

all geologists, together with the theoretical views they are thought to favour. They consist in the greater degree of induration assumed by many of the neighbouring rocks near the walls of trap dykes; by which loose grits pass into compact quartz rock, and shale into flinty slate; coal being converted under similar circumstances into coak, as if by the volatilization of its bituminous matter. Many geologists dwell on both these effects, as evidently resulting from the proximity of matter in a state of igneous fusion; and consider them as decisive of the volcanic origin of these rocks. Instances of the phenomena are afforded by several of the dykes of Northumberland, Durham, and Staffordshire. The effect attributed to the toadstone beds of Derbyshire in cutting off the metalliferous veins, has been already noticed; but it will be seen that this is not a general fact. Should it appear however, that any such veins are decidedly broken through by them, the proof of their subsequent formation must in every such instance be admitted; and we shall be obliged to ascribe to the uncut veins, a still more recent origin. But this subject cannot be considered as having yet been fully investigated.

Particular description and localities of the Trap rocks associated with the Coal-formations, &c.

*I. Beds overlying masses, and dykes, of trap in Northumberland and Durham.**

The mass of trap which first claims our attention in this quarter, is that named the great Whinsill; this forms a stratified mass, conformably arranged near the middle of the carboniferous limestone formation; and may be traced for many miles about half way up the great western escarpment of the mountain range, connected with Cross fell; particularly near the lead mines on Dufton fell. The thickness of this stratum is, however very irregular; being only six fathoms in some places,

* Mr. Trevelyan has recently laid before the Wernerian Society sections of all those parts of the Northumberland coast which present masses of trap; and has detected the same passage of dykes into apparent beds noticed by Dr. Mac Culloch. Professor Sedgewick also has lately examined the trap of Northumberland, and considers the evidence of its igneous formation as complete.

Monsieur Boué, 'Geologie de l'Ecosse,' while supporting in its most extravagant degree the igneous theory of trap rocks, has yet questioned some of these inferences; one of his arguments is that the flinty slate found near trap dykes cannot be indurated shale, because it is fusible without great difficulty; had he tried the same experiment with ordinary lias shale he would have found the same result.