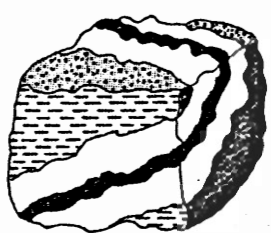


R.V.B.

THE OMINIQUE



Newsletter of the Mineral Deposits Division

Geological Association of Canada

No. 5 April 1980

MDD Executive Elections: Slate of Candidates

The Nominating Committee has prepared the following slate of candidates for the six positions on the Executive Committee and the nine positions on the Board of Directors. Ballots will be mailed to members of the Mineral Deposits Division on or before April 18. Election results will be announced at the first Annual Meeting of the Division, to be held in conjunction with the MDD luncheon, Tuesday May 20, 1980 at Dalhousie University, Halifax, Nova Scotia.

Executive Committee 1980-81

- Chairman: Steven D. Scott; University of Toronto.
- Vice Chairman: Victor F. Hollister; Consultant, Vancouver
- Secretary: Roy V. Beavon; Canadian Superior Exploration, Vancouver
- Treasurer: Alastair J. Sinclair, University of B.C.
- Program Chairman: D.F. Strong; Memorial University
- Publications Chairman: J.G. Roberts; University of Waterloo

Board of Directors

- | | | |
|----------|---|-----------------------------------|
| 1980-81: | L.A. Clark
D.F. Sangster
M. Tremblay | Saskatoon
Ottawa
Montreal |
| 1980-82: | J.A. Coope
J.Y. Chagnon
R.R. Potter | Toronto
Ste. Foy
Fredricton |
| 1980-83: | A.L. Barker
W.D. McRitchie
J.A. Garnett | Toronto
Winnipeg
Dartmouth |

Duncan Derry Medal

The Duncan Derry medal honouring outstanding achievement in economic geology will be presented at the GAC luncheon at Halifax '80, and an honorary award will be made to Dr. Derry at the same time. A rubbing of both sides of the medal is duplicated below. The recipient's name will be engraved below the scene depicting the Frood headframe.



M.D.D. Field Trip: Porphyry Cu Deposits of South-Central B.C.

The field trip which was postponed from last fall will take place May 6 to 8, 1980. Field trip leader Bill McMillan regretfully announces that the trip is overbooked, and no further registrations will be accepted. The bus tour will overnight at Kamloops and Logan Lake, and shortage of accommodation at the latter eliminates the possibility of a second busload. Participants will be sent further details by mail.

Conference Reports: A.A.P.G. Uranium Symposium; El Paso, Texas

The southwest Section of A.A.P.G.'s annual meeting, held at El Paso, Texas February 25-27, featured a symposium on uranium and related volcanic rocks. Economic interest was centred on some new uranium environments and districts namely McDermitt (Nevada-Oregon) and Pena Blanca (Chihuahua, Mexico). Older uranium districts in the western U.S. were retouched against a background of new ideas in volcanotectonics, petrochemistry of volcanic rocks, and the geochemistry of associated trace and gangue mineralization. The mobility of uranium in ignimbritic volcanic glasses, rhyolitic lavas, and in thick sequences of tuffaceous sediments was considered in proximal and distal environments.

A session devoted to regional geology of Chihuahua Mexico, served to remind explorationists of the large tracts of barren ground that can absorb our efforts, however deserving they may seem at the time.

McDermitt caldera is a Miocene collapse structure that has yet to be mapped in its entirety. A well known mercury mining camp, it has recently become the site of intensive uranium exploration. Beginning with vein (?) deposits within a rhyolite dome along the western structural boundary of the caldera (Moonlight-Chevron), the newly discovered Aurora ore zone of Placer Amex, and neighbouring Cordex prospect, occur in intermediate lavas just inside the ring-faulted north-eastern boundary of the complex. Uranium values of 1 lb. per ton are concentrated in scoriaceous flow breccias between massive flows overlain by lakebed tuffs. Mineralization consists of fine grained uraninite and coffinite associated with clay (montmorillonite) alteration. Sub-ore uranium values are also found in a thin opal bed within the overlying bedded tuffs, and along a nearby unconformity marking a paleotopographic boundary of the caldera. The latter mineralization occurs at the Bretz mercury prospect in conjunction with considerable kaolinitic and opaline alteration. The control of uranium by solution channelways along stratigraphic boundaries and lack of cross cutting veins suggest that supergene mechanisms were important in ore formation. However, a combination of hydrothermal and supergene processes is favoured to explain the observed features, with the uranium in the lacustrine sediments precipitated from superficial hot springs that acted during mineralization. (Authors Wallace and Roper).

