

itself, and the acid varieties form a series varying in composition from a quartz diorite to a very siliceous granite. Then followed a period of faulting with production of large shear zones in the gabbro, accompanied by much jointing. Through the fissures and shear zones rose very hot solutions highly charged with mineral matter, which altered the rocks with which they came in contact to masses of hornblende. Another period of jointing ensued, and through this set of fissures there again rose solutions which formed aplitic fissure and replacement veins. After these were formed, a second period of faulting took place, in which the stresses relieved themselves along the earlier-formed shear zones now filled with hornblende, and through the brecciated and crushed hornblendites the solutions which deposited the chalcopyrite ores ascended. Finally, further minor jointing took place.

The relations of the hornblendites and aplite to each other and the main gabbro mass were studied in some detail. It was shown that these are the pegmatitic after-effects of the intrusion, the last exhalations of the cooling magma. The hypothesis is advanced that the emission of such solutions from a magma is a continuous process throughout the whole period of cooling, but that the escape of the solutions so formed is governed by the more or less accidental occurrence of movements able to joint the intrusive and thus afford channels of flow. The load of such solutions always includes all the constituents of the rock from which it has originated; although the amounts of these vary, and are dependent on the temperature of the solutions, and probably also on other conditions of which we are ignorant. The composition of the veins formed by them, and their metamorphic effects on the wall rocks, therefore, vary according to the time in their history when they were enabled to make their escape. In the case under consideration, opportunity for escape occurred at two, or possibly three, periods, owing to the frequency with which jointing and faulting movements affected the stock, and veins of different composition thereby resulted.