

theories of mountain-making, and we owe to him, moreover, the hypothesis that volcanic outbursts act as safety-valves for the pent-up activities of subterranean vapours. He pointed out, that Sicily in his time was less frequently disturbed by earthquakes than it had been in previous ages before volcanic discharges were known in the district, and he correlated the comparative tranquillity of the ground with the means of escape afforded for explosive underground vapours by the volcanic vents that had opened at Etna, in the Lipari Isles, and in Ischia. It speaks highly for Strabo's powers of observation that he should have recognised in Vesuvius a volcanic mountain although it was then quiescent.

Probably the most acute scientific observer of Roman times was Seneca, the physician of the Emperor Nero (born 2 or 4 B.C., died 65 A.D.). Quite recently, Nehring has placed the importance of the work of Seneca in its true light. The *Quæstiones Naturales* contain detailed communications about earthquakes, volcanoes, and the constructive and destructive agencies of water. Seneca explains earthquakes partly as a result of the expansion of gases accumulated in the earth, partly by the collapse of subterranean cavities. He regards volcanic eruptions simply as an intensified form of the same series of phenomena, and volcanoes themselves as canals or vents between local sub-terrestrial reservoirs of molten material and the earth's surface. He names the chief volcanoes, placing Etna in the first rank; then Stromboli, Therasia, and Thera (the present "Santorin"), but there is no mention of Vesuvius. He regards the earth as primitively a watery chaos, and it is more especially in his treatment of the action of water in dissolving and carrying away rock-material, together with his explanation of the origin of sediments and deltas, that Seneca has shown his remarkable insight and sound judgment.

The learned historian, Pliny the Elder (23-79 A.D.), has handed down to us a compendium that embraces the whole scientific knowledge of antiquity. His *Historia Naturalis*, in thirty-seven books, embraces the natural history of animals, plants, and stones, the history of the heavens and the earth, of medicine, of commerce, of navigation, etc.; in Lib. II., c. 88 and 89, all the islands that have been thrown up in the ocean are enumerated—Delos, Rhodes, Anaphe, Nea, Alone, Thera, Therasia, Hiera, Automate, and Thia. The reports