group stratigraphy, Magdalen Islands, Quebec

High temperature X-ray absorption analysis of transition metal complexes in magmatic fluids

EdGeo workshops: continuing earth science assistance for Nova Scotia teachers

Stratigraphy and mineralogy of the Goldenville Group-Halifax Group transition (GHT) of the Meguma Supergroup at Caribou gold district (drillcore LL81-5A), Nova Scotia

Innovations in imaging sub-surface geological features from 3-D seismic

Large slump structures in the Macumber Formation, basal Windsor Group, Ingonish area, northeastern Cape Breton

Stratigraphy of the Upper Carboniferous Colindale Member of the Port Hood Formation, Western Cape Breton Island, Nova Scotia

Digital mapping of the Wentworth plutonic complex, Cobequid Highlands, Nova Scotia and petrology of its felsic phases

Revised stratigraphy of the Rollingdam area, (NTS 21 G/6), southwestern N.B.

Miramichi-Tetagouche stratigraphic relationships

Possible raised marine sediments on the east coast of the Avalon Peninsula, Newfoundland

Geology and geochemistry of the Upsalquitch Lake Anticlinorium, northwestern Bathurst Camp, New Brunswick

Seafloor pockmarks in Passamaquoddy Bay: Evidence for a biogenic methane origin

- ALEXANDER M. GRIST, MARCOS ZENTILLI, MILTON GRAVES, and MICHAEL COLLINS -
- SUSAN C. JOHNSON -
- JULIET C. LUIZ* and DOROTHY I. GODFREY-SMITH -
- GREG LYNCH, PETER S. GILES and C. DEBLONDE -
- SANDRA MARSHALL* and IAN S. SPOONER -
- LISA J. MILLER* and GEORGIA PE-PIPER -
- PHIL MOIR, MARK WILLIAMSON, KEVIN COFLIN and JENNIFER BATES -
- DAVID J. MOSSMAN, ROBERT G. GRANTHAM, and FALKO LANGENHORST -
- MICHAEL A. PARKHILL and ROD A. KLASSEN -
- GEORGIA PE-PIPER and DAVID J.W. PIPER -
- DAVID J.W. PIPER and GAYLE CHAPMAN -
- GRAHAM WILLIAMS, JENNIFER BATES, JOHN CALDER, ROB FENSOME, LAING FERGUSON, HENRIETTA MANN, DAVID PIPER, and JOHN WADE -
- MARK A. WILLIAMSON and PHIL MOIR -
- Fission track research in Halifax, Nova Scotia: technical procedures and research directions in a changing fiscal environment**
- Revisions to Carboniferous Stratigraphy on Maringouin Peninsula, Cumberland Subbasin, New Brunswick**
- Comparative thermoluminescence dating of Quaternary North American obsidians and mafic lavas**
- Magdalen Basin NATMAP Program preliminary 1:250 000 compilation of central Nova Scotia and Prince Edward Island**
- An investigation of drumlins in southwestern Nova Scotia: Distribution, orientation and mode of formation**
- Zeolite assemblages in the North Mountain Basalt along the north shore of the Minas Basin, Nova Scotia**
- Responding to increased demand for east coast geoscientific data information and knowledge**
- The nature of the Triassic-Jurassic transition, Bay of Fundy region, eastern Canada**
- Ice-flow history, eastern Bathurst Mining Camp**
- New draft 1:50 000 digital maps of the Cobequid Highlands**
- Bedrock and Quaternary geology of the Scotian Shelf southwest of Yarmouth, N.S.**
- The Last Billion Years: A Geological History of Maritime Canada**
- Petroleum geoscience research in support of Canada's east coast hydrocarbon energy option**



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