Unlike the Aurora deposit, the uranium deposits of Pena Blanca occur in the caldera out-flow facies in Sierra Pena Blanca, a fault-block mountain range composed of Eocene ignimbrites that lie unconformably on Cretaceous limestones. Located near Chihuahua City, Mexico, three deposits are being developed by Uramex: the Nopal, Questas, and Margarita.

According to Goodell and Carraway the most important mineralization occurs low in the volcanic section near the basal part of a welded ash-flow tuff. Uranophane and uraninite grade up to 4 lb. per ton with associated molybdenum credits. Some mineralization has also been found within the underlying limestones, where nickel-arsenic, and fluorite alteration zones grade into unaltered carbonate rocks. Elsewhere in Chihuahua province, uranium has been found in collapse breccias in limestones (Sierra Gomez). The Pena Blanca deposits are considered to have derived their uranium from groundwater leaching of tuffs, followed by subsequent deposition at 100° - 200° C in topographic lows in the underlying unconformity, and along faults.

Associated Mo, Be, F, Sn and Li are important in some of the older districts of the western U.S. These uranium deposits occur in caldera, basin and range, rhyolite dome, and intrusive environments. Spor Mountain Utah (Be-U-Li-F), the Honeycomb Hills Utah (Be-U-Li-F), Wah Wah Mountains Utah, (Be-U-Li-F), and Black Range (Sn-Be-F), New Mexico are prominent examples. The Marysvale volcanic field of westcentral Utah is of interest because of the possibility of a buried porphyry molybdenum deposit underlying highly altered and fractured ground containing uraninite-coffinite, fluorite, molybdenite, umohoite, quartz and pyrite in veins. At first sight, deposits associated with rhyolite domes, such as at Lakeview, Oregon, appear to have limited uranium tonnage potential.

Experimental open-system leaching of uranium from volcanic glass emphasized the dominant roles of temperature and alkalinity (Author Zielinski). Diagenetic zeolite-carbonate-silica assemblages were also discussed, but there seems to be on consensus as yet on their economic significance except, perhaps, in the sandstone uranium districts.

Cordilleran Section Volcanogenic Symposium, Vancouver

The Cordilleran Section of the Geological Association of Canada held a successful, well attended symposium at the Hyatt Regency Hotel, Vancouver, B.C., on January 25-26, 1980. Under the title "Volcanogenic Deposits and their Regional Setting in the Canadian Cordillera" twenty-five talks were presented on regional overviews, geology of local areas, and geology of specific deposits. The coherence of the program was enhanced by grouping the presentations into sessions on respective Cordilleran tectonic belts starting in the Pacific Plate and moving eastward to the Omineca Belt. Talks were evenly divided between geologists associated with industry (6 talks), Geological Survey of Canada (6), universities (6), and Provincial and Territorial Governments (7). The interest in the talks was emphasized by the full attendance at the Saturday session when most normally would have been skiing! In all we had 447 registrants, up from 395 last year, showing that our section is vigorous indeed!

I would like to take this opportunity to thank the chairman and the speakers for their excellent contributions. Three speakers who deserve special mention because of their particularly onerous tasks, are: (1) Andre Panteleyev of the B.C.M.O.M. with his overview of volcanogenic deposits that initiated the conference; (2) Ray Price of Queen's University with his luncheon talk "Whither Geodynamics" which broadened the perspective of the symposium; and (3) Colin Spence of RioCanex with his comments on the 'Western' approach from an 'Eastern' viewpoint which wrapped things up nicely. Finally, we're all grateful to our President Bill Mathews and our Secretary-Treasurer Ken McTaggart who kept the conference rolling from registration to cocktails.

Colin Godwin

Symposium on Archean Volcanic-Hosted Gold Deposits, Waterloo

A one-day symposium on Archean, volcanic-hosted gold deposits, sponsored by the Ontario Geological Survey and the Mineral Deposits Division of GAC, was held at the University of Waterloo, on March 7th, 1980. The symposium attracted 380 geologists, most of them from the mineral exploration industry.

Eleven invited papers were given by geologists currently engaged in field and laboratory work related to the genesis of gold deposits in the Timmins, Red Lake and Kirkland Lake districts. The papers were presented in groups according to district. The lead-off paper for each district presented an overview of the regional geology and the distribution of the gold deposits. This was followed by papers that dealt specifically with the geochemistry or structural geology as it related to the deposits of the district.

