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BELL MOUNTAIN DISTRICT, (FAIRVIEW)
NEVADA

by

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BELL MOUNTAIN DISTRICT, NEVADA

By F. C. Schrader

Bell Mountain Mine

Location

The Bell Mountain district joins the Gold Basin district on the south and centers about the Bell Mountain mine.

The Bell Mountain, Homestake, or Stockton mine, is 6 miles direct (18 by road) southeast of Fairview and 5 miles southeast of the Nevada Hills mine. It is north of Bell Flat, on the southeast side of the Fairview Mountains, in a more or less detached group of foot hills, at an elevation of about 6,200 feet (fig. 3). It is usually reached from Fallon, on the west, by way of the old Downieville road through Crown Canyon. The area drains southward through Bell Flat, and thence northeastward through Crown Canyon into Fairview Valley.

History

The Bell Mountain deposit was located in March 1914 by W.W. ("Billy") Stockton, the owner, who soon sunk the 60-foot incline shaft and found fair values nearly all the way down, a considerable part of the material excavated running about \$8 to the ton. The discovery was made on the west part of the vein, and Homestake No. 6 claim was located on the site of cut A (fig. 45), through mineralized material thrown out by a badger, which had dug ^{to} a depth of 9 feet.

The Nevada Wonder Mining Co. ^{A/} took an option on the property in

A/ Nevada Wonder Mining Company, Thirteenth Annual Report, for the year ending December 31, 1919, page 9.

October 1916 and soon did, by hand, several thousand dollars worth of development work, which included the driving of a 580-foot adit tunnel, Some crosscutting, and the sinking of a 50-foot winze. In the fall of 1919 the company renewed its option, installed machinery, sunk the winze 200 feet deeper and drifted and crosscut at the bottom until its engine broke down. This work was done in the hope that the deposits would improve with depth, and the company would have purchased the property, it is said, had it been able to find ore that averaged as well as \$9 to the ton. The ore that they found, however, averaged much lower, and ore was running low in the face of the deep drift at the time of the break-down. The company is said to have estimated that the equipment needed for working the mine efficiently would cost half a million dollars; and, as the outlook did not seem to justify any such expenditure, the work was abandoned and the option surrendered.

In 1925 a prominent mining company of San Francisco was said to have taken an option on the property. ^{1/}

1/ Nevada Mining Press, June 25, 1925.

The nearest adequate source of water supply for mining and milling is Westgate, 8 miles distant. Although ample firewood of medium quality is obtainable nearby in the Fairview Mountains, the most dependable source of power would probably be gasoline or oil, which would have to be hauled from Fallon.

At the time of visit there was stationed in place and well housed at the mine a 25-horse power Fairbanks engine for running the compressor and air pump, and also 3 smaller engines.

Country rock

The country rocks consist of siliceous light-colored Tertiary volcanics. In texture they are all fragmental, consisting of tuffs or flow breccias. Their composition probably ranges from that of rhyolite to that of dacite or quartz latite, but they have been so ~~much~~ altered hydrothermally that nothing remains of their primary constituents ^{except} but a few phenocrysts of quartz and feldspar. The original groundmass, which constituted almost the whole of the rock, seems in all specimens examined to have been glassy, but it is completely devitrified and probably silicified. The feldspar phenocrysts that remain are predominantly plagioclase, a fact which apart from other considerations suggests that the rock may be a dacite; but this indication does not amount to proof, and the rocks will therefore be referred to as rhyolitic rocks, in accordance with local usage. The rock on the hanging-wall side of the vein ^{in particular} ~~especially~~ is locally regarded as rhyolite.

In many of the specimens unmistakable traces of the original flow structure still remain, but the glassy groundmass is entirely transformed, devitrified and recrystallized into secondary quartz, albite, oligoclase, and other minerals. The rock in the deepest workings, at the crosscut in the bottom of the 250-foot winze, though relatively firm and fresh in appearance, is found on microscopic examination to have been originally a

glassy tuff, but it now consists almost wholly of secondary minerals.

Many small vugs in these rocks are lined with quartz or with a mixture of quartz and adularia that corresponds closely to the quartz-adularia gangue found in the vein; vugs of this character occur even at considerable distances from the vein.

The rocks are cut by a dominant sheeting that strikes N. 75° E. and dips 80° N., and by another sheeting that strikes N. 25° W. and dips 70° E.

