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OCCURRENCES OF SCHEELITE IN THE SOLOMON DISTRICT, SEWARD PENINSULA, ALASKA

A short preliminary report on some occurrences of scheelite in the Solomon district, Seward Peninsula, Alaska, has been prepared by the Geological Survey, United States Department of the Interior, according to a statement by the Director of the Survey, William E. Wrather. The scheelite occurrences were briefly examined in July 1943 by R. R. Coats and W. N. Laval of the Geological Survey.

A limited number of mimeographed copies of the report are available to those directly interested and may be obtained upon application to the Director, Geological Survey, Washington 25, D. C.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey
Washington

OCCURRENCES OF SCHEELITE IN THE SOLOMON DISTRICT, SEWARD PENINSULA, ALASKA.

by Robert R. Coats

Introduction

The scheelite occurrences here reported are on the Solomon River, about 35 miles by road east of Nome, the principal town on the Seward Peninsula, and on and near Big Hurrah Creek, about 5 miles northward by road (see fig. 1).

The scheelite is associated with gold, both in the lodes and in the placer deposits, and is economically of little importance compared with the gold. The gold placers of the Solomon River were discovered in 1899, 1/ and the quartz veins of the Big Hurrah mine, at the junction of Big and Little Hurrah Creeks, in the following year. No mention has been found in the literature of the presence of scheelite at these places; it was first called to the attention of the Geological Survey in the summer of 1943.

This report is the result of a brief examination in July, 1943 by Robert R. Coats and William N. Laval, of the Geological Survey.

Lode scheelite

Scheelite was observed in an adit of the Big Hurrah mine in a quartz vein cutting the Hurrah slate, a carbonaceous quartzitic

1/ Smith, P. S., Geology and mineral resources of the Solomon and Casadepaga quadrangles: U. S. Geol. Survey Bull. 433, pp. 143, 155, 1910.

slate. The vein in which the scheelite was observed is one of several developed by the Big Hurrah mine. 2/ 3/ The mine has not been operated since 1907. At the time of the writer's examination all of the underground workings were inaccessible, with the exception of one short adit, on the east bank of Little Hurrah Creek, in the footwall of the vein that has yielded most of the ore mined. This adit (see fig. 2) exposes two nearly parallel, narrow veins of milky ribbon quartz without noticeable gold or sulfides. The two veins appear similar, but the more northerly has a small amount of scheelite, apparently deposited with the latest quartz of the vein; the other vein contains no scheelite. The scheelite content was estimated to be about 0.1 percent by volume of the whole vein.

Some gold ore, probably from the vein most extensively mined, still remains in the bins of the mill, which has been stripped of nearly all its machinery. This vein was not seen underground in 1943. The ore in the bins was examined and was estimated to contain about 0.25 percent by volume of scheelite. The scheelite is not uniformly distributed through the ore; most of the pieces contain none. Very few of the pieces contain as much as 10 percent of scheelite by volume; a greater number contain about 1 percent. The possibility of the occurrence of one or more shoots of scheelite ore in the quartz veins is not excluded by the available evidence.

2/ Collier, A. J., Gold placers of parts of the Seward Peninsula, Alaska: U. S. Geol. Survey Bull. 328, pp. 228-232, 1908.
3/ Smith, P.S., op. cit., pp. 143-147.

Placer scheelite

In the summer of 1943, C. O. Roberts was mining the gold-bearing gravels of Big Hurrah Creek, just below the mouth of Little Hurrah Creek. A one-pan sample from about 1/4 cubic yard of concentrate accumulated by Roberts in 1943 up to the time of the examination in July yielded 8.75 grams of impure gold and 10.44 grams of scheelite in grains 1 mm. or more in diameter. On this basis the 1/4 yard of concentrate contains 10.5 ounces of gold and 0.87 pound of scheelite. Panning of the concentrate was very difficult because of the large proportion of magnetite, ilmenite, and garnet which differ only slightly in specific gravity from scheelite.

