

But whatever may be the number and frequency of the shocks composing an earthquake, the shock itself is almost instantaneous. The earthquake, like the storm, may endure for a period ; but the shock, like the lightning, is the work of a few seconds.

The convulsion which, in 1693, devastated the fair city of Messina, and fifty hamlets and villages in Sicily, causing the death of 60,000 individuals, lasted only five seconds—only the twelfth part of a minute! That which, in 1812, destroyed Caraccas, and converted that town into a heap of ruins, was of still briefer duration : in three seconds the terrible doom was accomplished ! The first shock toppled down the spires and towers of the churches ; the second unroofed the houses and public buildings ; and before the timid populace could look around and estimate the amount of their misfortune, a last shock shattered the town into ruins, under which the inhabitants were crushed and buried.

The shocks which, from April the 2nd to May the 17th, 1808—that is, for seven weeks—did not cease to disturb the province of Pignerol, and were repeated four or five times daily, never lasted more than a few seconds each.

The direction of these movements of the soil is not always easy to define ; for it is very rare, on the occurrence of so awful a catastrophe, an observer can be found with a mind sufficiently stoical to observe, with philosophical calmness and scientific accuracy, the course of the terrible convulsions which threaten himself with an immediate and a frightful death. Aristotle, who had been able to study in Greece and on the coast of Asia Minor some of these phenomena, was the first to establish three distinct categories in the course and direction of the shocks. We may say, then, with the illustrious Stagyrice, that they are sometimes *undulatory* or *horizontal* ; sometimes *vertical*—that is, resulting from a rapid succession of upheavals and depressions of the soil ; and, thirdly, sometimes *rotatory*.

Vertical and horizontal shocks are frequently simultaneous. According to Humboldt, a vertical shock directed from below to