

appear to me ill-founded. I think there is as little probability that mountains of granite, gneiss, or primitive calcareous stone have existed where we now see the tops of the Peak, of Vesuvius, and of Etna, as in the plains where almost in our own time has been formed the volcano of Jorullo, which is more than a third of the height of Vesuvius. On examining the circumstances which accompanied the formation of the new island, called Sabrina, in the archipelago of the Azores;\* on carefully reading the minute and simple narrative, given by the Jesuit Bourguignon of the slow appearance of the islet of the little Kameni, near Santorino; we find that these extraordinary eruptions are generally preceded by a swelling of the softened crust of the globe. Rocks appear above the waters before the flames force their way, or lava issue from the crater: we must distinguish between the nucleus raised up, and the mass of lavas and scorïæ, which successively increases its dimensions.

It is true that from all existing records of revolutions of this kind, the perpendicular height of the stony nucleus appears never to have exceeded one hundred and fifty or two hundred toises; even taking into the account the depth of the sea, the bottom of which had been lifted up: but when considering the great effects of nature, and the intensity of its forces, the bulk of the masses must not deter the geologist in his speculations. Every thing indicates that the physical changes of which tradition has preserved the remembrance, exhibit but a feeble image of those gigantic catastrophes which have given mountains their present form, changed the positions of the rocky strata,

\* At Sabrina island, near St. Michael's, the crater opened at the foot of a solid rock, of almost a cubical form. This rock, surmounted by a small elevated plain perfectly level, is more than two hundred toises in breadth. Its formation was anterior to that of the crater, into which, a few days after its opening, the sea made an irruption. At Kameni, the smoke was not even visible till twenty-six days after the appearance of the upheaved rocks. *Phil. Trans.* vol. xxvi, p. 69 and 200, vol. xxvii., p. 353. All these phenomena, on which Mr. Hawkins collected very valuable observations during his abode at Santorino, are unfavourable to the idea commonly entertained of the origin of volcanic mountains. They are usually ascribed to a progressive accumulation of liquified matter, and the diffusion of lavas issuing from a central mouth.