

dolerite, greenstone, clinkstone, and others might be added ; while those founded chiefly on peculiarities of texture, are porphyry, amygdaloid, lava, volcanic breccia or agglomerate, tuff, scorix, and pumice. It may be stated generally, that all these are mainly composed of two minerals, or families of simple minerals, *felspar* and *hornblende* ; but the felspar preponderates greatly even in those rocks to which the hornblendic mineral imparts its distinctive character and prevailing color.

The two minerals alluded to may be regarded as two groups, rather than species. Felspar, for example, may be, first, common felspar (often called Orthoclase), that is to say, potash-felspar, in which the predominant alkali is potash (see Table, p. 475) ; or, secondly, albite, that is to say, soda-felspar, where the predominant alkali is soda instead of potash ; or, thirdly, Oligoclase ; or, fourthly, Labrador-felspar (Labradorite), which differs not only in its iridescent hues, but also in its angle of fracture or cleavage, and its composition. We also read much of two other kinds, called glassy felspar and compact felspar, which, however, cannot rank as varieties of equal importance, but both the albitic and common felspar appear sometimes in transparent or *glassy* crystals ; and as to compact felspar, it is a compound of a less definite nature, sometimes containing largely both soda and potash ; and which might be called a feldspathic paste, being the residuary matter after portions of the original matrix have crystallized. The more recent analyses have shown that all the varieties or species of felspar may contain both potash and soda, although in some of them the one, and in others the other alkali greatly prevails.

The *hornblendic* group consists principally of two varieties ; first, hornblende, and, secondly, augite, which were once regarded as very distinct, although now some eminent mineralogists are in doubt whether they are not one and the same mineral, differing only as one crystalline form of native sulphur differs from another.

The history of the changes of opinion on this point is curious and instructive. Werner first distinguished augite from hornblende ; and his proposal to separate them obtained afterwards the sanction of Haüy, Mohs, and other celebrated mineralogists. It was agreed that the form of the crystals of the two species were different, and their structure, as shown by *cleavage*, that is to say, by breaking or cleaving the mineral with a chisel, or a blow of the hammer, in the direction in which it yields most readily. It was also found by analysis that augite usually contained more lime, less alumina, and no fluoric acid ; which last, though not always found in hornblende, often enters into its composition in minute quantity. In addition to these characters, it was remarked as a geological fact, that augite and hornblende are very rarely associated together in the same rock ; and that when this happened, as in some lavas of modern date, the hornblende occurs in the mass of the rock, where crystallization may have taken place more slowly, while the augite merely lines cavities where the crystals may have been produced rapidly. It was also remarked, that in the crystalline slags of furnaces, augitic forms