

The property is equipped with a power plant consisting of an 80 hp. and a 120-hp. Diesel engine. Electric current is also purchased from the Sierra Pacific Power Co. Water is scarce in the region, but enough for ordinary needs is piped from Antelope Springs 2 miles away.

Figure 6 shows a flow sheet of the reduction plant prepared from an article by Adamson.<sup>11/</sup> The rotary furnace has a capacity of about 50 tons of ore per day and the Herreshoff of 85 tons. The mercury from the condensers is run into a concrete launder that has an outlet into one of two submerged cast-iron pots holding 100 flasks each.

O. H. Oleson of Lovelock and E. E. Grille own six claims and two fractions adjoining the property of the Nevada Quicksilver Mine, Inc. Development work comprises a 75-foot shaft, 400 feet of tunnels, and surface workings, a total of 1,000 feet. About 60 tons of ore left on the dump were taken out during development. Other claims are held in the district by various owners, but none were active when the author visited them.

There is a deposit of antimony about 6 miles northeast of the quicksilver deposits. George Senn first worked the deposit in 1864 and erected a small crucible furnace that is reported to have been unsuccessful. During the World War 400 tons of ore averaging 35 percent antimony was produced. The property has been idle for many years.

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Rochester District

The Rochester district is in the central Humboldt Range 9 miles east of Oreana, a station on the Southern Pacific Railroad. The Packard part of the district is  $2\frac{1}{2}$  miles south of the Rochester townsite.

The Rochester district was discovered and named in the sixties by prospectors from Rochester, N.Y. The Relief mine in the southern part of the range 4 miles south of Nenzel Hill was worked during the sixties and seventies. In 1905 Charles E. Stevens located claims on Nenzel Hill at the head of Rochester Canyon. These claims eventually came into the possession of Joseph F. Nenzel. In 1912 Nenzel shipped a small lot of float ore that gave surprisingly high returns. With the subsequent discovery of several silver-bearing veins development proceeded rapidly, and in 1913 Rochester Canyon had a population of about 2,000. Two companies, the Rochester Mines Co. and the Nevada-Packard Mine Co., built all-slime cyanidation plants in 1915. The mill of the Rochester Mines Co. had an initial capacity of 100 tons per day, which was later increased to 160 tons. The plant of the Nevada Packard Mines Co. had a capacity of 120 tons. In 1917 a mill reported to have cost \$300,000 was erected at Packard by the Rochester Combined Mines Co. After the mill had been operated only a few weeks it was shut down, and in 1922 the equipment was moved to Candelaria, Nev.

The principal producer, the Rochester Mines Co., was threatened by apex litigation in 1917, but by compromise and consolidation litigation was avoided, and the Rochester Silver Corporation was formed in 1920. This company ceased operations in 1929, and the equipment of the mill was sold. In March 1936 the principal active property in the district was the Buck and Charley mine owned by the Rochester

<sup>11/</sup> Adamson, W. G., Recent Progress in the Metallurgy of Quicksilver: Eng. and Min. Jour., vol. 128, pp. 503-505.

Plymouth Mines Co. The production of gold and silver from lode mines in this area from 1912 to 1934 is shown in table 2.

TABLE 2. - Silver and gold produced from deep mines,  
Rochester District, Nevada, 1912-34

Year <sup>1/</sup>	Tailings and ore (short tons)	Value of gold	Silver (fine oz.)	Value of silver	Value per ton	Total value
1912	144	\$491	6,850	\$4,213	\$32.67	\$4,704
1913	16,152	52,350	701,395	423,664	29.47	476,014
1914	14,499	71,769	621,833	344,276	28.69	416,045
1915	26,665	105,407	663,791	337,684	16.62	443,091
1916	67,992	81,228	816,620	538,923	9.12	620,151
1917	88,371	152,855	799,865	660,514	9.20	813,369
1918	95,747	177,120	810,974	815,034	10.36	992,154
1919	103,662	117,899	667,161	747,398	8.35	865,297
1920	75,048	130,715	620,046	676,328	10.75	807,043
1921	87,628	176,144	667,084	667,129	9.62	843,273
1922	116,455	107,033	800,238	800,238	7.79	907,271
1923	91,374	124,326	664,714	545,077	7.33	669,403
1924	28,779	113,882	329,819	220,979	11.64	334,861
1925	8,718	34,012	60,012	41,655	8.68	75,667
1926	484	9,904	3,737	3,140	26.95	13,044
1927	23,939	42,450	156,633	88,811	5.48	131,261
1928	30,627	39,448	240,346	140,732	5.88	180,180
1929	4,479	7,992	52,628	28,345	8.11	36,337
1931	28	2,681	295	86	98.82	2,767
1932	641	5,070	2,029	573	8.80	5,643
1933	310	5,991	316	111	19.68	6,102
1934	606	14,308	11,857	7,648	36.23	21,956
Total	882,348	1,573,075	8,698,243	7,092,558	<sup>2/</sup> 9.82	8,665,633

