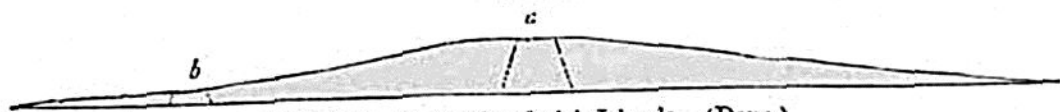


Fig. 640.



Mount Loa, in the Sandwich Islands. (Dana.)

a. Crater at the summit.

b. The lateral crater of Kilauea.

The dotted lines indicate a supposed column of solid rock caused by the lava consolidating after eruptions.

on an average from 4 degrees to 8 degrees; but in some places considerably steeper. Sometimes deep rents are formed on the sides of these conical mountains, which are afterwards filled from above by streams of lava passing over them, the liquid matter in such cases consolidating in the fissures and forming *dikes*.

The lateral crater of Kilauea, *b*, fig. 640, is 3970 feet above the level of the sea, or about the same height as Vesuvius. It is an immense chasm, 1000 feet deep, and its outer circuit no less than from two to three miles in diameter. Lava is usually seen to boil up at the bottom in a lake, the level of which alters continually, for the liquid rises and falls several hundred feet, according to the active or quiescent state of the volcano. But instead of overflowing the rim of the crater, as commonly happens in other vents, the column of melted rock, when its pressure becomes excessive, forces a passage through some subterranean galleries or rents leading towards the sea. Mr. Coan, an American missionary, has described an eruption which took place in June, 1840, when the lava which had risen high in the great chasm began to escape from it. Its direction was first recognized by the emission of a vivid light from the bottom of an ancient crater, called Arare, 400 feet deep and 6 miles to the eastward of Kilauea. The connection of this light with the discharge or tapping of the great reservoir was proved by a change in the level of the lava in Kilauea, which sank gradually for three weeks, or until the eruption ceased, when the lake stood 400 feet lower than at the commencement of the outbreak. The passage, therefore, of the fluid matter from Kilauea to Arare was underground, and it is supposed by Mr. Coan to have been at its first outflow 1000 feet deep below the surface. The next indication of the subterranean progress of the same lava was observed a mile or two from Arare, where the fiery flood broke out and spread itself superficially over 50 acres of land, and then again found its way underground for several miles farther towards the sea, to reappear at the bottom of a second ancient and wooded crater, which it partly filled up. The course of the fluid then became again invisible for several miles, until it broke out for the last time at a point ascertained by Captain Wilkes to be 1244 feet above the sea, and 27 miles distant from Kilauea. From thence it poured along for 12 miles in the open air, and then leapt over a cliff 50 feet high, and ran for three weeks into the sea. Its termination was at a place about 40 miles distant from Kilauea. The crust of the earth overlying the subterranean course of the lava was often traversed by innumerable fissures, which emitted steam, and in some places the incumbent rocks were uplifted 20 or 30 feet.