

Heights and Depths.

The elevations on the land rise at most to about five miles above the level of the sea; and the depths of the Atlantic may perhaps be justly estimated at nine miles, from the data furnished in Mr. Whewell's *Essays on Cotidal Lines*.* The labour would probably not be wasted which should be given to a careful estimate of the mass of the sea, as compared with the mass of land raised above its surface; on the hypothesis of a gradual refrigeration of the globe, it is perhaps not impossible to determine by calculation the relation of these masses; and from a comparison of these independent results there would arise an important test of the truth of the speculation. The heights and depths of the land and sea appear to require the supposition of co-extensive upward and downward movements, and, as Mr. Lyell has shown, it is probable the depressions exceeded the elevations. These effects appear unintelligible, except upon the admission of subterranean surfaces of melted rock, capable of yielding to subsidence inward, and eruptive forces outwards.

But this conclusion becomes more decided when we take into account the continuity of mountain chains and oceanic depths, the abrupt borders of the sea-coasts, the large areas of tertiary and secondary strata which were formed in the old sea bed, and are now raised, with *little mark of local violence*, into almost boundless plains and vales, within a border of bold mountains. All these circumstances are the natural consequences of *extensive depression* of the crust of the globe, followed by *elevations*; both being determined in greater intensity to points, lines, and areas of weakness, in a solid crust above a fluid of small compressibility, like melted rock.

* Phil. Transactions, 1833.