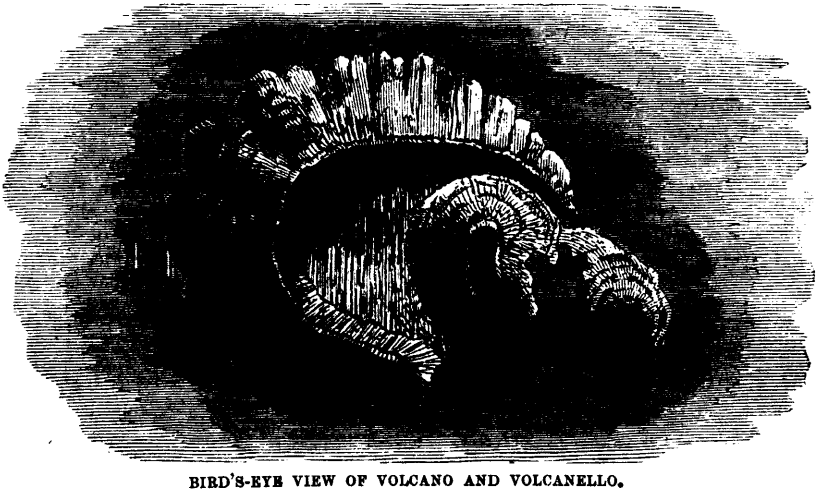
teen, or even at Mauna Loa of twenty-four, degrees slope. At Lanzerote, in the eruption of 1750-56, a stream of basaltic lava formed a layer from two to four feet thick on a grade of thirty degrees. The sharply-drawn furrows at Palma, supposed by Von Buch to be crevices opened in the process of elevation, are wider at bottom than top, contrary to the shape required by such an origin.

According to the view of the opposite party, a comparatively slight opening, like the fissures through which water passes down, having been effected in the crust of the globe, ashes and melted stone, simultaneously or in various shades of alternation, are projected in volumes which in the course of time build up the volcano, with no great local disturbance of the penetrated strata. The canal or vertical pipe, inconsiderable it may be at first, enlarges its dimensions—like that, for instance, of Vesuvius, which was widened to a diameter of one thousand feet by the explosions of fifteen days. The ejected matter rolls



BIRD'S-EYE VIEW OF VOLCANO AND VOLCANELLO.

back into the enlarged funnel, and thus, aided by the secular sinking of the exhausted focus beneath, forms a vast cavity, sometimes miles across. The showers and currents which reach the scrap are subject only to the influence of gravity and the rains. Thus, their thickness increases. The apparent height of the enceinte is enhanced also by the breaking through, generally at a single point, of water or lava from the cavity. The degradation thus caused often forms peninsulas in the sea, and corresponding deposits on land. In the Pacific are many hollow islands like Palma, with the floor more depressed, so as to lie under water. One of this character furnished a refuge, two or three years ago, to the water-logged transport Magæra and her crew. If we draw a horizontal line across the lowest point of the crater of Orizaba, we have one of these islands reproduced and their formation illustrated.

Upon the perpendicular walls of the tremendous seam called the Val del Bove, three thousand feet deep, the anatomy of Etna is depicted. It presents a succession of inclined beds of lava, tufa and scoriæ, cut through by dykes or narrow injected clefts, which traverse them nearly at right angles. Such fissures, we may remark here, are the channels into which pass, either originally or after the decomposition of their first contents, the sublimations which leave metallic ores.