Deposits

The deposits are contained in the Bell Mountain vein or lode, shown in figure 45. The vein, which has a known extent of more than 3,000 feet, lies in the rhyolitic rocks just described and is associated with a fault. It strikes about N. 70° E. and dips about 50° S. Its width varies from less than 10 feet to more than 50 feet. It has a known vertical range, to the deepest underground exposures, of 650 feet, and its highest and lowest outcrops differ in altitude by 500 feet. It does not outcrop prominently; almost everywhere it had to be located by cross trenching. Nor do the vein walls in general stand high above the surrounding surface, though in places they may be well silicified. In places the wall rock, especially the hanging wall, contains quartz stringers 2-1/2 inches in maximum width, paralleling the vein. The vein in part is crudely and coarsely banded. Much of it has been crushed or brecciated and re-cemented with silica, which is mostly fine-grained. The walls of the vein are mostly without well-defined gouge, the crushed vein material itself being directly in contact with the wall rock. The walls are partly smooth, but in places they are rough and protrude deeply into the vein. The shattered condition of the vein has

made it permeable for leaching and deposition of secondary ore in depth. To determine whether such enrichment had taken place was the purpose of the deep development work done by the Nevada Wonder Co.

The ore is irregularly distributed but tends to occur in parallel streaks or bands, some of which have considerable continuity.

The vein consists mainly of greenish-gray quartz, calcite, and partially-replaced fragments of country rock, and its wider parts include lenses or horses of the country rock, as on Homestake No. 1 claim. On the eastern end of this claim, as shown at cut 6 -- a long crosscut trench,-- the vein or lode, here 160 feet in width, consists mainly of alternating bands of vein material and of country rock each about 3 to 5 feet wide. On the south or hanging-wall side there is 4 feet of vein quartz, apparently replacing country rock. This quartz is said to pan \$5 to the ton. Oxidation extends below the deepest workings in the mine, which are 360 feet deep. There are no indications that the workings have approached the sulphide zone, the top of which probably lies at a depth of about 600 feet.

Much of the vein and ore is stained darkish with oxides of manganese and iron, and the good ore ^{is} commonly associated with manganese stains. The best values are in or toward the foot wall or north side of the vein, which side generally carries also 1 to 2 feet of tough greenish-gray sparry quartz. This quartz, apparently formed for the most part by replacement of the wall rock, ~~and~~ contains only about \$1.25 to the ton.

Most of the ore contains much calcite, some of which has been replaced by quartz. Much of the quartz has an apple-green tinge. The gangue of the ore is usually quartz and calcite, the best ore being generally associated

with almost pure quartz, especially of the greenish variety. It nearly always pans considerable silver sulphide as well as gold, and on weathering it turns bluish owing to oxidation of its silver sulphide content. The ore, especially the more siliceous ore, is ^{very} densy and contains small vugs lined with crystalline quartz and adularia.

The vein has been explored to the depth of 360 feet by about 2,000 feet of work, mainly on the adit-tunnel or 110-foot level and on the winze or 360-foot level(figure 46). This work is on the western third of the vein, the part most deeply eroded. At the depth of 260 feet, or about 100 feet above the bottom of the winze, the vein is disturbed by a fault nearly parallel to it and becomes adulterated with yellowish-brownish barren clay or waste mud, which here makes up about two-thirds of the vein, the other third being hard bouldery quartz, which runs about \$3 to the ton. At the bottom of the winze, as shown in a 35-foot cross cut, this mixture of barren mud and bouldery quartz is 20 to 25 feet wide.

In the most of the 140-foot drift to south, as shown by occasional exposures of wall rock ~~here~~ ^{or} on one side ~~and there~~ on the other, the vein seems to be only 4 or 5 feet wide. Toward the face of the drift, however, it seems to widen and to improve in quality. The face shows 30 inches of good-looking \$3 quartz ore, underlain by 2 feet of low-grade sparry hard quartz and overlain by 2 feet or more of mixed mud and quartz. It thus appears likely that the effects of shearing, which are so conspicuous at the bottom of the winze, may be rather local and that farther east or at greater depth the ore may improve and become normal.

The ore in general runs about \$4 in gold and silver to the ton, the values being about half gold and half silver at the surface and about two-thirds silver and one-third gold at depth. In many places, however, the vein carries \$6 to \$12 or \$14, in some places as much as \$20, and in a very few places as much as \$40 to the ton; and some small residual masses of primary (?) quartz ore found along the foot wall are said to have assayed as high as an ounce in gold and 45 ounces in silver to the ton. Most of the high values found in the mine are probably due to concentration or enrichment by leaching and redeposition. Crushed ore when panned usually yields a long head or string of fine free-gold particles, together with considerable argentite and cerargyrite, much of which resembles lead. All the ore that weathers bluish pans well in argentite as well as in free gold, the bluish color being apparently due to the presence of argentite. The gold is light colored and is probably electrum, containing perhaps 40 percent of silver by weight.

Origin of deposits

The deposits are of hypogene origin. They were formed by ascending hot magmatic solutions that circulated through the rocks following one or more volcanic eruptions, and they belong to the group of deposits found in the Tertiary volcanic rocks, of which there are so many examples in Nevada. They were probably formed by the same solutions that so extensively altered the country rock in the surrounding region.

