



# THE GANGUE

The Newsletter for  
Mineral Deposits Division  
Geological Association of Canada

No. 27

May, 1989

## THE GREW CREEK Au-Ag DEPOSIT in SOUTH-CENTRAL YUKON

The Grew Creek property lies between Ross River and Faro in the central Yukon Territory. The block of 332 claims that cover the zone of mineralization lie on the western flank of a broad valley which marks the Tintina Trench. This valley was scoured by Pleistocene glacial ice and is extensively covered by till, drumlins and small lakes. The epithermal style gold and silver mineralization is hosted in Eocene felsic ignimbrite. The Grew Creek discovery is important as the first reported tertiary volcanic-hosted epithermal gold showing in the Tintina Trench.

Between June 1987 and September 1988, 19 173 metres of diamond drilling and 1651 metres of reverse circulation drilling were completed on the property as part of a joint venture agreement between golden Nevada Resources Inc., Brenda Mines Ltd., Hemlo Gold Mines Ltd. and Noranda Exploration Company Ltd.

### REGIONAL SETTING

The deposit at Grew Creek is hosted by a part of the Eocene volcanic assemblage preserved in a graben within the Tintina Trench. The trench is a major northwest trending structure with extensive Late Cretaceous and Tertiary right-lateral displacement. In the Grew Creek area this resulted in the juxtaposition of the Pelly-Cassiar platform against rocks of the Anvil allochthon. Basaltic to rhyolitic volcanism during the Eocene produced the rocks which contain the Grew Creek deposit.

### LOCAL GEOLOGY

The Grew Creek deposit is hosted by a steeply dipping sequence of rhyolitic crystal-lithic lapilli tuff, which has been intruded by quartz-feldspar porphyry dykes of the same composition, and minor andesite. These rocks form a fault bounded wedge in contact with Paleozoic metasediments to the south and interbedded Eocene fluvial sediments and volcanics to the north. Felsic quartz-porphyry intrusions into the sediments are limited to the area immediately north of the Main Zone mineralization.

### STRUCTURE

The Main Zone is located at the intersection of the north-west trending, compressional Grew Creek Fault and a north trending extensional structure. The Grew Creek Fault is a zone of gouge and rock fragments over 10 metres wide. The north trending structure is visible on airphotos as a physiographic linear. This structure has the same orientation as several prominent faults within the Main Zone which are important controls on the distribution of mineralization. Sense of movement along these structures is consistently normal with west block down. One of these faults forms the western boundary of the Main Zone and this implies that a western continuation of the ore body may occur at depth.

Although gold and silver is localized along some north trending faults mineralization is sometimes offset by these same faults. This suggests the timing of mineral deposition and normal extensional faulting was very close.

### MINERALIZATION

High-grade mineralization extends to the bedrock surface, which is normally covered by up to 59 metres of glacial till.

Mineralization occurs in a stockwork of chaledonic and fine to medium grained veins of quartz (+/- clay +/- calcite or aragonite +/- adularia) that dips steeply northeast. The distribution of mineralization within the stockwork is very irregular. Deposition was dominantly as open space fillings which resulted in vuggy, colloform, crustiform and banded textures suggesting mineral deposition occurred over repeated cycles. Gold occurs as electrum with highly variable gold/silver ratios. Silver also occurs in acanthite, amalgam and with selenides. Pyrite and trace amounts of arsenopyrite and chalcopyrite are also found in the deposit.

The stockwork zone that contains the ore body is shaped like an elongated wedge, with the wide end pointed upward, plunging about 75 degrees north. It has been defined over a strike length of 400 metres with a vertical extent of about 150 metres and a maximum width of about 110 metres.

### ALTERATION

Gold/silver mineralization is at the western end of a hypogene sericite and clay alteration zone which ranges up to 500 metres wide and has been traced eastwards for 3 kilometres.

Intense argillic alteration of the wall rock, adjacent to mineralized veins, is typical. and silicification of the tuff near mineralization is common. A 10 to 80 metre wide zone with 3-5% pyrite occurs as a hangingwall immediately adjacent to the stockwork mineralization.

Strong sericitic and argillic alteration is widespread throughout the felsic volcanics.

Contributed by Jesse L. Duke  
Noranda

### EXPLORNET - UPDATE

A national network of centres of excellence to utilize some of the \$240 million in funds allocated by the Federal government for centres-of-excellence in advanced technologies in mineral deposits, geophysical and geological research.

