



## SOUTHWEST BRITISH COLUMBIA

### VANCOUVER ISLAND

By G.E.P. Eastwood

#### UPPER RENFREW CREEK AREA (92C/9W)

The area is underlain by an intrusive complex, containing remnants of andesite and limestone which have been disrupted and engulfed by multiple intrusive activity. The two largest bodies of limestone may be roof pendants. Mafic diorite has been shattered and intricately intruded by felsic diorite. In the northwest part of the area the largest limestone body is truncated by a quartz monzonite intrusion. This intrusion was not seen in contact with the diorites, and its relative age is unknown. The limestone is intruded by numerous andesite dykes, which are older than the diorites, and by a swarm of felsite dykes in the north part of the area, which may be younger than the diorites.

The largest limestone body appears to have been contained in a syncline prior to intrusion, but any other large folds have been destroyed. This body is offset 300 metres to the left on a northeast-striking post-diorite fault. Numerous shear and gouge zones are exposed in road cuts, and some show offsets of a metre or two.

Eleven magnetite and sulphide zones have been previously described. Some are at or near limestone contacts, but others exhibit no apparent control. The No. 8 zone was planetabled: it consists of small bodies of magnetite and some attendant skarn scattered over 0.2 hectare of intrusive complex. The ridge previously thought to be a landslide appeared more solid after some of the overburden had been eroded by winter rains, and the magnetite bodies may in fact be in bedrock.

**References:** *B.C. Dept. of Mines & Pet. Res.*, Geological Fieldwork, 1974, p. 73; 1975, pp. 33, 34; *B.C. Dept. of Mines & Pet. Res.*, GEM, 1974, pp. 167-170; *B.C. Dept. of Mines & Pet. Res.*, Geology in British Columbia, 1975, in press.

#### SR (WET) (92C/15W)

This molybdenite prospect is situated near South Sarita River.

Dacite and andesite of the Bonanza Formation have been repeatedly intruded by stocks and dykes of varied composition. Pyrite is common to abundant, but molybdenite is sparse and sporadic.

#### **A CLAIMS (92F/2W)**

A segment of the Quatsino limestone was planetabled, and eight chalcopyrite and magnetite showings were tied in. The limestone is offset to the right by a subparallel fault, and does not pinch out to the southeast. Two showings are adjacent to the fault, but the others are distant from it in Karmutsen lavas.

**References:** *B.C. Dept. of Mines & Pet. Res.*, Geological Fieldwork, 1975, p. 41; *B.C. Dept. of Mines & Pet. Res.*, Geology in British Columbia, 1975, in press.

#### **MORNING (92F/6W)**

The main adit on this property is driven into a steep rocky slope overlooking the Taylor River 4.8 kilometres west of Taylor Arm of Sproat Lake. Access is by 3.9 kilometres of rough road, designated Branch 500, and a short steep tractor road.

A contractor enlarged the old adit, extended it 41 metres, and drove a 12-metre crosscut. At the time of the visit he was diamond-drilling three holes from the crosscut to test the vein below adit level. The writer mapped the adit and crosscut by chain and Brunton compass.

The adit follows a persistent shear zone in massive Karmutsen volcanic rocks, which strikes 057 degrees in the first 90 metres of adit and 069 degrees over the remaining 56 metres, and dips generally northwest at 75 to 80 degrees. Along the hangingwall a discontinuous quartz vein, 30 to 90 centimetres wide, carries disseminated chalcopyrite and malachite. A footwall quartz vein, 90 centimetres wide and well mineralized with disseminated chalcopyrite, is exposed in the crosscut 3 metres from the centre of the shear zone.

#### **GREY JAY (92F/7E)**

The property straddles the upper part of French Creek, and is reached by a road which leaves the Parksville--Port Alberni Highway 3.7 kilometres west of Coombs. The upper part of this road is interrupted by a bulldozer trench which extends for about 100 metres between the 2,000 and 2,100-foot contours on the ridge north of the creek.

