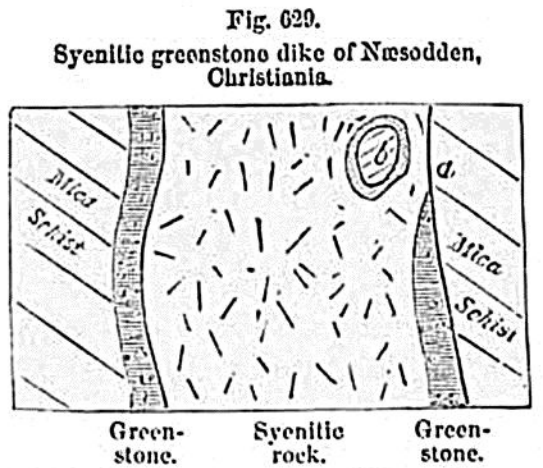


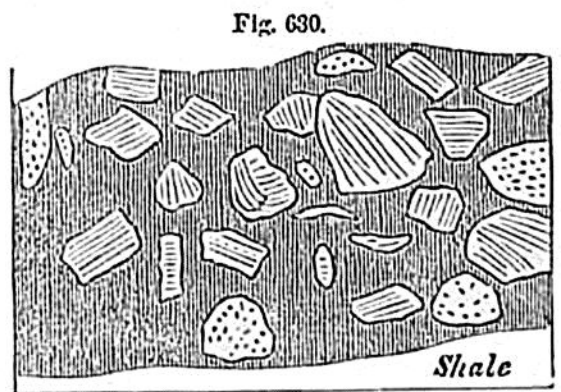
enters mica-schist. Fig. 629 represents a ground plan, where the dike appears 8 paces in width. In the middle it is highly crystalline and granitiform, of a purplish color, and containing a few crystals of mica, and strongly contrasted with the whitish mica-schist, between which and the syenitic rock there is usually on each side a distinct black band, 18 inches wide, of dark greenstone. When first seen, these bands have the appearance of two accompanying dikes; yet they are, in fact, only the different form which the syenitic materials have assumed where near to or in contact with the mica-schist. At one point, *a*, one of the sahlbands terminates for a space; but near this there is a large detached block, *b*, having a gneiss-like structure, consisting of hornblende and felspar, which is included in the midst of the dike. Round this a smaller encircling zone is seen, of dark basalt, or fine-grained greenstone, nearly corresponding to the larger ones which border the dike, but only one inch wide.



*b*. Imbedded fragment of crystalline schist surrounded by a band of greenstone.

It seems therefore evident that the fragment, *b*, has acted on the matter of the dike, probably by causing it to cool more rapidly, in the same manner as the walls of the fissure have acted on a larger scale. The facts also illustrate the facility with which a granitiform syenite may pass into ordinary rocks of the volcanic family.

The fact above alluded to, of a foreign fragment, such as *b*, fig. 629, included in the midst of the trap, as if torn off from some subjacent rock or the walls of a fissure, is by no means uncommon. A fine example is seen in another dike of greenstone, 10 feet wide, in the northern suburbs of Christiania, in Norway, of which the annexed figure is a ground plan. The dike passes through shale, known by its fossils to belong to the Silurian series. In the black base of greenstone are angular and roundish pieces of gneiss, some white, others of a light flesh-color, some without lamination, like granite, others with laminae, which, by their various and often opposite directions, show that they have been scattered at random through the matrix. These imbedded pieces of gneiss measure from 1 to about 8 inches in diameter.



Greenstone dike, with fragments of gneiss. Sengenfrin, Christiania.

*Rocks altered by volcanic dikes.*—After these remarks on the form