

I consider it probable, that all large tracts of country or continents emerged slowly from the ocean, forming at first mountainous islands, before the lower countries were raised above the level of the sea. The power which could upheave a continent, or, in other words, occasion a large portion of the crust of the globe to swell out, must be very different from the force which acted along certain lines, and elevated mountain ranges. This power may be dependent on a more general law of subterranean motion, with which we are at present unacquainted; for I deem it would be the extreme of presumptuous absurdity to maintain, that the causes we observe in present operation, comprise the whole agencies of the material Universe. The discoveries of electric and voltaic energy, and several laws of crystalline and magnetic polarity, have been made only during the life-time of some of the present generation; shall we then presume to fix limits to the discoveries of other powers and properties of Nature, of whose existence we cannot at present form the most remote conjectures? We might offer many instances in our own island, in which the forces that have broken and lifted up the strata along certain lines, appear to be very different from that which elevated continents or large islands. The elevating force that broke and tilted up the chalk strata, and the tertiary strata, along a line extending east and west through the Isle of Wight into Dorsetshire, does not appear to have produced any considerable change on each side of the line.

In passing from Alum Bay, where the chalk strata are nearly vertical, to the south side of the island, it is truly extraordinary to observe, how little the lower beds beneath the chalk, and adjacent to it, appear to have been disturbed. The force which uplited the strata is altogether distinct from that mighty upheaving force, which raised the whole chalk hills in the south of England from the ocean, without disturbing the relative position of the strata.

The same conclusions may be formed respecting the Wealden beds (see Chap. XIII.); but in this case the strata have been upheaved and submerged more than once, without any great change in their relative position. The repeated upheaving and submergence of the secondary strata is proved by the occurrence of fresh water strata, or of strata containing freshwater shells and land plants, resting on marine strata, and also covered with a great thickness of marine formations. (See Chap. VIII.) The strata in the great coal formation, were deposited in the freshwater lakes or marshes of an ancient country. The coal is composed of vegetable matter, and sometimes contains cortical impressions of plants. The beds of sandstone and shale that accompany coal, contain trunks and stems of large terrestrial plants, sometimes standing in the position in which they grew. In the greater number of coal fields not a vestige of any marine shells is found, though they frequently contain freshwater shells. In the lower part of some coal formations, indeed, there are