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to F. Byers, U.S.G.S.

TUNGSTEN IN THE PORTLAND CANAL AREA

Scheelite has been discovered at twelve localities in the Portland Canal area to date, eight of these in Alaskan territory and four in British Columbia. Of these only one, the Riverside, Alaska has produced any quantity of scheelite. *only* Two others, the Mountain View in Alaska and the Molly B in British Columbia, at the present time show any promise of production.

The Alaskan deposits have been the subject of a rather detailed study by a party of the United States Geological Survey under Mr. Frank Byers personal communication and since the geology of these deposits may be a useful reference to those prospecting in British Columbia, and an abstract of their findings to date is given below:

ALASKAN DEPOSITS

All the scheelite found to date occurs in quartz veins which strike northwest and dip at moderate to steep angles to the northeast. These veins vary from a few inches to several feet in thickness; they may be continuous, lenticular, or branching or, locally, a network of quartz stringers. In them are shoots or pockets of scheelite-bearing vein matter which may be rich enough to constitute milling ore or may be too low grade for profitable concentration; all parts of the veins, however, do not carry

scheelite. All the veins occur in the 'Texas Creek batholith' (Buddington, U.S.G.S. Bull. 807 - Hyder and vicinity) or, as is the case at the Riverside, in an elongated inclusion or roof pendant within this batholith. The older sediments and volcanics of the Hazelton group and the younger 'Hyder quartz monzonite' are barren of scheelite-bearing veins. Buddington regards the Texas Creek batholith as the source of the mineral deposits of this area.

The mines of the area show a distinct zoning, of which the scheelite-bearing deposits occur in the lowest zone; one which extends more or less horizontally across the valley bottoms. Above the scheelite zone is a zone of base-metal sulphide deposits in which scheelite may occur but not in commercial quantities. The mineral tetrahedrite is regarded as the indicator of this zone.

The scheelite-bearing deposits, in addition to occurring within the lowest zone, or the lower part of the 'tetrahedrite zone', are, with one exception situated within an elliptical area 2 miles in length and 1 mile in width, trending northwest and southeast. The one exception on the Engineer Group, is situated 6 miles to the northwest of this area, but still along the trend of its major axis.

The important deposits of scheelite occur below an elevation of 750 to 800 feet above sea-level, that is in the lowest zone as described above. These consist of quartz veins containing pyrite, barite and scheelite. No.

other minerals contemporaneous with the scheelite have been found. The scheelite-bearing veins may, however, be followed or cut by veins of a later period of mineralization, consisting of barren quartz, or of quartz and sulphides, notably galena, sphalerite, tetrahedrite, chalcopyrite, pyrite and pyrrhotite, with some calcite, minerals all characteristic of the next higher base-metal sulphide zone. In this later mineralization some low-grade scheelite-bearing patches may be found and it has been postulated that these have been derived by solution and reprecipitation of the earlier scheelite. The deposits in this zone are the Riverside (Lindeborg vein) and the lower part of the Mountain View (Fish Creek No. 2 vein).

For a thousand feet or more above the productive zone, scheelite may be found sparingly distributed through quartz-sulphide veins, but nowhere at present is it known to occur in sufficient quantity to offer hope of commercial recovery. In this zone tetrahedrite is found in the same veins with the scheelite and the presence of the former mineral is regarded as an unfavourable omen for any tungsten production. The deposits in this zone included the upper part of the Mountain View, the Monarch, the "Last Chance" vein of the Olympia Extension, and the veins in No. 5 tunnel of the Olympia and the No. 3

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tunnel of the Starboard, the Hyder Butte and the Engineer.

The wall rock may have some influence on the deposition of scheelite. In the Riverside mine, the vein follows a shear, not in granodiorite, but in highly metamorphosed rock of the Hazelton series, and it has been suggested that the additional calcium in this rock aids in the precipitation of scheelite from tungstic acid or similar material in the vein solutions whereas the granodiorite, low in calcium, would be much less favourable. In the Mountain View deposit, however, the vein cuts granodiorite and no such inclusions of wall rock are to be found.

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*W. A. Matthews
12th Jan, 1943*