Three main centres which have been identified are: Polytechnique, University of Toronto and The University of British Columbia.

There is a proposed budget of \$18 million over four years for the geosciences.

### REDFERN - TULSEQUAH CHIEF MASSIVE SULPHIDE DEPOSIT, NW BRITISH COLUMBIA

The Tulsequah Chief property is located near the confluence of the Tulsequah and Taku Rivers in the Coast Range Mountains, 95 km south of Atlin, B.C. and 70 km northeast of Juneau, Alaska. The property was first staked in 1923 following the discovery of a high grade lens of barite, sphalerite, galena and chalcopryrite. Cominco Ltd. acquired the deposit in 1946 and placed it and the adjacent Big Bull deposit into production in 1951 at a rate of 530 tons per day. The mine was closed in 1957 due to low metal prices. Production totalled 625 781 tons from the Chief and 403 308 tons from the Bull at a combined average grade of 0.11 oz/t Au, 3.69 oz/t Ag, 1.59% Cu, 1.54% Pb and 7.0% Zn. At Shutdown, ore reserves in the Chief were estimated at 780 000 tons containing 0.07 oz/t Ag, 1.3% Cu, 1.6% Pb and 8.0% Zn.

The Tulsequah Chief deposit occurs in a northeasterly trending, west dipping sequence of Pre-Permian, submarine volcanic rocks located on the west limb of a north plunging anticline. The rocks consist primarily of andesite volcanics with lesser dacite-rhyolite pyroclastics, clastics, limestone and chert. All rocks are intruded by Paleozoic diorite and dacite, and tertiary rhyolite plugs, sills and dykes. The anticline is delineated by a mixed limestone, chert, clastic sequence containing Pennsylvanian-Permian fossils. This sequence occurs stratigraphically above the deposit. A major regional fault partially truncates the west extension of the Tulsequah Chief stratigraphy.

The Tulsequah Chief is located near the base of a large lenticular mass of dacite-rhyolite pyroclastics and flows. The deposit is broken into four blocks by north striking, steeply

dipping faults, some of which may have been, in part, synvolcanic growth faults.

Mineralization occurs in seven separate, conformable lenses. The lenses consist of pyrite (15-80%) with varying concentrations of sphalerite, galena, chalcopryrite, gold, silver, barite and gypsum. These lenses occur within several stratigraphic intervals along a 500 metre strike length in a lithologic package known as the mineral horizon. The mineral horizon consists of altered, intercalated dacite-rhyolite tuffs, muds, cherty tuffites, and cherts intermixed with altered dacite-rhyolite lapilli tuffs.

Alteration in the mineral horizon consists primarily of sericite-pyrite and locally, anastomosing zones of silica veins and pervasive silicification. The alteration extends for distances up to 30 metres into the overlying dacite-rhyolite pyroclastics, indicating hydrothermal activity continued after the main phase of sulphide deposition. The mineral horizon is underlain by a discordant alteration pipe which can be traced on surface for 1 km and occurs primarily in andesite volcanics. The pipe contains pyrite (5-25%), sericite and phlogopite zoned outward from a sericite-pyrite core through a transition zone of phlogopite-pyrite to an outer zone of pyrite. An adjacent, separate alteration pipe 400 m to the west formed slightly later at a higher stratigraphic level. No mineralization of significance has been found to date associated with this pipe.

The intimate spatial relationship of the mineralized lenses with volcanic rocks suggests that sulphide formation was an integral part of, and related to volcanism.

Contributed by: M.J. Casselman  
Cominco Ltd.

