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(27) Item 14

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of Crescent, Nev. The only work done on it is an open cut about 10 feet deep and 10 feet wide.

The pegmatite dike is 15 feet wide and consists of an intergrowth of quartz, feldspar, and mica. The mica crystals are small and the material is suitable only for scrap purposes. One-quarter mile north of the pegmatite dike is a prominent outcrop of solid white quartz at least 20 feet wide. The formation is granite.

## ELDORADO (COLORADO) DISTRICT

(Gold, Silver)

The Eldorado, also known as the Colorado, district comprises an area 12 miles long and 6 miles wide in the north end of the Opal Mountains in southeastern Clark County. It includes the mines in the vicinity of Knob Hill on the west and those in the Capitol area on the east. The camp of Nelson in the central part of the district is 25 miles by road south of Boulder City, Nev. This district is one of the oldest in the State and mining has been done here almost continuously for nearly 80 years. It was organized as the Colorado district in 1861. Old arrastres and prospect holes reported to have been found in this area in the sixties indicate that mining was carried on by Spanish adventurers probably several hundred years ago. The first authentic discovery was in 1857 on the Honest Miner claim, now a part of the Eldorado Rand property. The Techatticup (an Indian word said to signify either "white flower" or "plenty for all") mine was purchased from the original locaters in 1862 by the Southwestern Mining Co. The mine was opened in 1863, and in the following year a 15-stamp chlorination mill was erected at the mouth of Eldorado Canyon on the Colorado River. The salt required for the treatment of ore was mined from the Virgin River salt beds near St. Thomas, Nev., and transported by boat down the Virgin and Colorado Rivers.

The Southwestern Mining Co. dominated the district until about 1897 as it owned virtually all of the productive mines, including the Techatticup, Wall Street, Quaker City, Mocking Bird, Jubilee, Honest Miner, Morning Star, Red Butte, Rover, and others. The company was at first controlled by the Barker brothers and later by Joseph Wharton, a prominent figure in the steel industry of Pennsylvania. During its greatest activity the company owned several mills and operated its own fleet of river boats for bringing in supplies from the Pacific coast. After 1897 the properties were either sold or leased to a number of small companies, which operated with varying success. Speaking of the Eldorado district in 1906, Ransome[10] states:

> It is a little surprising that a district once alive with activity should have attracted so little outside notice. This, however, is partly accounted for by the overshadowing predominance of the Comstock, Eureka, Ely, and other districts noted in

10/ Ransome, F. L., Preliminary Account of the Goldfield, Bullfrog, and Other Mining Districts in Southern Nevada: U. S. Geol. Survey Bull. 303, 1907, pp. 63-76.

the early history of mining in Nevada and by the isolation of Eldorado Canyon. The rich ore shipped from the canyon in early days was taken down the Colorado by boat to Needles, Yuma, or the Gulf of California.

The production of the Eldorado district from 1907 to 1935 is shown in table 2. The bulk of the production, however, was made from 1864 to 1900, and for this period no accurate data are available. Yeoman Briggs, of Nelson, Nev., has compiled production statistics on all the individual properties in this area for the Nelson-Searchlight power district and, according to Briggs, figures the total production has been about $10,000,000. Briggs obtained his data from many sources, and due allowances must be made for old production figures, which have a way of increasing with time.

## Eldorado Canyon Development Co.

The Eldorado Canyon Development Co., D. P. Simons of Nelson, Nev., president, controls the Wall Street group (three patented claims), the Mocking Bird (one patented claim), and seven unpatented claims. The Wall Street mine in the early days is said to have produced $1,750,000, and the Mocking Bird claim $240,000. In 1935 the present company erected a 50-ton daily capacity amalgamation-flotation mill on the property. Since November 1935, when the mill was completed, up to February 1937, 6,500 tons of ore were treated, from which bullion and concentrates valued at $55,000 were produced. Most of the ore was obtained from the dumps and stope fills. An average of 12 men are employed.

Development work comprises a number of shafts, the deepest of which is about 200 feet, and approximately 1 mile of underground workings. Most of the development work has been done on the Wall Street group of claims.

