a century before, declared their belief that a gradual change had, for ages, been taking place in the relative level of land and sea. They attributed the change to a fall of the waters both of the ocean and the Baltic. This theory, however, has now been refuted by abundant evidence; for the alteration of relative level has neither been universal nor everywhere uniform in quantity, but has amounted, in some regions, to several feet in a century, in others to a few inches; while in the southernmost part of Sweden, or the province of Scania, there has been actually a loss instead of a gain of land, buildings having gradually sunk below the level of the sea.*

It appears, from the observations of Mr. Darwin and others, that very extensive regions of the continent of South America have been undergoing slow and gradual upheaval, by which the level plains of Patagonia, covered with recent marine shells, and the Pampas of Buenos Ayres, have been raised above the level of the sea.† On the other hand, the gradual sinking of the west coast of Greenland, for the space of more than 600 miles from north to south, during the last four centuries, has been established by the observations of a Danish naturalist, Dr. Pingel. And while these proofs of continental elevation and subsidence, by slow and insensible movements, have been recently brought to light, the evidence has been daily strengthened of continued changes of level effected by violent convulsions in countries where earthquakes are frequent. There the rocks are rent from time to time, and heaved up or thrown down several feet at once, and disturbed in such a manner, that the original position of strata may, in the course of centuries, be modified to any amount.

It has also been shown by Mr. Darwin, that, in those seas where circular coral islands and barrier reefs abound, there is a slow and continued sinking of the submarine mountains on which the masses of coral are based; while there are other areas of the South Sea, where the land is on the rise, and where coral has been upheaved far above the sea-level.

It would require a volume to explain to the reader the various facts which establish the reality of these movements of land, whether of elevation or depression, whether accompanied by earthquakes or accomplished slowly and without local disturbance. Having treated fully of these subjects in the Principles of Geology,‡ I shall assume, in the present work, that such changes are part of the actual course of nature; and when admitted, they will be found to afford a key to the interpretation of a variety of geological appearances, such as the elevation of horizontal, inclined, or disturbed marine strata, and the superposition of fresh-

* In the first three editions of my Principles of Geology, I expressed many doubts as to the validity of the alleged proofs of a gradual rise of land in Sweden; but after visiting that country, in 1834, I retracted these objections, and published a detailed statement of the observations which led me to alter my opinion in the Phil. Trans. 1835, Part I. See also the Principles, 4th and subsequent editions.

† See his Journal of a Naturalist in Voyage of the Beagle, and his work on Coral Reefs.

‡ See chapters xxvii. to xxxii. inclusive, and chap. l.