The country rock is grey chert intruded by small granitic dykes. In the trench it has been largely altered to skarn, and patches of skarn occur in it up along the angle of the ridge. The skarn in the trench contains a gently north-dipping band of generally massive magnetite which carries disseminated pyrite and chalcopyrite. The shape and extent of this zone have not been determined. Some magnetite and pyrite occur in the skarn along the angle of the ridge.

## **FORBIDDEN PLATEAU AREA (92F/11W)**

In 1968 a tract of land including Forbidden Plateau and the mountainous area to the west was added to Strathcona Park. H. C. Gunning had in 1930 described the Three Musketeers and New Bronsville copper-bearing shear zones and the Gem Lake copper zone. In his 1968 report D.J.T. Carson referred also to gold and copper occurrences at Faith Lake. None of the zones had been examined by the Department of Mines and Petroleum Resources prior to 1976. The shear zone occurrences did not appear to represent a significant mineral resource, and were given a secondary priority. The Gem Lake and Faith Lake copper deposits offered the possibility of substantial tonnages; they were examined in August and are described separately.

**References:** Carson, D.J.T., in *Geol. Surv., Canada, Paper 68-50*; Gunning, H. C., in *Geol. Surv., Canada, Summ. Rept., 1930, Pt. A, pp. 74, 75*; *Minister of Mines, B.C., Ann. Rept., 1930, p. 302.*

## **FAITH LAKE (RIM) (92F/11W)**

Faith Lake is a tarn at 1 200 metres elevation between Mount George V and an unnamed peak southeast of Mount Albert Edward. It is drained by Eric Creek, which descends very steeply to the end of an old road at 600 metres elevation. Access was made to the west end of the lake by helicopter from Campbell River. At this time (August 5) the north slope of Mount George V was still largely snow-covered, and large patches of snow remained in the bottom of the valley west of the lake, but south-facing slopes were largely clear.

Falconbridge Nickel Mines Limited had explored the area in 1961-64 and 1969 and located 12 RIM claims covering Faith Lake and the valley slopes to the north, west, and south. J. J. McDougall did preliminary geological mapping, self-potential surveys were made, and several holes were diamond drilled. Company reports on this work were made available to the writer after the property was visited.

The country rock is massive andesite or basalt of the Karmutsen Formation. Immediately west of Faith Lake it is intruded by a small stock and associated dykes of hornblende monzonite. J. E. Muller obtained a Tertiary radiometric age, and D.J.T. Carson suggested that it might constitute a porphyry copper deposit similar to Catface. Three traverses were made over the length of the stock, and no chalcopyrite and only very minor, sporadic pyrite was found. Off the west end of the stock the Karmutsen volcanic rocks are cut locally by numerous narrow feldspar veins and contain sporadic disseminated pyrite and rare grains of chalcopyrite. A band of skarn, 25 centimetres wide, is well mineralized with chalcopyrite. Southwest of this occurrence Falconbridge obtained anomalous self-potential readings, but no mineralization was found. Most of this anomalous area is covered with overburden which would appear to be frozen or

waterlogged for most of the year. The south contact of the stock was covered by the toe of the George V snowslide, but had been intersected by Falconbridge's diamond drill hole AX-5. Some magnetite, a little pyrite, and some rusty sections were noted in the core.

Falconbridge had found several gold-bearing quartz veins scattered around Faith Lake, but none were seen because the small-scale sketch map available at the time of the visit was inaccurate.

**References:** Muller, J. E. and Carson, D.J.T., *Geol. Surv., Canada, Paper 68-50*.

#### **GEM LAKE (MEG) (92F/11W)**

Gem Lake lies at 1 020 metres elevation in a deep valley between Mounts Regan and Albert Edward on the southwest and Jutland Mountain on the north. At the time of the visit (August 4) snow still filled the valley bottom between the lake and headwall cliffs, but the steep rocky walls were largely bare. Access was made by helicopter from Campbell River to a point on the snowslide about 75 metres above the lake.

Falconbridge Nickel Mines Limited had explored the area in 1960-61, and a summary report was placed in the Department's files.

