

important observations of Dr. Mac Culloch, which satisfactorily prove that the inferences derived from the position of trap rocks, cannot always be safely relied on; and that portions of one and the same mass of trap, may be found under all these seemingly different relations. Although the observations refer to a district not falling within the limits of the present work, they are so intimately connected with the subject now under consideration, that their introduction cannot be thought irrelevant. This able geologist observed in the cliffs on the east coast of Trotternish, (Isle of Sky,) several interesting sections of the sandstone strata, traversed by trap, in various manners. Among these he noticed a large mass of trap rising through, and on one side overlying, the sandstone strata. From this mass an horizontal bed was detached running conformably through the midst of the strata; and this ultimately became subdivided into three smaller beds, also conformable and alternating with the sandstone. Dykes also proceeded in several points from the single bed of trap. So that in this instance we have all the three modes of position described in the beginning of this article, assumed by different portions of the very same mass of trap; and these appearances too were exhibited on a large scale. A delineation of them is given in plate 17, fig. 2. Western Islands. A contracted sketch is here subjoined.



It should be remembered that the question of the volcanic origin of these rocks, is not in fact affected by their occasional occurrence as conformable beds; since on the supposition of volcanic agency prevailing contemporaneously with the formation of the strata, the lavas produced would necessarily occur thus interstratified; and no theorist ever refers these rocks to volcanic agency of recent date; but makes it a necessary condition of his hypothesis that they flowed before the continents assumed their present form, and while they were buried beneath the ocean. It is evidently quite consistent with this hypothesis, to admit a successive series of such volcanic agencies, exerted contemporaneously with the epochs of the several geological formations. This observation is not made for the purpose of maintaining a theory; but only to shew that it is necessary to admit with some caution, the arguments brought against it by those, who though of another school, are equally theorists.

(e) *Alterations induced on the stratified rocks in the neighbourhood of the trap.* These phenomena are familiar to