JKD

Silver Cy M.D. [Fe Duke, Peck, Siegel]
(Murum M.D.) (Schellbourne D)
T 21N - R 65E

P-35
(322B)
Item 14

Lincoln, Cy (1923) See P-34

Siegel Mine is mentioned in Lincoln

4360 004

Pardee, J.T., & Jones, E.L., USGS Bull 710F (1920)
"Depts of Mn ore in Nev,"

p 213: 1902-08 - prod 1,200 T Ag ore avg 37.4% Mn.
Qtzite (oldest), sh, & ls (youngest) also exposed
Qtzite & ls are each dev. thous ft thick
Sh only 200 ft.
All are conformable & E
General strike ~ N. & dip 45° W

A few small, siliceous, greenish grey dykes (granodiorite) near mine.

Underground workings (in good shape in 1918) amnt to 7,000 ft.

The Sommer Tunnel & the lower & upper St Anthony tunnels are x-cuts to St. Tony vein at elevations of 7,800, 8,050, & 8,150 ft resp.

The Allan tun at 8,250 ft and an adit at 8,350 ft open the Black Eagle dept.

The principle ore bodies are distributed in an irreg N.W. trending belt somewhat less than a mile in length.

The St Tony vein has → 4/5 of ore & occurs at the S along a N 50° W fracture that dips 60° N & cuts the ls, & ls gen form in tabular.

Report of Seigel Mine cont on Xerox.

tabular; the productive portion, which ranges from 1 to 15 feet in thickness, extends from the surface downward about 400 feet on the dip and shows a maximum width (stope length) of 300 feet at the level of the lower St. Anthony tunnel. It pinches before reaching the Sommer tunnel and ends on the west at a broken zone that marks a northeasterly fault of considerable throw. The Black Eagle deposit is a short distance northwest of the St. Anthony, from which it is separated by the northeasterly fault mentioned. It consists of several irregular pipelike bodies, most of which occur along bedding planes near a fault that strikes N. 45° W. and dips 45° SW. The fault movements, which are indicated by gouge and breccia and horizontal grooves on the walls, took place mainly before the ore was deposited. About 2,000 feet farther northwest a short adit on the Black Eagle No. 3 claim exposes an ore body from 2 to 6 feet thick, and several smaller deposits are exposed by workings elsewhere in the mineralized belt.

As shown by the St. Anthony workings oxidation is practically complete to a depth of 350 feet. Below this level the vein is saturated with water and characterized by rhodochrosite and the rather uncommon mineral alabandite, a sulphide of manganese. This mineral occurs in massive granular aggregates and as intergrowths with rhodochrosite. It is iron-black, gives a dark-green streak, and splits readily on cubical cleavage planes that show a metallic luster somewhat less brilliant than that of galena. Its hardness is 3.5, it is easily scratched with a penknife, and the application of cold dilute hydrochloric acid, without even powdering the mineral, causes rapid effervescence, with the evolution of hydrogen sulphide. When exposed to the weather specimens soon lose their luster and acquire a coating of black manganese oxide. This fact, together with its green streak and the ease with which cold dilute hydrochloric acid attacks it, serve to distinguish alabandite from galena or any other sulphide that may resemble it. Other constituents of the vein are quartz, calcite, pyrite, and galena. Except part of the calcite, which forms secondary veinlets, all the minerals appear to be of the same generation. A banding parallel to the walls is indistinctly shown, and there are fragments of partly replaced limestone in the ore. A sample representative of this part of the vein yielded 18 per cent of manganese, 7.9 per cent of iron, and 37.6 per cent of silica. Two selected samples reported show respectively 3.7 and 54.4 ounces of silver to the ton, 8.2 and 27.5 per cent of manganese, and 7.6 and 1 per cent of lead. Rather curiously the sample low in lead and high in manganese shows the more silver.

