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James Doyle Sell Mining Collection

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ore is said to have been found below it. The altered granite for a width of 100 feet or more bordering the deposit is also said to contain $2 to $4 a ton in gold.

The ore is of low grade, and is said to mill on the average from $7 to $8 a ton in gold, and to cyanide well. It contains also a little silver and a trace of copper, the latter occurring chiefly as malachite and not in sufficient amount to interfere with the cyanidation. The company is reported to have recently computed about 1,000,000 tons of ore in sight.

GOLD BELT MINE.

The Gold Belt mine is located on the southeast side of Banker Wash, at about 5,000 feet elevation. It is owned by Henry Paully. The country rock is an amphibolite schist, dipping about 30° W. At the western of the two principal openings the deposits are contained in a blanket vein of quartz 15 feet thick, inclining gently eastward, but thinning out in a distance of about 30 feet. The eastern opening shows two quartz blanket veins, each 2 to 6 feet in thickness, dipping gently westward and separated by a 4-foot dike of some volcanic rock that seems to be basalt, but is altered beyond identification.

The ore is said to be of two grades, the lower grade yielding from $4 to $7 in gold to the ton and the better grade from $16 to $20 to the ton and some as high as several hundred dollars a ton, that occurring in the porous or honeycombed quartz being the best. The deposit is reported to have produced a few hundred dollars' worth of ore.

SENATOR MINE.

The Senator mine is located some distance beyond the border of the Gold Basin district, about 7 miles northwest of the Eldorado and Golden Rule mines and about 7 miles south of Colorado River, on a low round hill at the southeast base of a prominent landmark known as "Senator Mountain." The mine was discovered late in the eighties by John Burnett, who in 1892 sold it for $14,000 to Senator Page, of Los Angeles, who in turn sold it to a Colorado company. The company at once installed a 10-stamp mill on Colorado River, 2 miles below Salt Springs, operated the mine and mill for about six months, and then suspended. Later the property was acquired by or leased to the Salt Springs Mining Company, which operated it about a month in 1903 and shut down, the ore being of too low grade to pay for its haulage to the mill, 7 miles distant, and for bringing supplies from Hackberry and Kingman, 50 and 60 miles distant, respectively. The mine is reported to have been abandoned since then.

The [illegible] developed principally by open work, cuts, and adit [illegible] deposits are said to be nearly flat lying and similar in [illegible] those of the Cyclopic mine (p. 125), but they form a

larger body. The ore is said to be similarly low in grade, averaging about $3 in gold to the ton. According to Comstock,[a] the deposits exhibit structural features resembling those of "brecciated fusion" and "cooling lamination" and in origin seem to be associated with igneous intrusion.

DEPOSITS AT SALT SPRINGS.

The Salt Springs mine is about 7 miles northeast of the Senator mine and several miles south of Colorado River, in the first canyon west of Hualpai Wash. It is owned by the Salt Springs Mining Company, which is said to include members of the Arizona-Minnesota Gold Mining Company. The country rock is granite. The gold ore is said to occur sporadically in quartz bodies, and its downward limit is usually indicated by copper-stained quartz.

Other properties in this district are the Smuggler-Union group, the Eureka mine, and the Lutley group.

WHITE HILLS DISTRICT.

GENERAL DESCRIPTION.

LOCATION AND HISTORY.

The White Hills district is located about 28 miles north of Chloride, in the western border of the White Hills, at about 3,000 feet elevation. It comprises an area about 2 miles in diameter and is a part of the Indian Secret mining district, so named because the knowledge of the presence of its mineral was for a long time withheld from the whites by the Indians.

The first discovery of mineral in the district by white men was made by Henry Shaffer in May, 1892, through the aid of an Indian known as Hualpai Jeff, who exhibited a piece of rich silver ore at Gold Basin and showed Shaffer its source, where the Indians procured the supply of red iron oxide with which they adorned their faces. The locality is at the site of the Hidden Treasure mine.

After making several locations, Shaffer reported the discovery at Gold Basin and was soon joined by John Burnett and John Sullivan, who also located what later proved to be some of the best mines. The trio began work and were soon shipping very rich ore, some averaging $1,000 a ton. The camp soon became the largest in the region and reached its zenith in 1894, with a population of 1,200. Within a short time the camp was owned by one company, the White Hills Mining Company, of which the chief men were R. T. Root and D. H. Moffatt, of Denver. A 10-stamp mill was built early in 1904; in

[a] Comstock, Theodore B., Geology and vein phenomena of Arizona: Trans. Am. Inst. Min. Eng., vol. 30, 1900, pp. 1048–1049.

[illegible] be [illegible] in the sulphide zone in the lower part of the mine than in the oxide zone near the surface. Its run of mine, roughly computed from a record of the output from October 10, 1885, to March 6, 1901, is about as follows: Silver 160 ounces and gold 2 ounces to the ton; lead, 12 to 20 per cent.