The meeting was successful in that it presented new observational and analytical data, and summarised current ideas on the genesis of these deposits. Many of the authors focussed on the aspects of the genetic models that are relevant to exploration geologists.

It is evident from the geochemical studies that considerable progress has been made in identifying and describing syn-volcanic alteration and the relationships of these processes to gold-bearing, chemically precipitated sediments. There are, however, interesting differences between the genetic models being developed in the Red Lake and the Timmins districts. MacGeehan and Hodgson stress the significance of an early volcanic alteration in mafic pillowed units of Red Lake, that stripped iron, magnesium and gold from the rocks. This type of alteration is not described from the Timmins district. Fyon and Crockett, and Karvinen, in their papers, emphasize the relationship of carbonatization to auriferous sediments and to quartz vein deposits. The carbonatization alteration is considered to be a sea floor and sub-sea floor, volcanic process. Karvinen, Fyon and Crockett, and Roberts are in general agreement that, in Timmins, the spatial relationships of the tectonic (metamorphogenic), quartz veins to altered (carbonatized) volcanics indicates derivation of the veins from the altered rocks. However, in Red Lake, the observations of Rigg and Helmstaedt indicate that, rather than having a spatial relationship to "altered rocks", the veins constituted major conduits for hydrothermal solutions.

It was interesting, that Pyke and Jensen, from their regional perspective, consider the major faults (Destor-Porcupine and the Larder Lake fault system) to be very significant in the localisation of deposits. Downes described the field evidence for a late-stage carbonatization process (after the principal period of folding), and the strong spatial relationship of deposits and alteration to the Larder Lake "break".

A good discussion was provoked by Kerrich's overview of the genesis of gold deposits. He briefly touched on a topic which I suspect will shortly engage many geologists: the relationship between these deposits and massive sulphide deposits.

All the speakers are either the recipients of grants from the Ontario Geoscience Research Grant Program, or are geologists who are presently working for OGS or were doing so until comparatively recently. Registrants at the symposium received a 380 page volume of the papers. This volume is presently on open file at the Ontario Geological Survey (Open File Report 5293), and will be published later in the year by OGS in their Miscellaneous Paper series.

R. Gwilym Roberts

G.S.A. Cordilleran Section Meeting; Corvallis, Oregon

The Cordilleran Section of the Geological Society of America annual meeting, March 19-21, contained several clusters of gems for economic geologists. Attendance by GAC members was good (by GSA standards), and those who stayed for all sessions were amply rewarded.

Two symposia were of particular interest to economic geologists: Mineral Deposits of the Northwest and Mesozoic Tectonics of the Pacific Northwest. The Mineral Deposits symposium included an outstanding paper by W.J. McMillan on rock geochemistry, geology and genesis of the Highland Valley porphyry copper deposits. The new data will be available to those who sign-up for the May 6-8 field trip. A companion paper on the Bethlehem deposits also provided a specific update. Island Copper was also described, and new data were presented on the deposit. A paper by Robyn et al. on possible non-subduction associated porphyry deposits in the Pacific northwest caused the greatest uproar. Although the discussion was cut-off 45 minutes after the paper ended, it was clear that the dust had not settled. Massive sulfides were also described in the Mineral Deposits symposia. Randy Koski described the setting of ophiolite type massive sulfides in southern Oregon, and Robert Derkey described the Kuroko type mineralization at Silver Peak, also in southern Oregon. The Iron Dyke Kuroko type deposit in eastern Oregon was described by Juhas et al. in terms that greatly simplified the metamorphic and structural complications. Colin Godwin et al. provided new data on lead-lead ratios for Canadian Cordilleran deposits.

The tectonic symposium included papers on the structural history of the Klamath Mountains as well as the tectonic evolution of some modern island arcs. The implication for ore deposits in the changing structural style was clear to everyone.

V.F. Hollister

Metallogenesis in Latin America, Mexico City

An International Symposium and Workshop on "Metallogenesis in Latin America", co-sponsored by the International Union of Geological Sciences, Consejo de Recursos Minerales de Mexico and Consejo Consultivo de Directores de Servicios Geologicos de Latinoamerica, was held in Mexico City February 3-6, 1980. Financial support was provided by UNESCO and the Consejo Nacional de Ciencia y Tecnologia de Mexico. The meeting was well attended by representatives of various government agencies and universities, with a leavening of geologists from industry. A stimulating program of technical papers, well organized by Srs. G.P. Salas and J.L. Lee-Moreno and their staff, coupled with a liberal amount of Mexican hospitality, made for a meeting that was both enjoyable and instructive.

