

descended thousands of feet towards the centre of the earth, by gradual sinking of the sea-bottom, and the simultaneous piling up of newer strata upon them. The layer that is formed to-day beneath the water forms the actual sea-bottom; but neither the land nor the sea-bottom are steady. The land is in places slowly descending beneath the sea, and sea-bottoms are themselves descending also. It has frequently happened, therefore, that for a long period a steady descent over a given area has taken place, and simultaneously with this many thousands of feet of strata have by degrees accumulated bed upon bed, as for example in the Pacific Ocean in the region of modern atolls and barrier coral reefs.

As we descend into the earth the temperature rises, whence, in the main, the theory of central heat has been derived. In our latitude heat increases about 1° for every sixty feet, and the temperature therefore, at so great a depth as 30,000 feet, to which it could be shown some strata have sunk, may at present be about 500° . Furthermore, strata that were deposited horizontally have been frequently disturbed and thrown into rapid contortions, or into great sweeping curves; and by this means especially, strata which once were at the surface have often been thrown twenty, thirty, or forty thousand feet downwards, and therefore more within the influence of internal heat, as, for instance, in the bed marked * fig. 12, which may be supposed to represent a large tract of country. I do not wish it to be understood that the globe is entirely filled with melted matter—that is a question still in doubt; but were this book specially devoted to general questions of theoretical geology, I think I could prove, that the heat in the interior of the globe in places sometimes appar-