felspars being generally abundant in the granites. The volcanic rocks moreover, whether basaltic or trachytic, contain less silica than the granites, in which last the excess of silica has gone to form quartz. This mineral, so conspicuous in granite, is usually wanting in the volcanic formations, and never predominates in them.

The fusibility of the igneous rocks generally exceeds that of other rocks, for the alkaline matter and lime which commonly abound in their composition serve as a flux to the large quantity of silica, which would be otherwise so refractory an ingredient.

We may now pass to the consideration of those igneous rocks, the characters of which are founded on their form rather than their composition.

Porphyry is one of this class, and very characteristic of the volcanic formations. When distinct crystals of one or more minerals are scattered through an earthy or compact base, the rock is termed a porphyry (see fig. 622). Thus trachyte is porphyritic; for in it, as in many modern lavas, there are crystals of felspar; but in some porphyries the crystals are of augite, olivine, or other minerals. If the base be greenstone, basalt, or pitchstone, the rock may be denominated greenstone-porphyry, pitchstone porphyry, and so forth. The old classical type of this form of rock is the red porphyry of Egypt, or the well-known "Rosso antico." It consists, according to Delesse, of a red felspathic base in which are disseminated rose-colored crystals of the felspar called oligoclase, with some plates of blackish hornblende and grains of oxidized iron-ore (fer oligiste). *Red quartziferous porphyry* is a much more siliceous rock, containing about 70 or 80 per cent. of silex, while that of Egypt has only 62 per cent.

Fig. 622.

Porphyry.
White crystals of felspar in a dark base of hornblende and felspar.

Amygdaloid.—This is also another form of igneous rock, admitting of every variety of composition. It comprehends any rock in which round or almond-shaped nodules of some mineral, such as agate, chalcedony, calcareous spar, or zeolite, are scattered through a base of wacké, basalt, greenstone, or other kind of trap. It derives its name from the Greek word *amygdala*, an almond. The origin of this structure cannot be doubted, for we may trace the process of its formation in modern lavas. Small pores or cells are caused by bubbles of steam and gas confined in the melted matter. After or during consolidation, these empty spaces are gradually filled up by matter separating from the mass, or infiltered by water permeating the rock. As these bubbles have been sometimes lengthened by the flow of the lava before it finally cooled, the contents of such cavities have the form of almonds. In some of the amygdaloidal traps of Scotland, where the nodules have decomposed, the empty cells