The Wall Street vein strikes about east and west, with a dip of 15° to 30° to the south. The old stopes mined through to the surface show widths up to 15 feet. The ore occurs in a shattered zone of monzonite in a gangue of quartz, calcite, and country rock. Values are in gold and silver.

The flow sheet of the mill is shown in figure 4. The only unusual feature of the flow sheet is the rotary amalgamator employed. The amalgamator is an iron cylinder (3 feet long and 15 inches in diameter), inside of which is an amalgamating plate sleeve and an 8-mesh screen. The cylinder is connected to the discharge end of the ball mill. A water spray is used to prevent the screen from blinding. Mercury is added to the ball mill and the amalgamator is cleaned up about every 10 days. An average of 55 percent of the values is recovered by amalgamation. The over-all recovery is about 86 percent. The ore is ground to minus 60 mesh, and a pulp density of 24 percent is maintained in the flotation circuit. Flotation reagents are Z-6, copper sulphate, soda ash, and pine oil. The concentration ratio is 250 to 1, and the flotation concentrates have an average value of $900 per ton. The cost of milling is $2.55 per ton, including the trucking cost. Power is furnished by a 110-horsepower, Pacific, 3-cylinder, Diesel engine connected

TABLE 2. - Gold, silver, copper, lead, and zinc production from Eldorado Canyon District, Clark County, Nevada, 1907-1935

(Compiled by Charles White Merrill, supervising engineer, San Francisco office, Mineral Production and Economics Division, U. S. Bureau of Mines)

| Year | Placer | | | | | | Lode | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. of mines | Gold | | Silver | | Total value | No. of mines | Ore, short tons | Gold | |
| | | Fine ounces | Value | Fine ounces | Value | | | | Fine ounces | Value |
| 1907 | ---- | ---- | ---- | ---- | ---- | ---- | 5 | 417 | 306.94 | $ 6,345 |
| 1908 | ---- | ---- | ---- | ---- | ---- | ---- | 1 | 25 | 36.28 | 750 |
| 1909 | ---- | ---- | ---- | ---- | ---- | ---- | 3 | 48 | 74.01 | 1,530 |
| 1910 | ---- | ---- | ---- | ---- | ---- | ---- | 1 | 431 | 139.08 | 2,875 |
| 1911 | ---- | ---- | ---- | ---- | ---- | ---- | 6 | 541 | 125.53 | 2,595 |
| 1912 | ---- | ---- | ---- | ---- | ---- | ---- | 5 | 137 | 37.20 | 769 |
| 1913 | ---- | ---- | ---- | ---- | ---- | ---- | 4 | 276 | 125.29 | 2,590 |
| 1914 | ---- | ---- | ---- | ---- | ---- | ---- | 2 | 162 | 81.56 | 1,686 |
| 1915 | ---- | ---- | ---- | ---- | ---- | ---- | 3 | 6,547 | 3,047.58 | 62,999 |
| 1916 | ---- | ---- | ---- | ---- | ---- | ---- | 9 | 24,868 | 10,310.26 | 213,132 |
| 1917 | ---- | ---- | ---- | ---- | ---- | ---- | 7 | 12,689 | 6,631.18 | 137,079 |
| 1918 | ---- | ---- | ---- | ---- | ---- | ---- | 4 | 15,302 | 5,424.92 | 112,143 |
| 1919 | ---- | ---- | ---- | ---- | ---- | ---- | 4 | 13,875 | 3,553.63 | 73,460 |
| 1920 | ---- | ---- | ---- | ---- | ---- | ---- | 3 | 9,160 | 2,280.01 | 47,132 |
| 1921 | ---- | ---- | ---- | ---- | ---- | ---- | 1 | 2 | 1.06 | 22 |
| 1922 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 1923 | ---- | ---- | ---- | ---- | ---- | ---- | 1 | 160 | 80.83 | 1,671 |
| 1924 | ---- | ---- | ---- | ---- | ---- | ---- | 1 | 917 | 1,001.46 | 20,702 |
| 1925 | ---- | ---- | ---- | ---- | ---- | ---- | 5 | 708 | 539.14 | 11,145 |
| 1926 | ---- | ---- | ---- | ---- | ---- | ---- | 4 | 2,104 | 1,380.57 | 28,539 |
| 1927 | ---- | ---- | ---- | ---- | ---- | ---- | 3 | 1,155 | 945.05 | 19,536 |
| 1928 | ---- | ---- | ---- | ---- | ---- | ---- | 3 | 1,183 | 468.56 | 9,686 |
| 1929 | ---- | ---- | ---- | ---- | ---- | ---- | 3 | 2,207 | 1,434.46 | 29,653 |
| 1930 | ---- | ---- | ---- | ---- | ---- | ---- | 2 | 3,350 | 1,277.05 | 26,399 |
| 1931 | ---- | ---- | ---- | ---- | ---- | ---- | 1 | 3,689 | 2,174.55 | 44,952 |
| 1932 | 2 | 110.68 | $2,288 | 27 | $ 8 | $2,296 | 8 | 3,463 | 968.34 | 20,017 |
| 1933 | 3 | 40.32 | 1,031 | 11 | 4 | 1,035 | 7 | 1,823 | 663.20 | 16,951 |
| 1934 | 1 | 3.19 | 111 | ---- | ---- | 111 | 3 | 4,086 | 927.55 | 32,418 |
| 1935 | 3 | 11.41 | 399 | 1 | 1 | 400 | 11 | 3,565 | 856.89 | 29,991 |
| Total | ---- | 165.60 | 3,829 | 39 | 13 | 3,842 | ---- | 112,890 | 44,892.18 | 956,767 |

