

in the immediate neighbourhood of the sea, or near some saltwater lake. A great number are found in islands, and many of the islands themselves have been produced by the volcanic cause. Some few exceptions, however, must be made to this rule, and we may particularly mention the American volcanoes, some of which are situated in the interior of the continent, but from their relative position there is some reason to suppose that they are all ranged over the same general line of communication with the sea. The volcano of Jorullo is more distant from the sea than any other; yet on one side it is connected with the Atlantic by Tuxtla, and on the other with the Pacific by Colima.

2. Another observation, deduced from the geographical position of volcanoes, is, that they are generally arranged in lines. It is true that we may here and there find a solitary cone apparently unconnected with any other mountain, as is the case with Etna, and the Peak of Teneriffe; and, at other times, we may observe a small group of volcanoes, as in South America; but their most common position is in lines. The volcanoes of South America are arranged in this manner; and the fact suggested to Humboldt the supposition that they might be ranged over an immense chasm of intumescent matter.

3. Volcanoes are not confined to situations of any particular geological formation. They are found among primitive and secondary rocks; and the only restraint upon the formation of a volcanic cone, is the existence of an opposing force in the constitution of the mineral crust greater than the projecting force of the volcanic agent.

4. Earthquakes and thermal springs have their origin in the same agency as volcanoes. This statement leads us at once to a consideration of the circumstances under which these two classes of phenomena are exhibited.

#### EARTHQUAKES.

The constancy with which volcanoes and earthquakes attend each other, is the best proof that can be given of the identity of their origin. We may select one or two examples in illustration.

The same night that Lima was destroyed by earthquake, four new volcanic vents were formed in the Andes. In the year 447, the earth was convulsed almost without intermis-