

would best explain the successive fluctuations in terrestrial temperature, the glaciation of solid rocks, the transportation of erratics above and below the sea level, the height of arctic shells above the sea, and last, not least, the migration of the existing species of animals and plants into their actual stations, and the extinction of some conspicuous forms which flourished during the post-pliocene ages. When we duly consider all these changes which have taken place since the beginning of the glacial epoch, or since the Forest of Cromer and the *Elephas meridionalis* flourished, we shall find that the phenomena become more and more intelligible in proportion to the slowness of the rate of elevation and depression which we assume.

The submergence of Wales to the extent of 1,400 feet, as proved by glacial shells, would require 56,000 years, at the rate of $2\frac{1}{2}$ feet per century; but taking Professor Ramsay's estimate of 800 feet more, as stated at p. 267, that depression being implied by the position of some of the stratified drift, we must demand an additional period of 32,000 years, amounting in all to 88,000; and the same time would be required for the re-elevation of the tract to its present height. But if the land rose in the second continental period as much as 600 feet above its present level, as in map, p. 279, this 600 feet, first of rising and then of sinking, would require 48,000 years more; the whole of the grand oscillation, comprising the submergence and re-emergence, having taken about 224,000 years for its completion; and this, even if there were no pause or stationary period, when the downward movement ceased, and before it was converted into an upward one.

I am aware that it may be objected that the average rate here proposed is a purely arbitrary and conjectural one, because, at the North Cape, it is supposed that there has been a rise of about five feet in a century, and at Spitzbergen, according to Mr. Lamont, a still faster upheaval during the