

were exposed, and strewed over the ground in great numbers, partly boiled and partly burnt.

It was remarked, that the boiling mud and cinders were projected with such violence from the mountain, that while many remote villages were utterly destroyed and buried, others much nearer the volcano were scarcely injured.

The first eruption lasted nearly five hours, and on the following days the rain fell in torrents, and the rivers, densely charged with mud, deluged the country far and wide. At the end of four days (October 12th) a second eruption occurred more violent than the first, in which hot water and mud were again vomited, and great blocks of basalt were thrown to the distance of seven miles from the volcano. There was at the same time a violent earthquake, and in one account it is stated that the face of the mountain was utterly changed, its summits broken down, and one side, which had been covered with trees, became an enormous gulf in the form of a semicircle. This cavity was about midway between the summit and the plain, and surrounded by steep rocks, said to be newly heaped up during the eruption. New hills and valleys are said to have been formed, and the rivers Banjarmang and Wulan changed their course, and in one night (October 12th) 2000 persons were killed.

The first intimation which the inhabitants of Bandung received of this calamity on the 8th of October, was the news that the river Wulna was bearing down into the sea the dead bodies of men, and the carcasses of stags, rhinoceroses, tigers, and other animals. The Dutch painter Payen determined to travel from thence to the volcano, and he found that the quantity of the ashes diminished as he approached the base of the mountain. He alludes to the altered form of the mountain after the 12th, but does not describe the new semi-circular gulf on its side.

The official accounts state that 114 villages were destroyed, and above 4000 persons killed.*

Submarine volcanos.— Although we have every reason to believe that volcanic eruptions as well as earthquakes are common in the bed of the sea, it was not to be expected that many opportunities would occur to scientific observers of witnessing the phenomena. The crews of vessels have sometimes reported that they have seen in different places sulphurous smoke, flame, jets of water, and steam, rising up from the sea, or they have observed the waters greatly discoloured, and in a state of violent agitation as if boiling. New shoals have also been encountered, or a reef of rocks just emerging above the surface, where previously there was always supposed to have been deep water. On some few occasions the gradual formation of an island by a submarine eruption has been observed, as that of Sabrina, in the year 1811, off St. Michael's in the Azores. The throwing up of ashes in that case, and the formation of a cone about

* Van der Boon Mesch, de Incendiis Montium Javæ, &c. Lugd. Bat. 1826; Baron Van der Capellen; also, Von Buch, Iles Canar. p. 424. and Official Report of the President,