

Babbage in 1834 has proved a reference work of permanent value. Lyell used it freely for his discussion of the subject in his *Principles*. Continental authors of repute, Hoffmann (1833), Scacchi (1849), also accepted the explanation of alternating movements, and the Serapeum became a recognised example in the text-books of "instantaneous" change of level.

Antonio Niccolini made observations for several decades, and wrote, between 1838 and 1846, a series of papers in which he contended that the submersion of the Serapeum had not been due to any movement of the land, but to a rise in the water-level of the ocean. Professor Suess has arrived at the same conclusion as Niccolini; he points out that the changes of level at Pozzuoli were limited to the area of the Phlegrean volcanic cones, and argues that after a slow rise of the water-level throughout many centuries, there came during, or immediately after, the eruption which formed Monte Nuove (1538), a sudden lowering of the water-level, so that the temple ruins were once more fully exposed.

Other cases of instantaneous uprise have been reported from the western coast of South America. The first account appeared in a letter from a lady, Mrs. Maria Graham, to the Geological Society of London. The letter relates how, after the Valparaíso earthquake in November 1822, a long strip of the coast of Chili rose three or four feet above the sea-level. The German traveller, Pöppig, heard confirmatory evidence from the fishermen of the district when he visited the Bay of Concon in 1827. Charles Darwin and Captain Fitzroy witnessed, in 1835, a violent earthquake in Chili, and they reported local elevations of eight or nine feet along dislocations that formed in the district of Concepcion and Valdivia. Darwin also observed raised beaches and terraces at various heights on the coasts of Chili, some of them 1,500 feet above sea-level, and he came to the conclusion that sudden elevations of land had followed the earthquakes so frequently associated with volcanic activity in that neighbourhood. Upon the basis of his direct observations in Chili, Darwin founded his bold theory of the uprise of continents and mountain-systems by successive sudden elevations due to volcanic forces.

Ever since oscillations of level have been observed, there have been differences of opinion regarding the cause or causes. Strabo doubted as little in the elevation of islands, mountains,