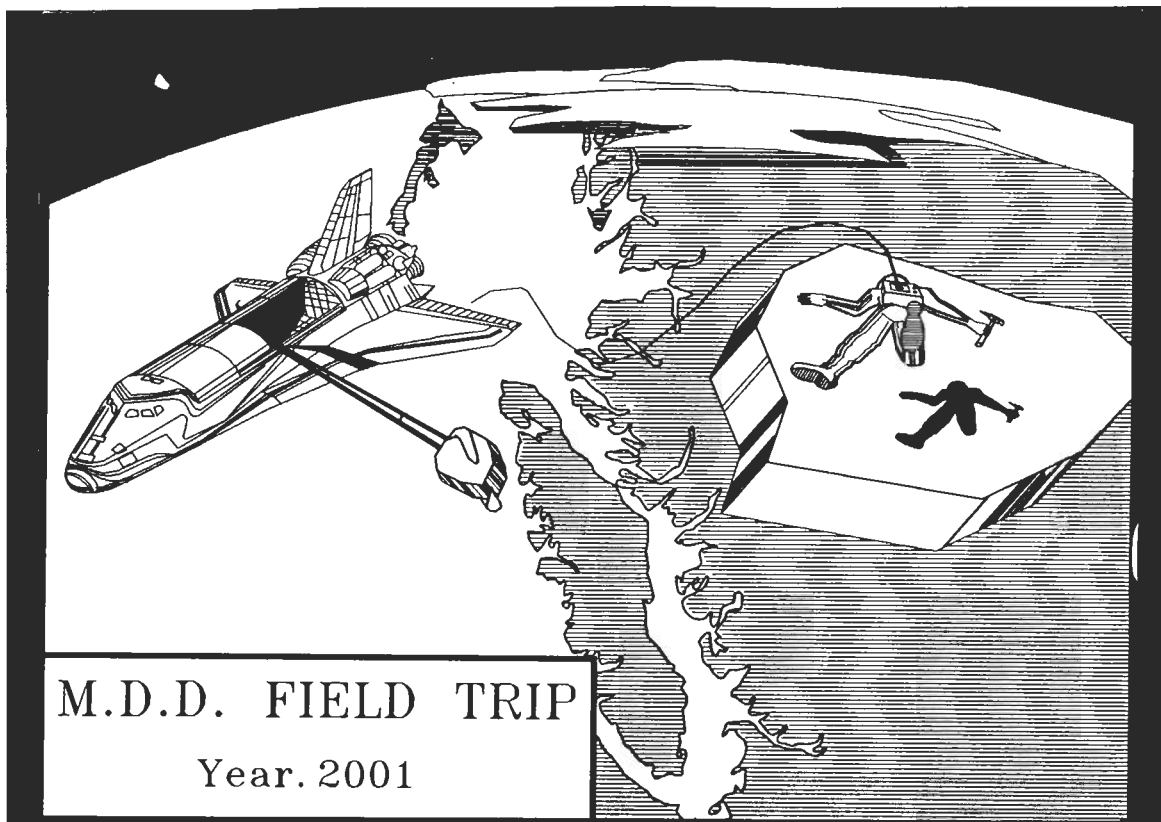
### DUNCAN R. DERRY MEDAL

The Duncan R. Derry medal is a prestigious award made to members of the mining community who have made a positive contribution to economic geology.

In recognition of their achievements and contributions to the mining industry, the following is a list of well known geoscientists who have been Medal Winners from 1980 through 1988:

1908 - A.J. (Tony) Naldrett  
1981 - Donald F. Sangster  
1982 - G.D. Julian Boldy  
1983 - R.W. (Dick) Hutchinson  
1984 - J.J. (Joe) Brummer  
1985 - Michael J. Knuckey  
1986 - R.W. (Bob) Hodder  
1987 - A.E. (Art) Soregaroli  
1988 - Eric A. Swanson

Nominations for the MDD's Duncan R. Derry Medal are invited annually, prior to January 15th of the year of the award. Nominations may be made by 3 members of the MDD, either jointly or by independent submissions. Nominations should include a resume for the candidate, a summary of his ac-



**M.D.D. FIELD TRIP**  
Year. 2001

accomplishments in economic geology and any other information which would supplement and enhance the presentation. Candidates should be recognized for their skill and stature as professional economic geologists and also for their public contributions to the science. Publication may be the prime but not necessarily the only method of disseminating information to the geological community.

Current MDD Subcommittee for the Duncan Derry Medal consists of Paul Wojdak, Linda Thorstad, Tom Schroeter, Bob Hewton, Alex Davidson, Ken Shannon and Jacques Trotter.

**DEVELOPMENTS AT THE COMINCO  
- DELAWARE SNIP GOLD PROJECT,  
ISKUT RIVER, Northwest B.C.**

The Snip property is located on the lower slopes of Johnny Mountain and adjoins the north boundary of Skyline Explorations Ltd.'s Stonehouse property where gold production commenced in 1988.

The first claims were staked on the northeast flank of Johnny Mountain in 1910 and Cominco prospectors re-staked and prospected claims in the area in 1929. Native gold was first observed in outcrop by a Cominco exploration crew prospecting the ground around Johnny Mountain for base metals in 1965. The showing was hand trenched in 1986 and this work revealed a sheared vein containing calcite, quartz, pyrite,

sphalerite, galena, native gold and chlorite-sericite hosted by intensely carbonate-altered siltstone. The property was abandoned in the early 1970s but restaked by Cominco in late 1980. Cominco carried out geological mapping, soil geochemistry and trenching from 1981 to 1983.

