

Von Buch allowed, have flowed into their present position, but not superficially like the lava streams of an active volcano, only below the surface and under great pressure. The more important points in Von Buch's chain of evidence were the occurrence of coarse-grained crystalline rocks in the bottom of the Palma cauldron, the general arrangement of the strata sloping away from the central crater and penetrated by numerous dykes, and the presence of deep ravines (*Barrancos*), which he regarded as eruptive fissures on the outer side of the crater of elevation. Von Buch thought craters of elevation were very numerously distributed; some of them originally embracing a central volcanic cone, for example, the island of Bourbon; others, such as those of Auvergne, the Siebengebirge near Bonn, the Lipari Isles, Etna and the American Cordilleras, being trachytic dome-shaped mountains situated above the fissures of elevation, and either remaining intact at their summit or providing themselves with orifices of ejection.

Von Buch sub-divided all the volcanoes on the earth's surface into two classes—*central* and *serial*. The former, according to Von Buch, are located centrally with reference to a large number of outbreaks radiating in all directions; the latter mark the position of long crust-fissures, and either form the highest ridge of a terrestrial mountain-system, or if the volcanic fissure be submarine, the highest summits emerge as islands above the ocean.

While Von Buch in his theory tacitly accepted Hutton's principle, that the upheaval of the solid rocks was due to the expansive force of subterranean heat, he re-cast this doctrine into the particular form required to explain his own conceptions of volcanicity. He formed the erroneous idea that the inclination of the basalts around a volcanic vent could only be due directly or indirectly to crust-elevation, and this view shipwrecked a theory which otherwise embodied some valuable generalisations. Adapting his theory to the terminology of the present day, Von Buch's conception of a "*Central elevation-crater*" represented a *local* exhibition of crust-expansion accompanied by a *local* inrush of molten and gaseous material towards a centre of crust-weakness, and the escape of the same at a central vent; Von Buch's "*Serial elevation-craters*" represented the results of a *regional* exhibition of the expansive forces due to internal heat, and *regional* admission of molten rock and gaseous vapours into zones and areas