The country rock is massive andesite or basalt of the Karmutsen Formation. It is intruded on the east side of the valley by a small diatreme and by associated dykes of felsite and hornblende quartz diorite. The diatreme consists of fragments of the felsite and quartz diorite in a dark green matrix which is presumably re-consolidated Karmutsen. It contains considerable disseminated magnetite and rather sparse disseminations and fracture coatings of pyrite and chalcopyrite. It is transected by a shear zone striking 300 degrees and dipping 80 degrees north. The south side of the shear zone has been eroded, leaving a vertical to overhanging wall about 60 metres high which is spectacularly stained with malachite. No sulphides were found in outcrops of the quartz diorite, but a talus block contained veinlets of massive chalcopyrite. A felsite dyke near the diatreme appeared to be barren, but another extending south along the juncture of the snow surface with the rock wall contained modest chalcopyrite with pyrite or pyrrhotite as disseminations or fracture veinlets. Fracture seams of pyrite and chalcopyrite occur in the Karmutsen near this dyke.

#### **MOUNT WASHINGTON AREA (92F/11W, 14W)**

A brief visit was made to the property while Imperial Oil Ltd. were carrying out a drill program.

Karmutsen andesite or basalt and Comox sandstone were faulted, intruded by Tertiary quartz diorite stocks and dykes and dacite porphyry sills, brecciated in part, and altered

and mineralized. The Murray and Washington breccias constitute much of the north face of the peak. In addition to quartz diorite and sandstone fragments, the Washington breccia also contains fragments of Karmutsen and Murray breccia. Beside Murex Creek to the east, the Murex breccia shows both simple and fluidized phases. The simple breccias consist of angular fragments of Comox sandstone in a matrix of more finely crushed sandstone, or angular fragments of Karmutsen basalt in more finely crushed basalt, with very little mixing at the formational contact. The fluidized breccia contains mixed fragments and shows a streaming pattern and locally, fluidization channels.

Chalcopyrite is widespread, but is marginal to submarginal outside the open pit on the northwest ridge. This ore was in a quartz stockwork developed in Comox sandstone between two sills.

#### **WESTERN MINES (92F/12E)**

Ten days were spent on preliminary studies. The ore control is both structural and stratigraphic, and future detailed studies should assist the search for additional ore. A new crosscut in the Price mine had intersected a fault-slice of argillite of unknown origin.

#### **DONNER, HEBER (92F/12W)**

These claims extend across the lower south slope of White Ridge from Strathcona Park boundary to Kunlin Lake. The southern claims are reached by the Ucona logging road. Branch 140 formerly provided access to the northern claims, but bad washouts had rendered it impassable by 1976.

A tongue of the Bedwell batholith extends obliquely across the south face of White Ridge between tongues of the Karmutsen Formation. An infold of Quatsino limestone was found by Bacon and Muller on the crest and upper face of White Ridge, but was not reached by the writer. The tongue of the batholith is variable in grain size, colour, and mineral composition, and there is evidence of multiple intrusion. The contacts with Karmutsen rocks are zones of dykes and intrusive breccia. Sporadic alteration in both rock units consists of epidotization, silicification, and incipient development of garnet.

Pyrite is sparsely widespread, and locally is fairly thickly disseminated in and near silicified rock and shear zones, where it is accompanied by minor chalcopyrite. One of the better occurrences is on the lower part of Branch 145. The only magnetite found in place occurs as an accessory mineral in phases of the intrusive tongue.

Abundant alluvial magnetite and limestone are present along the lower course of the creek that enters the Ucona River 300 metres below the bridge over the falls. Part of this

surficial deposit has been used to surface logging roads above this point, but it might be profitable to recover magnetite from the remaining material. The source is clearly the magnetite associated with limestone reported from the east end of the upper south face of White Ridge, on the adjoining TRIM claim.

