

all the day. During the time of this phenomenon, a pungent odour of sulphuretted hydrogen gas was perceived at a great distance, to the surprise of the inhabitants, who did not dare to approach this spot on account of the horrible noises. But many came the following day, and found that the new great orifice, had ejected several streams of liquid chalk (*creta*), which had covered, with an ashy crust of many feet, all the surrounding space, filling the cavities and chinks. The hard substances ejected were fragments of calcareous tufa, of crystallized gypsum, pebbles of quartz, and iron pyrites, which had lost their lustre, and were broken in pieces. All these substances form the outward circuit at this day. The unpleasant smell of sulphur still continued, and the water which remained in the holes was hot for many months; while a keen smell of burning issued from the numerous orifices around the great gulf, which is now completely filled."

Volcanoes frequently occur in groups, sometimes arranged along a line, as if they had originally been formed over one vast chasm, like the minor volcanoes on the sides of Etna; sometimes they are dispersed irregularly over the surface, and sometimes they are isolated like *Ætna*, and the Peak of *Teneriffe*.

The volcanoes in South America, Humboldt observes, instead of being isolated or disposed in irregular groups as in Europe, are arranged in rows, like the extinct volcanoes of Auvergne, or the volcanoes of Java; sometimes in one line, and sometimes in two parallel lines. These lines are generally in the same direction, as the chain of the Cordilleras, but sometimes (as in Mexico) they form an angle with it of 70° . The volcanoes of Mexico, he further observes, are placed in a narrow zone, between latitude $18^{\circ} 59'$ and $19^{\circ} 12'$. This he regards as a vast chasm, seven hundred and fifty miles in length, extending from the coast of the Atlantic to that of the Pacific, and to the islands of *Revillagiedo* in the same direction.

Our knowledge of volcanic geography is, at present, imperfect, but among the principal volcanic groups and ranges, the following may be briefly enumerated:—

In the Azores, there are no less than forty-two active or dormant volcanoes; and submarine volcanoes, not unfrequently, break forth in their vicinity. Almost all the other islands in the Atlantic, and many of the West India islands, are volcanic. Numerous islands in the Pacific Ocean and the Indian Seas have large volcanoes. In the Island of Java alone, there is a range consisting of thirty-eight large volcanic mountains, some of which are, at present, in an active state; they are detached from each other, and though some of them are covered by the vegetation of many ages, the indications of their former eruptions are numerous and unequivocal.

Numerous volcanoes exist, near or within the arctic circle, in *Kamschatka*, in *Greenland*, and in *Iceland*. A range of active or dormant volcanoes extends from the southern extremity of *America*