of antimony ore was produced in 1893 by Sanders and Young, and the last production of record was made in 1906, when 200 tons were shipped. C. Solomon, Jr., of San Francisco, identified with the Chapman Smelting Co., was active in the district during the World War. Although considerable development work was done at that time there is no record of any production.

The Antimony King and Lofthouse mines are the principal antimony properties. The former is at Bernice and the latter about 5 miles southwest. The deposits have been prospected by numerous superficial workings. According to Mallory,9/ the prevailing geological formations are a series of sedimentary rocks, chiefly slate, shale, and limestone intruded by granite. The commercial antimony ore occurs in quartz veins in the lower slate stratum of the sedimentary series closely associated with limestone strata. At the Antimony King mine are two siliceous limestone beds averaging about 2 feet in thickness and being 300 feet apart. The most persistent bed is traceable on the surface for 3 miles. The croppings of limestone are stained yellow from antimony oxide along the cleavage planes, but it is not present in commercial quantities.

The Antimony King vein is traceable on the surface for 900 feet and strikes N. 10° E. with a dip of 50° W. It cuts the slate and limestone strata at nearly right angles. The width of the vein ranges from 4 inches to 4 feet, and both walls have a parting of black slaty gouge. The vein filling is predominantly quartz containing shoots of nearly solid antimony in places. The weathered zone contains cervantite, the yellow oxide of antimony, which in places forms coatings on stibnite. Sphalerite occurs sparingly. The best ore is near the intersection of the vein with the southern limestone stratum.

The Lofthouse vein parallels the Antimony King vein; the best ore likewise occurs associated with a limestone stratum in the enclosing shale. In the Lofthouse vein the antimony is less massive, occurring in fibrous or needle-like forms.

CHALK MOUNTAIN DISTRICT

The Chalk Mountain district is in the southeastern part of Churchill County in the vicinity of Chalk Mountain in the southern end of Dixie Valley. This mountain, isolated from the main Alpine Range, is 3 miles long and 2 miles wide and rises to a height of about 1,000 feet above the surrounding terrain. It is composed of whitish dolomitic limestone, which forms a conspicuous landmark in the region. The nearest railroad connection is at Fallon, 44 miles west-northwest of the principal mine. The district is midway between Wonder and Fairview, sometimes being considered part of the latter, which lies about 8 miles south. The mineral production is included under the Fairview district.

Chalk Mountain was prospected in the early years of mining activity in Churchill County, but received little attention until 1923, when E. M. Dawes interested a Minneapolis group and acquired control of the Chalk Mountain Silver

9/ Mallory, Willard, Antimony Veins at Bernice, Nev.: Min. and Sci. Press, Vol. 112, 1916, p. 556.

Lead Mines Co. Dawes and associates started a development campaign and several deposits of ore were found. This development and increased production stimulated activity, and about eight small companies were organized, which were active during 1925 and 1926. These small companies produced little, and all became inactive after short periods of prospecting. In the early part of 1939 the only mining activity was by lessees on the property of the Chalk Mountain Silver Lead Mines Company.

Production of the district has totaled several hundred thousand dollars in shipping ore, virtually all of which was produced by the Chalk Mountain Silver Lead Mines Co.

Chalk Mountain Silver Lead Mines Co.

The Chalk Mountain Silver Lead Mines Co., E. M. Dawes, Lovelock, Nev., president, owns 12 unpatented claims on the east slope of Chalk Mountain. The company was incorporated in 1920 under the laws of Nevada, with a capitalization of 2,000,000 shares at a par value of 50 cents, which was later increased to $1 per share. The principal production was made between 1923 and 1929. In 1925, 1,505 tons of ore sold to a smelter had a value of $86,923 and contained 99 ounces of gold, 59,651 ounces of silver, and 861,355 pounds of lead. Up to June 1, 1927, the total production of the company amounted to 2,300 tons valued at $135,000, or an average net value of $58.70 per ton. Some ore was also shipped in 1928 and 1929. In 1929 a 50-ton mill employing table concentration and having a Diesel power plant was erected at the mine to treat the lower-grade ore, but it was unsuccessful metallurgically. In 1930 the company sold the mill equipment and suspended operations, since which time the mine has been operated sporadically by lessees with occasional small shipments. In 1939 the mine was under lease to Harry Howard and associates, who were shipping ore intermittently to the smelter. The royalty payments made by lessees on net smelter returns are 10 percent of the gross smelter value of ore assaying $35 or less, 20 percent on ore ranging between $35 and $75 per ton, and 25 percent on ore having a gross smelter value of more than $75 per ton.

The mine is developed by a 40-foot shaft, two 110-foot shafts, and one double-compartment vertical shaft 517 feet deep, with lateral work on 6 levels. Total workings comprise about 5,000 feet.

Equipment includes a 40-horsepower Fairbanks-Morse gasoline hoist, blacksmith shop, tools for hand mining, and camp accommodations for a crew of about 20 men.

Formation is dolomitic limestone intruded by granodiorite. The limestone is locally folded and traversed by a number of faults, with which the ore bodies are associated. Ore occurs as irregular replacement deposits ranging from 1 to 12 feet in width along fissures and bedding planes of the limestone. The ore minerals are cerussite, anglesite, cerargyrite, wulfenite, vanadinite, and argentiferous galena in a porous gangue consisting of quartz, calcite, altered limestone, and iron oxides. Ore is largely oxidized to the lowest level of the mine, and the high iron content makes it desirable for fluxing.