In early 1986, Cominco Ltd. signed an option agreement with Delaware Resources Corp. During 1986-87, the programs were financed by Delaware and led to the completion of 85 diamond-drill holes which intersected several high-grade veins. The best of these is the Twin Zone, a 3 to 25 foot-thick discordant, shear vein, cutting a thickly bedded sequence of feldspathic greywacke and siltstone.

During 1988, underground drifting along the Twin Zone system on the 300 Level identified the existence of two distinct ore types. Type A ore occurs in a complex banded shear-vein composed of alternating bands of massive calcite, heavily disseminated to massive pyrite, thin bands of biotite-chlorite and crackle quartz. Pyrite averages 15 per cent. Other sulphide minerals include pyrrhotite, chalcopyrite, sphalerite, galena and arsenopyrite. Molybdenite is also common locally. Minor to trace amounts of bismuth and lead-tellurides are also present. Type B mineralization is dominated by pyrite-pyrrhotite (quartz and calcite are absent) and tends to be more attenuated and discontinuous than the type A ore.

The current ore reserve estimate comprises 1.57 million short tons of 0.64 ounce gold per ton in indicated and inferred categories. The reserve includes 25 per cent mining dilution

at zero grade and is based on a minimum mining width of 6 feet. Metallurgical tests on underground bulk samples and drill core composites spaced throughout the ore deposit produced combined recoveries (gravity + cyanidation) of 91 to 98 per cent gold.

Underground exploration and development of the deposit is now in progress and preliminary engineering for construction of mill, tailings disposal sites and surface facilities is underway in preparation for the late 1989 start-up of a 330 ton per day operation.

Contributed by: Ron Nichols  
Cominco Ltd.

### ORE HORIZONS ARTICLES

--> *Northern Miner*

MDD sponsors a section in *The Northern Miner* called "Ore Horizons". Articles on mineral properties and districts, which are the subject of significant exploration or development, are requested. Please contact Bill Roscoe, our editor and liaison with the *Northern Miner*. Bill would like to receive regular submissions and you may contact him for manuscript guidelines. A recent submission by Danny Alldrick on precious metals in the Iskut-Sulphurets area of northwestern B.C. has been published in the January 1989 issue of *The Northern Miner Magazine*.

This is an excellent opportunity for MDD members to publish timely articles on specific deposits or general aspects of mineral deposits. Lead time is relatively short and the format allows for less rigorous "scientific" papers. Color illustrations are welcomed.

#### Guidelines for Authors:

- Topics of a general or specific nature. Generally not research oriented but sufficiently technical to maintain the interest of a mineral deposits or exploration geologist.
- Articles will be refereed by the MDD
- Maximum length about 3 000 words
- Up to 4 diagrams or photos with up to 4 colors each
- The *Northern Miner Magazine* reserves the right to rewrite parts of articles in style only. Technical content will not be compromised and any significant rewriting will be cleared through the MDD Editor.
- Articles to be submitted approximately 2 months prior to the month of publication.

CONTACT: Roscoe Postle Associates Inc.  
120 Adelaide Street West  
P.O. Box 2201  
Richmond Adelaide Centre  
Toronto, Ontario, M5H 1T1  
Tel: (416) 947-0395

### WILLIAM PINCH MINERAL COLLECTION

The William Pinch Mineral Collection is one of the world's finest privately owned mineral collections. Located in Rochester, N.Y. it contains about 16 000 specimens and is

reputed to be more impressive than the famous Smithsonian Institute collection. It represents the lifes work of William Pinch, a 47 year old Eastman Kodak employee who has collected minerals since the day, 40 years ago, he discovered a fossil at his aunt's farm.

The collection includes gemstones of great estetic and monetary value, meteorites, ore specimens and one of the world's finest micromount collections. There are apparently 35 sub-collections from many areas of the world and for specialized purposes. Many of the specimens (over 1000) are from famous Canadian occurrences.

When the collection was first offered for sale the National Museum of Natural Sciences in Ottawa expressed an interest but the price tag proved to be too high. However, in January 1987, Pinch signed an agreement with the Museum to sell his entire collection for \$5 million. This \$5 million is being raised by private donations while the federal government has donated an additional \$2 million to establish an 8000 ft<sup>2</sup> permanent display (the National Mineral Exhibition Gallery) in one of the wings of the museum. Parts of the collection will be sent on frequent tours of the country.