Production.—The production is reported to be $1,300,000, that of silver alone amounting to about $1,000,000; and several thousand dollars' worth of medium-grade ore are said to now lie on the dump. The output was mostly made between the autumns of 1885 and 1892. During this period 3,687 tons of ore are reported, according to smelter return sheets, to have contained about 402,000 ounces of silver, 1,180 ounces of gold, and 515,760 pounds of lead. Later, about 1900 to 1902, about 17,550 ounces of silver, 180 ounces of gold, and 114,360 pounds of lead are said to have been obtained from 330 tons of concentrates.

MINES OF CANYON STATION WASH.

In Canyon Station Wash, about a mile north of C. O. D. Wash, there are reported to be several small mines, of which the most important seem to be the Baden-Baden, King, and Queen mines, said to be owned by Lewis Davidson, of Kingman.

MINES IN "TOP OF STOCKTON HILL" AREA.

The "top of Stockton Hill" is situated in the northwestern part of the district, at the crest of the range, between the northern part of the Cerbat district on the west and the heads of I. X. L. and C. O. D. washes on the east. The mines include the Cincinnati, Miner's Hope, Blue Bell, Fountain Head, Brown, and others, the most important of which seems to be the Cincinnati. It is situated near the crest of the range about midway between Lane Springs and I. X. L. basins. It has not been worked for many years, but is regarded as a good property.

GOLD BASIN DISTRICT.

GENERAL FEATURES.

The Gold Basin mining district, of which Basin is the post-office, is situated in the eastern part of the White Hills (fig. 18). It extends over a hilly area about 6 miles in diameter, sloping to Hualpai Wash on the east, and ranges from 2,900 to 5,000 feet in elevation. The northeastern portion, where most of the mines are situated, is rugged, being marked by longitudinal fault scarps and scored by several deep transverse washes, of which the principal ones are Banker, O. K., and Cyclopic, situated about 2 miles apart. The nearest railway station is Hackberry, 40 miles to the south, with which connection is made by stage line. Colorado River lies 16 miles to the north. Mineral was first discovered here early in the seventies, but remoteness from the base of supplies, together with scarcity of fuel and water, renders operations expensive and has materially retarded developments. Nevertheless, considerable progress has been made and much ore has been produced and worked in arrastres and mills.

The mine is said to contain no copper above the 200-foot level, but in an opening half a mile west of the mine and about 500 feet above it, on what is thought to be same C. O. D. vein, the ore, which here occurs in a milk-white quartz gangue, consists chiefly bornite and chalcopyrite, with some zinc blende, and about $20 in gold to ton.

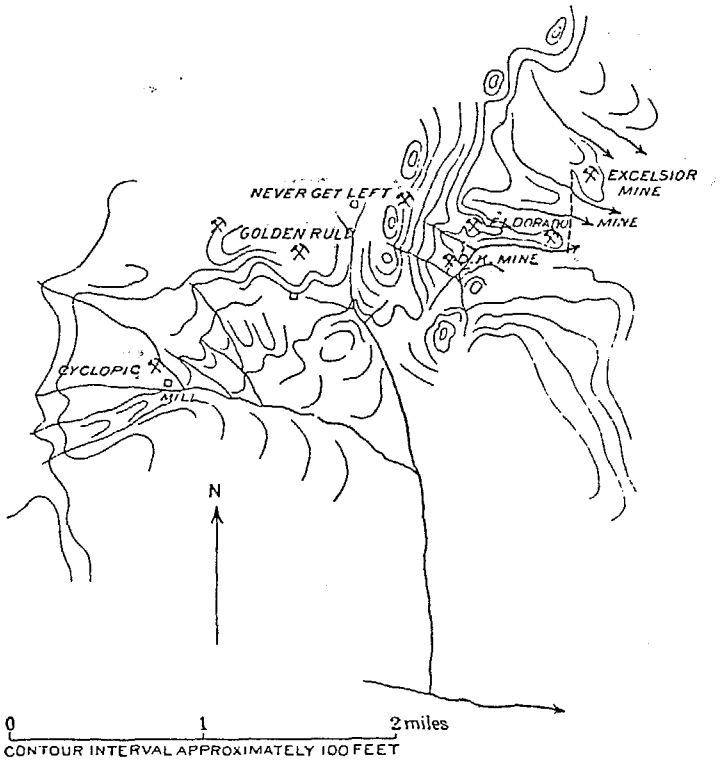

FIGURE 18.—Sketch map of Gold Basin district.

The deposits occur mainly in fissure veins in the pre-Cambrian crystalline rocks. The veins dip southeastward or northwestward, mainly at angles of 40° or 70°. The gangue is quartz, in places with siderite, and the metal is gold, mostly free milling, but it is associated with lead or copper ores, copper stain being a good indication of the gold values. Pyrite, chalcopyrite, galena, molybdenite, and wolframite are found, but the ore is largely oxidized, the water level not having been reached. Among the oxidized products are limonite, malachite, cerusite, and vanadinite.

