The Chalk Mountain, Quartz Mountain, Gold Basin, and King Mining districts, Nevada.

DEPARTMENT OF THE INTERIOR

Geological Survey

September 15, 1927.

Chalk Mountain, Quartz Mountain, Gold Basin, and King Mining Districts, Nevada.

The Chalk Mountain and Quartz Mountain mining districts are in southwestern Nevada southeast of Fallon, the nearest railroad station, to which the ore is hauled by autotrucks over the Lincoln Highway and thence shipped to Salt Lake City, Utah. The districts have recently been brought into prominence by the discovery of valuable ore bodies. This general region was examined by the Geological Survey several years ago, but in view of the recent discoveries and considerable production another visit was made in October, 1926. The work was done by F. C. Schrader, geologist, who received valuable aid and information from the local mining companies. The deposits occur mostly in Triassic (?) limestone and are associated with porphyritic intrusive rocks, like the ores of Tintic, Utah, and Leadville, Colo.

Chalk Mountain District

The Chalk Mountain district is about 40 miles east-southeast of Fallon, in Churchill County, midway between the famous old Fairview and Wonder districts. (See fig. 2.) Chalk Mountain, in which nearly all the ore occurs, is a conspicuous whitish hill in Fairview Valley. It is about 3 miles long, in a north-northeast direction, and 2 miles wide, and it rises to an altitude of 5,440 feet, or about 1,000 feet above the surrounding surface. (See fig. 3.) It is separated from the west front of the Westgate Range, which contains the eastern part of the district, by a valley about a mile wide.

Geology

Chalk Mountain consists mainly of whitish dolomitic limestone which has been arched into an anticlinal fault block along its longitudinal axis and intruded by granodiorite porphyry. The limestone contains the ore deposits. It is medium to thick bedded and is more or less marmarized. It has been faulted, sheeted, and locally intensely folded. Pronounced faults occur along the east front of the mountains, and with them is associated the principal zone of mineralization. Faulting and mineralization have occurred also on the west slope, in a cross zone, or "iron belt," nearly a mile south of the north end, and across the south end. Along the contact the granodiorite porphyry has changed the limestone into dolomitic marble and produced a contact-metamorphic zone, in places several hundred feet wide, containing a score or more of the usual metamorphic minerals and also bodies of ferruginous magnetic greenstone or low-grade iron ore, with which copper minerals are associated. Epidote, a green calcium-aluminum silicate, occurs in large bodies on the west slope of the mountain, and large masses of phlogopite, a light-gray, pearly-lustered magnesium mica, are found at the southeast base. No fossils indicative of its age have yet been found in the limestone of Chalk Mountain, but because of Jurassic fossils found in limestone in the foothills to the south and in the adjacent part of the Westgate Range, and because of the more highly metamorphosed character and dynamically shattered condition of the limestone in Chalk Mountain, it is thought to be probably of Triassic age and to belong to the formation that occurs 12 miles to the north, in the Stillwater Range, and was described by the Fortieth Parallel Survey as the Koipato series.

The granodiorite porphyry, with which the ore deposits are genetically connected, is a medium-grained gray porphyritic rock composed chiefly of soda-lime and alkali feldspars, quartz, biotite, and hornblende.

The limestone and granodiorite porphyry are intruded by dikes of a greenish iron-gray diorite and a whitish aplite, which are presumably complementary to each other and have been differentiated from the granodiorite porphyry magma. In places ore deposits are associated with these dikes.

At the north end of the mountain the limestone and the granodiorite porphyry are mostly covered by rhyolite, a light-colored siliceous volcanic rock. On the northeast slope occur two small areas of a dark-greenish iron-gray andesite, and a small belt of the andesite crosses the south base.

Covering the consolidated rocks on the lower slopes of the mountain is a thin mantle of alluvium or wash, which increases in thickness to at least 150 feet in the surrounding valley.