TABLE 2. - Gold, silver, copper, lead, and zinc production from Eldorado Canyon District, Clark County, Nevada, 1907-1935 (Continued)

(Compiled by Charles White Merrill, supervising engineer, San Francisco office, Mineral Production and Economics Division, U. S. Bureau of Mines)

| Year | Lode | | | | | | | | Total value | Average recoverable value of ore per ton[1] | Total value (lode & placer) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Silver | | Copper | | Lead | | Zinc | | | | |
| | Fine ounces | Value | Pounds | Value | Pounds | Value | Pounds | Value | | | |
| 1907 | 4,533 | $ 2,992 | ------- | ------- | ------- | ------- | ------- | ------- | $ 9,337 | $22.39 | $ 9,337 |
| 1908 | ------- | ------- | ------- | ------- | ------- | ------- | ------- | ------- | 750 | 30.00 | 750 |
| 1909 | 3,212 | 1,670 | ------- | ------- | 2,232 | $ 96 | ------- | ------- | 3,296 | 68.67 | 3,296 |
| 1910 | 2,335 | 1,261 | ------- | ------- | ------- | ------- | ------- | ------- | 4,136 | 9.60 | 4,136 |
| 1911 | 3,799 | 2,013 | ------- | ------- | 32 | 1 | ------- | ------- | 4,609 | 8.52 | 4,609 |
| 1912 | 10,379 | 6,383 | 157 | $ 26 | 442 | 20 | ------- | ------- | 7,198 | 52.54 | 7,198 |
| 1913 | 346 | 209 | 297 | 46 | ------- | ------- | ------- | ------- | 2,845 | 10.31 | 2,845 |
| 1914 | 1,650 | 912 | ------- | ------- | 292 | 11 | ------- | ------- | 2,609 | 16.10 | 2,609 |
| 1915 | 56,859 | 28,828 | ------- | ------- | 180 | 8 | ------- | ------- | 91,835 | 14.03 | 91,835 |
| 1916 | 241,789 | 159,097 | 1,205 | 296 | 11,771 | 812 | ------- | ------- | 373,337 | 15.01 | 373,337 |
| 1917 | 90,618 | 74,669 | 281 | 77 | 4,956 | 426 | ------- | ------- | 212,251 | 16.73 | 212,251 |
| 1918 | 103,672 | 103,672 | 119 | 29 | 3,430 | 244 | ------- | ------- | 216,088 | 14.12 | 216,088 |
| 1919 | 113,039 | 126,604 | ------- | ------- | ------- | ------- | ------- | ------- | 200,064 | 14.42 | 200,064 |
| 1920 | 85,113 | 92,773 | ------- | ------- | 148 | 12 | ------- | ------- | 139,917 | 15.27 | 139,917 |
| 1921 | 22 | 22 | ------- | ------- | ------- | ------- | ------- | ------- | 44 | 22.00 | 44 |
| 1922 | ------- | ------- | ------- | ------- | ------- | ------- | ------- | ------- | ------- | ------- | ------- |
| 1923 | 2,283 | 1,872 | ------- | ------- | ------- | ------- | ------- | ------- | 3,543 | 22.14 | 3,543 |
| 1924 | 2,265 | 1,518 | 1,189 | 156 | 7,870 | 630 | ------- | ------- | 23,006 | 25.09 | 23,006 |
| 1925 | 3,621 | 2,513 | 736 | 105 | 6,674 | 581 | ------- | ------- | 14,344 | 20.26 | 14,344 |
| 1926 | 17,714 | 11,054 | 2,816 | 394 | 18,808 | 1,505 | 1,800 | $ 135 | 41,627 | 19.78 | 41,627 |
| 1927 | 2,912 | 1,651 | 927 | 121 | 4,435 | 279 | ------- | ------- | 21,587 | 18.69 | 21,587 |
| 1928 | 1,000 | 585 | 568 | 82 | 2,242 | 130 | ------- | ------- | 10,483 | 8.86 | 10,483 |
