KNEE LAKE AREA - G.D. SPRINGER

Report 46-1

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PRELIMINARY NOTES TO ACCOMPANY GEOLOGICAL MAP 46-1

G. D. SPRINGER

Knee Lake may be reached by canoe from Norway House following Nelson, Echimamish and Hayes Rivers. The district north of Knee Lake is more inaccessible and no previous work had been done between Knee Lake and the Sipanigo River.

The entire area is characterized by low topographic relief and heavy drift cover. Very few rock outcrops were found at any distance inland from the larger lakes and stream channels. Glacial striae indicate the latest ice movement was between south 45 and 50 degrees west. Eskers also trend in this direction. Low mounds of morainal material are scattered throughout the area.

All consolidated rocks in the map-area are of Precambrian age. The oldest known rocks comprise a volcanic and sedimentary series known as the Hayes River group. These rocks are exposed in the vicinity of Knee Lake in the southwest corner of the map-area, and along the Bigstone, Fox and Sipanigo Rivers in the northern part of the area. The volcanics (1) are chiefly andesites and basalts. They vary from dark grey to dark green and black in colour. Many of the greenstones are massive and fine grained with some medium grained, ophitic textured types. Well developed schists are common. A few of the flows are amygdaloidal: others show well defined pillows. Along the Bigstone, Fox and Sipanigo Rivers the volcanics are chiefly andesite. The more highly metamorphosed phases of the greenstone are altered chiefly to chlorite schists but locally some grey to greenish sericite schist is found and at other places biotite is developed. Inter-bedded with the flows are minor beds of pyroclastics and fragmental

volcanic rocks.

The sedimentary rocks (2) exposed in the map-area are all placed in the Hayes River group. They consist chiefly of iron formation and conglomerate with some greywacke in the vicinity of Knee Lake and quartz-biotite schists, garnet schists and staurolite schists along the Fox River. The iron formation consists of alternating bands of magnetite and light green chert up to one inch in thickness. One exposure of this rock occurs on a small island in Knee Lake at the south end of the map-area. The greywacke is fine grained, finely banded and dark grey in colour. The conglomerate is exposed at four places on Knee Lake and at one on Parker Lake. The pebbles, ellipsoid and rounded, vary greatly in size and are composed of volcanic rocks, quartz porphyry, quartz, chert and iron formation in a dark grey, fine grained groundmass. The basal contact of the conglomerate was not found in any outcrop.

There are numerous narrow dykes of light coloured, fine grained quartz porphyry (3) in the Knee Lake district, especially near the northeast end of Knee Lake. The quartz phenocrysts are small and have a bluish hue similar to many quartz veins in the vicinity. A small body outcrops on the south shore of Knee Lake and on adjacent islands. The dykes cut all types of volcanic rocks but definite age relations between the porphyry and granite were not determined. However, the granite is fresh in appearance in contrast to the porphyry which is sheared.

The major intrusive is grey to pink, fine to medium grained biotite granite (4) whose composition is uniform over wide areas. It varies from massive, structureless granite to gneissic granite. The massive granite is at places porphyritic with phenocrysts of orthoclase up to one inch in length. Inclusions of greenstone are abundant and when they occur in the gneissic granite they are elongated parallel to the gneissosity. The granite at places has intruded the schistose volcanics in lit par lit fashion. Pegmatite and aplite dykes are common in the granite.

Diabase dykes and quartz veins cut all the above-mentioned rocks. The quartz veins are as much as one and a half feet wide. Some are composed of milky and yellowish quartz whereas many have a blue tinge.

In a number of localities magnetic attractions give compass deflections of a high order but the causes of the disturbances are buried under muskeg. These localities are indicated on the map.

The high percentage of overburden has been a detriment to prospecting, excepting near the shores of Knee Lake and Hayes River. Knee Lake Gold Mines Limited and Johnston Knee Lake Mines Limited, sank shafts on the south shore of Knee Lake in 1935. Spectacular gold values were discovered but they were of such erratic nature that operations were abandoned early in 1936.