

In March 1936 Jess Owens and T. H. Williams leased a block of ground opened by the Regan shaft owned by the Nevada State Gold Mines Co. When the writer visited the property a small tonnage of ore had been mined, and the lessees were rehabilitating a small mill owned by Fred Preston of Lovelock in Seven Troughs Canyon to treat the ore. This mill is equipped with a 5- by 7-inch Blake crusher, a 5-foot Huntington mill having a 40-mesh screen, an amalgamating plate 4 feet wide and 10 feet long, and a Wilfley table. Power for milling is furnished by a 15-hp. Fairbanks-Morse gasoline engine. The mill was leased on a royalty basis of 50 cents per ton of ore milled.

Near the camp of Vernon, L. G. Nickerson and his two brothers were working their property of nine unpatented claims, developed by a 400-foot shaft and several adits totaling 4,000 feet in length. The vein ranges from 1 to 5 feet in width and dips 35°. Mining is done by hand methods. In 1935 several carloads of ore had been shipped by the Nickerson brothers to a Salt Lake City smelter. Hauling to Lovelock, 26 miles distant, costs \$3.85 per ton on contract.

In 1935 lessees produced about 8,000 tons of ore by screening the mine dumps near the Tyler shaft in Seven Troughs Canyon. A small gasoline shovel was used for this work. After the dump material was screened, the fines were hauled 3 miles to the Seven Troughs cyanidation mill. According to J. H. Caustin, one of the lessees, the cost of loading and trucking was \$1.18 and the cost of milling \$1.53 per ton. The fines have an average value of about \$6 per ton.

Sierra (Dun Glen, Chafey) District

The Sierra, Dun Glen, or Chafey district is at the north end of the East Range 12 miles northeast of Mill City. It was organized in 1863. The town of Dun Glen, settled in 1862, ranked next to Unionville in importance in this part of the State. At one time it had a military post garrisoned by a company of regulars.

Both placer and lode gold were discovered in the sixties by prospectors from Unionville, and a number of mines were opened. The important early mines were the Tallulah, Auld Lang Syne, Munroe, Mayflower, and Auburn. These properties have been worked intermittently up to the present time. In March 1936 the Auld Lang Syne, Auburn, Gold Top, and White Bear mines were being worked on a small scale. Total production from the lode properties in the district has probably exceeded \$1,000,000. The greatest activity was from 1862 to 1880. According to Mineral Resources, production from 1908 to 1921, chiefly gold from lode mines, was valued at \$314,441.

The placers occur over a large area and include Auburn, Barber, Wright, Rock Hill, and Dun Glen Canyons on the western slope of the range and Spaulding Canyon on the eastern slope. The production of placer gold is said to have had a total value of \$4,000,000 and to have come principally from Barber, Wright, Auburn, and Rock Hill Canyons. In all probability the value of the placer production is less than that stated. The bulk of it was produced by Chinese miners.

The Auburn mine near the head of Dun Glen Canyon comprises five patented and six unpatented claims owned by Mrs. C. H. Rowland of Lovelock. In the eighties a 10-stamp amalgamation-concentration mill was operated on the property for several years. Production from the mine is reported to have been worth \$250,000. The mine

has been developed by six adits; total workings comprise about 3,500 feet. Several years ago a small mill was erected on the property. The mill equipment consists of a jaw crusher, an Ellis ball mill, a 2- by 7-foot amalgamating plate, and a small concentrating table. The mill is still intact. Water for milling is available from a spring below the mine.

The formation consists of limestone, schist, and rhyolite. Numerous small quartz veins occur in the limestone and schist. The values are in gold, silver, and lead.

In March 1936 William Kline and partner were working the property under lease on a royalty of 15 percent of the net smelter returns. Mining was done by "chloriding" small stringers. When the mine was visited Kline and partner had produced, in about 3 months, 16 tons of shipping ore that was reported to average better than \$100 per ton.