Ore Deposits

Chalk Mountain

Since the early Comstock days it has been known that ore occurs in Chalk Mountain, but until 1921 there was only sporadic production, occasionally in carload lots, running about 60 per cent of lead and 60 ounces in silver to the ton. Until about 1920 the operators believed that the mountain contained considerable ore but that it was of too low grade to be shipped and that the veins were not persistent. Beginning with the operations of the Chalk Mountain Silver-Lead Mines Co., about 1921, more extensive deposits were found, which stimulated activity and increased production. The property of the company lies about the middle of the lower east slope of the mountain and extends nearly 1½ miles on the zone of mineralization, in which the vein along the main fault fissure dips steeply to the east. The mine is situated toward the south end of the property. (See fig. 2.) By May, 1923, the company had shipped, mostly from development work, 120 tons of $80 ore, comprising about 80 per cent of the ore mined. By 1925 a 5-foot ore body had been developed for 375 feet on the 110-foot level and a new shaft, 600 feet south of the old shaft, showed the ore body to be about 10 feet wide on the 160-foot level, from which the company was shipping daily 12 tons of $100 ore. In July, 1926, a large, rich ore body was opened on the 335-foot level. It alone produced $175,000 worth of ore, some of which ran 70 per cent in lead. In places it was 12 feet wide. The ore was found to continue down to the 500-foot level, where the main vein contained 6 feet of rich ore. By February 1927, the company had shipped 51 cars of ore, which returned $127,400, or an average net value of $60.94 to the ton. About $500,000 worth of $25 mill ore had been blocked out in the mine and about 3,000 tons of $20 ore accumulated on the dump. The ore shipped runs about $90 in gross value to the ton, of which $60 is in lead and $30 in silver. The company can profitably mine and ship ore of $30 grade.

Other operators at Chalk Mountain, mostly on the west side, are the Nevada Chalk Mining Co., the Chalk Mountain West Side Mines Co., the Quartz-Chalk Mountain Mining Co., and the Chalk Mountain Extension Mining Co., each with a group of four to eight claims. The Nevada Chalk Mining Co. has for some time been producing on a small scale.

The deposits are mostly oxidized, and the ore bodies, though a few are tabular, are mostly irregular masses of porous iron-stained material. They occur as veins and replacement deposits along fractures or bedding planes in the limestone. The ore minerals are cerusite, wulfenite, anglesite, argentiferous galena, cerargyrite, plumbojarosite, copper carbonates, and vanadinite. The gangue consists of altered limestone, quartz, calcite, dolomite, chalcedony, jarosite, garnet, epidote, jasperoid, iron oxide, and brown ferruginous material. Iron is present in sufficient quantity to make the ore desirable for smelting.

The ores were deposited as sulphides, principally argentiferous galena, pyrite, molybdenite, and chalcopyrite, by hot solutions that ascended from the granodiorite porphyry magma and circulated through the openings in the limestone. They were deposited soon after consolidation of the granodiorite, probably at depths of about 1,000 feet below the surface, largely in the places they now occupy. Since their deposition they have been partly enriched through the processes of leaching and concentration by descending surface waters.

Additional commercial deposits probably occur in and near Chalk Mountain, associated with the zones of mineralization in the limestone. Most of the veins, especially those of steep dip, probably continue in depth to or below water level, and enrichment probably extends to that depth, which is from 300 to 500 feet in the mines. Below water level, however, the deposits are probably leaner than above, having received less, if any, enrichment from descending surface waters. Owing to irregularity in the occurrence of the deposits, the best guide in prospecting and mining is to follow the signs of mineralization in the limestone, which may range from a broad iron-stained zone to an almost invisible seam. Owing to the prevailing easterly dip of the limestone and of the eastern zone of mineralization, the east side of the mountain seems to be the more promising, as it is more favorably situated for enrichment by concentration, along the bedding planes and fractures, of minerals leached from higher levels.

Westgate Range

About 2 miles east of Chalk Mountain, in the west slope of the Westgate Range, which here is composed chiefly of Jurassic limestone, is a north-south series of active prospects or claim groups, including the Mogul, Huber-Morrell, Watkins, Sawyer, Twin Metals, and Wolff. These prospects extend through a distance of several miles and are mostly at altitudes between 5,000 and 5,500 feet. Some of them have made a small production. The deposits, like those at Chalk Mountain, carry lead and silver and occur in veins and replacement bodies in the limestone, but they are closely associated with intrusive andesite and rhyolite and therefore may belong to the Tertiary period of ore deposition.

