semblage of which constitutes positive geology, that the surface of the globe has presented a long series of tranquil periods, each separated from that which followed it by a sudden and violent convulsion, in which a portion of the earth's crust was dislocated—that, in a word, this surface was ridged at intervals in different directions—the mind would not rest satisfied, if it did not perceive, among those causes now in action, an element fitted from time to time to produce disturbances different from the ordinary march of the phenomena which we now observe.

"The idea of volcanic action naturally presents itself, when we search, in the existing state of things, for a term of comparison with these great phenomena. They nevertheless do not appear susceptible of being referred to volcanic action, unless we define it with M. Humboldt, as being the influence exercised by the interior of a planet on its exterior covering, during its different stages of refrigeration."

Having explained the appearance and origin of mountains, it would be necessary to refer to the probable formation of valleys, had we not already made some remarks upon this subject. Valleys have been produced in two ways, by an elevation and by denudation; the former being generally the deeper and the more precipitous. The spaces occupied by the ocean are, in fact, valleys, and the continents are but mountain chains. The sea, however, has not a uniform depth, but its basin is diversified by elevations and depressions in the same manner as the dry lands.

Valleys which separate high mountains are usually long and narrow, having frequently their salient and re-entrant angles so perfectly formed, that the sides would correspond if brought together. Instances of this have been observed in both the Alps and the Pyrenees.

CAVERNS.

There may be sometimes a difficulty in explaining the origin of those fissures and cavities which so frequently intersect strata, and are especially numerous in mountainous countries, and in limestone rocks. They may, however, be usually traced to the sinking or elevation of strata by volcanic forces, or to the action of water. Some singular theories have been proposed to account for the formation of caverns, and we remember one that assumes their elevation by the expansion