

to species now inhabiting the Mediterranean, it is evident that there has been here an upheaval of the region at the base of Etna at a very modern period. It is fair, therefore, to infer that the volcanic nucleus of the mountain, partly perhaps of submarine, and partly of subaërial origin, participated in this movement, and was carried up bodily. Now, in proportion as a cone gains height by such a movement, combined with the cumulative effects of eruptions, throwing out matter successively from one or more central vents, the hydrostatic pressure of the columns of lava augments with their increasing height, until the time arrives when the flanks of the cone can no longer resist the increased pressure; and from that period they give way more readily, lateral outbursts becoming more frequent. Hence, independently of any local expansion of the fractured volcanic mass, those general causes by which the modern tertiary strata of a great part of Sicily have been raised to the height of several thousand feet above their original level, would tend naturally to render the discharge of lava and scorïæ from the summit of Etna less copious, and the lateral discharge greater.

If, then, a conical or dome-shaped mass of volcanic materials was accumulated to the height of 4000, or perhaps 7000 feet, before the upward movement began, or what is much more probable, during the continuance of the upward movement, that ancient mass would not be buried under the products of newer eruptions, because these last would then be poured out chiefly at a lower level.

Since I visited Etna in 1828, M. de Beaumont has published a most valuable memoir on the structure and origin of that mountain, which he examined in 1834\*; and an excellent description of it has also appeared in the posthumous work of Hoffmann.†

In M. de Beaumont's essay, in which he has explained his views with uncommon perspicuity and talent, he maintains that all the alternating stony and fragmentary beds, more than 3000 feet thick, which are exposed in the Val del Bove, were formed originally on a surface so nearly flat that the slope never exceeded three degrees. From this horizontal position they were at length heaved up suddenly (*d'un seul coup*) into a great mountain, to which no important additions have since been made. Prior to this upthrow, a platform is supposed to have existed above the level of the sea, in which various fissures opened; and from these melted matter was poured forth again and again, which spread itself around in thin sheets of uniform thickness. From the same rents issued showers of scorïæ and fragmentary matter, which were spread out so as to form equally uniform and horizontal beds, intervening between the sheets of lava. But although, by the continued repetition of these operations, a vast pile of volcanic matter, 4000 feet or more in thickness, was built up precisely in that region where Etna now rises, and to which nothing similar was produced elsewhere in Sicily, still we are told that Etna was not yet a mountain. No hypothetical diagram has been given to

\* *Mém. pour servir, &c.* tom. iv. Paris, 1838.

† *Geognost. Beobachtungen, &c.* Berlin, 1839.