| 1929 | 9,813 | 5,230 | 264 | 46 | 3,860 | 243 | ------- | ------- | 35,172 | 15.94 | 35,172 |
| 1930 | 5,507 | 2,120 | 432 | 56 | 1,537 | 77 | ------- | ------- | 28,652 | 8.55 | 28,652 |
| 1931 | 6,436 | 1,866 | ------- | ------- | ------- | ------- | ------- | ------- | 46,818 | 12.69 | 46,818 |
| 1932 | 3,690 | 1,041 | ------- | ------- | 499 | 15 | ------- | ------- | 21,073 | 6.09 | 23,369 |
| 1933 | 2,796 | 979 | 250 | 16 | 5,664 | 210 | ------- | ------- | 18,156 | 9.96 | 19,191 |
| 1934 | 6,731 | 4,348 | 1,813 | 145 | 9,911 | 367 | ------- | ------- | 37,278 | 9.12 | 37,389 |
| 1935 | 7,359 | 5,289 | 443 | 37 | 2,271 | 91 | ------- | ------- | 35,408 | 9.93 | 35,808 |
| Total | 789,493 | 641,171 | 11,497 | 1,632 | 87,254 | 5,758 | 1,800 | 135 | 1,605,463 | 14.22 | 1,609,305 |

1/ Not to be confused with average assay value.

to a 75-kva generator. The cost of power is 1 1/2 cents per kilowatt hour. Water for milling is pumped from a shaft in the vicinity.

## Diamond Gold Mining Co.

The Diamond Gold Mining Co., P. A. Simon, Las Vegas, Nev., president and general manager, controls 12 patented mining claims and 1 patented millsite, the latter at the mouth of the Eldorado Canyon on the Colorado River, 6 miles east of the mine. The property is worked under bond and lease from the Joseph Wharton estate, administered by the Girard Trust Co. of Philadelphia, Pa. It includes the Techatticup mine, which has been the largest producer in the Eldorado district.

Production of the Techatticup mine, most of which was made prior to 1900, is estimated at about $3,500,000. Judging from the extent of the mine workings, the tailings pile (about 150,000 tons) near the present millsite, and the ore that was treated in the early days in mills on the Colorado River, this estimate is probably fairly accurate. From 1913 to 1920 the mine was operated by Martin Heller of New York City. According to P. A. Simon, production for this period was 60,000 tons of ore averaging 0.55 oz. gold and 9.5 oz. silver, having a value of $17.82 per ton. This ore was treated in the cyanide mill formerly on the property. From 1923 to 1930 the Stile brothers, lessees, produced $48,000 in crude ore and flotation concentrates. Under the management of P. A. Simon, the mine has been operated intermittently for the past four years. In February 1937 the Diamond Gold Mining Co. employed an average of 35 men.

Development work comprises about 3 miles of underground workings. The Techatticup inclined shaft has a depth of 600 feet, with levels at about 100-foot intervals. An adit 180 feet long connects with the Techatticup shaft about 200 feet below the outcrop of the vein. An interesting feature of the property is that most of the development work has been in ore.