The fundraising campaign, started in September 1987, has collected \$3.1 million in commitments or cash. Stan Gibson of the Fundraisers Service Network, indicated much of the monies are from resource companies, many of which have been generous enough to purchase entire subcollections. This acquisition, in complement to the existing collection of the National museum, and that of the Geological Survey of Canada, will give Canada a world class mineral collection.

While the price tag may seem a huge sum, many mineralogists say the William Pinch collection is worth two to three times that amount. Some maintain it is priceless and that such a collection could never be reassembled because Pinch has acquired some of the best specimens available, and that many specimens come from mines which are closed or inaccessible.

Among the more spectacular specimens are a diamond, still with the host kimberlite, from Siberia, the 17-carat O'Dunne sapphire from Kashmir that once belonged to a Russian duchess and a beautiful specimen of serandite from Mont-Saint-Hilaire Quebec. The collection contains well over 1000 specimens from Canadian localities and boasts the world's largest and best baricite crystal and one of the finest kainosite specimens in existence. The suite of platinum group minerals consists of about 100 specimens and includes outstanding large platinum, tulameenite and rutheniridos-mine nuggets virtually impossible to obtain today. The research collection contains thousands of rare specimens, comprising over 2200 species, and represents over 70 per cent of all known mineral species. Each species is well documented as to identification and locality information. In all there are over 30 sub-collections of minerals from specific areas or topics. Impressive seems to be rather inadequate to describe this amazing collection.

Canada, whose history and prosperity are so totally identifiable with our unique mineral wealth, does not yet process a first class mineral collection. The acquisition of the William

Pinch Collection for the National Museums of Canada would make our national mineral collection world class. To this effect the trustees are seeking support from individuals in the mining industry to assist in the acquisition of this collection. For further information contact Stan Gibson at (416) 421-4786. Donations are categorized as gifts to the Crown; cheques may be made payable to the Pinch Acquisition Fund and sent to Fundraisers Service Network, 3103 McCarthy Court, Mississauga, Ontario L4Y 3Z3.

In the meantime William Pinch remains an avid collector and although his collection is in trust in Ottawa he is already filling his basement with minerals, fossils and rare mineralogical books. A recent acquisition includes a 400-million year old trilobite unearthed in Morocco.

*PLEA - FROM THE EDITOR: CANADIAN JOURNAL OF EARTH SCIENCES*

In November 1988, I became the Editor of Canadian Journal of Earth Sciences, replacing Glen Caldwell who served for many years. I am acutely aware that some members of the Mineral Deposits Division are dissatisfied with CJES, believing that it contains very few articles of interest to them. Although CJES is, and will continue to be, a generalist journal, catering to all earth science disciplines, I believe that it does not publish enough papers in the field of economic geology. Through Glen Caldwell's efforts, a number of mineral deposit papers have appeared in the Journal in recent years (including a collection of papers on silver vein deposits in the October 1986 issue), but more can and should be done to meet the needs of the economic community. Economic geologists constitute almost 50% of the membership of the Geological Association of Canada, which CJES must serve. Furthermore, much of the wealth of this country is founded on the mineral industry; without this wealth, a government-subsidized journal of the calibre of CJES could not exist.

All of this brings me to the point of this letter. I have a 'supply' problem -- CJES does not receive enough mineral deposit manuscripts. I, therefore, plead with you, members of MDD, to submit your best manuscripts to CJES. I am specifically looking for papers dealing with processes of ore deposition (e.g., Beaty et al., 1988, v. 25, no. 3), and papers describing and interpreting specific ore deposits and mineralized rocks (e.g., Brown and Nesbitt, 1987, v. 24, no. 12). I'd also welcome syntheses and regional overviews that advance our understanding of the occurrence and formation of ore deposits. I believe the Journal is a good vehicle for disseminating information and new ideas in economic geology. It has an excellent reputation, a large and growing international readership, and superb production standards. So, how about sending me your manuscripts?

John J. Clague  
Editor, Canadian Journal of Earth Sciences

*H.S. ROBINSON FUND  
1989 LECTURE SERIES*

The MDD is pleased to announce that Richard Walker has been selected as the 1989 H.S. Robinson Distinguished Lecturer. Richard is currently the Exploration Manager, Vancouver Island, for Westmin Resources Ltd. He has had extensive exploration experience particularly in uranium, gold and diatremes.

