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YELLOWKNIFE RIVER AREA, NORTHWEST TERRITORIES

by

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(A) Descriptions of Known Mineral Deposits

Burwash Yellowknife Mines, Yellowknife Bay

The main showing on this property occurs on the crest of a hill about 65 feet above the level of Great Slave lake and 2,000 feet from the shore, near the northeast corner of Rich 4 claim. The rocks in the immediate vicinity are Archaean greywackes and slates trending generally slightly north of east and dipping steeply to the south. A shear zone containing quartz veins strikes north 15 degrees east, dips 75 degrees to the west, and marks a fault along which the rocks on the west side have moved relatively upwards with little or no horizontal displacement. This zone is exposed for 230 feet to where it disappears under muskeg and drift to the north and south respectively. Rather dark quartz, in widths up to 10 inches, occurs along much of the exposed length of the shear zone. At the time of the first examination, July 2, a pit 25 feet long and 16 feet deep had been opened 30 feet from the south end of the outcrop. At the south end of the pit no quartz is visible, and the fissure is marked by some 2 inches of chlorite schist gouge. At the north end lenticular quartz masses up to 10 inches across are distributed over a width of 3 feet. In the floor of the pit the vein is up to 7 inches wide and is offset at several places by cross faults. The maximum horizontal displacement observed along any of these is 3 feet. The vein material is largely dark-coloured quartz, with considerable brown-weathering, pink dolomite, some calcite, and possibly minor amounts of feldspar. The metallic minerals in order of their apparent relative abundance are arsenopyrite, pyrite, gold, marcasite (?), chalcopyrite (?),

galena (?), and pyrrhotite (?). The gold occurs in both quartz and carbonate and only in a few places is it associated with the sulphides. A few flakes of gold were seen in the gouge along the foot-wall of the vein, but none was observed in the wall-rock beyond. Although no particular search was made for it, free gold was seen in place in the vein material in the pit at five points - 1,3,13,21, and 24 feet from the south end. Visible gold is reported in places in the vein outside the pit, but none was observed. On September 4 and 5 a final visit was made to this property. A vertical shaft (dimensions about 6 by 12 feet) was being sunk at about the middle of the pit and had reached a depth of 30 feet. At the south end of this the vein was $5\frac{1}{2}$ inches wide and showed numerous pellets of gold up to $\frac{1}{8}$ inch across, distributed nearly continuously along a seam in the quartz for a length of 2 feet down the dip of the vein. The vein quartz could be traced across the floor of the shaft, but was not visible in the north wall where several small faults occur.

Gold-quartz Vein West of Yellowknife Bay

On September 16 a gold strike was made about 3 miles slightly north of west from the Burwash Yellowknife Mines camp. The country rock is greenstone, in part showing pillow structure, cut by scattered pink granite and aplite dykes. An isolated granite stock one-half mile wide lies about a mile east of the main granite contact, which in this vicinity swings in a sharp curve to the west, As soon as reconnaissance mapping had outlined the formations as described, this locality was recommended by the Geological Survey field party to prospectors. On the basis of this

recommendation search was made, and about midway between the stock and main contact a quartz vein up to 12 inches wide and traceable for 300 feet was found in a fracture zone up to 4 feet in width. A brief examination revealed free gold at intervals over a length of 12 feet.

Sulphide Replacement Deposits and Veins North of Yellowknife Bay

In addition to those described by Stockwell[1], several sulphide replacements and veins have been discovered during the past four years. They lie in sedimentary schists and occur as massive banded sulphides (mainly arsenopyrite, galena, sphalerite, and chalcopyrite), or disseminated in schist or quartz veins. The precious metal content of these deposits is reported to be low.

Niccolite Vein Near Francois River

This has been described by Stockwell[2]. The regional mapping around the deposit in 1935 has indicated that the augite diorite country rock is part of a pre-granite basic complex consisting mainly of gabbro and anorthosite, in places interbanded.

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[1] Stockwell, C. H., and Kidd, D. F.: "Metalliferous Mineral Possibilities of the Mainland Part of the Northwest Territories"; Geol. Surv., Canada, Sum. Rept. 1931, pt.C, pp.70-86 (1932).

[2] Stockwell, C. H. "Great Slave Lake-Coppermine River Area, Northwest Territories"; Geol. Surv., Canada, Summary Rept. 1932, pt.C, pp. 37-64 (1933)