

new islands and mountains, by commotions propagated with the rapidity of an electric shock, finally by those subterranean thunders,* heard during whole months, without shaking the earth, in regions far distant from active volcanos.

In proportion as equinoctial America shall increase in culture and population, and the system of volcanos of the central table-land of Mexico, of the Caribbee Islands, of Popayan, of los Pastos, and Quito, shall be more attentively observed, the connection of eruptions and of earthquakes, which precede and sometimes accompany those eruptions, will be more generally recognized. The volcanos just mentioned, particularly those of the Andes, which rise above the enormous height of two thousand five hundred toises, present great advantages for observation. The periods of their eruptions are singularly regular. They remain thirty or forty years without emitting scorïæ, ashes, or even vapours. I could not perceive the smallest trace of smoke on the summit of Tunguragua or Cotopaxi. A gust of vapour issuing from the crater of Mount Vesuvius scarcely attracts the attention of the inhabitants of Naples, accustomed to the movements of that little volcano, which throws out scorïæ sometimes during two or three years successively. Thence it becomes difficult to judge whether the emission of scorïæ may have been more frequent at the time when an earthquake has been felt in the Apennines. On the ridge of the Cordilleras everything assumes a more decided character. An eruption of ashes, which lasts only a few minutes, is often followed by a calm of ten years. In such circumstances it is easy to mark the periods, and to observe the coincidence of phenomena.

If, as there appears to be little reason to doubt, that the destruction of Cumana in 1797, and of Caracas in 1812, indi-

* In the town of Guanaxuato, in Mexico, these thunders lasted from the 9th of January till the 12th of February, 1784. Guanaxuato is situated forty leagues north of the volcano of Jorullo, and sixty leagues north-west of the volcano of Popocatepetl. In places nearer these two volcanos, three leagues distant from Guanaxuato, the subterranean thunders were not heard. The noise was circumscribed within a very narrow space, in the region of a primitive schist, which approaches a transition-schist, containing the richest silver mines of the known world, and on which rest trap-porphyrines, slâtes, and diabasis (grünstein.)