Mining equipment includes three compressors - an Ingersoll-Rand (12 by 12 inches), a Union (10 by 12 inches), and an Ingersoll-Rand Imperial type 10 (10 by 16 by 12 inches) drill sharpener, rock drills and other mining tools. Hoisting is done in a 1-ton skip operated by 20-horsepower Fairbanks-Morse geared hoist. There is a 50-ton daily capacity amalgamation-flotation mill on the property. Power for mining and milling is furnished by a 200-horsepower, Fairbanks-Morse, Y-type, Diesel engine.

There are two veins on the property - the Savage and the Techatticup. In the former silver values predominate, while in the latter values are chiefly in gold. The ore occurs as a network of stringers in monzonite. The strike of the veins is about east and west, and the dip varies from 20° to 70° to the north. The width varies from 2 to 12 feet, averaging about 5 feet. The Techatticup vein is traceable on the surface for several thousand feet. The gangue minerals are principally quartz, calcite, and shattered country rock, with subordinate amounts of pyrite, sphalerite, galena, and chalcopyrite. A little below the 400-foot level the veins are displaced by a flat fault. The monzonite stands well, and the open stope method of mining is employed.

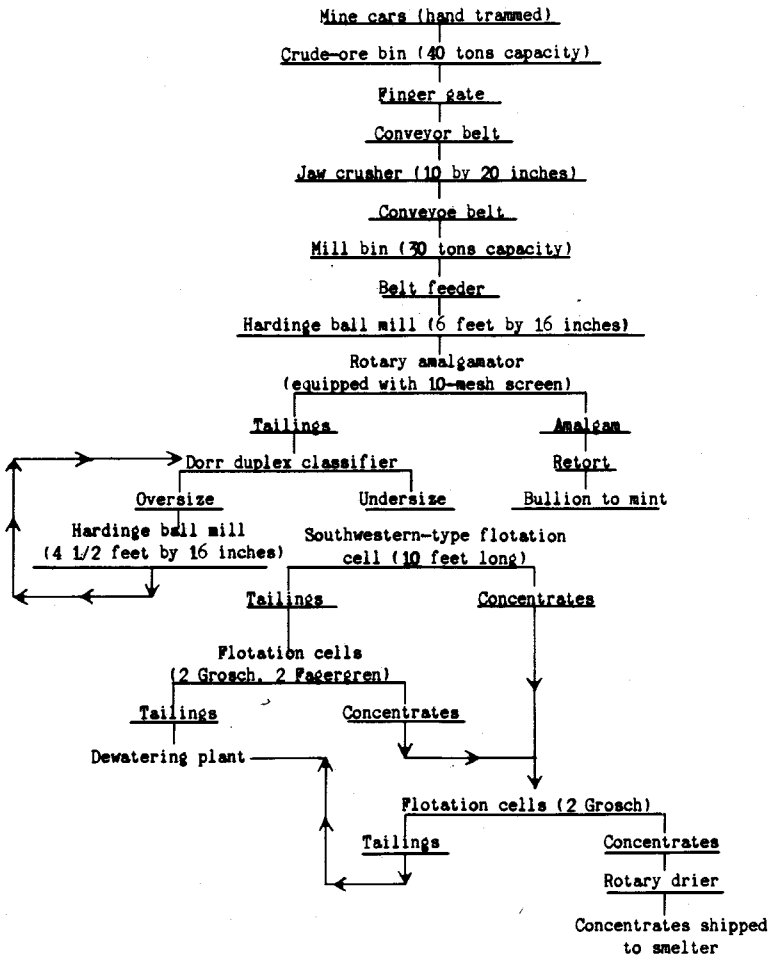


Figure 5.- Flow sheet of the Diamond Gold Mining Co. mill, Eldorado district, Clark County, Nev.

