

about 2 feet in width. The pegmatite is about 30 per cent feldspar. The mineralization is fairly heavy, sufficiently so to give values of about \$10 per ton. In trench No. 4 a similar narrow vein of pegmatite was observed, whose feldspar content is confined to a few small crystals along the wall of the vein. Alteration extends only about 2 inches from the walls, and mineralization is comparatively small. In the same trench a veinlet of quartz was observed, about an inch in width. On each side of it the rock is altered for a distance of about a foot, but the mineralization has been very slight.

The facts described appear to justify the following conclusions.

(1) The ore-bodies have been formed by solutions emanating from the dyke or vein at their centres. These solutions have altered and mineralized the country rocks. (2) The tuffs may have been more easily altered and mineralized than the altered basalts. (3) The extent of the mineralization and alteration is related to the size and the composition of the central dyke or vein. The strongest alterative and pyritizing effects have been exercised by the pegmatites, whereas the effects of the end members of the series, the porphyry dykes, and the quartz veins have been slight. The pegmatites containing 23 to 50 per cent of feldspar appear to have produced the most powerful mineralization and alteration. Other things being equal the extent of alteration and mineralization is roughly proportional to the size of the dyke or vein. (4) The gold content of the dyke and vein-forming solutions was also dependent on their composition. The pyrite deposited by the dykes of red porphyry contains very low values. Grey porphyry dykes carry more gold, sufficient to give good values within the dykes themselves, but not apparently to mineralize the surrounding rocks very highly. Pegmatites appear to have carried the maximum of gold, which they deposited as auriferous pyrite both in the veins and in the altered wall rocks; whereas the solutions forming the pure quartz veins carried little gold.

The only primary ore mineral present appears to be auriferous pyrite; however, a detailed study of the ores by the aid of the reflecting microscope has not as yet been made. If ore minerals other than pyrite are present, they are in very minor amount. The gold occurs only in the pyrite, in what form is not known. Native gold is not found, except in oxidized surficial portions. In general a high pyrite content indicates a correspondingly high gold value, although in one or two places this has not proved true. In the pegmatites the pyrite is very coarse-grained, in crystals and aggregates several millimetres in diameter; but in the adjacent schists the pyrite is always fine-grained, 0.3 to 0.5 mm. in diameter of crystal. Only in one case was this not found to hold good, in the ore-body in trenches 14 and 15 peripheral to the dyke or red porphyry in 15. There the pyrite is very coarse-grained.

The wall rock alteration accompanying the mineralization produces a rather light grey, fine-grained rock from whatever variety of rock has been originally present. Under the microscope the alteration of the parts farthest from the central vein is seen to consist of calcitization, pyritization, and sericitization, with probably some albitization. Fine-grained magnetite originally present in the altered basalts in amount up to 5 per cent is converted into sulphide, forming a few crystals up to 0.5 mm. diameter instead of a multitude of small grains. Possibly, also,