Quartz Mountain District

The Quartz Mountain district is in Nye County, 60 miles east-southeast of Fallon, 25 miles south-southeast of Chalk Mountain, and just northwest of Marble and the old Illinois mine. (See fig. 2.) It is about 8 miles long east and west by 5 miles wide. Quartz Mountain and the town and post office of Quartz Mountain are near its center. (See fig. 1.) The population is about 200. A daily auto mail stage is in operation from Fallon.

The district lies in open rolling country. It is drained southward into Gabbs Valley. The dominant topographic and structural features and the ore deposits trend northwestward. The southeastern part of the district is occupied by the western half of the Lodi Hills, which have the form of an isosceles triangle with its apex on the northwest in Quartz Mountain. (See fig. 1.) The groundwater table probably stands at a depth of about 800 feet.

The district is named from Quartz Mountain, a low elliptical hill about half a mile long and 100 feet high, much of whose northern half is strewn with quartz and whitish silicified rock. Ore deposits similar to those it contains were discovered in 1858 at the neighboring Illinois mine, which produced more than $100,000 in lead-silver-gold ore, and in 1905 ore was discovered in the western part of the district, 2 miles west of Quartz Mountain, where the Broken Hills mine has produced more than $210,000 in similar ore.

Ore was discovered at Quartz Mountain in 1920, and by the end of 1925, under the Annette-Walker lease, the discovery property had produced $90,000 worth of ore. Then the property, henceforth known as the San Rafael mine, and many surrounding claims were taken over by several mining companies, including the San Rafael Co., which has since produced and shipped from the mine about $250,000 worth of silver-lead ore running about $40 to the ton and has opened up sufficient ore to continue its present rate of output for a year.

Mining or deep prospecting is also being done on several other properties, including the Quartz Mountain Metals, Hasbrouck, Calico, San Felipe, Exchequer, Standard, Argentum, West Divide, Tripod, Desert, and Iron Mountain. Some of them are opened to depths of 400 feet, and some have made a small production.

Geology

Most of the surface is covered by a mantle of alluvium or wash, 150 feet in maximum thickness, beneath which the consolidated rocks are mostly Tertiary volcanic flows, but the Lodi Hills, in which are nearly all the recently discovered ore deposits, is chiefly Cretaceous or Jurassic granodiorite porphyry or allied intrusive rocks, together with areas and masses of Triassic (?) limestone and greenstone. (See fig. 1.) The assignments to the Mesozoic are based on age determinations of similar rocks in the adjoining Paradise Range, on the southeast, made by H. G. Ferguson and S. H. Cathcart, of the Geological Survey. In the Lodi Hills the limestone is locally underlain by an older series of volcanic greenstones and tuffs of Triassic (?) age.

The most abundant of the granitic rocks is the granodiorite porphyry, which has intruded and metamorphosed the limestone and together with its complementary dikes of diorite, quartz monzonite, and aplite represents the magma from which the ores were derived. It is a dull greenish-gray medium-grained rock and is locally compressed, with most of its minerals considerably altered.

The oldest sedimentary rock is the limestone exposed in the Lodi Hills. These hills consist mainly of a batholith of granodiorite porphyry containing remnants of a huge limestone roof, most of which has been removed by erosion. The limestone is the principal ore repository. It is a medium to thick bedded

bluish-gray crystalline rock and contains a little interbedded black shale and volcanic greenstone. It has been metamorphosed, faulted, and folded. The structure is mostly monoclinal, as at Quartz Mountain. Just north of Quartz Mountain the limestone is thought to be down faulted and deeply buried by the Tertiary volcanic rocks. It has not yet been found in the Calico mine, which is 400 feet deep with its bottom in rhyolite and granodiorite porphyry. The faulting seems to have included the northeast side of Quartz Mountain, as neither the limestone nor the Lease vein occurs northeast of the fault.

Encircling Quartz Mountain on the north and west is a series of nearly flat-lying, mostly light-colored lavas of Tertiary age, consisting chiefly of rhyolite but including also basic types. The series consists of flows, tuff, and breccia and is about 500 feet thick. (See fig. 1.) These rocks are considerably altered hydrothermally, as well as by oxidation, and contain much sericite.