**References:** Assessment Reports 560, 4972; *Geol. Surv., Canada*, Map 17-1968.

#### **CEDAR HILL (92F/13E)**

The mineral occurrences are on the southwest slope of the hill west of Gentian Lake, and are reached by a dirt road which leaves the main logging road about 2 kilometres north of the Iron Hill mine, or 15.2 kilometres from the Campbell River-Gold River Highway. The country rock is diorite of the Quinsam Intrusions. The owner, R. B. Hopton, had excavated some 13 small open cuts, exposing some small shear zones and some disseminated sulphides. The first seven cuts contained pyrite and minor chalcopyrite, one cut contained moderate chalcopyrite, and the last three, low on the west slope of the hill, contained moderate pyrite, chalcopyrite, malachite, and sphalerite. The mineralization appears to be sporadic.

#### **HEATHER HILL, KALGOORLY (92F/14W)**

The mineral occurrences are on the south brow of the ridge east of Gentian Lake, 700 metres north of the east tip of the triangular lake. They are reached by a dirt road which leaves the main logging road within sight of the Iron Hill mine and passes along the south side of this lake. The country rock is andesite of the Bonanza Formation. A vertical shear zone striking 070 degrees is exposed on the southeast corner of the ridge and can be followed westward for some 30 or 40 metres. Chalcopyrite and arsenopyrite are disseminated in and adjacent to the shear zone. The mineralized zone continues westward along the strike of the zone, although the shear zone is not discernible and cross-fractures appear to provide local control. Pyrite and galena are present in this westerly extension. Farther west, bedrock is covered in a shallow draw, but pyrite and galena are present on the HEATHER HILL claim, approximately on the strike of the zone. The width of the zone is of the order of 1 to 3 metres.

#### **MOUNT HOY AREA (92L/7W)**

A traverse was made with Hans Knapp up the creek that flows northeast off the 1 336-metre summit north of Mount Hoy and into the north end of Bonanza Lake. Mr. Knapp had obtained encouraging copper and zinc geochemical results from sediments collected from this and nearby creeks. The creek exposes a nearly continuous section of gently west-dipping beds of the upper part of the Quatsino Formation and the lower part

of the Parson Bay Formation. Abundant fossils were found on the surfaces of some shale beds. Both limestone and shale are intruded by thick and thin medium-grained sills and connecting dykes. Beds and sills are displaced a metre or two on more or less perpendicular faults. These intrusions appear substantially different from the Karmutsen-type intrusions common in the Quatsino at other localities, and could be offshoots of the Mount Hoy stock. They contain considerable disseminated pyrite and sporadic grains of chalcopyrite, and could be indicative of copper mineralization higher on the mountain.

#### **ISLAND COPPER (92L/11W)**

A brief visit was made to the Island Copper open pit. Now that the upper north and west walls have been pushed back, away from ore and alteration, the Bonanza stratigraphy is becoming apparent. The ore was splitting into north and south zones at the pit floor, as predicted from diamond drilling.

### **NORTH TEXADA ISLAND**

**By G.E.P. Eastwood**

E. T. Johanson of Vananda prospected two areas with a self-potential instrument and discovered several new mineral occurrences. The country rock is the Marble Bay limestone, which is described in some detail by Mathews and McCammon. It is intruded by several diorite and gabbro stocks and by many mafic dykes.

**References:** *B.C. Dept. of Mines & Pet. Res., Bull. 40, pp. 52-58.*

#### **SANDY (92F/10E)**

This 2-unit claim is northwest of Paxton Lake, and is reached by a dirt road which branches off the highway to Gillies Bay on Crown Grant Lot 79. The main mineralized zone is blind, and is exposed by three large test pits over a length of 40 metres, on a trend of 014 degrees. It is a zone of bleached limestone, 20 to 75 centimetres wide, containing braided veins of pyrite, sphalerite, and galena. A second zone is also blind and is exposed in a large test pit 140 metres south of the main zone. Bleached limestone, 120 centimetres wide, carries abundant pyrite and less sphalerite. It strikes 020 degrees, but appears to terminate at the north end of the pit. Northeast of the main zone, sulphides are finely disseminated in a mafic dyke.