

be included in such masses, as also that these deep-seated igneous formations considered in mass must underlie all the strata containing organic remains, because the heat proceeds from below upwards, and the intensity required to reduce the mineral ingredients to a fluid state must destroy all organic bodies in rocks included in the midst of them.

If by a continued series of elevatory movements, such masses shall hereafter be brought up to the surface, in the same manner as sedimentary marine strata have, in the course of ages, been upheaved to the summit of the loftiest mountains, it is not difficult to foresee what perplexing problems may be presented to the geologist. He may then, perhaps, study in some mountain-chain the very rocks produced at the depth of several miles beneath the Andes, Iceland, or Java, in the time of Leibnitz, and draw from them the same conclusion which that philosopher derived from certain igneous products of high antiquity; for he conceived our globe to have been, for an indefinite period, in the state of a comet, without an ocean, and uninhabitable alike by aquatic or terrestrial animals.

CHAPTER XXVIII.

EARTHQUAKES AND THEIR EFFECTS.

Earthquakes and their effects — Deficiency of ancient accounts — Ordinary atmospheric phenomena — Changes produced by earthquakes in modern times considered in chronological order — Earthquake in Syria, 1837 — Earthquakes in Chili in 1837 and 1835 — Isle of Santa Maria raised ten feet — Chili, 1822 — Extent of country elevated — Aleppo and Ionian Isles — Earthquake of Cutch in 1819 — Subsidence in the Delta of the Indus — Island of Sumbawa in 1815 — Town of Tomboro submerged — Earthquake of Caraccas in 1812 — Shocks at New Madrid in 1811 in the valley of the Mississippi — State of the convulsed region in 1846 — Aleutian Islands in 1806 — Reflections on the earthquakes of the nineteenth century — Earthquake in Quito, Quebec, &c. — Java, 1786 — Sinking down of large tracts.

IN the sketch before given of the geographical boundaries of volcanic regions, I stated, that although the points of eruption are but thinly scattered, constituting mere spots on the surface of those vast districts, yet the subterranean movements extend simultaneously over immense areas. We may now proceed to consider the changes which these movements produce on the surface, and in the internal structure of the earth's crust.

Deficiency of ancient accounts. — It is only within the last century and a half, since Hooke first promulgated, in 1688, his views respecting the connection between geological phenomena and earthquakes, that the permanent changes effected by these convulsions have excited attention. Before that time, the narrative of the historian was almost