

dikes, tend to bind the framework of the volcano and strengthen it against subsequent explosions. In this way, a kind of oscillation is established in the form of the cone, periods of crater-eruptions being succeeded by others when the emissions take place only laterally (*ante*, p. 359).

One consequence of lateral eruption is the formation of minor parasitic cones on the flanks of the parent volcano (p. 329). Those on Etna, more than 200 in number, are really miniature volcanoes, some of them reaching a height of 700 feet (Fig. 62). As the lateral vents successively become extinct, the cones are buried under sheets of lava and showers of débris thrown out from younger openings or from the parent cone. It sometimes happens that the original funnel is disused, and that the eruptions of the volcano take place from a newer main vent. Vesuvius, for example (as shown in Figs. 63 and 45), stands on the site of a portion of the rim of the more ancient and much larger vent of Monte Somma. The present crater of Etna lies to the northwest of the former vaster crater. The pretty little example of this shifting furnished by Volcanello has been already noticed (p. 415).

While, therefore, a volcano, and more particularly one of great size, throwing out both lava and fragmentary materials, is liable to continual modification of its external form, as the result of successive eruptions, its contour is likewise usually exposed to extensive alteration by the effects of ordinary atmospheric erosion, as well as from the condensation of the volcanic vapors. Heavy and sudden floods, produced by the rapid rainfall consequent upon a copious discharge of steam, rush down the slopes with such volume and force as to cut deep gullies in the loose or only partially consolidated tuffs and scorïæ. Rain continues the erosion until the outer slopes, unless occasionally renewed



Fig. 63.—Section of Vesuvius and Monte Somma from north to south.

a, Plain of the Campagna; b, Village of Somma (413 French ft.); c, Fontana dell' Ollivella (994); d, Casa Cancaroni (1588); e, Punta di Nasone (3430), on crest of old crater of Monte Somma; f, Atrio del Cavallo, bottom of old crater of Monte Somma; g, i, edges of modern crater (h) of Vesuvius (3640); k, Boche Nuove (1515); l, Camaldoli (584); m, Torre dell' Annunziata, on Bay of Naples.