

1902

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NEVADA
White Pine County

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file Tungsten dist.
Item 9

SMITH, FRED D., The Osceola, Nevada, tungsten deposits.
Eng. Min. Jour., vol. 73, no. 9, p. 304-305, 1902.

This occurrence has been noted by Mr. F. B. Weeks, of the United States Geological Survey, who visited the locality in the autumn of 1900. His notes on the "Occurrence of Tungsten Ore in Eastern Nevada," which were published in the twenty-first Annual Report of the Survey, were reproduced in the ~~trans~~ Engineering and Mining Journal in the issue of July 6, 1901.

During December, 1901, the writer made a careful examination of this deposit and was greatly impressed by the quantity of ore on the claims comprising the present group. It (is) his belief that the occurrence is worthy of a more detailed description. Compared with other visible supplies of tungsten ore in the world, these mines are of a most extraordinary economic importance, as they are capable, apparently, of producing more tungsten mineral than any other mine known, and perhaps than all other mines combined.

History.--The very prominent outcrops of the veins of white quartz in the brownish gray granite were noticed by the earliest prospectors, and the black mineral therein examined. The writer is informed that as early as 1885 samples of this mineral were sent to the chemist of a prominent reduction works in California, who reported same to be "specular hematite," thus confirming the prevalent misconception of this mineral.

In 1889 more observing prospectors, refusing to accept the mineral as one of iron, sent samples to Denver for analysis, with the result of learning the true character of the same and of its value as a source of tungstic acid. It is probable that from this analysis the prevalent idea was obtained that the mineral is hübnerite and not wolframite. The writer
(over)

has never made a complete analysis of it and is not aware of any such from an authoritative source.

Messrs. C. W. Gaby and W. Buntin located on the more prominent veins in 1899 and have since made several small shipments of hand cobbled ore which was taken from the outcropping of the richest parts of the veins. In the summer of 1900 a small handmade jig and canvas table were erected and operated by horse power. Later a gasoline engine was used for motive power, but the equipment was not adapted to the concentration of the mineral either from the economic or the metallurgical standpoint.

A shipment of about 10 tons of concentrates, which carried from 65 to 70 per cent WO_3 , was made in 1900. The owners then sold their claims to Mr. J. H. Marriott, of Osceola, Nev., who had previously located the surrounding claims which showed any veins of the mineral. The present owner drove a tunnel for a distance of 208 feet on one of the stronger veins, the workings of which can be seen in Fig. 2. The ore taken from this drift was left on the dump and shows plainly the character of the vein filling.

Geology.--The veins are in the foot hills and lowest slope of the Snake Mountains. (See Fig. 1). For a distance of several thousand feet up the side of the mountain and for an elevation of about 1,500 feet the formation is granite, which is overlain by Cambrian quartzite. The latter rock forms the main ridge of the mountains to the top of Mount Wheeler or of Davis Peak, which is directly above the deposits in question. The veins, of which there are five prominent ones, all occur in the granite and plainly cut across the bedding of the granite, which is very indistinctly marked. They have been traced to the contact of the two rocks, though none has yet been found in the quartzite. The general strike of the veins is northeast-southwest and the dip to the northwest. Only one is developed, and as the directions are determined from the croppings only, there is necessarily much uncertainty regarding the parallel character, or whether some of the veins will ultimately run together.

(Card 2)

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In many cases the croppings are very prominent, for instance, on the hübnerite, where the vein can be traced in one continuous line for a distance of 600 feet. Figure 2 shows the vein running from the dump of the tunnel up the mountain side. Talus has covered the veins in many places, but they are discernible for a total distance of 1,800 feet, either as one vein or as parts of several, up the mountain side which has a general slope of about 18°.

The hübnerite vein, as shown in the tunnel, has a strike of N. 70° E. and a dip of 65° N.W. The walls are well defined and part easily from the vein being separated on the foot by a layer of clay. The width varies from 18 to 36 inches and averages 26 inches throughout the whole length of the tunnel.

On the surface the vein shows greater width in places, and in some it has narrowed to 6 inches. Large boulders of quartz not properly in place, which from their proximity to the vein show their connection with it, are scattered along the slopes below the vein.

Character of the Ore--The hübnerite occurs in ~~with~~ the white quartz in various sized crystals, many of which are 3 inches long and plainly show the crystalline character. Massive specimens when broken show cleavage planes from 2 to 4 inches long and 1 to 3 inches wide. However, much of the mineral is in fine grains and in irregular bodies. The quartz is found entirely enclosing the hübnerite in some cases while the reverse is also true in that some specimens of apparently solid mineral will be found to enclose the quartz. This plainly shows that the two minerals were deposited simultaneously. In some cases a laminated appearance of the quartz is found with the hübnerite concentrated between the laminae of quartz, giving a banded appearance to the mineral. This is more prominent where the vein pinches to a width of 6 to 12 inches.

The quartz is very solid, with practically no evidences of weathering such as shown (over)

by pores or a honeycomb character. No oxidation products as iron oxides, etc., are found. In some few instances a yellowish efflorescence suggesting tungstite, WO_3 , was observed though unidentified.

In one locality a considerable amount of scheelite was found mixed with the hübnerite. Its color varies from a waxy grayish white to a pale yellow and is often overlooked or mistaken for the quartz.

As far as studied, it appears that the mineralization of the vein has taken place across its whole width, though it often occurs in larger quantities on one wall than on the other. This concentration on the walls was found to change from one side of the vein to the other in short distances. It was also found that a concentration of the mineralization into so-called shoots had taken place. These shoots were from 15 to 25 feet in length and were separated by less mineralized portions of the vein of about the same length. At the same time some mineral was found in all of the vein.

These shoots are very prominent on the surface, as each shows an abundance of the hübnerite in massive form owing to the high contrast in the colors of the hübnerite and the gangue. At a depth of 80 feet at the face of the tunnel, it is reported that the mineral was found in as good a proportion as the surface indications would suggest.

Accessory Minerals--As far as examined the ore is remarkably free from other minerals. Pyrite was found in a few places in small bunches, but the absence of iron stains would indicate a small content of pyrite. None was seen on the croppings. Fluorite in very small quantities was found on the dump from the tunnel workings, though to what extent it occurred in the vein could not be learned. These two minerals, besides the hübnerite, scheelite and quartz, were the only ones found, unless more careful examination discloses the presence of wolframite mixed with the hübnerite.

Practically all of the ore shipped has been either hand sorted and bobbed or concentrated by the crude methods outlined above. These ores carried an average of 68 per cent (card 3)

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tungstic acid. One shipment of 2,000 pounds gave 600 pounds of 65 per cent concentrates. The ore was closely cobbled before shipment. Hand concentrated samples have assayed as high as 67½ per cent WO₃.

From the ore as exposed in the croppings and in the tunnel workings it is the opinion of the writer that the whole vein matter, if carefully concentrated so as to save both the hübnerite and the scheelite, would produce 10 per cent of mineral carrying 70 per cent WO₃.

A small sample of the pyrite found on the dump was assayed for gold and silver and found to carry 2½ ounces silver and a trace of gold. Samples of pure hübnerite were found to carry 2 ounces of silver and likewise a trace of gold.

The mine appears to be singularly favored, for Nevada mines, in that it is very accessible, being practically in the valley, at the foot of the mountain, and in close proximity to water both for milling purposes and for power. The mountain sides above are still covered with wood for fuel and some of this is large enough for mill and mine timbers. The nearest railroad point is Frisco, Utah, on the Oregon Short Line, a distance of 85 miles, over fairly good desert roads.

$$\frac{600}{2000} \times 0.65 = 19.5\%$$