

which he is forced to employ. Gay-Lussac ascended in a balloon to the height of 25,000 feet without feeling any severe pain, and without hæmorrhage, because he was at rest in his aerial car. The rarefied air forces an effusion of blood through the veins and arteries, owing to its insufficient pressure externally on the skin.

All at once the veil of clouds which drooped over the crest of Chimborazo seemed torn aside as if by enchantment, revealing its rounded summit. The road growing somewhat wider, the travellers advanced with surer step, when a deep crevasse, 500 feet deep, and 70 broad, suddenly arrested them with an insurmountable obstacle. The path was continued beyond; but it was equally impossible to flank the abyss or descend into its shades, on account of the softness of the snow which filled it. They were compelled to abandon all hopes of ascending higher.

It was one o'clock P.M. The barometer marked 13 inches 11.2 lines, corresponding with (about) 19,400 feet. The air was 1° C. below zero. A distance of 700 yards only, or ten times the height of the monument of London, separated our gallant explorers from the topmost point of the Colossus of the Andes. La Condamine and Bouguer, on a previous occasion, had not ascended above 15,500 feet; Humboldt and Bonpland, therefore, found themselves at the greatest elevation attained by man up to their time.

It was not possible for them to remain long in this gloomy desert. The fog had again thickened, and neither the peak of Chimborazo nor any of the neighbouring mountains was now visible. They could perceive nothing around them but one vast sea of clouds. Not an organism, not a living being, could be seen. Humboldt did, however, at last discover a species of rock-lichen. At an elevation of 18,000 feet bloomed the *Gyrophora rugosa*; at 15,500 feet he had detected the last of the mosses. At 16,000 feet Bonpland captured a butterfly, and they saw a fly at 17,500 feet. But these insects had evidently been swept away by currents of air, for they sometimes saw tufts of grass raised to this height by the action of the wind.

The sky grew more and more cloudy, and the adventurers addressed themselves to a speedy downward journey, which they accomplished by the same route, but not without the greatest precautions. They had scarcely begun their descent when a thick hail, soon followed by snow, came down in heavy showers. The ground was soon covered ankle-deep—a circumstance which rendered the trajet doubly perilous. However, about two P.M., Humboldt and Bonpland rejoined their guides, whom they had left with their horses on the borders of the perpetual snow.

Having resumed their route towards Calpi, the small caravan arrived there about five o'clock in the evening. "According to custom," says Humboldt,\* "the fog which had spoiled our expedition was followed by the finest possible weather. On June 25th, Chimborazo unveiled itself to the inhabitants of Nueva-Riobamba in all its splendour, with that calm and impressive dignity which is the natural character of the tropical landscapes." But, spite of this attractive appearance, the philosopher did not consider it requisite to renew an attempt which had succeeded to the desired extent.

From the observations made by Humboldt, it appears that Chimborazo is an extinct volcano, composed of porphyry and trachyte. Its peak consists of labradorite

\* Humboldt, "Mélanges de Géologie et de Physique," vol. i., pp. 160, *et seq.*