The mine dump, consisting of about 3,000 tons, is reported to be ore of milling grade.

DESERT DISTRICT

The Desert district is in the northeast portion of the Hot Springs Mountains in northwestern Churchill County on the northeast flank of Desert Peak, which has an altitude of 5,401 feet above sea level. Parran siding, on the Southern Pacific R. R., is 7 miles east. The district is accessible by automobile over a desert road 5 miles in length, which leaves the Victory Highway at a point several miles northeast of Springer's Hot Springs.

The principal mine, the Desert Queen, is said to have been discovered by emigrants in 1849. If this is true, it has the distinction of being the first lode mine worked in the northern part of Nevada. In the early sixties the Desert Queen mine was worked by a company from Schenectady, N. Y., with which Horace Greeley is reported to have been connected. In 1863, a mill consisting of two two-stamp batteries was built on the flat 2 miles east of the mine, but it proved unsuccessful and a second mill was built at the edge of Humboldt Sink 14 miles northeast. Eventually the property reverted to the Public Domain, and in 1931 a group from Lovelock, Nev., relocated the principal claims, which in the following year were taken over under bond and lease by Wilford Dennis and associates, who organized the Manitou Gold Mining Co. A 25-ton-capacity amalgamation-concentration mill was erected by the company in 1937. Early in 1939 a crew of three men was employed on development.

Manitou Gold Mining Co.

The Manitou Gold Mining Co. controls, under bond and lease, the Chrysler-Bonanza group of 10 unpatented claims owned by Herman N. Marker and K. O. Olfers, of Lovelock, Nev.

Development consists of three adits, the longest 750 feet, and several shallow shafts and old workings, totaling approximately 4,000 feet. Mining equipment includes an Ingersoll Rand, two-stage compressor (model 25) with a Waukesha gasoline engine, a blacksmith shop, rock drills, and other mining tools. Mill equipment consists of a Blake-type crusher size 7 by 9 inches, a Straub ball mill, amalgamation plate, and an Overstrom concentrating table. Power is supplied by gasoline engines. Camp buildings can accommodate a crew of 10 men. Water for milling is pumped from a shaft 265 feet deep near the mill site.

Ore occurs in a series of fissure veins with a maximum width of 5 feet in a diorite formation. The principal vein, the Desert Queen, has a strike of N. 60° W. with a dip of 40° NE. The economic minerals, gold and silver, have a quartz gangue impregnated with iron oxides.

EASTGATE DISTRICT

The Eastgate district is on the west side of the Desatoya Range in southeastern Churchill County about 50 miles east-southeast of Fallon, the nearest railroad point. No information is available concerning the first mining activity in this area, although it is known that a number of gold and silver properties have been prospected in a desultory manner for at least 40 years. The production of the district is estimated at about $25,000 in shipping ore, most of which was derived from the Gold Ledge group of claims. In the first part of 1939 the only activity was at the Gold Ledge property.

Gold Ledge Group

The Gold Ledge group of unpatented claims, owned by W. H. Schweis, of Reno, Nev., is situated on a mountain spur off the west side of the Desatoya Range about 56 miles east southeast of Fallon, the nearest railroad point. It can be reached by automobile over an unimproved desert road 5 miles in length, which leaves the Lincoln Highway about 1 mile west of Eastgate. The last 2 miles of the road is in a narrow, steep canyon with a number of sharp turns. First locations in this area were made by E. W. Baker in 1906. The Gold Ledge property has been worked intermittently by individuals and small companies. In 1934 the property was operated for a short time by the Monarch Gold Ledge Mining Co., which erected a 50-ton amalgamation-concentration mill several miles northwest of the mine, but it was unsuccessful; the mill equipment was sold in 1939. About $20,000 in shipping ore has been produced.

Development consists of an adit 350 feet in length along the ledge, an inclined shaft 200 feet in depth with levels at 150 and 200 feet below the surface, a vertical shaft 110 feet deep, and other workings, totaling about 1,500 feet. Mining equipment includes a 7 by 6-inch Sullivan air compressor, belt-driven by an automobile engine; a West Coast, 5-horsepower, gasoline geared hoist; rock drills and other mining tools; a blacksmith shop; and camp accommodations for a crew of four men. Although there is no water at the mine, it can be obtained in Eastgate Wash, several miles northwest of the mine. In 1939 the property was being worked by Schweis with a crew of two men. In 1938 he shipped about 100 tons of ore, averaging approximately $30 per ton, to the Dayton custom mill at Silver City, Nev. The truck haul to the Dayton mill, a distance of about 160 miles over hard-surfaced roads, cost $5 per ton and milling was $4 per ton. The shipper was paid for 90 percent of the assay value of the ore.

Ore containing gold and silver occurs in a fault fissure vein striking N. 30° E. and dipping about 65° easterly. The formation is altered rhyolite. The vein ranges in width from 1 to 6 feet, with no well-defined walls. The gangue is composed largely of crushed and iron-stained rhyolite showing little silicification. At the south end of the workings the vein has been intercepted by a number of faults that cut it at right angles; to the north, a fault striking N. and S. and dipping 70° E. apparently has displaced the vein several hundred feet north, as indicated by workings on a vein east of the fault.