

with water-substance, and brought to the surface in virtue of the expansive force of escaping vapours and gases.

Sir Charles Lyell held views very similar to those of Poulett-Scrope. His observations in the Auvergne, and at Vesuvius and Etna, had convinced him of the mistaken principles in the Elevation-Crater theory. He made the pertinent objection that one of the "craters of elevation" mentioned by Von Buch was entirely composed of marine or littoral sediments; and he explained the enormous "cauldrons" of Palma, Gran Canaria, Bourbon, etc., as craters due to volcanic explosion; and the circular walls of the Somma, the Peak of Teneriffe, Etna, etc., as the remainder of old crater walls. In common with Poulett-Scrope, Lyell ascribed the conical form of most volcanoes to the accumulation of volcanic products round a vent, and he accepted Scrope's view that volcanic eruptions were originated by the explosive disengagement of the compressed vapours and gases from subterranean magma. His wider geological experience, however, led him to the further conclusion that the water-substance dissolved in the magma had been introduced into it by percolation downward from the surface, and that the characteristic occurrence of serial volcanoes on the sea-board betokened direct influence of the sea-water upon the subterranean magma.

Dr. Charles Daubeny's *Description of Active and Extinct Volcanoes, etc.* (1826), although less full of original matter than the works of Scrope and Lyell on kindred subjects, was distinguished by greater chemical and mineralogical knowledge. His treatment of European volcanoes is based for the most part on his own field investigations of the various localities, and careful laboratory research of the volcanic rocks. Daubeny was favourably inclined to Buch's "Elevation-Crater" theory, and thought that Scrope attached too great importance to the expansion of vapours, and too little importance to chemical processes in his explanation of volcanic eruption.

Valuable results of a special study of the Lipari Islands were made known in 1832-33 by Friedrich Hoffmann, but the complete researches of this gifted writer were first published by Von Dechen after Hoffmann's death, in Karsten's *Archiv für Mineralogie*, 1839. Hoffmann contended that there was no essential difference in point of structure between the craters attributed by Von Buch to crust-elevation and fissure, and the