The spring tour in early May will take Richard on a swing through Thunder Bay, Sudbury, Timmins and then off to Buchan's, St. John's, Nfld., Bathurst, Fredericton, Ottawa and on to the GAC meeting in Montreal.

This eastern excursion will be complimented by a tour of Western Canada later in the fall.

Possible topics considered for the tours include the HW (Westmin) volcanogenic massive sulphide deposit, with a possible comparison to Archean deposits. In addition Richard may include presentations on the Kidd Creek VMS deposit, a discussion of ore reserve problems and calculations or an informed look at diatremes.

This lecture tour will, no doubt, compare very favourably with the excellent presentations of previous lecturers and members of the mining community are encouraged to participate. Details may be obtained from MDD Vice-Chairman, Paul Wojdak or Director, Alex Davidson. See MDD excutive list for addresses and phone numbers.

*MDD Industrial Minerals Fieldtrip - 1989*

The recent, highly successful Cordilerran Roundup provided an excellent forum for both government and industry to show their wares. Highpoint of this illustrious, Western Canadian mining industry get together was an MDD "sponsored" (read instigated!) tour of industrial mineral sites in the downtown Vancouver area, guided in part by our Past-President, Tom Schroeter.

Staff of several Geological Surveys and representatives from numerous mining companies participated and were eager to identify the finer characteristics of the attractions examined at each stop on the tour. Representatives of the Newfoundland Dept. of Mines were particularly impressed by the potential for using MARBLE in downtown buildings and decorative ARCHES. It is understood they will attempt to develop similar marble deposits on their return to the windswept isle.

Senior Ministerial staff from western Canada were on hand to observe some rather unique applications of the province's 'natural resources'. Professional opinions on the polish and application of these bountious resources were obtained on-the-spot from university-based researchers, principally Bellefontaine from McGill and Teng from St. Francis Xavier.

Mining industry consultants from Newfoundland were noted in intense study of the many fine exposures noted during this walking tour and will probable initiate new exploration models at a later date.

**GEDDES RESOURCES' WINDY CRAGGY  
COPPER-GOLD-COBALT MASSIVE  
SULFIDE DEPOSIT, IN NORTHWEST B.C.**

The Windy Craggy Cu-Au-Co massive sulfide deposit lies within the St. Elias Mountain Range in northwestern B.C. The all-weather Haines Road is 65 kilometres to the east. Access is currently by air from Whitehorse, about 200 kilometres northeast. The property terrain is rugged with elevations up to 2100 metres.

The deposit was discovered by Jim McDougall of Faconbridge Ltd. in 1958 and they carried out limited diamond drilling, geophysical and geological surveys. In 1981, Geddes resources entered into an agreement with Falconbridge to acquire an interest in the property by funding further exploration. Between 1981 and December 1988, Geddes completed 8997 metres of surface diamond drilling in 23 holes, 17 524 metres of underground drilling in 55 holes and 2750 metres of adit and exploration drifting.

The Windy Craggy property lies within the allochthonous Alexander terrane of the Canadian Cordillera. The property is underlain by argillite and intercalated mafic volcanic flows or sills of Triassic age which overlie Palaeozoic calcareous platformal rocks; all of these are intruded by granitoid bodies of Mesozoic age. Major structures within the area include large scale blocks and strike slip faults and easterly-striking folds.

The Windy Craggy massive sulfide deposit is hosted by intercalated graphitic and calcareous argillite, intermediate to mafic volcanic flows, sills and tuffs. The massive sulfides comprise pyrrhotite and pyrite, with lesser chalcopyrite, magnetite and ankerite. The host rocks are isocinally folded about a northwest-striking axes; the superimposed broad northwest-striking anticline divides the massive sulfides into two major bodies. The massive sulphides extend over a strike length of at least 1600 metres with vertical extent of at least 600 metres and width of 160 metres. A possible feeder zone comprised of angular silicified fragments in a pyrrhotite-pyrite matrix exists adjacent to the western margin of the massive sulfide body. The drill intersection in a chert-ankerite sulfide unit in the north margin of the southern sulfide body contains 14.7 grams per tonne gold over 29.7 metres.

