

Yet even in the midst of such apparent chaos it is not impossible to trace the fundamental law and order by which it is underlaid. The prime fact to be noted is the universal plication and crumpling of rocks which were at first nearly horizontal. From the gentle undulations of the strata beneath the plains to their violent contortion and inversion among the mountains, there is that insensible gradation which connects the whole of these disturbances as parts of one common process. They cannot be accounted for by any mere local movements, though such movements no doubt took place abundantly. The existence of a mountain chain is not to be explained by a special upheaval or series of upheavals caused by an expansive force acting from below. Manifestly the elevation is only one phase of a vast terrestrial movement which has extended over whole continents, and has affected plains as well as high grounds.

The only cause which, so far as our present knowledge goes, could have produced such widespread changes is a general contraction of the earth's mass. There can be no doubt that at one time our planet existed in a gaseous, then in a liquid condition. Since these early periods it has continued to lose heat, and consequently to contract and to grow more and more solid, until, as the physicists insist, it has now become practically as rigid as a globe of glass or of steel. But in the course of the contraction, after the solid external crust was formed, the inner hot nucleus has lost heat more rapidly than the crust, and has tended to shrink inward from it. As a consequence of this internal movement, the outer solid shell has sunk down upon the retreating nucleus. In so doing, it has of course had to accommodate itself to a diminished area, and this it could only accomplish by undergoing plication and fracture. Though the analogy is not a very exact one, we