

Otto Jancke and O. C. Miller were prospecting on a 40-acre tract leased from the Southern Pacific Railroad in 1936. Prospecting work consisted of a number of open-cuts, none of which was more than 15 feet below the surface at any point.

When the writer visited the property four parallel veins striking east and west and dipping  $55^{\circ}$  south had been found. The veins average 10 inches in width; the country rock is granodiorite, and the vein filling is chiefly quartz carrying free gold. In places, on either or both walls of the veins, seams of arsenopyrite 1 to 2 inches wide carry values in gold up to \$70 per ton. The average value of the vein material is \$25 per ton, as determined from an 800-pound sample treated at the Olsen mill at Scossa. No ore had been shipped up to March 1936.

The nearest water is in Woody Canyon on the west slope of the Eugene Mountain 7 miles away.

James Walker of Lovelock has located five claims on public land about 1 mile east of the Jancke lease. These claims are in the prospecting stage.

#### Humboldt (Imlay, Eldorado) District

The Humboldt, Imlay, or Eldorado district is at the north end of the Humboldt Range on its west flank. From north to south it includes Prince Royal, Humboldt, Florida, Black, and Eldorado Canyons. Humboldt, a station on the Southern Pacific Railroad, is several miles east. The Humboldt mining district was organized in 1860, and Humboldt City was founded and had a population of 500 in 1863.

The Imlay mine worked in the early days has been the principal mine in this area. In 1907 it was equipped with a 10-stamp amalgamation-concentration mill. This mill operated at intervals until 1918. Judging from the tailings pile below the mill, about 1,500 tons of ore were treated. The mill building is still intact and in good condition, but all machinery has been removed except the stamps. The American Mining & Exploration Co. worked the Imlay mine in 1918 and shipped considerable silver ore. In recent years the mine has been worked on a small scale.

The Imlay mine comprises seven unpatented claims owned by E. J. Sears of Imlay and William Baker of Lovelock and has been developed by a vertical shaft 250 feet deep and an adit 1,500 feet long driven for drainage. In 1930 the owners erected a small amalgamation mill near the portal of the adit. Mill equipment consists of a Challenge feeder, two stamp batteries (850-pound stamps), and an amalgamating plate 3 feet wide by 8 feet long. Power for milling is furnished by a 15-hp. gasoline engine. The plant has a capacity of 2 tons per 8 hours. The mill operated for a time in 1935. Amalgamation made an 85-percent recovery on ore that averaged \$15 per ton.

Mine equipment consists of a 6- by 6-inch Gardner Denver compressor belt-driven by 9-hp. Fairbanks-Morse gasoline engine, drills, and steel. Steel is hand-sharpened.

The formation is shale, quartzite, and limestone. Vein filling is a hard, white quartz carrying values in silver and gold and a little lead and copper. In March 1936 the Imlay mine was idle.

Near the Imlay mine are a number of claims owned by individuals or groups. Most of these claims are in the prospecting stage.

Humboldt Valley 2 miles southwest of Humboldt station contains a deposit of sulphur. This deposit has been known since the seventies, but very little work has been done upon it. About 3 years ago O. J. Streeter, of Reno, and associates purchased 80 acres of patented land on which the sulphur deposit occurs. Up to March 1936 8 carloads of material had been shipped from the deposit to southern Oregon, where it was ground to minus 40-mesh and sold for agricultural use. The material is mined by hand, shoveled into trucks, and hauled to Humboldt station for shipment. According to Streeter the material must contain 20 percent sulphur to be marketable for agricultural use.

The sulphur occurs on the surface in a cone formed by an extinct hot spring. The cone stands about 15 feet above the level of the surrounding terrain. It is 1,000 feet long and 700 feet wide. Large, amorphous masses of sulphur occur intermixed with gypsum. The deposit is capped with several feet of calcareous material. Streeter and associates are planning to explore the deposit by drilling in the near future.

Black Canyon is 8 miles southwest of Humboldt station. In 1908 prospectors rushed to this section because rich bunches of free gold ore had been discovered, but no important deposits were found.

In 1935 the McGee property at the head of Black Canyon was under option to the contracting firm of Lindgren & Swinerton, Inc., of San Francisco, Calif. This company relinquished its option after prospecting the veins at depth by an adit 150 feet long.

