beds extend in general over small horizontal spaces, and some of them may possibly be no other than intrusive lavas, in the nature of dikes, more or less parallel to the layers of ejectamenta. Such lavas, when the crater was full, may have forced their way between highly inclined beds of scoriæ and lapilli. We know that lava often breaks out from the side or base of a cone, instead of rising to the rim of the crater. Nevertheless one or two of the stony masses alluded to seemed to me to resemble lavas which had flowed out superficially. They may have solidified on a broad ledge formed by the rim of a crater. Such a rim might be of considerable breadth after a partial truncation of the cone. And some lavas may now and then have entirely filled up the *atrium*, or what in the case of Somma and Vesuvius is called the *atrio del cavallo*, that is to say, the interspace between the old and new cone. When by the products of new eruptions a uniform slope has been restored, and the two cones have blended into one (see *e*, *d*, *c*, fig. p. 511), the next breaking down of the side of the mountain may display a mass of compact rock of great thickness in the walls of a caldera, resting upon and covered by ejectamenta. Other extensive wedges of solid lava will be formed on the flanks of every volcanic mountain by the interference of lateral, or, as they are often termed, parasitic cones, which check or stop the downward flow of lava, and occasionally offer deep craters into which the melted matter is poured.

By aid of one or all the processes above enumerated we may certainly explain a few exceptional cases of intercalated stony beds, in the midst of others of a loose and scoriaceous nature, the whole being highly inclined. But to account for a succession of compact and truly parallel lavas having a steep dip, we may suppose that they flowed originally down the flanks of a cone sloping at angles of from 4 to 10 degrees, as in many active volcanoes, and that they acquired subsequently a steeper inclination. It would be rash to assume the entire absence of local disturbances during the growth of a volcanic mountain. Some dikes are seen crossing others of a different composition, marking a distinctness in the periods of their origin. The volume of rock filling such a multitude of fissures as we see indicated by the dikes in Palma must be enormous; so that, could it be withdrawn, the mass of ejectamenta would collapse and lose both in height and bulk. The injection, therefore, of all this matter in a liquid state must have been attended by the gradual distension of the cone, the increase of which I have elsewhere compared both to the exogenous and endogenous growth of a tree, as it has been effected alike by external and internal accessions.

But the acquisition of a steeper dip by such reiterated rendings and injections of a cone is altogether opposed to the views of those who defend the upheaval hypothesis, because it draws with it the conclusion that the slopes were always growing steeper and steeper in proportion as the cone waxed older and loftier. Once admit this, and it follows, that the upper layers of solid lava must have conformed to surfaces already inclined at angles of 20, or, in the case of the Caldera of Palma, 28 degrees.