

been cut through, by those causes which formed the present valleys, they are then obviously older than the valleys, and where these currents have flowed into valleys, beds of rivers, &c. they are as evidently of a more recent date.

Although the formation of these volcanic regions was anterior to the records of history, it was, evidently, in the most recent portions, posterior to the existence of organized beings, which are found imbedded in the volcanic tufa.

The recent researches of Humboldt, "have greatly extended our knowledge of the volcanic tracts of our globe; he has shown the whole country round the Caspian to be a vast district of this nature, a "pays crateres," exactly resembling, in its general outlines, the telescopic appearance of the moon; he has also pointed out another great seat of volcanic action, the chain of Thion Chou, south of the Altai, and running about  $42^{\circ}$  lat. N. and between  $70^{\circ}$  and  $80^{\circ}$  long. E. of London. This vast ignigenous district extends over two thousand five hundred square leagues, and being generally remote from every sea, shows that marine contiguity, although a common, is by no means an indispensable concomitant of volcanic action."\*

For our purpose, it is not necessary to go any farther into detail, with respect to this class of rocks. All that is true of modern eruptions from active volcanos, considered as proofs of succession in geological events, is true in the present case. Every thing was occasionally covered by the currents that issued from the ancient volcanos, and there is no reason to doubt, that, as happens in connexion with modern volcanic convulsions, destructive earthquakes preceded and attended their eruptions.

It is not our purpose, on this occasion, to enter into the consideration of the theory of volcanos. It is undoubtedly obscure, and attended with many difficulties, especially in the extent to which the view of igneous action is carried by most of the geologists of the present day. "It is impossible, (says Conybeare,) to propose, as explanatory of volcanic phenomena, any probable theory, which does not, at the same time, embrace the entire structure of the globe, in all its generality."†

### 3. *Ancient Rocks of Igneous Origin.*

With respect to the extent of this class of rocks, there has been great diversity of opinion.

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\* Discourse of Prof. Conybeare on Geology, at Oxford University, 1832.

† Discourse at Oxford, 1832.