

towards the sea, form the boundary cliffs of all other parts of the Val del Bove. If then we estimate the height of Etna at about 11,000 feet, we may say that we know from actual observation less than one half of its component materials, assuming it to extend downwards to the level of the sea; namely, first, the highest cone, which is about 1000 feet above its base; and, secondly, the alternations of lava, tuff, and volcanic breccia, which constitute the rocks between the Cisterna, near the base of the upper cone, and the foot of the precipices at the head of the Val del Bove. At the lowest point to which the vertical section extends, there are no signs of any approach to a termination of the purely volcanic mass, which may perhaps penetrate many thousand feet farther downwards. There is, indeed, a rock called Rocca Gianicola, near the foot of the great escarpment, which consists of a large mass between 150 and 200 feet wide, not divided into beds, and almost resembling granite in its structure, although agreeing very closely in mineral composition with the lavas of Etna in general.* This mass may doubtless be taken as a representative of those crystalline or plutonic formations which would be met with in abundance if we could descend to greater depths in the direction of the central axis of the mountain. For a great body of geological evidence leads us to conclude, that rocks of this class result from the consolidation, under great pressure, of melted matter, which has risen up and filled rents and chasms, such, for example, as may communicate with the principal and minor vents of eruption in a volcano like Etna.

But, if we speculate on the nature of the formations which the lava may have pierced in its way upwards, we may fairly presume that a portion of these consist of marine tertiary rocks, like those of the neighbouring Val di Noto, or those which skirt the borders of the Etnean cone, on its southern and eastern sides. Etna may, in fact, have been at first an insular volcano, raising its summit but slightly above the level of the sea; but we have no grounds for concluding that any of the beds exposed in the deep section of the Val del Bove have formed a part of such a marine accumulation. On the contrary, all the usual signs of subaqueous origin are wanting; and even if we believe the foundations of the mountain to have been laid in the sea, we could not expect this portion to be made visible in sections which only proceed downwards from the summit through one half the thickness of the mountain, especially as the highest points attained by the tertiary strata in other parts of Sicily very rarely exceed 3000 feet above the sea.

On the eastern and southern base of Etna, a marine deposit, already alluded to, is traced up to the height of 800 or 1000 feet, before it becomes concealed beneath that covering of modern lavas which is continually extending its limits during successive eruptions, and prevents us from ascertaining how much higher the marine strata may ascend. As the imbedded shells belong almost entirely

* Hoffman, *Geognost. Beobachtungen*, p. 701. Berlin, 1839.