The Windy Craggy massive sulfide deposit is estimated to contain a resource of 100 million tonnes with a grade of 2 to

**1988 Treasurer's Report  
Mineral Deposits Division - GAC**

Balance, January 1, 1988		\$4,865.01
Revenue		
Membership Dues	\$3,392.00	
Guidebook Sales		
Newfoundland	\$2,417.50	
Hemlo	\$ 880.00	
Highland Valley	\$ 210.00	
Yellowknife	\$ 336.00	
Interest	\$3,578.75	
Term Deposits Sold	\$21,355.61	\$32,169.86
		\$37,034.87
Expenses		
W.H. Gross Award	\$ 6,272.21	
Field Trip Insurance	\$ 600.00	
Newfoundland Guidebook	\$15,400.00	
Executive Travel	\$ 762.00	
Office	\$ 689.26	
Gangue	\$ 1,308.15	
Conf. Education	\$2,000.00	
Yellowknife Guidebook	\$ 5,949.11	
Bank Charges	\$ 57.78	\$33,039.62
Balance, December 31, 1988		\$ 3,995.25
Additional Capital Goods, December 31, 1988		
Term Deposits		\$ 6,614.26
Guaranteed Invest. Cert.		\$28,000.00
W.H. Gross Award Fund		\$30,791.46

Original Signed by:  
A.J. Sinclair, Treasurer  
January 16, 1989

3.5% Copper, 0.3 grams per tonne gold and 0.1% Cobalt and there is a potential for a small tonnage gold deposit adjacent to the massive sulfide deposit. Exploration is continuing to define an economically-viable deposit.

Rob Beckett  
Consultant To Geddes Resources

**MINERAL DEPOSITS DIVISION  
(MDD) - G.A.C**

*Executive & Directors 1989-1990*

Chairman: Paul Wojdak  
Westmin Resources Ltd.  
904-1055 Dunsmuir Street  
Vancouver, B.C., V7X 1C4  
Tel: (604) 681-2253 FAX: (604) 681-0357

Past-Chairman: Tom Schroeter  
B.C. Ministry of Energy, Mines &  
Petroleum Resources  
159-800 Hornby Street  
Vancouver, B.C. V6Z 2C5  
Tel: (604) 660-2812 FAX: (604) 660-2653

Vice-Chairman: Ed Debicki  
Inco Gold Management Inc.  
Copper Cliff, Ontario, P0M 1N0  
Tel: (705) 682-8452 FAX: (705) 682-8243

Program Chairman: Alvin Jackson  
Cyprus Metals Canada  
1810-1055 West Hastings Street  
Vancouver, V6E 2E9  
Tel: (604) 685-6867

Secretary: Linda Thorstad  
Interaction Resources Ltd.  
720 - 800 West Pender Street  
Vancouver, B.C., V6C 2V6  
Tel: (604) 684-2285 FAX: (604) 684-8887

Treasurer: Vacant

Publications Chairperson: Pat Sheahan  
Konsult Int. Inc.  
44 Gemini Road  
Willowdale, Ont., M2K 2G6  
Tel: (416) 223-7750 FAX: (416) 361-0369

Editor - The Gangue: Brian Grant  
B.C. Ministry of Energy, Mines &  
Petroleum Resources  
756 Fort Street, 3rd Floor  
Victoria, B.C., V8V 1X4  
Tel: (604) 356-1693 FAX: (604) 356-8153

*MDD Directors:*

Bob Hewton	1988-91
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Bill Pearson	1989-92
Colin Godwin	1989-93

**FUTURE MEETINGS, WORKSHOPS &  
FIELDTRIPS**

JUNE 1989

EXPLORATION UPDATE '89 - INTEGRATION OF TECHNOLOGIES, Calgary, Alberta. Details: CSPG Office, #505, 206-7th Avenue SW, Calgary, Alberta T2P 0W7, Tel. (403) 264-5610.

25 - 1 July INTERNATIONAL VOLCANOLOGICAL CONGRESS (IAVCEI) Sante Fe, New Mexico. Details: M.A. Dungan, Dept of Geological Sciences, Southern Methodist Univ., Dallas, TX, USA 75275.

JULY 1989

9 - 19 INTERNATIONAL GEOLOGICAL CONGRESS, Washington, D.C. Details: Dr. B.B. Hanshaw, IGC, Box 1001, Herndon, Virginia, USA 22070-1001, Tel. (703) 648-6053.

10 - 14 IGARSS-89. 12TH CANADIAN SYMPOSIUM ON REMOTE SENSING, Vancouver, B.C. Details: Venue West, Suite 801, 750 Jervis St., Vancouver, B.C., V6E 2A9, Tel.(604) 681-5226, FAX (604) 681-2503.

