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VINCENT P. GIANELLA
MINING GEOLOGIST

Reno, Nevada.
November 21, 1935.

REPORT ON ROCKS FROM THE KEY FLOWER MINE, PARADISE RANGE, NEVADA.

KEY FLOWER VEIN. K 1.

The vein is made up of white to gray quartz with some sulphides. The sulphides are principally pyrite and tetrahedrite and galena. On the surface are small areas covered by thin films of malachite derived from the alteration of the tetrahedrite.

In thin section the vein material is seen to consist principally of coarsely crystalling quartz. The quartz contains parallel lines of both dust-like inclusions and also cavities filled with liquid in which there are commonly small bubbles. This is quartz of an early generation. The earlier generation of quartz is cut by a later generation of quartz which fills fractures which cut across the crystal boundries of the earlier quartz. The younger quartz contains a few fragments of the earlier quartz but has no dust or liquid inclusions. The sulphides are associated with the later quartz mineralization. These relations suggest that the ore minerals are to be found only where the earlier quartz has been fractured and cemented by the later quartz with its accompanying sulphides.

In small cavities in the two earlier quartz generations is a still later quartz present as fine crystals surrounding quartz fragments. It is accompanied by a light stain of limonite. This latest quartz is probably a late injection of barren quartz or more probably is derived from silica liberated by weathering of the ourcrop.

VEIN FLOAT. K 5.

The sample of vein float is made up of quartz fragments held together by a dense black to brown cementing material.

The microscope shows the quartz fragments to be simililar to that in the vein material described above. In the section examined there were no sulphides. The quartz has been fractured and in places reduced to minute fragments. The fragments are cemented by a light brown, transparent, amorphous material with occasional splotches of opaque black substance. The cement is a hydrous iron oxide with lesser amounts of a similar manganese mineral. The fracture-filling brown and black material is obviously related to weathering processes.

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HANGINGWALL ROCK. K 3.

The hangingwall rock is a dense light greenish-gray rock containing fine white feldspars. In thin section it is seen to have a clastic texture and to be composed of a fine groundmass of dust and crystal fragments. In the groundmass are numerous feldspar crystals and occasional areas of chlorite which has been derived from ferromagnesian minerals chiefly biotite. Most of the feldspars are plagioclase with minor amounts of orthoclase. The feldspars have been largely altered to sericite. The ferromagnesian minerals are now converted to chlorite and sericite (white mica) with numerous fine grains of leucoxene (white, hydrous amorphous titanium oxide). Sericite is particularly plentiful in the groundmass and the feldspars. A few grains of epidote are scattered through the section. Occasional small veinlets and irregular areas of introduced quartz are irregularly distributed.

FOOTWALL ROCK. K 4.

The footwall rock is similar, in general makeup and alteration, to the hangingwall rock. Alteration has, however, more completely affected the footwall rock with the result that sericite, chlorite, and introduced quartz are more abundant.

Both footwall and hangingwall rocks are crystal andesite tuffs and are, in all probability, parts of the same rock formation.

FLOW ROCK. K 2.

The flow rock is a dark brown, dense, glass with many inclusions of light gray lava fragments. None of these fragments were found in the thin s sections. The are prophoritic and from a megascopic examination are seen to have a similar composition to the main rock mass which is described below.

In thin sections the mass of the rock proves to be made up principally of glass with a pronounced flow structure. Spherulites have developed in some parts. Occasional phenocrysts of quarts and feldspars are prensent. The feldspars are chiefly plagioclase with orthoclase in far lesser quantity. The rock is perfectly fresh showing none of the alteration which has effected the wall rocks enclosing the vein. The rock is a quartz latite similar to that which in places forms the basal member of the Esmeralda (miocene) formation.

CONCLUSION.

The wall rocks of the Key Flower vein are andesite crystal tuffs. They are probably early Tertiary in age. These rocks are overlain by a later lava flow which is a glassy quartz latite similar to that which, in places forms the base of the Esmeralda (Miocene) formation.

The type of alteration which has changed the original character of the wall rocks is similar to that which has been caused by the hydrothermal alteration common to the wall rocks enclosing epithermal veins which are prevalent in Nevada. This kind of alteration suggests mineralization at a moderate temperature.

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The vein is made up of an earlier and a later injection of quartz with minor amounts of a still later generation of quartz that is of no particular significance. The second generation of quartz has associated with it the ore sulphides while the earlier quartz appears to be barren. This relationship suggests that ore shoots are likely to occur only where the earlier barren quartz had been fractured and these fractures healed by the second generation quartz with the accompanying sulphides.

Respectfully,

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