In the oxidized zone the vein filling consists chiefly of manganese oxides with more or less quartz and calcite and locally iron oxides

and cerusite (lead carbonate). The manganese oxides are mostly soft, fine grained, and intimately mixed with one another. Pyrolusite is probably the most abundant mineral. The body is cavernous throughout, a result of the net loss in volume during oxidation of the parent minerals.

Parts of the body that contain more than the average amount of silver form irregular shoots from which the ore shipments have been made. Car samples representing 1,200 tons, four-fifths of which came from the St. Anthony and the remainder from the Black Eagle, show an average of 37.4 per cent of manganese, the range being from 23.3 to 45.1 per cent. Other constituents range approximately as follows: Iron, 3 to 10 per cent; lead, 0.5 to 4 per cent; zinc, 1 to 2.5 per cent; silver, 70 to 270 ounces to the ton; and gold, a trace to 0.05 ounce to the ton. Silica was not determined, but presumably it was rather high. Except that they may be less rich in silver, the remaining parts of the ore body appear to have about the same composition as those worked out. Several analyses reported of selected samples show from 25 to 55 per cent manganese, from 5 to 7 per cent iron, from 3 to 11 per cent silica, and less than 0.03 per cent phosphorus. One fairly complete analysis is as follows:

Analysis of manganese ore from the Seigel mine.

[Mississippi Iron Co., analyst.]

Manganese (Mn)	37.95
Iron (Fe)	6.96
Silica (SiO_2)	9.70
Alumina (Al_2O_3)	2.50
Lime (CaO)	1.50
Magnesia (MgO)	.40
Sulphur (S)	.187
Phosphorus (P)	.022
Barium (Ba)	None.
Loss on ignition	16.73

The Black Eagle deposit is explored only in the oxidized zone, where it is similar to the St. Anthony in structure and composition. Near the surface it contains a dark-brown manganese oxide that forms soft compact masses made up of concentric layers that show a fibrous or prismatic structure and a greasy luster. Its crystal habit suggests manganite, of which it is probably an alteration product. One sample reported from the Black Eagle No. 3 showed 39.6 per cent of manganese and 9 ounces of silver to the ton; another sample showed 50.54 per cent manganese and 13 per cent of insoluble matter and consisted of a soft pulverulent bluish-black oxide that is somewhat abundant in this deposit.

In places near the deposits described, especially the Black Eagle and the Black Eagle No. 3, the limestone is stained brown with manganese and iron oxides. A tunnel a short distance north of the Black Eagle No. 3 shows 40 feet of brownish crystalline limestone whose color is due to thin films of iron and manganese oxides in seams. Fresh, nearly white specimens of the rock give distinct reactions for iron and manganese, which are presumably present as carbonates. There is also considerable magnesia. Similar material is exposed by a tunnel on the Black Eagle claim, from which a sample yielded 4.9 per cent of manganese and 1.8 per cent of iron. A mixed carbonate of calcium, manganese, and iron occurs in the St. Anthony vein at the level of the Sommer tunnel.

In the deposits described a moderate amount of richly manganiferous material is available and in prospect, and a larger amount may be expected with further development work. Some of it is apparently of the grade known as dioxide ore, which has a special value, but all the material contains silver, the recovery of which without impairing the value of the manganese oxides is an interesting metallurgic problem.

NEVADA DISTRICT.

BOWEN & HOLMQUIST AND WITCHER & VIETTI MINES.

A moderate amount of ore was produced in 1917 and the first half of 1918 from manganese deposits in the Nevada district, about 10 miles southeast of Ely. In June, 1918, Bowen & Holmquist and Witcher & Vietti were operating the Steptoe group and the Manganese claim, respectively, from which the ore was hauled to the Nevada Northern Railroad at East Ely by autotrucks.

The known deposits are confined to an area at the east edge of Steptoe Valley, half a mile long from north to south and 1,000 feet wide. The local relief is slight, and the general elevation about 7,000 feet. On the east the Schell Creek Mountains rise 2,000 to 3,000 feet above the valley.

