

prehensive view of the subject in combining the agency of these two orders of geological causes. The vallies of mountainous countries (where every sign of disorder and disturbance prevails in the strata) owed in all probability at least their first outline to the disruptive forces which acted around them; and here accordingly we find that regular and systematic conformation, which has been already noticed, far less clearly marked in the structure of the vallies; for instead of the uniformly descending slope of their channels, this line is broken by deep hollows, the receptacles of large lakes. But although on these grounds we may refer the original formation of the vallies of such districts, in part at least, to the convulsions alluded to, yet there are the strongest proofs that even here also the vallies have subsequently been greatly modified by the rush of mighty currents of water through them; and in lower countries, where the horizontal and undisturbed position of the strata shew that other convulsions cannot very sensibly have affected the figure of the surface, we must refer its present inequalities almost exclusively to the excavating action of such currents.

The second defect which calls for animadversion in some of the theories which in other respects have given the clearest views of the phænomena under discussion, is, that while they correctly ascribe the excavation of vallies to the agency of aqueous currents, they look to no other supply of that agency than the streams (often inconsiderable rills) which now flow through them, borrowing liberally from time what they confessedly want in force. The advocates of this view imagine, that in a long lapse of ages the incessant action of this minute cause would be sufficient to account for the mighty effects observed; but not to dwell on the difficulties which the truly immense periods required, must present to any one who imagines he has less than an eternity of past time to calculate upon; yet even conceding that eternity, it is easy to shew that the phænomena attendant on vallies are very commonly of such a nature, that to believe them to have been formed by their actual rivers, however long their action may have endured, involves the most direct physical impossibilities. In fact (as we shall presently see) this hypothesis must be abandoned at once by any one who will take the trouble of subjecting it to a rigorous application to the vallies of any extensive district, or to any map of those vallies in which the configuration of the surface is accurately represented; and it must principally be ascribed to the imperfection of all but the most recent maps in this respect, and to the circumstance that the eye seldom takes in enough of the surface of a country to judge correctly of the totality (if we may so speak) of its configuration, that it could