<sup>1/</sup> No production in 1930.

<sup>2/</sup> Average value per ton.

The geology of the Rochester district has been described by Schrader<sup>12/</sup> and by Knopf.<sup>13/</sup> The principal ore deposits are silver-gold quartz veins and stockworks. The stockworks occur at Packard and consist of a network of narrow veinlets in rhyolite. The gangue consists of quartz, and the chief economic mineral is finely disseminated argentite associated with gold. Other metallic minerals found in minor quantities are pyrite, sphalerite, galena, tetrahedrite, covellite, and chalcopyrite. The veins worked by the Rochester Silver Corporation were productive from the surface to the 1,200-foot level, a vertical depth of 700 feet. Below this level little ore was found.

<sup>12/</sup> Schrader, Frank C., The Rochester Mining District, Nevada: U.S. Geol. Survey, Bull. 580-M, 1914, 47 pp.

<sup>13/</sup> Knopf, Adolph, Geology and Ore Deposits of the Rochester District, Nevada: U.S. Geol. Survey, Bull. 762, 1924, 78 pp.

The Buck and Charley mine is on the south side of Rochester Canyon a short distance below Lower Rochester. In 1935 Charles Mayer, working the property under lease, shipped several carloads of rich ore, and the Rochester Plymouth Mines Co. was organized and a 50-ton flotation mill built.

The mine is developed by several adits and a shaft 200 feet deep sunk from the lowest adit level. Most of the ore has been mined from near the surface. Besides gold and silver, the ore carries pyrite, zinc blende, and galena. Until April, 1936 about 19,000 tons of ore ranging in value from \$6 to \$20 per ton had been treated in the flotation mill.

Figure 7 shows the mill flow sheet. It was designed for a capacity of 50 tons per 24 hours, but as much as 70 tons have been treated. The cost of the mill was about \$45,000. The concentrates range from \$180 to \$400 per ton in value. Concentrates are shipped to the smelter by truck. Moisture in the concentrates after filtering averages 12 to 18 percent. The reagents used are aerofloat, xanthate, and cresylic acid. The pulp density in the flotation circuit is maintained at 25 percent solids.

Water for milling is obtained from the mine. Power is purchased from the Sierra Pacific Power Co. The motor horsepower required for milling is 121. Thirty men are employed in the mine and the mill.

There are two other mills in the district both of which were idle in March 1936. The Lonney amalgamation concentration mill is equipped with 15 stamps. This property is under lease to E. Lyon of Rochester. The Lincoln is a 2-stamp amalgamation mill.

In addition to the Rochester Plymouth Mines Co. operations about 10 men were leasing or prospecting properties in the area in March 1936.

#### Rosebud District

The Rosebud district is in the Kama Mountains 35 miles northwest of Tule, a station on the Southern Pacific Railroad. Sulphur, 9 miles northwest, is the nearest shipping point. Silver-gold ore was discovered in 1906, and a short-lived boom followed. Since 1908 the annual production, chiefly from leasing operations, has been small but consistent. Total production is estimated to be \$125,000. The only mill that operated in this area was erected several years ago by the American Mining & Milling Co., which had a bond and lease on the Brown-Palace mine. The mill had a daily capacity of 50 tons. The company became involved in difficulty, and the equipment of the mill was dismantled and sold. Judging from the tailings dump, several thousand tons of ore were treated in the mill. A. H. Leach sampled these tailings and obtained an average of \$2 per ton at current metal prices.

