

abound. The granite of the Wahsatch Mountains in Utah, which rises through the Upper Carboniferous limestones, converting them into white marble, sends out veins of granite-porphry and other crystalline compounds. In short, all over the world it is common for eruptive bosses of this rock to have a fringe of intrusive veins (*Apophyses*).

(2) Veins in the granite itself. These must be regarded as later than the rock which they traverse, but they may represent lower, still liquid portions of the granitic magma which have been forced by earth-movements into rents in the partially or wholly solidified granite. They are generally finer in grain than the granite around them, and differ more or less from it also in composition, especially in their greater acidity (Fig. 30).

(3) Pegmatites. These are distinguished by the manner in which their component minerals, notably the quartz and felspar, are intergrown (see p. 175). Much discussion has arisen as to the origin of such veins. They evidently cut the ordinary granite and in so far may be regarded as intrusive veins. But it is difficult to conceive that they could have been injected in their present crystalline condition. They may have been squeezed up from some lower, still liquid part of the granitic magma, but their remarkable crystalline structure would seem to have been afterward superinduced by some process of segregation or rearrangement and crystallization of their materials.

Many other eruptive rocks (diorite, diabase, melaphyre, basalt, etc.) present admirable examples of intrusive (even pegmatitic) veins. These are generally distinguished from those of granite by the much less metamorphism with which they are attended.

The "Contemporaneous Veins" of older writers included those veins in crystalline rocks which, though differing sufficiently from the surrounding material to be easily distinguished, resembled it so closely as to indicate that they were probably a part of it. The veins above described under No. 2 are examples. But they are not confined to granite, since they may not infrequently be observed in sheets of gabbro, diorite, dolerite, diabase, and other eruptive rocks. They are more particularly to be seen in sills