In places the volcanic rocks are cut by dikes which probably are branches of the younger flows. A large dike of this class is intruded along the contact of the lava flows with the older rocks of Quartz Mountain. It is a brownish-drab dense rock which is regarded as originally andesite but now consists mostly of secondary sericite. Branches of it in the San Rafael mine consist almost wholly of greenish chlorite and actinolite.

In the western part of the district the lava series, which there has not been differentiated, consists chiefly of the andesite and andesite breccia that contains the Broken Hills ore deposits. It has a known thickness of 350 feet.

Ore Deposits

The general distribution of the ore deposits and mineralization is indicated by the position of the mines, prospects, and claim groups shown on the map (fig. 1.) The ore deposits occur in two groups -- Mesozoic and Tertiary.

Mesozoic deposits

The Mesozoic deposits are genetically associated with the granodiorite porphyry and its complementary dikes. They occur in the limestone in the Lodi Hills area and are mostly the result of replacement. The ores, which yield silver and lead, are characteristically gray and yellowish lead carbonate ores containing lumps of galena. The ore minerals are chiefly cerusite, argentiferous galena, bindheimite, plumbojarosite, anglesite, cerargyrite, argentite, and gold. The gangue mineral consists chiefly of iron-stained comminuted quartz with chert or flint, jasperoid, calcite, dolomite, jarosite, and argillaceous material. Proximity to ore or an ore body in the limestone is usually indicated by the presence of iron or manganese oxides, cerusite, specks of galena, and copper stain. The largest deposits are those of the Lease vein, in Quartz Mountain, which have been most exploited in the San Rafael mine.

The Mesozoic ores were formed by ascending hot solutions as replacement deposits in the limestone at moderate depth and temperature. They were deposited as sulphides, principally argentiferous galena, from which oxidized ore minerals were subsequently leached by descending surface waters and concentrated at lower levels, where they formed new deposits and enriched the ore bodies already there.

The succession of events as indicated at Quartz Mountain was about as follows:

1. Upheaval and intrusion of the limestone by the granodiorite porphyry.
2. Deposition of the Lease vein by hot magmatic solutions ascending from the granodiorite porphyry and circulating through the limestone.
3. A long period of subaerial erosion during which Quartz Mountain and the Lease vein were brought to or nearly to the surface, and the ores were more or less oxidized.
4. Effusion of the Tertiary volcanic rocks, which probably covered Quartz Mountain and vicinity.
5. Intrusion of the andesite dike at the northeast side of Quartz Mountain, accompanied by faulting down of the limestone and the Lease vein on the northeast.
6. A second period of erosion during which the volcanic covering was removed from the Mesozoic rocks at Quartz Mountain and the deposits were further oxidized and partly enriched by descending surface waters.

Tertiary deposits

The Tertiary deposits occur chiefly in veins and fault-breccia zones in the Tertiary volcanic rocks. They contain lead, silver, and gold. The ore minerals are chiefly cerusite, argentiferous galena, argentite, cerargyrite, and gold. The gangue consists chiefly of brecciated wall rock, more or less altered and mineralized, quartz, and calcite, with a little sphalerite and traces of antimony. Most of it is more or less stained with iron and manganese oxides. Besides the Tertiary deposits at Broken Hill, which are to be described in a later report, there are a few at Quartz Mountain.

At Quartz Mountain the deposits occur chiefly in the Vertical vein and several small fault-breccia veins in the volcanic rocks. The Vertical vein fills a normal fault fissure that cuts the limestone, granodiorite porphyry, and volcanic rocks. It extends longitudinally through Quartz Mountain and the San Rafael property, south of which it continues into the Quartz Mountain Metals ground, and 800 feet to the northwest of the mountain it appears in the Calico mine. It dips 85° NE. or stands about vertical, and it cuts off the Lease vein, as shown on the 350-foot level in the San Rafael mine. (See fig. 4 and section in fig. 1.) In its outcrops at the north end of the mountain and on the 450-foot level in the San Rafael mine it is 35 feet wide. In the Calico mine it is 80 feet wide and in places contains mineralized pockets running about $6 in gold and silver to the ton. The filling of the vein is siliceous brecciated granodiorite porphyry, andesite, quartz, and calcite containing in places moderate quantities of galena and sphalerite, with traces of antimony and a little gold and silver.