The meeting opened with a field trip to the Pachuca silver mining district. I cannot report first-hand, but am told the trip was a great success, albeit that its geological aspects were almost overwhelmed by the extent of the food and drink provided at both lunch and dinner.

The technical sessions, extending through two days, provided an overview of metallogenesis in the Americas, followed by more detailed papers on the cratons, the Cordillera and the oceanic plate environment. Within this format, papers were presented on aspects of metallogenesis throughout South America and the Caribbean, though I was personally disappointed that, with the exception of Mexico, the host country, Central America was not represented. The majority of papers placed heavy emphasis on relating mineralizing processes to plate margins and the development of megastructures. My conviction that plate tectonic theory was overstressed was reinforced by having read Don Sangster's paper in the December issue of "Geoscience Canada", on my flight south.

I believe that most, if not all the exploration geologists present were disturbed by comments that in the context of Latin America, the descriptive geological work is largely complete. Though this may well be true in well established mining districts, the woeful lack of reconnaissance scale regional mapping was glaringly apparent from many of the presentations and it seems unfortunate that there is a strong thrust towards more esoteric geological research at the expense of providing a fundamental regional framework on which to base interpretations.

These comments aside, the meeting provided an excellent opportunity to meet Latin American and European geoscientists that is not often afforded to many economic geologists working in North America. Mexican beer can be an excellent catalyst to free and wide ranging discussion, and the program provided ample time for this activity.

J.M. Newell

Coming Events

APRIL

- 10-15 Eighth International Geochemical Exploration Symposium, Hannover, West Germany. FOR DETAILS: Dr. H. Gundlach, Organizing Committee, 8th IGES, Federal Institute for Geosciences and Natural Resources, P.O. Box 510, 153, D-3000, Hannover 51, W. Germany.
- 15-18 Workshop; 'Glacial Geology in the Service of Mineral Exploration' FOR DETAILS: Debbie Blair, Dept. of Geology, University of Toronto, Toronto, Canada M5S 1A1.
- 21-24 Canadian Institute of Mining and Metallurgy, Annual General Meeting, Toronto, Ontario. FOR DETAILS: G.F. Skilling, CIMM, Suite 400, 1130 Sherbrooke St. W., Montreal, Quebec, H3A 2M8.
- 28-May 2 Tectonics and Geophysics of the Appalachians, G.S.A. Penrose Conference, Helen, Georgia, U.S.A. FOR DETAILS: I. Zietz, U.S. Geological Survey, M.S. 927, Reston, Va., 22092, U.S.A.

MAY

- 7-9 Canadian Society of Exploration Geophysicists, Annual Convention, Calgary, Alberta. FOR DETAILS: W.R. Redmond, Amoco Canada, 444-7th Ave. S.W., Calgary, Alberta T2P 0Y2.
- 19-21 Geological Association of Canada-Mineralogical Association of Canada, Annual Meeting, Dalhousie Univ., Halifax, N.S. FOR DETAILS: D.J.W. Piper, Dept. of Geology, Dalhousie University, Halifax, N.S. B3H 4H6.
- 22-27 American Geophysical Union, Spring Meeting, Toronto, Ontario. FOR DETAILS: D.F. Russell, Dept. of Geophysics and Astronomy, University of British Columbia, Vancouver, B.C. V6T 1W5.

JUNE

- 8-11 American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists, Annual Meeting, Denver, U.S.A. FOR DETAILS: J.P. Lockridge, 1176 Lincoln Street, Suite 712, Denver, 80203, U.S.A.
- 11-13 Conference, "Applied Oilsands Geoscience", Edmonton, Alberta. FOR DETAILS: M.B. Dusseault, Dept. of Civil Engineering, University of Alberta, Edmonton, Alberta, T6G 2G7.
- 23-25 Conference, "Trench and Fore-Arc Sedimentation and Tectonics in Modern and Ancient Subduction Zones, The Geological Society of London, Burlington House, London. FOR DETAILS: J.K. Leggett, Dept. of Geology, Imperial College, London SW7 2BP, England.

JULY

- 7-17 Twenty-sixth International Geological Congress, Paris, France. FOR DETAILS: Secrétariat Général du 26ème Congrès géologique international, Maison de la géologie, 77-79, rue Claude Bernard, 75005 Paris, France.