

channel of discharge subsequently buried under the products of newer eruptions. Countless dikes, more or less vertical, consisting chiefly of basaltic lava, traverse the walls of the Caldera, some of them terminating upwards, but a great number reaching the very crest of the ridge, and therefore having been posterior in origin to the whole precipice.

We could not discover in any one of the fallen masses of agglomerate which strewed the base of the cliffs a single pebble or waterworn fragment. Each imbedded stone is either angular, or, if globular, consists of scoriæ more or less spongy, and evidently not owing its shape to attrition. It would be impossible to account for the absence of waterworn pebbles if the coarse breccia in question had been spread by aqueous agency over a horizontal area coextensive with the Caldera and the volcanic rocks which surround it. The only cause known to us capable of dispersing such heavy fragments, some of them 3, 4, or 6 feet in diameter, without blunting their edges, is the power of steam, unless indeed we could suppose that ice had co-operated with water in motion; and the interference of ice cannot be suspected in this latitude ($28^{\circ} 40'$), especially as I looked in vain for signs of glacial action here and in the other mountainous regions of the Canary Islands.

The lower formation of the Caldera is, as before stated, equally of igneous origin. It differs in its prevailing color from the upper, exhibiting a tea-green and in parts a light yellow tint, instead of the usual brown, lead-colored, or reddish hues of basalt and its associated scoriæ. Beds of a light greenish tuff are common, together with trachytic and greenstone rocks, the whole so reticulated by dikes, some vertical, others oblique, others tortuous, that we found it impossible to determine the general dip of the beds, although at the head of the great gorge or Barranco they certainly dip outwards, or to the south, as stated by Von Buch. But in following the section down the same ravine, where the mountain called Alejanado (*d*, figs. pp. 494 and 497) is cut through, and where the rocks of the lower formation are very crystalline, we found what is not alluded to by the Prussian geologist, that the beds exposed to view in cliffs 1500 feet high have an anticlinal arrangement, exhibiting first a southerly and then a northerly dip at angles varying from 20 to 40 degrees (see section, fig. 646 at *k*): Hence we may presume that the older strata must have undergone great movements before the upper formation was superimposed. No organic remains having been discovered in the older series, we cannot positively decide whether it was of subaerial or submarine origin. We can only affirm that it has been produced by successive eruptions, chiefly of felspathic lavas and tuffs. Many beds which probably consisted at first of soft tuffs have been much hardened by the contact of dikes and apparently much altered by other plutonic influences, so that they have acquired a semi-crystalline and almost metamorphic character.

The existence of so great a mass of volcanic rocks of ancient date