

where it approached a quartz vein. Both fresh and decomposed portions had the same orientation, and it is possible that the clear portion may have been an enlargement of the original grain.

In order to ascertain the character of the rock around the edge of the "*kernels*" where a transition between the two varieties might be looked for, two sections were cut from a small hand specimen one-half of which consisted of a portion of a "*kernel*" and the other of the usual grey granite. The granite near the "*kernel*" was found to resemble the ordinary granite in containing a considerable amount of pyrite, though less than the more altered granite usually holds, as well as in the fact that all the hornblende and epidote and practically all the chlorite has disappeared. A number of oblong forms were also to be seen, being of the same shape as those described in the sections of the "*kernels*" as probably decomposition products of hornblende. This rock however shows these in a still further stage of alteration, being now composed of an aggregate of calcite grains, often with a little pyrite and iron ore. The rock also contains some quartz, a portion of which occupies corners and is more or less broken and probably a primary constituent, while the rest occurs in a few irregular-shaped aggregations associated with calcite and pyrite in crushed portions of the rock and is secondary. The rock near the edge of the "*kernels*" therefore may be said to be intermediate in character between that of the "*kernels*" and the ordinary granite, but to resemble the latter more closely than that of the former. It is probable that some of the calcite masses found in the ordinary granite may be remains of the hornblende originally present but which have now to a certain extent lost their original shape owing to movements in the rock. It may therefore be stated that the ore of the Treadwell mine is a granite, probably belonging to the class of the hornblende granites, much crushed, altered and impregnated with secondary quartz, calcite and pyrite; that the "*kernels*" are portions of the rock in which alteration is less complete than in the mass of the granite and that at least a considerable portion of the gold present in the ore is contained in the pyrite as free gold.