of its growth, if any, has been due to upheaval, or how far it has been exclusively formed by the ejection of ashes and streams of lava. It seems, however, to be well attested that earthquakes of the most terrific description agitate and alter the bed of the sea and surface of the land throughout this tract.

The line is continued in the southern extremity of the Peninsula of Kamtschatka, where there are many active volcanos, which, in some eruptions, have scattered ashes to immense distances. The largest and most active of these is Klutschew, lat. 56° 3′ N., which rises at once from the sea to the prodigious height of 15,000 feet. Within 700 feet of the summit, Erman saw, in 1829, a current of lava, emitting a vivid light, flow down the north-west side to the foot of the cone. A flow of lava from the summit of Mont Blanc to its base in the valley of Chamouni would afford but an inadequate idea of the declivity down which this current descended. Large quantities of ice and snow opposed for a time a barrier to the lava, until at length the fiery torrent overcame, by its heat and pressure, this obstacle, and poured down the mountain side with a frightful noise, which was heard for a distance of more than fifty miles.*

The Kurile chain of islands constitutes the prolongation of the Kamtschatka range, where a train of volcanic mountains, nine of which are known to have been in eruption, trends in a southerly direction. The line is then continued to the south-west in the great island of Jesso, and again in Nipon, the principal of the Japanese group. It then extends to the Phillippine Islands, to Sangir, and the north-eastern extremity of Celebes, and thence to the Moluccas (see map, pl. 6.). Afterwards it passes westwards through Sumbawa to Java.

There are said to be thirty-eight considerable volcanos in Java, some of which are more than 10,000 feet high. They are remarkable for the quantity of sulphur and sulphureous vapours which they discharge. They rarely emit lava, but rivers of mud issue from them, like the moya of the Andes of Quito. The memorable eruption of Galongoon, in 1822, will be described in the twenty-sixth chapter. The crater of Taschem, at the eastern extremity of Java, contains a lake strongly impregnated with sulphuric acid, a quarter of a mile long, from which a river of acid water issues, which supports no living creature, nor can fish live in the sea near its confluence. There is an extinct crater near Batur, called Guevo Upas, or the Valley of Poison, about half a mile in circumference, which is justly an object of terror to the inhabitants of the country. Every living being which penetrates into this valley falls down dead, and the soil is covered with the carcasses of tigers, deer, birds, and even the bones of men; all killed by the abundant emanations of carbonic acid gas, by which the bottom of the valley is filled.

In another crater in this land of wonders, near the volcano of Talaga Bodas, we learn from Mr. Reinwardt, that the sulphureous

* Von Buch, Descrip. des Iles Canar. p. 450., who cites Erman and others.