

the heat which prevails daily on the woody shores of the Orinoco exceeds by $7^{\circ}2$ that of the month of August at Palermo, we find, on ascending the chain of the Andes, at Popayan, at an elevation of 5826 feet, the temperature of the three summer months of Marseilles; at Quito, at an elevation of 9541 feet, that of the close of May at Paris; and on the Paramos, at a height of 11,510 feet, where only stunted Alpine shrubs grow, though flowers still bloom in abundance, that of the beginning of April at Paris. The intelligent observer, Peter Martyr de Anghiera, one of the friends of Christopher Columbus, seems to have been the first who recognized (in the expedition undertaken by Rodrigo Enrique Colmenares, in October, 1510) that the limit of perpetual snow continues to ascend as we approach the equator. We read, in the fine work *De Rebus Oceanicis*,* “the River Gaira comes from a mountain in the Sierra Nevada de Santa Marta, which, according to the testimony of the companions of Colmenares, is higher than any other mountain hitherto discovered. It must undoubtedly be so if *it retain snow perpetually* in a zone which is not more than 10° from the equinoctial line.” The lower limit of perpetual snow, in a given latitude, is the lowest line at which snow continues during summer, or, in other words, it is the maximum of height to which the snow-line recedes in the course of the year. But this elevation must be distinguished from three other phenomena, namely, the annual fluctuation of the snow-line, the occurrence of sporadic falls of snow, and the existence of glaciers, which appear to be peculiar to the temperate and cold zones. This last phenomenon, since Saussure’s immortal work on the Alps, has received much light, in recent times, from the labors of Venetz, Charpentier, and the intrepid and persevering observer Agassiz.

We know only the *lower*, and not the *upper* limit of perpetual snow; for the mountains of the earth do not attain to those ethereal regions of the rarefied and dry strata of air, in which we may suppose, with Bouguer, that the vesicles of aqueous vapor are converted into crystals of ice, and thus rendered perceptible to our organs of sight. The lower limit of snow is not, however, a mere function of geographical latitude or of mean annual temperature; nor is it at the equator, or

* Anglerius, *De Rebus Oceanicis*, Dec. xi., lib. ii., p. 140 (ed. Col., 1574). In the Sierra de Santa Marta, the highest point of which appears to exceed 19,000 feet (see my *Rélat. Hist.*, t. ii., p. 214), there is a peak that is still called Pico de Gaira.