

and causing alterations in these last, which will be presently described. They also resemble trap in containing no organic remains; but they differ in being more uniform in texture, whole mountain masses of indefinite extent appearing to have originated under conditions precisely similar. They also differ in never being scoriaceous or amygdaloidal, and never forming a porphyry with an uncrystalline base, or alternating with tuffs. Nor do they form conglomerates, although there is sometimes an insensible passage from a fine to a coarse-grained granite, and occasionally patches of a fine texture are imbedded in a coarser variety.

Felspar, quartz, and mica are usually considered as the minerals essential to granite, the felspar being most abundant in quantity, and the proportion of quartz exceeding that of mica. These minerals are united in what is termed a confused crystallization; that is to say, there is no regular arrangement of the crystals in granite, as in gneiss (see fig. 704, p. 590), except in the variety termed graphic granite, which occurs mostly in granitic veins. This variety is a compound of felspar and quartz, so arranged as to produce an imperfect laminar structure. The crystals of felspar appear to have been first formed, leaving between

Fig. 683.

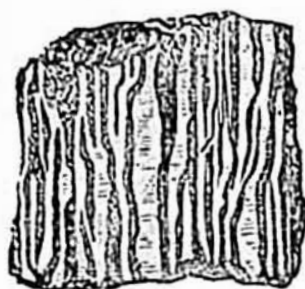


Fig. 684.



Graphic granite.

Fig. 683. Section parallel to the laminae.

Fig. 684. Section transverse to the laminae.

them the space now occupied by the darker-colored quartz. This mineral, when a section is made at right angles to the alternate plates of felspar and quartz, presents broken lines, which have been compared to Hebrew characters. The variety of granite called by the French *Pegmatite*, which is a mixture of quartz and common felspar, usually with some small admixture of white silvery mica, often passes into graphic granite.

As a general rule, quartz, in a compact or amorphous state, forms a vitreous mass, serving as the base in which felspar and mica have crystallized; for although these minerals are much more fusible than siliceous, they have often imprinted their shapes upon the quartz. This fact, apparently so paradoxical, has given rise to much ingenious speculation. We should naturally have anticipated that, during the cooling of the mass, the flinty portion would be the first to consolidate; and that the different varieties of felspar, as well as garnets and tourmalines, being more easily liquefied by heat, would be the last. Precisely the