

vulsive force. The stratified rocks must originally have been horizontal, or nearly so, and many of them were formed in the same manner as the deposits which are always to be found in the beds of rivers and the basins of oceans; but they were afterward acted upon by mighty disturbing forces, which elevated and disrupted them, throwing their strata into a variety of forms. Some were upheaved in a mass by an invisible but omnipotent agent acting beneath them; some were tilted into inclined positions; and others, acted upon in more than one point, were made to assume the form of a basin. These effects have been both local and general, at one time affecting a district not more than a few miles in extent, and at others elevating entire continents and immense mountain chains. The agent, as we believe, that produced these mighty effects, was internal heat; the same cause which in the present day mimics its former results by the exhibition of volcanic action and other phenomena, to which it will be hereafter necessary to refer. The identity of cause is proved by the identity of effects, not only in the disturbance of equilibrium, and in the arrangement of the solid materials of the earth's crust, but also in the character of the ejected matter; for, during the continuance of those mighty disturbances to which the earth was subject when its crust was in the process of formation, immense fissures were frequently formed, and from these the intumescent mass was thrown, producing overlying rocks of various extent and thickness. The summits of mountains frequently consist of these unstratified rocks, which have been elevated into their present condition by the internal force. At other times they are seen between stratified beds, bearing evidence, in their position and construction, of the fact that the upper bed was formed after the consolidation of the volcanic rock that disturbed the inferior mass. Not unfrequently these unconformable rocks, as they are sometimes called, assume a columnar structure, as at Staffa, Egg, and Antrim; and in other situations they may be crystalline or massive. It may, however, be necessary to remark that the ejection of these volcanic rocks did not necessarily attend the exertions of these internal disturbing agencies; for as an earthquake may happen in the present day without the actual ejection of lava, so the same force did in the early ages upheave the crust without any ejection of liquefied rock.

From these remarks it will be evident that the horizontal