USGS Bull 397 F.C. Schrader 1909

The district contains about half a dozen small mines and about an equal number of good-looking prospects. The relative location of the most important is shown in the small sketch map (fig. 18). The principal mines are the Eldorado, Excelsior, Golden Rule, Jim Blaine, Never-get-left, O. K., and Cyclopic. The production of the district is given as more than $100,000, most of which came from the Eldorado mine.

ELDORADO MINE.

Location and history.—The Eldorado mine is located in the high foothills in the eastern part of the district, at about 4,000 feet elevation and 1,000 feet above Hualpai Wash, which is about 2 miles distant. The mine is reached by wagon road, over which most of the ore was hauled to the Basin or O. K. mill, 4 miles distant in Hualpai Valley. This mill, which was burnt while in operation in August, 1906, contained 10 stamps and a cyanide plant.

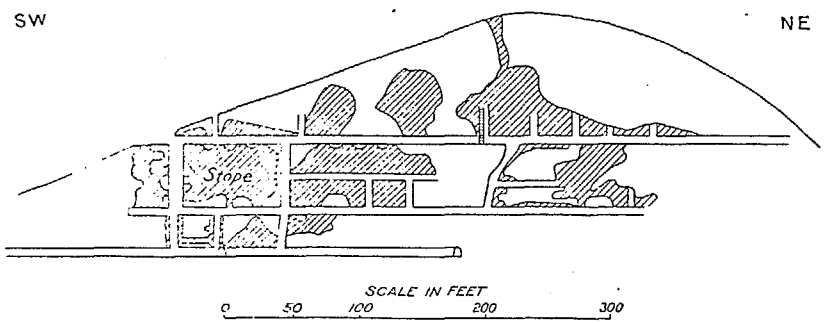

FIGURE 19.—Longitudinal section of Eldorado mine, showing stopes.

The mine was discovered late in the seventies and produced the first bullion taken from the district, much of its ore being at first worked in arrastres. It is owned by the Arizona-Minnesota Gold Mining Company, of Minneapolis. The production is reported to be $65,000, of which $5,000 was produced prior to 1902.

Developments.—The mine is developed principally by about 2,000 feet of tunnels and drifts and 40,000 cubic feet of stopes on three levels, aggregating probably about 90,000 cubic feet of underground work and distributed approximately as shown in the accompanying diagram (fig. 19). The lower tunnel trends about N. 33° E. and strikes the vein at about 200 feet in from the mouth. From this point the drift extends about 200 feet to the northeast.

Geology.—The country rock is a reddish schistose medium-grained granite. On the northeast, however, as shown at the surface and in the lower tunnel of the mine, this rock gives way to a dark friable biotite gneiss. The contact between the two rocks dips about 30° W. It is usually sharp and is probably a fault plane, which seems to cut off the vein on the northeast.

Veins and ores.—The deposit is a fissure vein, which strikes about N. 50° E. and dips 65° SE. It is continuous from the apex at the crest of the ridge to the contact in the lower tunnel of the mine and is stoped out through most of this extent. The walls are fair, but not regular. The vein averages several feet and the ore shoot about 20 inches in width. It contains iron-stained, free-milling gold-quartz ore, and is reported to average from $12 to $15 a ton in gold. The other associated minerals are malachite, lead carbonate, and vanadinite, the last occurring locally as incrustations of crystals one-fourth inch in maximum length. The principal mill treatment given to the ore was crushing, plate amalgamation, and cyanidation.

Just northwest of the apex of the vein above described and about 80 feet above it is the blanket vein, which is exposed for a length of 600 feet and a width of about 100 feet and which has contributed largely to the output of the mine. It dips about 25° E.

O. K. AND EXCELSIOR MINES.

The O. K. and Excelsior mines were discovered and located by three prospectors, Patterson, Rowe, and Fox, early in the eighties. They worked the ores in arrastres and hauled some to the 4-stamp mill at Grass Springs. In 1886 the O. K. was sold to a Kansas City company, which at once put up the O. K. mill in Hualpai Valley and ran it intermittently from 1887 to 1890. The mill burned down in 1893, but was rebuilt in 1896 and operated by lessees for a time, and then again shut down. It started once more early in 1902 and ran intermittently until 1906, when it burned down while in operation. The water used at the mills was piped from the springs or water tunnels in the upper part of Grand Wash Cliffs, 7 miles to the northeast. The mines are now owned by the Arizona-Minnesota Gold Mining Company.

O. K. mine.—The O. K. mine is about half a mile south of the Eldorado mine and about 100 feet below it, on the opposite side of O. K. Wash. The mine is developed mainly by adit drifts, winzes, and stopes on four levels. There is about 1,600 feet of underground work, distributed approximately as shown in the section (fig. 20). The production is reported to be about $25,000.

The country rock is a dark biotite granite, about the same as that which occurs in the bottom of the Eldorado mine. The strike is N. 30° E., with dip vertical. Slickensides pitch northeast-east toward the mouth of the drifts at angles of about 35°.

The vein trends N. 65° E., but curves to the north in its course and dips about 75° NW. It averages about 18 inches in width and is