A pan taken from the material being sluiced, which was in part unworked gravel but was largely tailings from earlier placer mining, yielded much garnet, several colors of gold, and a few grains of scheelite from 0.25 mm. to 0.5 mm. in size, and a larger number less than 0.1 mm. in diameter. A pan taken from the tailrace of the sluice box at a point where there was visible local concentration of garnet, yielded much garnet, a little magnetite and ilmenite, two or three grains of scheelite less than 0.5 mm. and more than 0.1 mm. in size, and perhaps a dozen grains less than 0.1 mm. in size, probably less than 0.25 gram of scheelite altogether. As a result of this inadequate sampling it is tentatively concluded that the scheelite content of the gravel and old tailings is considerably less than 0.1 pound per cubic yard. The amount of scheelite larger than

1 mm. in the gravel and old tailings apparently is negligible. Scheelite grains smaller than 1 mm. apparently cannot be recovered by ordinary methods, and scheelite grains of this size appear present in insufficient quantity to justify the expenditure of much effort or money to recover them.

The dredge of the Lee Bros., operating on the Solomon River, about a mile below the mouth of Shovel Creek and three miles below the mouth of Big Hurrah Creek, has recovered a few cubic yards of concentrate in the past several seasons. Panning of a sample of this concentrate indicated a content of about 22 ounces of gold and 9.1 pounds of scheelite per cubic yard of concentrate.

Reserves

The gold quartz veins of the Big Hurrah mine contain scheelite. The amount cannot be estimated accurately from the incomplete data available, but is inferred to be, at most, a few tens of tons. This scheelite probably can not be mined profitably except as a by-product of the mining and milling of the veins for their gold, the value of which is much greater than that of the scheelite.

The scheelite content of the gravel and old tailings is probably insufficient to make worthwhile its recovery, even from concentrates made incidentally to the recovery of the gold.

February, 1944.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WAR MINERALS INVESTIGATIONS
PRELIMINARY MAP

EXPLANATION

Hurrah Slate (blank). Symbol shows strike and dip

Quartz vein, showing dip

Quartz vein with scheelite. Distribution of scheelite shown diagrammatically

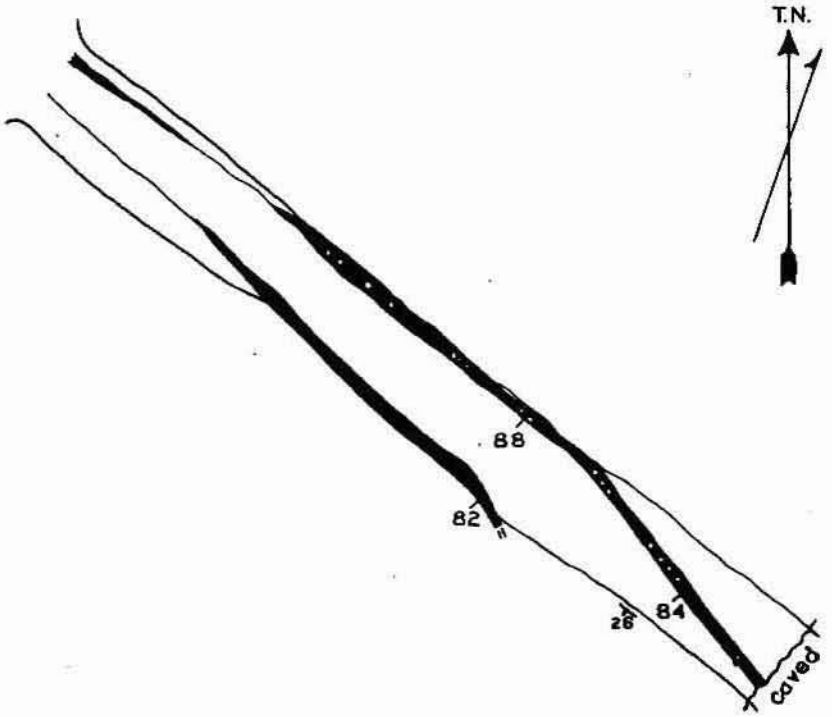
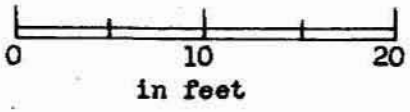