The veins at Rosebud are all in rhyolite, which in most places is extremely altered and somewhat silicified, kaolinized, and pericitized, and contains pyrite that has been changed to iron oxide. Most of the veins show little quartz. The mineralized material is largely soft, white kaolinite. In general the deposits do not have definite walls.

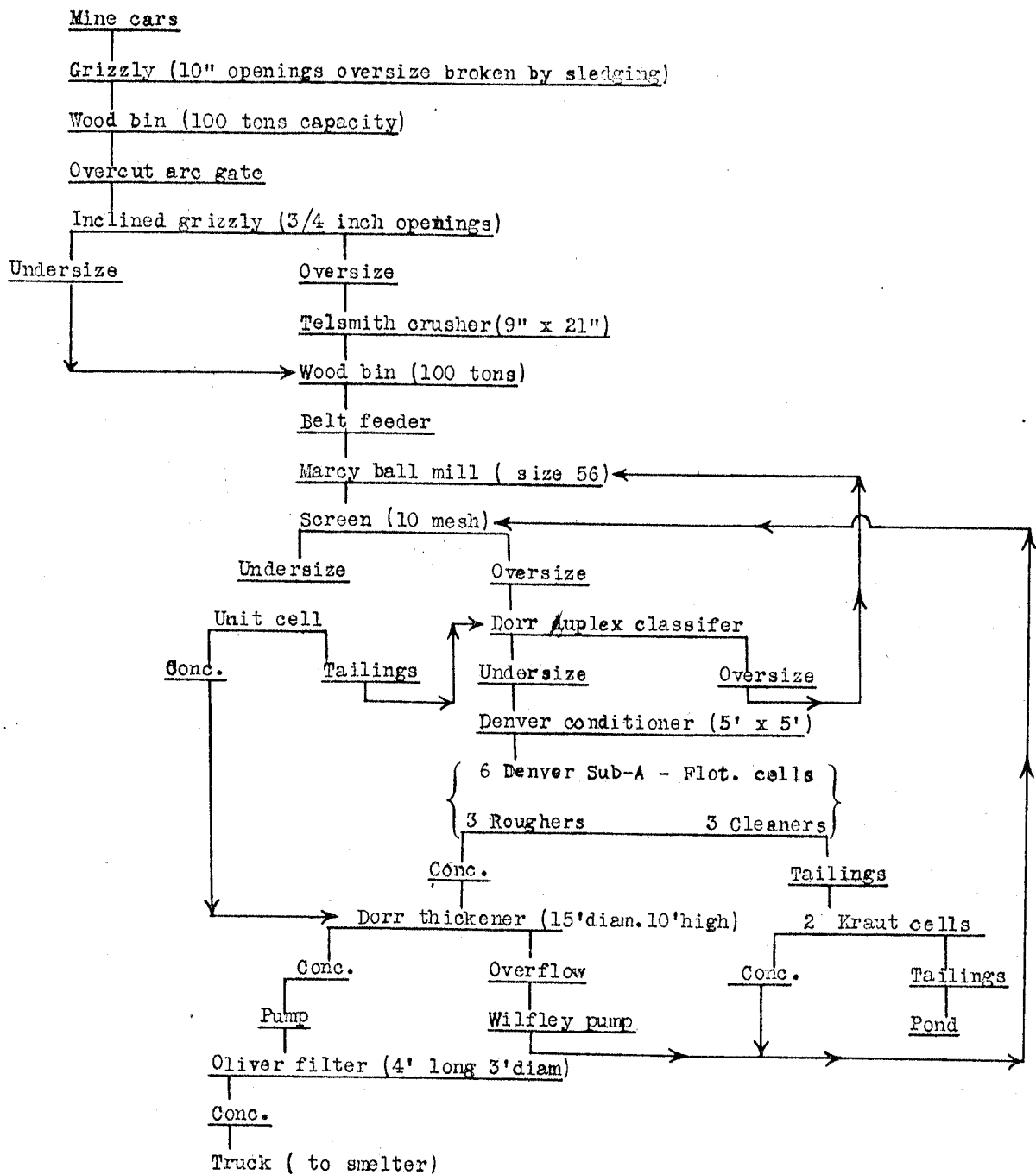


Figure 7.— Flow sheet of Rochester Plymouth Mines Company mill, Rochester District, Nevada.