blown out, and the top of the cone disappears. The lava may now escape from the lowest part of the lip of the crater, while, at the same time, immense numbers of red-hot bombs, scoriæ, and stones are shot up into the air. The lava at first rushes down like one or more rivers of melted iron, but, as it cools, its rate of motion lessens. Clouds of steam rise from its surface, as well as from the central crater. Indeed, every successive paroxysmal convulsion of the mountain is marked, even at a distance, by the rise of huge ball-like wreaths or clouds of steam, mixed with dust and stones, forming a column which towers sometimes a couple of miles or more above the summit of the cone. By degrees these eructations diminish in frequency and intensity. The lava ceases to issue, the showers of stones and dust decrease, and after a time, which may vary from hours to days or months, even in the *régime* of the same mountain, the volcano becomes once more tranquil.[43]

In the investigation of the subject, the student will naturally devote attention specially to those aspects of volcanic action which have more particular geological interest from the permanent changes with which they are connected, or from the way in which they enable us to detect and realize conditions of volcanic energy in former periods.

Fissures.—The convulsions which culminate in the formation of a volcano usually split open the terrestrial crust by a more or less nearly rectilinear fissure, or by a system of fissures. In the subsequent progress of the mountain, the ground at and around the focus of action is liable to be again and again rent open by other fissures. These tend to di-

[43] See Schmidt's narrative of the eruption of Vesuvius in May, 1855 (ante, p. 333). An account of the great eruption of Cotopaxi in June, 1877, by Dr. Th. Wolf, will be found in Neues Jahrb. 1878, p. 113.