

Large individuals of hornblende, frequently measuring from two to three inches in each dimension, here enclose great numbers of small well formed feldspars, producing a very distinct poikilitic structure.

When light is reflected from the cleavage faces the hornblendes appear to be unbroken individual crystals, but on closer examination half their area is sometimes found to be occupied by the included feldspars. Hornblende is the chief of the dark minerals which can be seen on the fresh surface by the unaided eye, the large interspaces between the hornblende areas showing only white or light-gray feldspar. (plate v, fig. 3).

Under the microscope the crystals of feldspar in the dark portions of the rock are found to be set in large fields of hornblende without reference to the orientation of their host or of one another. They are often extremely well formed showing that they had reached their present degree of crystal growth before their inclosure by the later formed crystals of hornblende.

Character of
crystalliza-
tion.

This order of crystallization is in direct exception to that prevailing amongst eruptive rocks, viz. that of decreasing basicity, as defined in the 'laws' of Prof. Rosenbusch, according to which the ferro-magnesian minerals are formed in a cooling magma earlier than those of the feldspathic series. The principal exception to this law, is the case of the diabases in which augite crystallizes contemporaneously with if not earlier than, feldspar. This, however, is commonly regarded as conforming to Rosenbusch's second law that the combinations of smaller amount in a magma crystallize out the earlier. Of the other ferro-magnesian silicates, augite appears in its usual position in relation of the feldspar, that is, distinctly earlier in crystallization, and enclosed by the biotite which is frequently intergrown with hornblende. The feldspar thus inclosed appears to be chiefly plagioclase and of the most basic character that is found in any of these rocks. The twinning lamellæ are broad and the extinction angles measured upon them rises to 40° , indicating basic labradorite or bytownite.

Bytownite.
Apatite.

Apatite crystals are large and numerous, the mineral almost assuming the proportions of an essential constituent.

The mode of occurrence of this phase of the rock gives no discernible clue to the origin of the structure. It appears to be in segregated masses, certainly not in veins or with vein-like structure, and occurs both in the zone of contact and well removed from it, hence it cannot be regarded as a contact phenomenon. The nature of the rock precludes the idea of the structure being of secondary origin, hence it must be