

von Buch from the ranks of extreme Wernerians. Nowhere was the re-action in favour of accurate investigation of volcanoes keener than in Germany, where Werner's remarkable influence had so long retarded progress in this important branch of teaching. Von Humboldt's works (p. 66) gave the first broad conceptions of the arrangement and distribution of volcanoes on the earth's surface. From the characteristic arrangement of volcanoes either as groups or in long series; from their occurrence in all parts of the globe, and from their frequent association with earthquakes, Humboldt concluded that the cause of volcanic phenomena could not be local, but must bear some relation to the constitution of the earth's interior. The serial arrangement of volcanoes led him to believe that the volcanic vents were disposed upon crust-fractures which extended to very great depths.

Leopold von Buch's visit to Auvergne in 1802 convinced this geologist that the volcanic phenomena of that neighbourhood could only have been produced by some general cause associated with the earth's internal heat. It was on this occasion also that Leopold von Buch formed his first crude conception of the theory which, under the name of "Elevation-Crater" theory, was destined to become notorious in geological controversy of the nineteenth century. At this time, however, Buch merely mentioned a central elevation of the Mont d'Or range caused by subterranean forces.

Von Buch's treatise, *On the Geognostic Relations of the Trap Porphyry* (1813), contains a careful account of the occurrence and mineral constitution of rocks belonging to the trachyte series. The central elevation, which he had assumed for the Mont d'Or and Cantal area, is in this work applied to other volcanic regions, for example to the Santorin Island, to the trachyte mountains of Hungary, and to the South American Cordilleras, and a distinction is drawn between true volcanoes and mountain-systems representing dome-like crust elevations pushed up by subterranean forces.

Accompanied by the Norwegian botanist, Christian Smith, in the summer and autumn of 1815, Von Buch explored the Canary Islands, the Palma Islands, and on the return voyage visited the Lancerote Island. The result of this journey was published independently by Buch, as Christian Smith died in the following year on the Congo river, where he had gone with Tuckey's Expedition. Von Buch's descriptive monograph of