The Tertiary deposits were formed by ascending hot solutions that circulated through the rocks after the eruption of certain of the Tertiary volcanic rocks. Those at or near Quartz Mountain seem to be genetically connected with the large andesite dike intruded along the contact of the Tertiary lavas with the Mesozoic rocks. Since they were deposited they have been partly oxidized and enriched by descending surface waters.

Mines and prospects

The San Rafael mine, around which the history of the district as described above largely centers, is in the northwest end of Quartz Mountain. It is principally on the Lease vein, but it includes also a part of the Vertical vein and several other lesser veins or large ore bodies. The Lease vein strikes about N. 40° W., with the trend of the mountain, and dips 25° NE., into the mountain, toward the Vertical vein. (See figs. 1 and 4.) It is a large bedding-plane replacement deposit in the limestone and is the principal ore deposit in the district. It is opened by a 450-foot 40° inclined shaft sunk near its north end. From the 70-foot level to the 352-foot level the vein was an almost continuous ore body, from 3 to 14 feet in width and about 120 feet long, and much of the ore was of high grade. Decrease of the dip just below the 250-foot level gives to the vein, between the 250- and 352-foot levels, 180 feet of stoping ground in which the ore body is 5 feet in width. Here the ore is more uniform and of better grade, contains more sulphide than that on the higher levels, and runs high in silver, much of it yielding $50 to the ton, of which $14 is in gold. Some of it is rich galena ore running about $100 to the ton. On the 200-foot level occurs a 13-foot bedding-plane ore body, which is at a higher geologic horizon than the Lease vein and contains more quartz and galena. It carries 12 feet of milling ore and on the footwall side 1 foot of shipping ore and shows good indications of persisting in depth. A 7-foot ore body has been found on the 352-foot level in the southeast drift, beyond the south end of the Lease vein. It is in virgin ground, with 400 feet of unexplored backs, and shows 3 feet of $60 ore and 4 feet of mostly $20 ore. The ore runs high in gold and silver and shows native silver in wire and other forms. In the footwall below the Lease vein is another vein which produced some shipping ore on and above the 200-foot level. In the northeast side of the mine the Vertical vein, on the 250-foot level south of the crosscut, contains an ore shoot 70 feet long consisting principally of galena ore, and below its junction with the Lease vein it shows 12 feet of milling ore in the crosscut.

In the Hasbrouck mine, at the south base of Quartz Mountain, the southeast workings on the 200-foot level are said to traverse a wide mineralized zone which has a limestone footwall and an aplite hanging wall and which contains several ore shoots or veins, including an east-northeast 3-foot vein of shipping ore similar to that of the San Rafael mine except that it contains more galena and 5 per cent of copper.

In the eastern base of Quartz Mountain the lower 70 feet of the Quartz Mountain Metals shaft, which is 300 feet deep, is said to be in mineralized limestone that looks promising.

Just north of Quartz Mountain, on the Nye-Mineral and other claims, are prospects on several fault breccia veins in the rhyolite (flow No. 4 in the section accompanying fig. 1) in which a little galena and lead carbonate occur. The San Felipe prospect, three-quarters of a mile northwest of Quartz Mountain, is opened 145 feet deep in rhyolitic rocks. It was supposed to be on the continuation of the Vertical vein, which recently, however, has been found to have a more westerly course. A little mineralized rock was found which assayed about $2 in gold and silver to the ton, but the prospect is not encouraging.

The outlook for the Quartz Mountain district is regarded as favorable. Its best probability is that of finding further ore deposits in the limestone. There is also a fair measure of probability that new deposits may be found in the large area of volcanic rocks extending from Quartz Mountain to Broken Hills. Owing to the irregularity in occurrence and the replacement character of the deposits, the best guide in prospecting is to follow mineralization in the limestone. The most promising places are on or near the contact of the limestone with the intrusive rocks, especially granitic rocks, as granodiorite porphyry and quartz monzonite. The larger the intrusive body the more chance there is of discovering an ore deposit.

