

an elliptical form of thirty-two degrees of inclination, which bears in the middle, above a nearly horizontal terrace, the cone of eruption with its circular crater. The crater is 10,874 feet high. It gives out no lava, but only vomits forth gas and vapour, the streams of lava issuing from sixteen smaller cones which have been formed on the slopes of the mountain. The observer may, by looking at the summit, convince himself that these cones are disposed in rays, and are based upon clefts or fissures which converge towards the crater as towards a centre.

But the most extraordinary display of volcanic phenomena occurs in the Pacific Ocean, in the Sandwich Islands, and in Java. Mauna Loa and Mauna Kea, in Hawaii, are huge flattened cones, 14,000 feet high. According to Mr. Dana, these lofty, featureless hills sometimes throw out successive streams of lava, not very far below their summits, often two miles in breadth and six-and-twenty in length; and that not from one vent, but in every direction, from the apex of the cone down slopes varying from four to eight degrees of inclination. The lateral crater of Kilauea, on the flank of Mauna Loa, is from 3,000 to 4,000 feet above the level of the sea—an immense chasm 1,000 feet deep, with an outer circuit two to three miles in diameter. At the bottom lava is seen to boil up in a molten lake, the level of which rises or falls according to the active or quiescent state of the volcano; but in place of overflowing, the column of melted rock, when the pressure becomes excessive, forces a passage through subterranean communications leading to the sea. One of these outbursts, which took place at an ancient wooded crater six miles east of Kilauea, was observed by Mr. Coan, a missionary, in June, 1840. Another indication of the subterranean progress of the lava took place a mile or two beyond this, in which the fiery flood spread itself over fifty acres of land, and then found its way underground for several miles further, to reappear at the bottom of a second ancient wooded crater which it partly filled up.*

The volcanic mountains of Java constitute the highest peaks of a mountain-range running through the island from east to west, on which Dr. Junghahn described and mapped forty-six conical eminences, ranging from 4,000 to 11,000 feet high. At the top of many of the loftiest of these Dr. Junghahn found the active cones and craters of small size, and surrounded by a plain of ashes and sand, which he calls the "old crater wall," sometimes exceeding 1,000

* Lyell's "Elements of Geology," p. 617.