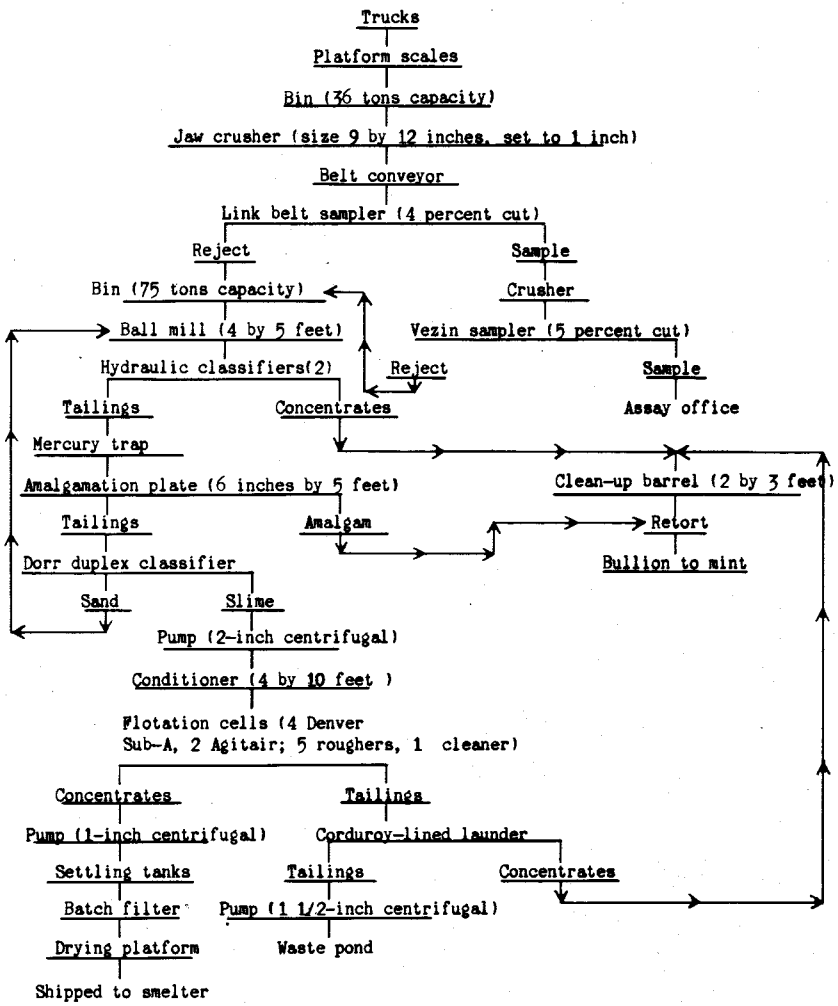


Figure 6.- Flow sheet of Kinney custom mill, Goodsprings, Clark County, Nev.

The flow sheet of the mill is shown in figure 5. Water for milling is hauled from the Colorado River, 6 miles distant, in tanks mounted on trucks, at a cost of $2 per 1,000 gallons. In February 1937, to eliminate the water haul, the company was installing a 4-inch pipe line 5.7 miles long from the Colorado River to the mill. The total lift will be 1,842 feet, and water will be pumped to the mine in two stages by triplex pumps. The value of the ore treated is from $12 to $18 per ton, averaging about $15. Recovery by amalgamation and flotation averages 85 percent. Flotation concentrates have a value of from $500 to $1,400 per ton.

## Eldorado Rover Mining Co.

The Eldorado Rover Mining Co., P. A. Keegel, of Las Vegas, Nev., president and general manager, controls the Rover, Flagstaff (Duncan), Rambler, and Sky Lark groups, comprising 17 patented claims. Production from these groups of claims has been about $550,000 of which $360,000 was produced from the Flagstaff. In February 1937, 12 men were employed and the company was preparing to operate its 75-ton daily capacity cyanide mill.