Promising platinum deposits are being developed south of Lodi Tank. High-grade scheelite deposits are being developed in Cottonwood Canyon, east of Lodi. The Illinois mine has recently opened up a large body of high-grade silver-lead ore.

Gold Basin District

The Gold Basin district is 45 miles southeast of Fallon, 5 miles south of Chalk Mountain, and just east of Fairview Peak. (See fig. 2.) It is a north-south area 3 miles long by 2 miles wide, which drains northwestward into Fairview Valley. The surface consists mostly of steep ridges and deep valleys eroded in faulted and folded Tertiary volcanic rocks. The predominant rock is a dull-gray quartz latite like that of the Wonder district, where it is commonly called a rhyolite.

The ore bodies are principally gold-bearing deposits such as commonly occur in veins in Tertiary volcanic rocks of the Southwest. They contain a little silver besides the gold. Outside the veins free gold in fine particles is widely distributed in nearly all the rocks, but it is not recoverable. The deposits occur mostly in eight or ten veins or breccia zones, which in general contain but little quartz or gangue mineral other than wall-rock breccia. The deposits were formed by hot ascending magmatic solutions that circulated through the rocks soon after the eruption and consolidation of certain members of the volcanic group. They were probably deposited mostly as argentite and gold. Since they were formed the deposits in the oxidized zone have been enriched by downward concentration of detrital mineral, especially gold leached from the disintegrated veins and rocks of higher levels removed by erosion. For this reason the deposits pan well in free gold.

The Gold Bug mine, owned by the Gold Bug Mining Co., lies near the south end of the district, at an altitude of about 5,400 feet, on a fault-breccia vein or zone that dips about 50° NE., in andesite. The vein, which was discovered by Henry Knight in 1924, is 2 to 6 feet wide and 1,700 feet long. It is opened by a 40° inclined shaft with two 50-foot drifts on the 50 and 100 foot levels and seems to persist still farther downward. It consists mainly of gray fault-brecciated andesite, partly replaced by vuggy quartz stained by iron and manganese oxides. In places it is fairly siliceous, and its metal content, mostly free gold, is as much as $20 to the ton. The ore contains also a little argentite and cerargyrite.

In Branch Canyon, about 1½ miles north of the Gold Bug mine, are five or six prospects in the quartz latite, mostly owned by Messrs. Branch, Hunt, Smith, and Wilson. The Smith prospect, situated on a hill toward the east, consists of a fault-breccia ledge or zone 2 to 4 feet wide, dipping 70° E. It is opened by a 35-foot shaft which shows only brecciated country rock, with but little quartz, silicification, or indication of mineral. The rock, however, pans well in gold, which is in very small particles and most of which has probably been concentrated in the ledge by leaching from higher levels. The prospect does not seem to be of any commercial value. The Branch prospect, farther west, at the north edge of the bottom of Branch Canyon, is on a brecciated fault zone that dips 75° SE. It is opened by a 50-foot tunnel and contains more quartz than some of the other prospects in this canyon.

The Hercules prospect, in the northern part of the district, is owned by the Hercules Mining Co. It is said to be on a fault-breccia zone, a mile in length, and to have considerable mining machinery on the ground about ready for operation.

In the lower half mile or more of Branch Canyon are gold placers about 100 feet in thickness, and as the gravel is very angular and porous and the gold is very fine, the gold is concentrated almost entirely on or near bedrock, where the gravel is said to run from $2 to $3 in gold to the cubic yard. Several attempts have been made to recover the gold by the dry-washing process with machinery and otherwise, but the results were not successful. The deposits can probably be mined best by the room and pillar method.

The outlook for the Gold Basin district is not encouraging. The deposits on the whole are small and of low grade. Few, if any of them, can be profitably mined, even on a small scale, in the oxidized zone, much less in the sulphide zone below the levels of enrichment, where they are doubtless very much leaner. This statement seems to apply equally well to the remainder of the large rectangular area of volcanic rocks extending from the Fairview Mountains 5 miles eastward and from Bell Flat 10 miles northward, nearly to Westgate and the Lincoln Highway, of which the Gold Basin district is only a one-eighth part.

