

PF: Britannia

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The GONGUE



GAC - Mineral Deposits Division Newsletter

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MDD/AWG Field Trip Britannia Mine Site, Howe Sound, B.C.

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Approximately 45 people with diverse backgrounds attended a one day field excursion to the Britannia Mine site, approximately 40 km north of Vancouver on the east shore of Howe Sound. Between 1905 and 1974, approximately 50 million tonnes of ore were mined grading 1.1% Cu, 0.65% Zn, 7 g/t Ag, 0.7 g/t Au. The objective of this field trip was to investigate:

- geological factors controlling mineralization
- implications for acid rock drainage (ARD)
- transportation of metals into Britannia Bay
- effects of mining on slope stability, increased ARD and metal transport

The excursion was co-sponsored by MDD and the AWG (Association for Women Geoscientists) and was organized by James Macdonald. Individual segments were led by experts in a variety of fields:

John Payne, Consulting Geologist, North Vancouver

Kelly Sexsmith, Steffen Robertson and Kirsten (Canada) INC.

George Headley, B.C. Min. of Energy, Mines & Pet. Res., Victoria

Jonathan Fannin, Depts. of Civil Engineering/Forestry, UBC, Vancouver

Remy Chretien, Dept. of Oceanography, UBC, Vancouver

Selection of the day for the drive and walk up to the Jane Basin (Saturday, November 13) was propitious - the last of a long sequence of glorious fall days in the Lower Mainland. Major precipitation commenced the next day, and the Jane Basin will probably not be accessible until July '94.

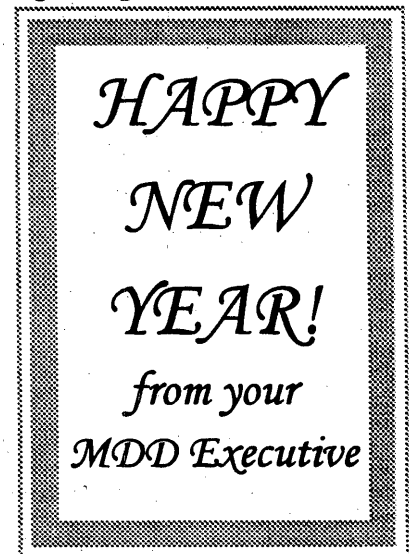
Remy Chretien (UBC) commenced

the technical program with a discussion of the transport of some elements via Britannia Creek into Howe Sound and demonstrated the various tools and equipment used by oceanographers to trap material at differing depths in the sound. Kelly Sexsmith (SRK) showed us metal deposition (as hydroxides) at the confluence of two creeks, one carrying considerable metals in solution in a relatively low pH fluid, mixing with more "normal" creek water. Metal (Cu) precipitation is also taking place where mine water is allowed to flow over scrap metal in an ion exchange process (galvanic cementation) where the copper replaces iron on the surface of the scrap metal. Kelly also demonstrated a number of relatively inexpensive pH and conductivity meters that should be considered as standard equipment for anyone wishing to monitor water courses on, for example, their mineral property.

After driving up to the old mine townsite, we walked up to the Jane Basin area, stopping occasionally to listen to either George Headley (BC Government) on slope failures, or Jonathan Fannin (UBC) on the effects of logging upon slope stability, or John Payne (Consultant, North Vancouver) on the Geology. George explained to us how the effects of underground mining by block caving can be manifested at surface by certain fissures and rock failures, as stresses are propagated upwards to surface from the old stopes. Jonathan was able, with the assistance of some well-placed logging roads, to enlighten us as to why slope failure is often triggered by the logging roads themselves, some 5-7 years after road construction, and how if a slope survives approximately 10 years without failing, then it probably never will. Its all to do with the time it takes for root masses in a logged area to die, lose their strength (permitting failure) and then regenerate.

John Payne was able to place the huge Britannia deposit in its geological context and help us unravel many of the controversies that have revolved around one of B.C.'s largest VMS deposits, such as the model of hydrothermal replacement within a shear zone popular before John Payne and others (1980) published an interpretation of the deposit as a deformed volcanogenic massive sulphide. The Jane Basin exposures of massive sphalerite-pyrite-barite lenses, a spectacular spire of chalcopyrite glinting in the setting sun, intense fabric development not everywhere obscuring the delicate exhalite layers, & much more - were a fitting finale to a great day's stroll and an opportunity for several disciplines to cross-fertilize in an informative but still pleasantly informal setting.

The AWG and MDD wish to express their appreciation for the efforts of the trip leaders, Remy Chretien, Kelly Sexsmith, George Headley, Jonathan Fannin and John Payne. We also thank several others who provided assistance: Bob Turner (GSC, Vancouver), Tom Pedersen (Oceanography, UBC, Vancouver), Jim Monger (GSC, Vancouver), Hugh Macdonald (Copper Beach Estates, Britannia Beach), Tim Eaton (BCMEMP, Victoria) and Oldrich Hunger (Thurber Engineering, Vancouver).



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MDD Goals and Objectives

The Mineral Deposits Division of the Geological Association of Canada is Canada's foremost society for promoting the study of mineral deposits by supporting local and national meetings, symposia, short courses and field trips. We sponsor the publication of research relating to ore deposits and metallogeny and recognize the contributions of outstanding Canadian economic geologists by annually awarding the Duncan Derry and William Harvey Gross medals and the Julian Boldy certificate.

Publication Schedule:

SUBMISSION DEADLINE	PUBLICATION DATE
December 15	January
March 15	April
June 15	July
September 15	October

Information for contributors:

The objective of this newsletter is primarily to provide a forum for members and other professionals to voice new ideas, describe interesting mineral occurrences or expound on deposit models. Articles on ore deposits, deposit models, news events, field trips, book reviews, conferences or other material which may be of interest to the economic geology community are welcomed. Reprints of presentations given to companies, mining groups or conferences are particularly welcome.

Manuscripts should be submitted on IBM-formatted diskettes in any major word processor format. A printed version should be included. Illustrations must be camera-ready; photos should be of good quality. Short items dealing with news events or meetings can be submitted by FAX, postal mail or E-mail.

Contributions may be edited for clarity or brevity.

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The MDD encourages geoscientists to join the division and contribute to the various programs and activities.