Development comprises three inclined shafts, the deepest of which is the Flagstaff, which is inclined 40° and is 500 feet deep. Underground workings total about 4 miles. Mining equipment includes a 25-horsepower Fairbanks-Morse geared hoist at the Duncan shaft, a 15-horsepower Fairbanks-Morse geared hoist, and an Ingersoll-Rand Imperial type 10, 2-stage compressor belt driven by a 60-horsepower Fairbanks-Morse distillate engine at the Rambler shaft. The mill is equipped with a Blake type crusher (10 by 16 inches), belt driven by a 25-horsepower Fairbanks-Morse distillate engine; 10 stamps (1,250 pounds each); a pebble mill (16 feet long and 4 1/2 feet in diameter); a Dorr duplex classifier, Wilfley table, two agitators (18 feet by 12 feet), a thickener (24 by 12 feet), and Oliver filter (9 feet in diameter), solution tanks, and other cyaniding equipment. Power is furnished by a 90-horsepower, Fairbanks-Morse, Y-type, 3-cylinder, Diesel engine and a 40-horsepower, Fairbanks-Morse, distillate engine. Water for milling is pumped from the Duncan and Rambler shafts.

The three veins on the property are the Rambler, Rover, and Flagstaff, which occur either in monzonite or at the contact of monzonite and andesite. In February 1937 mining was confined to the Rover vein. This vein strikes east and west, dips about 70°, and ranges in width from 2 to 6 feet. It outcrops for a distance of several thousand feet. The ore occurs in a gangue of shattered country rock with bunches and stringers of quartz and calcite. Values are chiefly in gold, with minor amounts of silver.

## Eldorado Rand Mine

The Eldorado Rand mine comprises 27 claims (three of them patented) controlled by the Guaranty Liquidating Corporation of Los Angeles, Calif. Recently this property was leased for 10 years to an eastern syndicate represented by John Daam of San Francisco, Calif. When the writer visited the property in February 1937 the syndicate was planning to develop the mine

further and to construct a mill on the Colorado River, about 8 miles east. This property has been a consistent producer, and past production, chiefly from the Quaker City and Rand patented claims, has been approximately $1,000,000.

Development comprises about 6,000 feet of underground workings. The Rand shaft is 350 feet deep. Equipment includes a 40-horsepower Fairbanks-Morse geared hoist, a compressor (10 by 10 inches) belt driven by a Fairbanks-Morse distillate engine, and a 10-stamp cyanide mill originally built in 1907. The mill equipment is in poor condition. Adjacent to the mill is a tailings pile estimated to contain 50,000 tons, but the writer could not learn whether the tailings contained sufficient values to be worth retreating.

The ore occurs in a series of veins varying from 3 to 6 feet in width in a monzonite formation. The veins are distinguished by their diversity in dip, varying from nearly horizontal to 80°. Values, chiefly gold and silver, occur in fissure zones in a gangue of country rock, calcite, quartz, pyrite, galena, and sphalerite.

Crown Queen Group

The Crown Queen group of three patented claims, known as the Eldorado Crown Mining Co., is controlled by Martin Heller, 120 Broadway, New York City. In February 1937 the property was worked by R. T. Roe, W. R. Cozart, and Osborne Gentry under 1-year lease with a royalty of 10 percent of net mill or smelter returns. The lessees were working at the surface on the east end of the vein, and several hundred tons of ore, said to average $15 per ton, had been exposed. Arrangements were being made to treat the ore at the Eldorado Rover mill, 2 miles distant. Prior to 1907 the property is said to have produced $450,000 in milling ore treated at the Techatticup mill.

Development work comprises a shaft 300 feet deep and inclined 52° and more than a mile of underground workings. Equipment includes a Rix 1-drill compressor belt driven by 6-cylinder automobile engine.

The main vein strikes east and west and dips 50° to the south. Formation is monzonite and andesite. Judging from the old stopes mined through to the surface, the average width of the vein is about 5 feet. Gold and silver values occur in a network of small stringers in a fairly well defined zone in shattered country rock.

Eldorado Empire Mining Co.

The Eldorado Empire Mining Co., C. E. L. Gresh, of Nelson, Nev., president and principal owner, controls the Empire group of three claims (one patented) adjoining the Wall Street group on the east. Although operations have been carried on intermittently for a number of years, very little has been produced and in February 1937 it was inactive.

Development work comprises a shaft 200 feet deep and other workings totaling in all about 2,000 feet. Mining equipment includes a 6-horsepower Fairbanks-Morse geared hoist, a 1-drill Ingersoll-Rand compressor, assay office, and blacksmith shop.

Equipment for a partly completed mill consists of a small Wheeling crusher, a Marathon rod mill, and a 15-horsepower Fairbanks-Morse distillate engine.