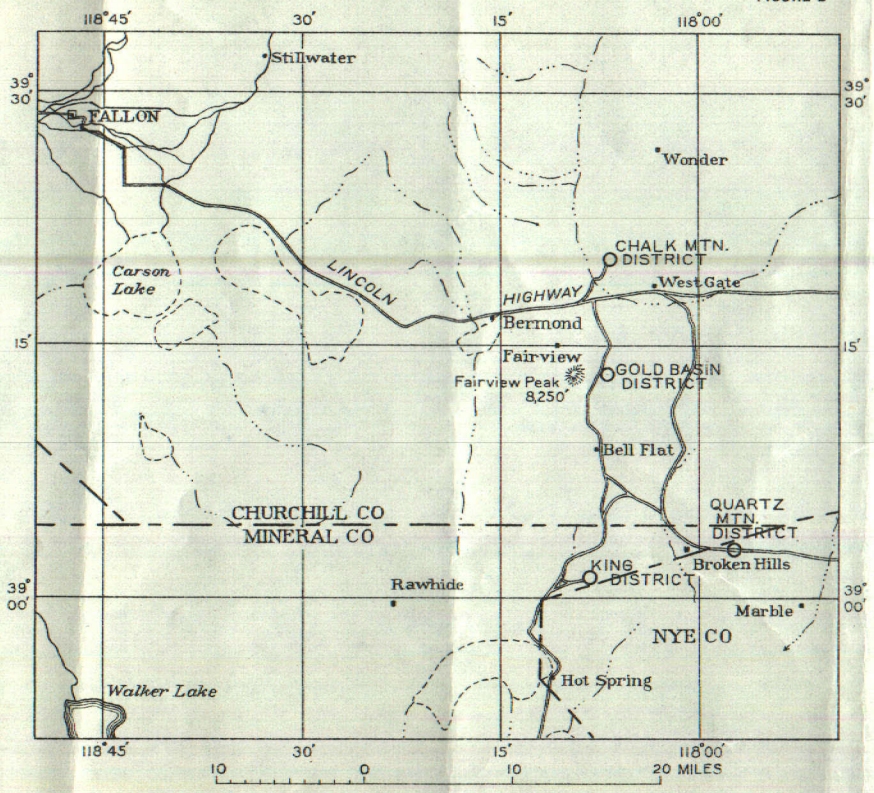
King District

The King district is in the northeast corner of Mineral County, 50 miles southeast of Fallon, 15 miles west-southwest of Quartz Mountain, about midway between Quartz Mountain and Rawhide, and just west of Mount Anna, a prominent landmark. (See fig. 2.) The region is underlain principally by tilted Tertiary volcanic rocks which rest on Mesozoic(?) limestone, diorite, and granite. Gold is said to be widely distributed in andesite and rhyolite for the extent of nearly a mile.

Here, in September, 1926, a stringer or small vein of rich gold ore was found by B. H. Donelly and Tex. Mondell at a depth of about 10 feet in an old shaft sunk in diorite porphyry. The strike soon attracted attention, and by October 20 a hundred men were camped on the ground. Soon after the discovery was made the principal properties, including the King and Queen claims, were taken over by the Desert Queen Mining Co. By November 10 two more strikes of high-grade silver-lead ore were made in parallel veins on the Queen claim. The ore is said to be associated with rhyolite, which intrudes the diorite. Some of it is said to run about 50 per cent of lead and 250 ounces in silver and $2 in gold to the ton. By January, 1927, development showed the gold vein to carry 6 feet of ore on the 50-foot level, in April the Queen claim was reported to show 17 feet of mill-grade ore on the 100-foot level, and by June there had been shipped from the gold vein, it is said, 35 tons of $40 gold ore.

