

siderations as to geological age influence the names of rocks may be illustrated by the following examples. Sometimes certain porphyries and trachytes are, in hand specimens, scarcely distinguishable from each other. When, however, such rocks occur among carboniferous or peruvian strata, geologists have been inclined to term them porphyries; and on the other hand, when they are of tertiary or recent age, the name trachyte is generally given them. Exactly the same mode of determination, if such it can be called, has been adopted in the case of greenstone and basalt, or rocks of such indistinct mineralogical composition as trap and aphanite. With reference to locality it has principally occasioned special names, such as syenite, dunite and andesite, or caused varieties of certain other species to be indicated by such terms as banatite, sieveite, *Herzolit*, &c. From these considerations it would appear that, generally speaking, origin has been allowed to determine the various divisions and sub-divisions among rocks; that the majority of the generic names have reference to texture, while mineralogical composition and locality have had the greatest share in originating the special names of rocks.

In striving to attend to what has been indicated as desirable and necessary in any attempt at classifying rocks, it has appeared to us most judicious to attach greatest weight to their various characters in the following order: 1, origin; 2, texture; 3, chemical composition; 4, mineralogical composition; and 5, locality. If a system be required at all resembling those of other branches of science, these characters might be allowed respectively to determine the classes, orders, families, species, and varieties of rocks.

II.—CLASSES OF ROCKS.

If we, at the present day, look around us, and ascertain, from actual experience, what the methods are which nature employs in producing rocks, we find that they result from the operation of two very distinct agencies. On the one hand we may see in different countries widely separated from each other, streams of melted matter issuing from volcanoes and solidifying to rocks on their sides, or at their feet, while on the other hand we may observe, on every sea beach or river delta, sand and clay, tel