On the McGee property three parallel veins outcrop over a width of several hundred yards and are traceable for about 600 feet. Veins average about 2 feet in width and dip nearly vertical. Free gold occurs in a gangue of hard, white quartz. Country rock is rhyolite.

Florida Canyon is 4 miles southwest of Humboldt station. In 1936 14 unpatented claims in this section owned by Mike Kearns were under option to W. G. Swart, mining engineer. At the time of the writer's visit a contract crew of six men was driving tunnels to explore several silicified outcrops carrying values in gold. No ore has been shipped from the property. This property is in the prospect stage.

One-quarter mile north of Florida Canyon is a deposit of kaolin owned by Kearns. The deposit is at the surface and has been prospected by numerous shallow trenches. In places the kaolin is stained with iron oxide. It is said that 2 carloads of material were shipped from the property in 1925.

The Star Peak mine is at the head of Eldorado Canyon 10 miles southwest of Humboldt station. The property comprises two patented claims owned by J. H. Hart of Lovelock. From 1914 to 1916 the mine was worked by the W. P. Hammond interests of California who erected a five-stamp amalgamation mill to treat the ore. The mill is said to have produced \$130,000 in bullion from about 3,500 tons of ore. A little leasing was done in 1917, and the property has been idle since. The

property is developed by a 200-foot vertical shaft and an adit 750 feet long.

The Star Peak mill tailings are on public land, and in 1934 M. J. Smith acquired the tailings by location. A small cyanide leaching plant was erected, and 1,500 tons of tailings averaging \$4 per ton in gold and silver had been treated up to 1936. Smith operates the plant with one man during the summer when weather conditions are favorable. The tailings have been ground to minus 35-mesh and contain about 30 percent slimes.

The cost of the leaching plant was \$2,000, exclusive of laboratory equipment. Leaching is done in three wood-stave tanks 18 feet in diameter and 5 feet deep. The stock-solution tank and a sump tank are each 12 feet in diameter and 10 feet high. Power is necessary only for pumping solution from the sump tank to the stock tank. This is done by a 1½-inch centrifugal pump driven by a 3-hp. Fairbanks-Morse Z-type gasoline engine. Tailings are shoveled by hand into a 1-ton mine car which is trammed to the leaching tanks and dumped. About 1 pound of lime is added per ton of tailings when the tanks are filled. By working on one shift 2 days are required to fill a tank. The leaching cycle is 36 hours, including 12 hours of washing with water. The strength of the solution is 1.6 to 1.8 pounds NaCN per ton. The tanks are emptied by sluicing.

An ingenious method is employed to elevate the solution to the leaching tanks; an air lift is used, the compressed air being furnished by a hydraulic air compressor as shown in figure 2. The solution is precipitated with zinc shavings. The fineness of the bullion recovered from the precipitant averages 200 gold and 600 silver. Recovery by leaching is 85 percent.

The Ruby Cinnabar mine in Eldorado Canyon was worked in 1908. The cinnabar occurs in limestone.

#### Indian District

The Indian district is in Indian Canyon on the east flank of the Humboldt Range about 8 miles south of Unionville. The district was organized in 1861. The Moonlight mine was the only important mine, and it is reported to have produced about \$100,000 in rich silver ore in the early days. There has been no lode-mining activity for many years.

In the early days some placer mining was done in Indian Canyon. The biennial report of the State mineralogist <sup>7/</sup> for 1875 and 1876 states:

The ravine north of the Eagle (Bonanza King) mine has been located for three miles in length and 400 feet in width. All the gravel in this ravine contains more or less gold. In places, as much as 2 ounces of dust to the man has been taken out in a day, and one streak of pay dirt gave 15 ounces to two men for one half day's work with one rocker. The supply of water here is very limited, so that very extensive washings cannot be carried on. Rockers are used except for a short time in the winter, when the supply of water is more plentiful, and then the long tom is operated. The gold obtained here is coarse and worth about \$17 per ounce. During

7/ Whitehill, H. E., Biennial Report of the State Mineralogist of the State of Nevada for the Years 1875 and 1876, pp. 63-64.