

From south to north was very striking in the almost uninterrupted undulations of the soil in the alluvial valleys of the Mississippi, the Arkansas, and the Ohio, from 1811 to 1813. It seemed here as if subterranean obstacles were gradually overcome, and that the way being once opened, the undulatory movement could be freely propagated.

Although earthquakes appear at first sight to be simply dynamic phenomena of motion, we yet discover, from well-attested facts, that they are not only able to elevate a whole district above its ancient level (as, for instance, the Ulla Bund, after the earthquake of Cutch, in June, 1819, east of the Delta of the Indus, or the coast of Chili, in November, 1822), but we also find that various substances have been ejected during the earthquake, as hot water at Catania in 1818; hot steam at New Madrid, in the Valley of the Mississippi, in 1812; irrespirable gases, *Mofettes*, which injured the flocks grazing in the chain of the Andes; mud, black smoke, and even flames, at Messina in 1781, and at Cumana on the 14th of November, 1797. During the great earthquake of Lisbon, on the 1st of November, 1755, flames and columns of smoke were seen to rise from a newly-formed fissure in the rock of Alvidras, near the city. The smoke in this case became more dense as the subterranean noise increased in intensity.* At the destruction of Riobamba, in the year 1797, when the shocks were not attended by any outbreak of the neighboring volcano, a singular mass called the *Moya* was uplifted from the earth in numerous continuous conical elevations, the whole being composed of carbon, crystals of augite, and the silicious shields of infusoria. The eruption of carbonic acid gas from fissures in the Valley of the Magdalene, during the earthquake of New Granada, on the 16th of November, 1827, suffocated many snakes, rats, and other animals. Sudden changes of weather, as the occurrence of the rainy season in the tropics, at an unusual period of the year, have sometimes succeeded violent earthquakes in Quito and Peru. Do gaseous fluids rise from the interior of the earth, and mix with the atmosphere? or are these meteorological processes the action of atmospheric electricity disturbed by the earthquake? In the tropical regions of America, where sometimes not a drop of rain falls for ten months together, the natives consider the repeated shocks of earthquakes, which do not endanger the low reed huts, as auspicious harbingers of fruitfulness and abundant rain.

* *Philos. Transact.*, vol. xlix., p. 414.