The Auld Lang Syne mine in Dun Glen Canyon comprises a group of five small patented claims owned by Moses Reinhardt of Winnemucca. These claims were among the first to be patented in Humboldt County. The mine is developed by several tunnels, and the total length of workings is roughly 2,000 feet. The property is reported to have produced ore worth \$200,000. In the early days a mill was erected in Dun Glen Canyon below the mine. Mill tailings total about 6,000 tons, which are said to have been treated by cyanidation some years ago. A mill was erected in 1931 on the Auld Lang Syne property. Mill equipment consists of an 8- by 10-inch Dodge jaw crusher, a Challenge feeder, a 5-foot Huntington mill with 40-mesh screen, a 4- by 10-foot amalgamating plate, and two Wilfley tables. Power for milling is supplied by a 25-hp. Fairbanks-Morse semi-Diesel type-Y engine. The capacity of the mill is 10 tons per day. F. E. Braitto and associates who are operating the Gold Top property are leasing the mill. The royalty for milling is 50 cents per ton.

The Auld Lang Syne vein zone as exposed where the stopes come to the surface, is about 100 feet wide and contains four parallel veins; the average width of each vein is $2\frac{1}{2}$ feet, and they dip at an angle of 45° . The vein material is hard white quartz in silicified andesite, and values are in gold and silver. In 1935 the four veins exposed in the Auld Lang Syne glory hole were sampled by F. E. Braitto. A 22-ton representative sample was milled, and \$3.90 per ton was recovered by amalgamation. The tailings averaged \$2.65 per ton. According to Braitto the best ore is near the surface; below a depth of 75 feet the values decrease.

In March 1936 the mine was under lease to H. M. Gilbert, who was prospecting with three men.

The property of the White Bear Mining Co. comprises 12 claims in Munroe Canyon $1\frac{1}{2}$ miles east of Dun Glen. The company is owned by stockholders of Altoona, Pa. In 1908 E. S. Chafey and associates acquired the property and equipped it with a 30-ton mill, which was destroyed by fire in 1929. From 1908 to 1910 the property is said to have produced ore worth \$100,000, chiefly in gold. In 1932 the White Bear Mining Co. started to erect a mill, but owing to financial difficulties the mill was not completed until March 1935. After the mill had operated several weeks in 1935 it was shut down.

The mine is opened by four main tunnels from which drifts have been driven on the vein. Total underground workings comprise 5,000 feet. Mining equipment includes a four-drill Chicago Pneumatic compressor driven by a 40-hp. gasoline engine and a one-drill compressor driven by a 15-hp. Fairbanks-Morse engine. Steel is hand-sharpened.

Mill equipment consists of a Blake crusher (size 10 by 12 inches), two sets of rolls (size 16 by 16 inches) arranged in series with a vibratory screen between them, a Challenge feeder, a Marcy 43 ball mill in closed circuit with a Dorr Simplex classifier, two amalgamating plates (4 feet wide and 18 feet long), and three Wilfley tables. The capacity of the mill is 30 tons per day. Power for milling is supplied by two Muncie oil engines of 40 and 70 hp., and water is obtained from a tunnel above the mill.

The formation is schist, slate, rhyolite, and tuffs cut by diabase dikes. The vein is persistent and is exposed on the surface and in underground workings for 4,000 feet. The width of the vein ranges from 3 to 8 feet, and it dips at an angle of 60°. Where stoping has been done the average width of the vein is 4 feet. Vein filling is solid quartz carrying gold and a little silver. Small quantities of pyrite, sphalerite, and galena are present. In March 1936 four men were doing exploratory work in the mine.

The Gold Top group of five unpatented claims owned by Braitto and associate is in the left fork of Barber Canyon. Development work on the property comprises an adit 280 feet long and other workings and totals 500 feet. Mining is done by hand methods. The vein is 3 inches to 3 feet wide. Values are chiefly in gold. Ore is trucked 13 miles to the Auld Lang Syne mill at \$2.00 per ton on contract. In 1935, 562 tons of ore were milled that averaged \$24 per ton in value.

Recent placer activity in the Sierra district has been confined to Dun Glen, Barber, and Spaulding Canyon.

