

Von Buch speaks of the transition of "gabbro," or diallage rock, to granite, in the island of Kielvig.

No author has given more attention to the transitions which obtain between the various pyrogenous rocks, nor with greater success, than the late Dr. MacCulloch, to whom, indeed, modern geologists owe a large debt, for the clear and masterly conceptions he has published on this subject. He tells us, concerning the granites of Aberdeenshire, which are generally composed of quartz, felspar, and mica, that in this compound hornblende is occasionally substituted for mica; that the quartz sometimes fails; that this hornblendic mass becomes fine-grained, and passes to greenstone, basalt, and an earthy trap-like claystone.

Von Dechen, in the German translation of De la Beche's manual, expresses very clearly the state of opinion among geological observers, as to the gradation in character from one to another, of all the igneous rocks. Thus *granite*, by replacement of its mica with hornblende, changes to *sienite*; by containing detached felspar crystals, it becomes *porphyritic*; and when reduced to very fine grains, we can entirely corroborate Von Dechen in saying that it is undistinguishable from *felspar porphyry*. A more earthy basis gives us *clay porphyry*; a concentric internal arrangement makes *globular porphyry* (kugel porphyr).

*Trachyte* and *porphyritic trachyte* are a parallel series to granite and porphyritic granite; in an earthy state they constitute *domite*.

Sienite and felspar porphyry pass by variation of mineral ingredients to the vague group of *greenstones* or *traps*, in which hornblende or augite forms a prominent part of the mass. Of these, *diorite* (diabase or greenstone) is related to sienite (the gradations being called greenstone sienite, and sienitic greenstone, &c.). The total absence of felspar turns such greenstones into *hornblende rocks*; diorites with extremely fine grains are called *aphanite*, and these cannot often be separated from the more quartzose rocks, usually called *hornstone* (by