

In like manner, the putrid fever, which raged seven years previously in the mountain town of Ibarra, north of Quito, was ascribed to the ejection of fish from the volcano of Imbaburu.\*

Water and mud, which flow not from the crater itself, but from the hollows in the trachytic mass of the mountain, can not, strictly speaking, be classed among volcanic phenomena. They are only indirectly connected with the volcanic activity of the mountain, resembling, in that respect, the singular meteorological process which I have designated in my earlier writings by the term of *volcanic storm*. The hot stream which rises from the crater during the eruption, and spreads itself in the atmosphere, condenses into a cloud, and surrounds the column of fire and cinders which rises to an altitude of many thousand feet. The sudden condensation of the vapors, and, as Gay-Lussac has shown, the formation of a cloud of enormous extent, increase the electric tension. Forked lightning flashes from the column of cinders, and it is then easy to distinguish (as at the close of the eruption of Mount Vesuvius, in the latter end of October, 1822) the rolling thunder of the volcanic storm from the detonations in the interior of the mountain. The flashes of lightning that darted from the volcanic cloud of steam, as we learn from Olafsen's report, killed eleven horses and two men, on the eruption of the volcano of Katlagia, in Iceland, on the 17th of October, 1755.

Having thus delineated the structure and dynamic activity of volcanoes, it now remains for us to throw a glance at the differences existing in their material products. The subterranean forces sever old combinations of matter in order to produce new ones, and they also continue to act upon matter as long as it is in a state of liquefaction from heat, and capable of being displaced. The greater or less pressure under which merely softened or wholly liquid fluids are solidified, appears to constitute the main difference in the formation of Plutonic and volcanic rocks. The mineral mass which flows in narrow, elongated streams from a volcanic opening (an earth-spring), is called lava. Where many such currents meet and are arrested in their course, they expand in width, filling large basins, in which they become solidified in superimposed strata. These few sentences describe the general character of the products of volcanic activity.

\* [It would appear, as there is no doubt that these fishes proceed from the mountain itself, that there must be large lakes in the interior, which in ordinary seasons are out of the immediate influence of the volcanic action. See Daubeney, *op. cit.*, p. 488, 497.]—*Tr.*