The Dun Glen placer has a length of about $4\frac{1}{2}$ miles, and an average width of 200 feet. In past years numerous shafts have been sunk in the canyon to test the gravel. The shafts are 18 to 40 feet deep and reach bedrock. It is reported that 5 to 6 feet of the gravel lying above the bedrock carries \$2 to \$3 in gold per cubic yard at the former price of \$20.67 per ounce. Drift mining of the gravels has been hampered by a large flow of water encountered near bedrock.

In 1934 sluicing was done on a small scale in Barber Canyon by Barney Sorenson of Salt Lake City. The placer ground was worked by first stripping the overburden to a depth of 12 feet with a caterpillar tractor and scraper and then hydraulicking the gravel near bedrock. A canvas hose and fire nozzle were employed to sluice the gravel to the washing plant. The washing plant consisted of a combination disintegrating and screening trommel (10 feet long and 4 feet in diameter) and a sluice box 36 feet long equipped with Hungarian riffles. Water for placering was pumped from a well sunk in the canyon.

In 1935 the hydraulic equipment was replaced by a patented placer machine called a "desert sluice", invented by G. W. Rathjens, chief engineer of the U. S. Smelting & Refining Co. A 1-cubic yard power shovel was used for mining the gravel. Operations were suspended after a short time.

Barber Canyon is 2 miles long and averages 300 feet in width. The average depth to bedrock is 30 feet. The best values are on bedrock and on benches at the sides of the canyon. The gold is coarse and averages 375 fine. The average value of the ground, including the low-grade surface material, is reported to be 28 cents per cubic yard.

In recent years several groups of men were placering on a small scale for 2 miles along Spaulding Canyon. These groups are reported to have made wages.

Spring Valley District

The Spring Valley district is on the east slope of the Humboldt Range 14 miles east of Oreana via the Limerick Canyon road, which crosses the Humboldt Range. It can also be reached by automobile road from Mill City, 28 miles north.

The Eagle mine, better known as the Bonanza King, is the only important lode mine in the district. It was located in 1868. A 15-stamp mill erected on the property in 1873 treated about 7,000 tons of ore, judging from the old tailings dump. These tailings are reported to average \$4 per ton in gold and silver at current metal prices. The property was operated by the Bonanza King Mining Co. several years prior to 1910. It is owned by M. M. McKeever of Boston. The property consists of one patented claim and five unpatented claims.

In 1934 the property was under bond and lease to F. R. McDonald who had charge of the property in 1910. When it was visited McDonald was employed in rehabilitating the mine. A 500-cubic foot compressor, driven by a four-cylinder Hercules engine, and a 15-hp. Fairbanks-Morse geared hoist had been installed. The mine is opened by a vertical shaft with levels at 100-, 225-, and 300-foot elevations. According to McDonald 4,600 tons of ore are blocked out in the mine.

The Bonanza King vein is in a rhyolite formation. The vein filling is quartz stained in places by copper carbonates. The vein ranges in width from $2\frac{1}{2}$ to 5 feet and dips nearly vertically. The ore minerals are gold, galena, pyrite, sphalerite, and tetrahedrite. A carload of ore shipped to the American Smelting & Refining Co. of Salt Lake City in 1908 contained 2.65 ounces of gold and 8.32 ounces of silver per ton, 2 percent iron, 9 percent insoluble, considerable lead, a little zinc and sulphur, and a trace of copper.

Spring Valley Gulch 2 miles southeast of the Bonanza King mine contains a cinnabar deposit owned by the Cinnabar King Mining Co. A Newhall furnace, 20 feet long and $2\frac{1}{2}$ feet in diameter, and a metal-pipe condensing system were built in 1931, but the plant closed down the same year owing to the low price of mercury. An aerial gravity tram several hundred feet long connects the workings with the mill. The cinnabar occurs in limestone.

Placer mining began in Spring Valley in 1881. The output of the Spring Valley, American Canyon, and Dry Gulch placer areas was large. Ransome^{16/} states:

The placers were first worked by Americans, who are reported to have taken out gold to the value of \$1,000,000. The ground, however, soon passed into the possession of the Chinese, who formed a considerable settlement in

^{16/} Ransome, E.L., Notes on Some Mining Districts in Humboldt County, Nev.: U.S. Geol. Survey Bull. 414, 1909, p. 12.