OCTOBER 1989

1 - 6 INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM & BRAZILIAN GEOCHEMICAL CONGRESS. Details: "RIO '89", c/o CPRM-LAMIN, Av Pasteur, 404-URCA, 22292 Rio de Janeiro, Brazil. Tel: (55-21) 239-9695, FAX (55-21) 239-8349

2 - 6 REMOTE SENSING FOR EXPLORATION GEOLOGY. Method, Integration and Solution. Calgary, Alberta. Details: c/o Michael Marchand, Canterra Energy Ltd., P.O. Box 1051, Calgary, Alberta, T2P 2K7. Tel: (403) 267-9111.

NOVEMBER 1989

5 - 8 WORLD GOLD '89, Reno, Nevada. Details: Meetings Dept. SME, Box 625002, Littleton, Colorado, USA 80162, Tel. (303) 973-9550.

20 - 21 MODERN EXPLORATION TECHNIQUES. Conference sponsored by the Saskatchewan Geological Society. c/o Robert Troyer, SGS Symposium '89, P.O. Box 234, Regina, Saskatchewan, S4P 2Z6. Tel: (306) 787-2562.

DECEMBER 1989

6 - 8 NORTHWEST MINING ASSOCIATION 1989 ANNUAL MEETING, Spokane Washington. One of the highpoints of the mining year! Details: NWMA, 414 Peyton Bldg., Spokane WA 99201, Tel. (509) 624-1158.

APRIL 1990

1 - 5 GEOLOGY AND ORE DEPOSITS OF THE GREAT BASIN, symposium and field trips, Sparks, Nevada. Details: Geol. Soc. Nevada, Box 12021, Reno, NV., USA 89510, Tel. (702) 786-0870.

MAY 1990

28 - June 1 CIMM Symposium on the POLYMETALLIC BELT OF NORTHWESTERN QUEBEC, Rouyn-Noranda. Details: Maurice Rive, Ministre de l'Energie et des Ressources, 19 rue Perreault Ouest, Rouyn-Noranda, Quebec, J9X 6N5, Tel. (819) 762-1748.

JULY 1990

29 - Aug 3 CIRCUM-PACIFIC ENERGY & MINERAL RESOURCES CONFERENCE, Honolulu. Details: M. Stewart, Circum-Pacific Council on Energy & Mineral Resources, 5100 Westhermer Road, Houston, Texas, USA 77056.

AUGUST 1990

12 - 18 8th International Association on the GENESIS OF ORE DEPOSITS (IAGOD) SYMPOSIUM will hold a conference on Mineral Deposit Modelling. Carleton University, Ottawa. c/o L.M. Cumming, Geological Survey of Canada, 601 Booth Street, Ottawa, Ont. Canada, K1A 0E8.

### *GAC - MAC 1990 - VANCOUVER*

MDD will support a mineral deposits session chaired by Alvin Jackson, (Bob Thompson will be the General Chairman).

If you want to find out about any of the early developments for the Vancouver '90 meeting, to make program suggestions, or, better yet, to volunteer, contact us at:

GAC - MAC '90 Secretariat  
801 - 750 Jervis Street  
Vancouver, B.C. V6E 2A9  
Ph. (604) 681-5226  
FAX (604) 681-2503  
Telex 04-352848 VCR

### *NOTE FROM THE EDITOR:*

First of all I would like to thank Norah Allman of Corona Corporation in Toronto for submitting the photographs which appeared in the last issue of the *Gangue*. I managed to include her photos but regretfully deleted the credits. A belated thanks Norah. Photos and illustrations are always welcomed!

This is the second issue of *The Gangue* since I've taken over as editor. Issue 27 is later than expected but here it is just in time for the field season. I hope we've included a few items which catch your interest.

We would like to greet you in the fall with a resume of field and conference activities from across the country so I encourage all of you and your friends to pop something in the mail. Short articles on new events, field trips, new discoveries or other items which are of economic interest are all appropriate. Articles need only be a page or two in length. All members should also be aware that the *Gangue* is available to publish short notifications of upcoming meetings, conferences, symposia and fieldtrips of interest to the economic geology community.

I'm sure there are a few members out there anxious to see themselves in print, so this request for short articles should result in a flood of submissions! Please help, my compatriots here in the office seem to be avoiding me, expecting to be *PRESS-GANGUE-d* into composing another article!

Brian Grant

**Have a successful field season!**