

colossal summits are of trachyte. It may almost be admitted as a general rule, that whenever the mass of mountains rises in that region of the tropics much above the limit of perpetual snow (2300—2470 toises), the rocks commonly called primitive (for instance, gneiss-granite or mica-slate) disappear, and the summits are of trachyte or trappean-porphry. I know only a few rare exceptions to this law, and they occur in the Cordilleras of Quito, where the Nevados of Conderasto and Cuvillan, situated opposite to the trachytic Chimborazo, are composed of mica-slate, and contain veins of sulphuret of silver. Thus in the groups of detached mountains which rise abruptly from the plains, the loftiest summits, such as Mowna-Roa, the Peak of Teneriffe, Etna, and the Peak of the Azores, present only recent volcanic rocks. It would, however, be an error to extend that law to every other continent, and to admit, as a general rule, that, in every zone, the greatest elevations have produced trachytic domes: gneiss-granite and mica-slate constitute the summits of the ridge, in the almost insulated group of the Sierra Nevada of Grenada and the Peak of Malhacen,* as they also do in the continuous chain of the Alps, the Pyrenees, and probably the Himalayas†. These phenomena, discordant in appearance, are possibly all effects of the same cause: granite, gneiss, and all the so-styled primitive Neptunian mountains, may possibly owe their origin to volcanic forces, as well as the trachytes; but to forces of which the action resembles less the still-burning volcanoes of our days, ejecting lava, which at the moment of its eruption comes immediately into contact with the atmospheric air; but it is not here my purpose to discuss this great theoretic question.

After having examined the general structure of South America according to considerations of comparative geology,

* This peak, according to the survey of M. Clemente Roxas, is 1826 toises above the level of the sea, consequently 39 toises higher than the loftiest summit of the Pyrenees (the granitic peak of Nethou), and 83 toises lower than the trachytic peak of Teneriffe. The Sierra Nevada of Grenada forms a system of mountains of mica-slate, passing to gneiss and clay-slate, and containing shelves of euphotide and greenstone.

† If we may judge from the specimens of rocks collected in the gorge and passes of the Himalayas, or rolled down by the torrents.