Figure 2

Sketch map of adit in footwall of main vein, Big Hurrah mine, Solomon district, Seward Peninsula, Alaska



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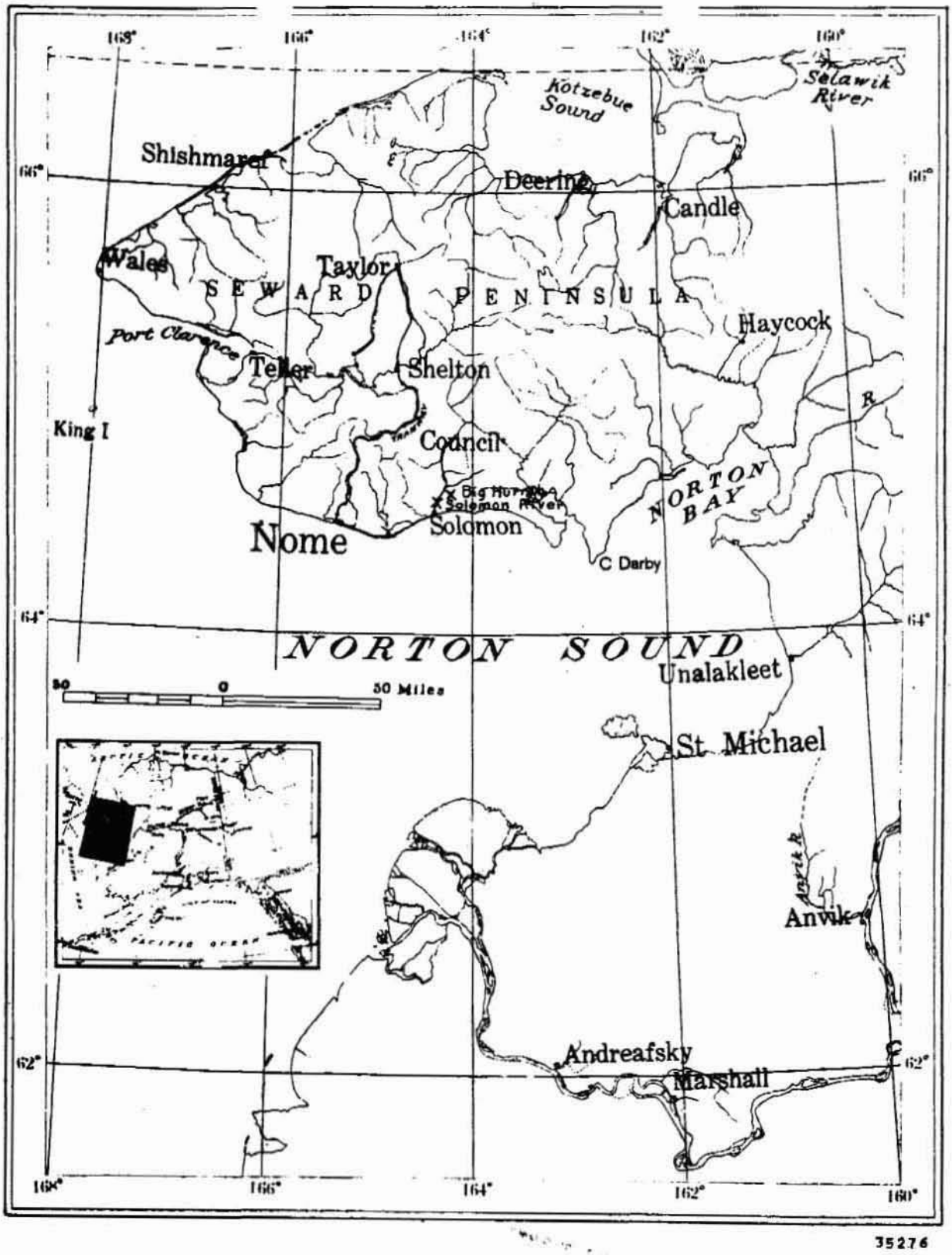

Figure 1

Index map of Seward Peninsula and vicinity Alaska, showing location of placer mining operations on scheelite-bearing gold deposits of Big Hurrah Creek and Solomon River