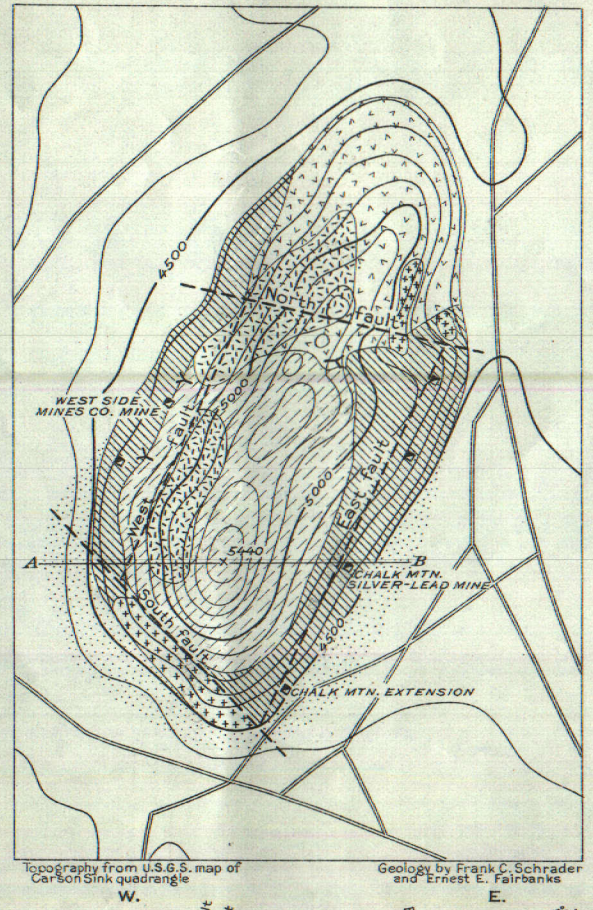
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

FIGURE 2



OUTLINE MAP SHOWING LOCATION OF CHALK MOUNTAIN AND QUARTZ MOUNTAIN MINING DISTRICTS, NEVADA

FIGURE 3



EXPLANATION

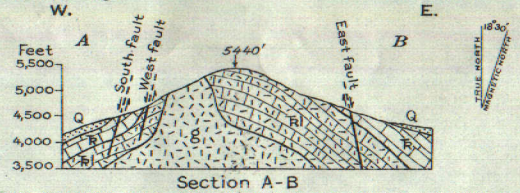
SEDIMENTARY ROCKS

- Q — Alluvium (wash) — QUATERNARY
- R — Limestone — TRIASSIC(?)
- Rl — Limestone (Marmorized) — TRIASSIC(?)

IGNEOUS ROCKS

- Rhyolite — TERTIARY
- Andesite — TERTIARY
- Granodiorite — CRETACEOUS OR JURASSIC

Shaft
Tunnel



Section A-B

GEOLOGIC SKETCH MAP AND SECTION OF CHALK MOUNTAIN, CHURCHILL COUNTY, NEVADA

0 ½ 1 Mile
Contour interval 100 feet

FIGURE 4

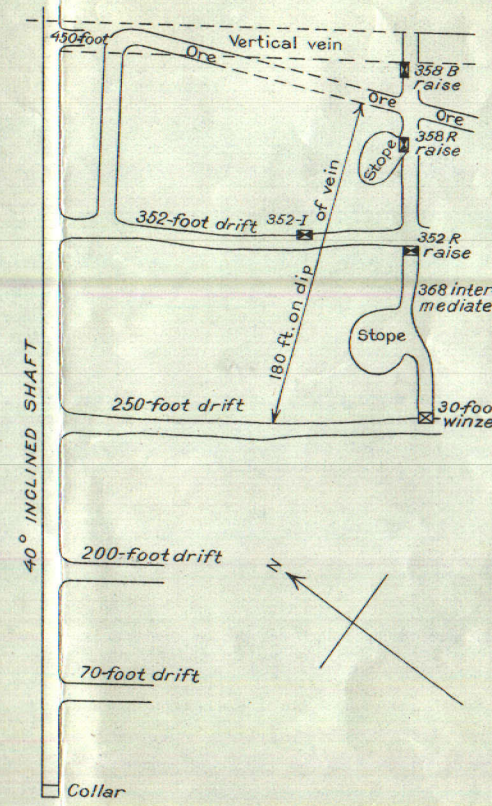


DIAGRAM OF THE PRINCIPAL WORKINGS ON THE LEASE VEIN IN THE SAN RAFAEL MINE, QUARTZ MOUNTAIN, NEVADA