Outlook

Judging from the nature of the deposits and the development work done on them the vein seems to contain considerable ore, but because of its low grade and irregular distribution, the ore could not be mined and milled at a profit unless all operations were conducted in a very economical manner. Before installing an expensive camp, and machinery, at least two kinds of exploration should be made. First, although it seems doubtful whether there has been much secondary enrichment of the deposits at the top of the sulphide zone, the vein should be prospected, by drilling or otherwise, down to the primary sulphides. Second, the eastern part of the vein, which has hitherto been prospected only by shallow trenches, should be explored in depth. An engineer experienced in this class of deposits and in this part of the country believes that with proper management the ore can be mined and milled for about \$2.50 per ton and that ore of \$5 grade will yield a net profit of \$1.50 to the ton.

Bell Antn mine

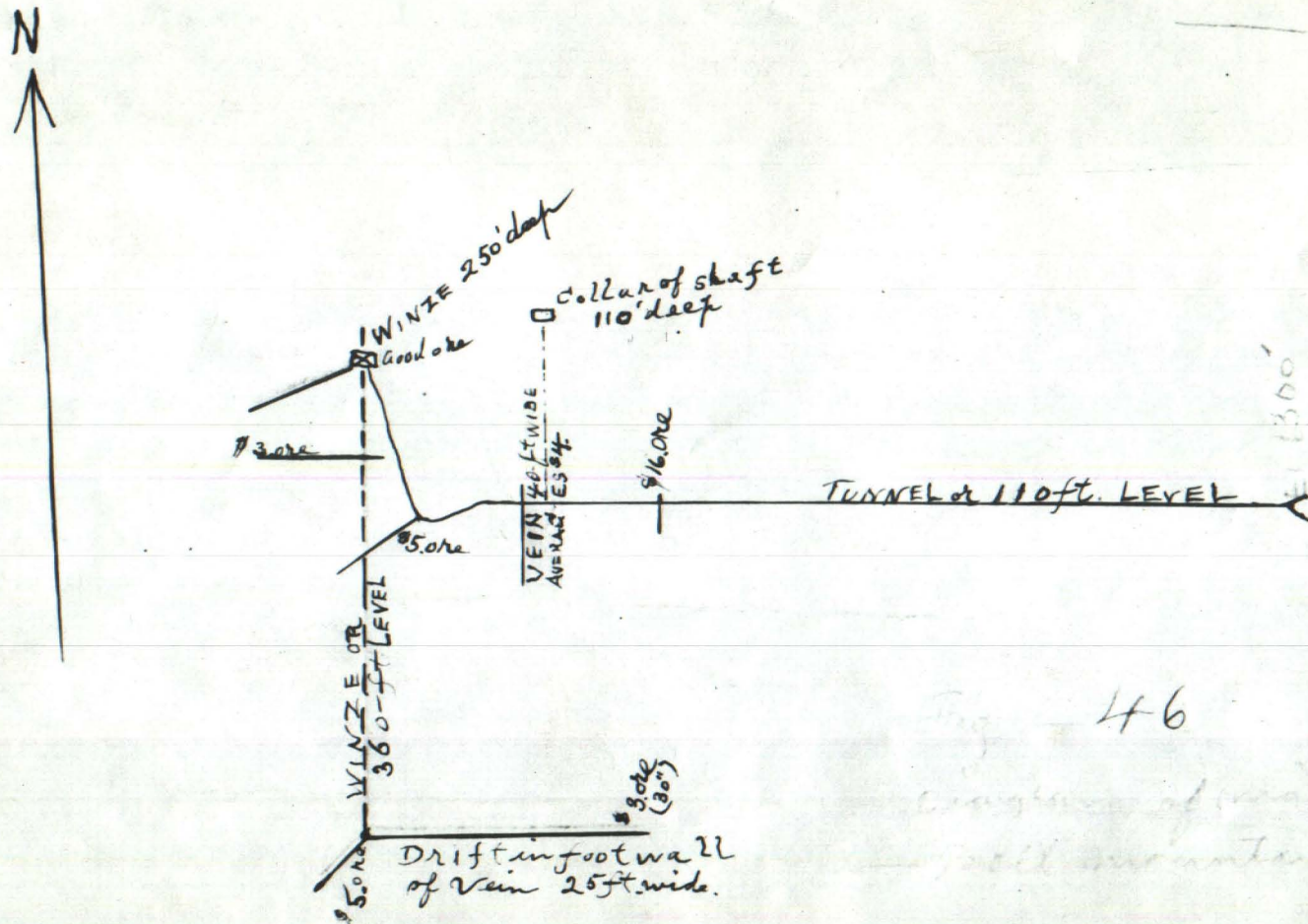


Fig. 46

Diagram of mine workings
Bell Antn mine

Scale

1 inch = 100 feet approx.

Fig. 46, Bell Antn mine

