

GOLD SHOOT OF THE NATIONAL MINE.

The one really important development in the camp is the gold shoot of the National mine. Encountered 40 feet below the surface in the Stall shaft, it has been followed on the dip of the vein a distance of about 800 feet, the stope length reaching 250 feet. Within this distance the vein carries much coarse electrum, or silver-gold alloy, mostly in the footwall seam, and much of the ore is extremely rich, averaging \$20 or \$30 to the pound. This high-grade ore is so irregularly distributed that entirely barren quartz may adjoin streaks of rich quartz a foot or two in width. Small grains of the common sulphides are found at the walls of the gold-bearing footwall veinlet, which is from a few inches to a foot wide and is beautifully banded by the alternating deposition of radial and fine-grained quartz. (See fig. 6.) In places the quartz contains a little stibnite, but it is not directly associated with the gold. This gold shoot has been stoped down to the tunnel level No. 5, and it did not outcrop at the surface. The total production of this shoot is said to have been about \$3,500,000. It is not probable that any other shoots with coarse gold occurred in the mass of rock removed by erosion, for no placer gold has ever been found either in Charleston Gulch or along any other creek in the district.

GENESIS OF THE VEINS.

It has been stated above (p. 21) that the volcanic flows at National are probably of Miocene age. If this statement be accepted the vein system is necessarily of Miocene or post-Miocene age.

The close relations of the veins and the rhyolite, the latest rock in the district proper, is suggested by the fact that the veins follow the dikes and by the almost constant mineralization of the dikes.

Veins similar to those of National intersect the rhyolite flow of Buckskin Peak, and the summit of this mountain shows hot-spring action of the most pronounced kind, with development of chalcedony and silicified rhyolite, in which were found reddish-brown spots giving strong reaction for selenium.

There existed, then, an epoch of hot-spring action after the eruption of the thick rhyolite sheet, and it is probable that the waters ascended near the rhyolitic vents on fissures following the trend of the rhyolite dikes.

The veins have the symmetrically banded and vuggy structure which is so often seen in deposits formed near the surface by ascending hot waters, and this applies both to the gold-bearing and to the silver-bearing veins.

The composition of the veins—the fine-grained quartz, scarcity of pyrite, constant presence of stibnite, and occasional occurrences of