

scattered over Savoy, rolled off from the regions of the higher Alps, during this last period of their elevation. There are six other supposed periods of elevation. If these generalizations be true, and they seem to be based on an immovable mass of evidence, we must conclude, that there have been, in the history of the earth, long periods of comparative repose, during which the sedimentary deposits went on in regular continuity; and short periods of comparative violence and revolution, during which that continuity was broken; and if we admit that the higher regions of the globe have been raised from the sea by any modification of volcanic force, we must then also admit, that there have been several successive periods of extraordinary volcanic energy. How we are to escape from this conclusion I am unable to comprehend, unless we shut out the evidence of our senses.

“That the system of M. Elie de Beaumont is directly opposed to a fundamental principle of Mr. Lyell, cannot admit of doubt; and I have decided in favor of the former author, because his conclusions are not based upon any *à priori* reasoning, but on the evidence of facts.*”

If we admit that the primary, the transition, the secondary, and the tertiary classes of rock, were formed at different successive epochs, and that the lower beds in each of these classes, are more ancient than the beds which rest upon them, it follows, as a necessary consequence, that the elevation of any of these rocks, must be dated from a later epoch than the period of their formation. The elevation of a range of primary or transition mountains, if they are not covered by any secondary or tertiary formations, may be dated either from an epoch coeval with their consolidation, or from any subsequent epoch; but if they are partly covered by secondary or tertiary beds which are tilted up with them, we have direct evidence that the date of their elevation, was posterior to the secondary or tertiary epoch. So far we may advance on secure ground; but when we infer, that mountains which range in the same direction were all elevated at the same time, we wander into the region of vague hypothesis. It is by no means certain, that the elevation of the outer ranges of the Alps was contemporaneous with that of the principal range. In various part of Savoy, I observed that the mountains at a certain distance from the central range, had their escarpments turned in a different direction, and frequently took the arched form of stratification, as represented Plate II. fig. 2. *x, y*.

* Though I agree with Professor Sedgwick and M. Elie de Beaumont, that the elevation of mountain ranges, where the beds are nearly vertical, was effected by a sudden and violent upheaving, yet I am persuaded, that the elevation of continents, or extensive tracts of country, was (as Mr. Lyell maintains) a long continued process. It may be proved that these operations were distinct from each other, as I shall afterwards state.