According to Gresh, the ore occurs in a brecciated zone 40 feet wide, in monzonite. When the writer visited the property, about 50 tons of ore on the dumps were reported to average about $12 per ton in gold and silver. It was planned to treat this ore in the nearby Eldorado Canyon Development Co. mill.

## Golden Empire Group

The Golden Empire group of eight claims owned by John S. Sartain is in the western part of the Eldorado district in the vicinity of Knob Hill. This property has been worked intermittently for many years and production is reported to have been about $50,000 in shipping ore. In February 1937 the property was under lease to R. W. Cate, with royalty payment of 10 percent on the net smelter returns. In 1936 Cate shipped 50 tons of ore averaging $50 per ton. The ore is mined by hand methods. The haul to Boulder City, 32 miles from the property, costs $3 per ton. Development work comprises four shafts, each about 100 feet deep, and subsidiary workings, totaling in all about 1,000 feet.

The ore occurs in narrow veins from a few inches to 2 1/2 feet wide, striking east and west and dipping 60° to 80° to the south. Values are in gold and silver. Formation is gneiss and schist.

## Other Properties

The Rich Hill group of two claims owned by J. Taylor, the Silver Legion group of nine claims owned by John S. Sartain and associates, and the Combination group of two claims are in the Knob Hill section of the Eldorado district. When the writer visited here in February 1937 these properties were inactive.

In general, the ore in the Knob Hill area is in east and west quartz veins in gneiss and schist. Some of the veins, although narrow, are very persistent and can be traced for several thousand feet. The values are in gold and silver associated with small amounts of pyrite, galena, and sphalerite.

In the Capitol area, in the eastern part of the district, a number of small properties were operated in former years. The first discovery in this area was made in 1894 by John Appel. The principal property is the Capitol group of five patented claims owned by Thomas F. Murphy of Los Angeles, Calif. Production is reported as $100,000.

Other properties are the Briggs Capitol group of 17 patented claims owned by Yeoman Briggs of Nelson, Nev., the Wallace group of 10 patented claims owned by William C. Wallace of Oakland, Calif., and associates, the Nevada Eagle group of six patented claims owned by the J. T. Weyerhaeuser interests of Tacoma, Wash., and various other groups of unpatented claims.

In the Capitol area the ore occurs as numerous narrow quartz veins in monzonite and andesite. Values are chiefly in gold, with small amounts of silver. Nearly all the properties in this section are in the prospect stage of development.

## GOLD BUTTE DISTRICT

(Gold, Zinc, Copper, Mica, Magnesite)

The Gold Butte district is in southeastern Clark County in the southern end of the Virgin Range. It includes the territory south of Gold Butte lying between the Nevada-Arizona boundary line on the east and the Virgin River on the west. Mining was begun in this area in the eighties. A small boom occurred in 1908, when the camp of Gold Butte was established, and although a number of small companies were organized to work various properties, no important discoveries were made. The total production from the district has been about $75,000, mostly in shipping ores. In 1936 the principal operation in the district was that of the Lake Shore Mining Co.

The geology of the Gold Butte mining district has been described by Hill[11/].

The ore deposits are of two types - replacement deposits in limestone and quartz veins in gneiss and granite. The ore in the limestone consists of oxidized copper, lead, and zinc minerals. The values in the quartz veins are chiefly in gold.

A small amount of sheet mica has been produced from pegmatite dikes in the vicinity of Gold Butte.

### Lake Shore Mining Co.

The property of the Lake Shore Mining Co., comprising the Utah group of four unpatented claims owned by O. W. Yates, A. W. Lawson, and Fred Gibson of Las Vegas, Nev., is located about 15 miles south of Gold Butte and 5 miles from the shore of Lake Mead. In 1934 and up to July 1935 the Utah group and other claims were worked by the Gold Cross Mining Co., controlled by Salt Lake City interests. The Gold Cross Mining Co. erected a small amalgamating mill on the shore of the Colorado River and treated about 400 tons of ore. This company also shipped 340 tons of ore,

11/ Hill, James M., Notes on Some Mining Districts in Eastern Nevada: U. S. Geol. Survey Bull. 648, 1916, pp. 42-53.