The area, which is within a section mapped as Devonian by Spurr,[1] is underlain by rather indistinctly bedded limestone that strikes N. 25° W. and dips steeply eastward and shale that is very poorly exposed. On the west these rocks pass beneath the alluvium of Steptoe Valley.

The manganese deposits are parts of irregular jaspery quartz lodes that replace the limestone along fractures, joints, and bedding planes. They form thick podlike or pipelike masses, of which some are cut by the present surface and some end below it. At the north, on the

[1] Spurr, J. E., Descriptive geology of Nevada south of the fortieth parallel and adjacent portions of California: U. S. Geol. Survey Bull. 208, p. 40, pl. 1, 1903.

Steptoe claim, a lode of red and yellow jaspery-looking quartz crops out here and there for a distance of 300 feet or more. It strikes N. 25° W., the same as the limestone, stands nearly vertical, and ranges from a few feet to 30 feet in width. Manganese oxides are distributed irregularly through it. At the widest part a large pit known as the glory hole exposes an ore body 12 feet wide and 35 feet long that extends from the surface downward at least 35 feet. About 1,500 feet to the southeast, along a smaller quartz lode, a body exposed by the Jane shaft is about 10 feet thick and 50 feet wide at the 25-foot level. It tapers above and below and extends from a point near the surface 50 or 60 feet downward on a 45° E. slope. At intermediate points at least two other bodies of comparable size to those described have been found. One at the whim shaft on the Steptoe claim is formed along a small discontinuous east-west lode and extends to a depth of 70 feet. The other, at the whim shaft on the Manganese claim, is very irregular in form and strikes nearly due north. From all these bodies small irregular streaks of ore lead off here and there along joints in the limestone. On the Storm claim, southwest of the Jane shaft, red jaspery quartz and manganese oxides crop out over an area 30 feet wide and 70 feet long. As far as it is penetrated by a shaft 35 feet deep this lode is broken and contains but little high-grade ore.

The bodies described are generally loose, friable, and cavernous. The principal constituents are manganese oxides, quartz, and calcite. In places there is considerable fluorite, and small amounts of iron oxides are general. Assays are said to show the presence of about 2 ounces of silver to the ton. Commonly the manganese oxides form a rather indefinite mixture, the bulk of the material being soft and noncrystalline. Part of it resembles wad and part has the properties of pyrolusite. Fine crystals of a hard steel-gray oxide, tentatively determined as braunite, are scattered through the mass, and manganite and psilomelane also occur. In the whim shaft on the Steptoe claim an 8-inch streak of ore so hard and dense as to suggest cast iron occurs at a depth of about 60 feet. It consists of psilomelane in which plumose aggregates of finely crystalline braunite are embedded.

The vein quartz is fine grained but not chalcedonic. Commonly it is brecciated, and the cracks are filled with manganese oxides. Calcite coats the walls of open spaces. In the ore body on the Manganese claim compact fluorite forms branching veinlets, the manganiferous material between them being loose and open.

In the ore so far shipped manganese ranged from 35 to 48 per cent; silica from 4 to 22 per cent; iron from 2 to 8 per cent; and phosphorus from 0.01 to 0.03 per cent. The higher-grade ore represents selected material and the lower-grade ore run of mine.

AKD

P-35

HEWETT, D.F., & ROVE, O.N., ECON GEOL v. 25 (1930) "Occurrence & Relations of Alabandite."

p 47. Siegel mine developed by 3 tunnels to a max depth of 400' below outcrop.

Alabandite occurs in the St Anthony vein which x's the ls.

A polished sect examined by Hewett cont 95% (by wt.) alabandite, 4% Rhodonite, & 1% Py, Gal etc.

The alabandite forms interlocking grains 2-5 mm long by 2 mm or less wide, & gives a laminated or gneissic appearance when viewed as a whole. (Poss. caused by post depositional press.)

NOTHING IN N.B.M. FILES

Township No. 24 North Range No. 65 East