

WALLOWA
RANGE
CORNUCOPIA
DISTRICT

THE LAST CHANCE MINE

The Last Chance mine is the property of the Baker Mines Company.

Geology.—The Last Chance is the next vein of importance to the westward and higher up the mountain from the Union-Companion vein. The outcrop at the principal workings is at about 7,000 feet, or 1,000 feet above the principal outcrop of the Union-Companion vein. Horizontally the Last Chance vein is about 3,100 feet from the Union-Companion vein.

The wallrock in part, is granodiorite, similar to that found at the Union-Companion mine. In other places it is a dense dark green rock that was probably once an argillaceous sediment laid down between the old surface flows.

The striking point of difference between this vein and the others of the district is its location on both sides of an aplite dike that is older than the vein. This aplite dike, locally known as the "Forest dike," is probably the same as found alongside the vein in the Mayflower mine on the other side of the mountain.

Sufficient manganese oxide is present in the surface waters to precipitate on the joints and seams of the dike, black tree-like forms so characteristic of this element. These tree-like forms, which the mineralogist calls dendritic manganese, has caused the prospector to give this dike the apt name of "Forest dike." This dike has a greater amount of dark minerals than ordinarily found in aplite. Basalt dikes also break across both the vein and the aplite dike.

The Vein.—The strike of the vein is N.20°E. and the dip 45° W.

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Massive white quartz, through which pyrite with a little chalcopyrite and zinblende are irregularly scattered, makes up the vein. Whether the walls of the vein are of schist, granodiorite or aplite, they are bleached and sericitized, such as is ordinarily found next to any vein made by ascending hot waters.

The stoping width of the Last Chance vein probably averages at least five feet of higher average grade of ore than found so far in the other properties. Because of a small cave-in in the lower working tunnel, the underground investigation of the Last Chance was not completed.

It seems probable that the re-fissuring in the general plane in which the aplite dike had been placed, broke the aplite dike in the same way that the Union vein was broken to receive the basalt dike. On the Union-Companion ground the vein was broken to receive a dike. On the Last Chance ground the dike was broken to receive a vein.

Further similarity probably exists in that the re-fissuring alternated from wall to wall of the dike like the re-fissuring of the Union-Companion quartz vein. Doubtless at some points it may have loosened the dike along both walls and shattered it in many places. Similarity as to fracturing is pronounced. Here the analogy ceases.

The molten basalt intrusion into the Union-Companion vein cooled rather quickly, but even if it should not have done so, it nevertheless would have had but little effect on the simple quartz of the vein, always slow to alter. Alteration of the walls of the basalt dike are practically negligible. But in the Last Chance vein they are altered whether it be schist, greenstone, granodiorite, or aplite dike. All the

rocks except the crosscutting basalt dike are considerably altered next to the vein. The aplite dike especially so because it was a thin sheet between two walls subjected to compression and movement. This together with its being very fine-grained caused more shattering, therefore more area within it to be subjected to the action of hot ascending waters.

The aplite dike and the Last Chance vein are seen on the surface to be probably several claims in length. The stope lengths are about 300 feet in a development of the vein of not much more than 600 feet with much of the latter distance unfruitful because of a failure to determine the form of a thick irregular basalt dike that cuts the vein. Doubtless when the interrupted vein is found on the other side a good shoot of ore will be discovered. The considerable horizontal length, the good width of the vein, the length of the stopes, the persistence of fair values with frequent bodies of high values, the nature of mineralization of the vein, and the pronounced alteration of the walls all indicate the likelihood of a continuation of shoots of ore to considerable depths.

Mine Development.—We do not possess maps of the mine showing its present development. The following description shows less than the present amount of work done, although it gives a fairly good idea of the development accomplished. This is a description of the work completed up to 1903.

“The Last Chance vein is developed by an adit tunnel, driven south on the vein for a length of 690 feet. This tunnel undercuts the vein at a maximum depth below the surface, on its dip of 500 feet. At a point in the tunnel 105 feet from its mouth, a shaft is sunk on the vein to a depth of 265 feet. From this shaft, two levels are run on the

They have also acquired claims adjoining them in the Bonanza basin upon which it is said the development is decidedly encouraging.

Aerial Tramway.—The ore is conveyed to the mill by means of a Bleichert aerial tramway 5,500 feet long. The difference in elevation between the loading and discharge terminals is 1,675 feet. There are only two intermediate supports for the cable. The upper span has two locked-coil track cables 616 feet long, one is $1\frac{1}{8}$ inches in diameter and the other $\frac{7}{8}$ inch. The middle span has two similar cables each 1,410 feet long; while the third span has two cables 3,210 feet long of $1\frac{3}{8}$ inches and $1\frac{1}{8}$ inches in diameter respectively. This span has a clearance of over 500 feet above the bottom of the gulch. The traction rope used is made of special cast steel. This tramway when operated at a speed of 500 feet per minute has a capacity of 15 tons of ore per hour.

Mill Practice and Flowsheet.—The ore is dumped from tram buckets onto grizzlies, the undersize falling into a bin and the oversize passing to a No. 3 Austin gyratory crusher. Twenty stamps are employed in crushing to 'so-called' 25-mesh. About 25 per cent of the values are recovered on the plates, which are eight feet in length and have a slope of 2 inches to the foot. After passing through a mercury trap the pulp is treated by a Dorr classifier. The sands are leached in 30-foot vats, the slimes passing to a 30-foot Dorr thickener, and from thence to two 20x16 Dorr agitators. The slime is again thickened in a 20-foot Dorr thickener, diluted and again thickened in a 30-foot Dorr thickener. The reason for the use of two thickeners is because of the necessity of obtaining a large amount of dilution owing to the high value of the slimes. From the last thickener the pulp goes to a 20x16 Dorr agitator used as a stock tank for a Portland filter. The precipitation is with zinc-dust and Merrill zinc presses.**

*Will C. Higgins, in Salt Lake Mining Review.

vein, at a depth of 100 feet, level drives are run north and south on the vein 270 feet and 180 feet respectively, and at a depth of 200 feet level drives are run on the vein 375 feet and 270 feet respectively. From the north level drives a cross-cut 296 feet is run to the surface, for the purpose of drainage and ventilation.**

Since that time this property, until 1914 a part of the Cornucopia Mines, was operated only in a small way by the company or by leasers. These operations were spasmodic and did not extend the development to any great degree. The last work, which was done by leasers milling their ores at the Union-Companion mill, was successful in finding ore of sufficient grade to stand the heavy expense of wagon transportation to the mill. Unfortunately for them their lease expired November 1, 1913, which came too soon after the finding of the rich ore to get more than a small part of it to the mill to reap the profit for themselves.

The finding of larger and better grades of ore than were already known to exist encouraged certain western and New York persons, largely of the same group already in the Cornucopia Mines Company, to form a strong leasing company to take over the Last Chance vein. This new company, with John M. Baker as general manager, is called the Baker Mines Company. It perfected its organization last winter and arranged for the financing of the development work in the mine, the erection of a surface plant at the mine, an aerial tramway, a water power plant, and a 20-stamp mill with a sand and slime cyanide plant. This work was started early in the spring and late in October they commenced to mill their ore.

**Bernard MacDonald's report upon the property, April 10, 1903.