

help us to conceive how this great mass of materials of supramarine origin could have been disposed of in horizontal beds, so as not to constitute an eminence towering far above the rest of Sicily; but it is assumed that a powerful force from below at length burst suddenly through the horizontal formation, uplifted it to a considerable height, and caused the beds to be, in many places, highly inclined. This elevatory force was not all expended on a single central point, as Von Buch has imagined in the case of Palma, Teneriffe, or Somma, but rather followed for a short distance a linear direction.\*

Among other objections that may be advanced against the theory above proposed, I may mention, first, that the increasing number of dikes as we approach the head of the Val del Bove, or the middle of Etna, and the great thickness of lava, scoriæ, and conglomerates in that region, imply that the great centre of eruption was always where it now is, or nearly at the same point, and there must, therefore, have been a tendency, from the beginning, to a conical or dome-shaped arrangement in the ejected materials. Secondly, were we to admit a great number of separate points of eruption, scattered over a plain or platform, there must then have been a great number of cones thrown up over these different vents, and these hills, some of which would probably be as lofty as those now seen on the flanks of Etna, or from 300 to 750 feet in height, would break the continuity of the sheets of lava, while they would become gradually enveloped by them. The ejected materials, moreover, would slope at a high angle on the sides of these cones, and where they fell on the surrounding plain, would form strata thicker near the base of each cone than at a distance.

What then are the facts, it will be asked, to account for which this hypothesis of original horizontality, followed by a single and sudden effort of upheaval, which gave to the beds their present slope, has been invented? M. de Beaumont observes, that in the boundary precipices of the Val del Bove, sheets of lava and intercalated beds of cinders, mixed with pulverulent and fragmentary matter, evidently cast out during eruptions, are sometimes inclined at steep angles, varying from  $15^{\circ}$  to  $27^{\circ}$ . It is impossible, he says, that the lavas could have flowed originally on planes so steeply inclined, for streams which descend a slope even of  $10^{\circ}$  form narrow stripes, and never acquire such a compact texture. Their thickness, moreover, always inconsiderable, varies with every variation of steepness, in the declivity down which they flow; whereas, in several parts of the Val del Bove, the sheets of lava are continuous for great distances, in spite of their steep inclination, and are often compact, and perfectly parallel one to the other, even where there are more than 100 beds of interpolated fragmentary matter.

The intersecting dikes also terminate upwards in many instances, at different elevations, and blend (or, as M. de Beaumont terms it, articulate) with sheets of lava, which they meet at right angles. It is

\* De Beaumont, Mém. pour servir, &c. tom. iv. pp. 187, 188.