

It must be one of the Massive volcanic rocks (p. 269 *et seq.*). If it occurs in association with siliceous lavas (liparites, trachytes) it will probably be obsidian (p. 282), or pitchstone (p. 283); if it passes into one of the basalt-rocks, as so commonly happens along the edges of dikes and intrusive sheets, it is a glassy form of basalt (p. 297). Each of the three great series of eruptive rocks, Acid, Intermediate, and Basic, has its glassy varieties (see pp. 282-284, 297).

iii. A fresh fracture shows the rock to be crystalline.

If the component crystals are sufficiently large for determination in the field, they may suggest the name of the rock. Where, however, they are too minute for identification even with a good lens, the observer may require to submit the rock to more precise investigation at home, before its true character can be ascertained. For the purposes of field-work, however, the following points should be noted.

a. The rock can be easily scratched with the knife.

(a) Effervesces briskly with acid=limestone. (b) Powder of streak effervesces in hot acid. See dolomite (p. 264). (c) No effervescence with acid: may be granular crystalline gypsum (alabaster) or anhydrite (pp. 143, 265).

β. The rock is not easily scratched. It is almost certainly a silicate. Its character should be sought among the massive crystalline rocks (p. 268). If it be heavy, appear to be composed of only one mineral, and have a marked greenish tint, it may be some kind of amphibolite (p. 314); if it consist of some white mineral (felspar) and a green mineral which gives it a distinct green color, while the weathered crust shows more or less distinct effervescence, it may be a fine-grained diorite (p. 286), or diabase (p. 296); if it be gray and granular, with striated feldspars and dark crystals (augite and magnetite), with a yellowish or brownish weathered crust, it is probably a dolerite (p. 294) or andesite (p. 289); if it be compact, finely-crystalline, scratched with difficulty, showing crystals of orthoclase, and with a bleached argillaceous weathered crust, it is probably an orthoclase-porphry (p. 285), or quartz-porphry (p. 278). The occurrence of distinct blebs or crystals of quartz in the fresh fracture or weathered face will suggest a place for the rock in the quartziferous crystalline series (granites, quartz-porphries, rhyolites), or among the gneisses and schists.