

axis of the range on each side; and that this action, being confined within narrow limits, produced a rent or line of fracture on the crust of the globe, along which the beds were suddenly tilted into their present position; and that the outer ranges were raised by similar explosions, acting along lines of fracture of greater or less extent. These upheavings, whether simultaneous or successive, took place under the sea, and must have occasioned an agitation of the water, far exceeding in violence, any thing which modern causes present to our observation.

The vertical, or highly elevated position of certain portions of strata, that were originally horizontal, implies the sudden and violent action of an upheaving force. Where mountains are raised to a considerable elevation, and preserve an unbroken range of nearly horizontal strata, we may infer, that the upheaving force was slow in its operation, or acted on a large segment of the earth's surface.

I now claim the attention of geologists to the following position, which admits of direct and positive proof, though I am not aware that it has been before noticed:—THE ELEVATION OF LARGE CONTINENTS AND ISLANDS, WAS NOT EFFECTED BY THE SAME OPERATION, WHICH UPRaised THE PRIMARY ROCKS. For instance, the horizontal strata of new red sandstone, that rest on the upraised beds of slate and granite at Charnwood Forest, (see Plate II. fig. 4.) were deposited under the ocean; they are evidently sedimentary depositions, composed of fragments of slate and other rocks, intermixed with clay and sand, indurated into sandstone.

Now let us notice the present elevation of these strata of sandstone, which is not less than about 500 feet above the level of the sea, and we shall be compelled to admit, that the rocks of slate and granite, together with their covering of sandstone strata, were raised from the ocean to their present height, at an epoch long posterior to the uptilting of the former beds, or to the deposition of the sandstone that rests upon them. At the same epoch, and by the same upheaving cause, a great extent of the central part of England was also raised from the ocean; for the same beds of slate, sienite, granite and quartz rock, covered with the same beds of new red sandstone, extend into Warwickshire, and, in all probability, are connected with the Malvern range. Should any one suggest a doubt, whether this portion of the new red sandstone was deposited under the sea, it is only necessary to say, that the same new red sandstone, immediately adjacent to the Charnwood range, is covered by beds of the lias formation, (see *e* in the same plate,) which abound in marine organic remains. The same reasoning will apply to all other situations in which uplited transition or primary rocks, are covered by horizontal depositions of secondary strata. The elevation of the up-tilted beds was a distinct operation from that which raised them, together with the rocks that cover them, above the ocean, and which converted the former bed of the sea into dry land.