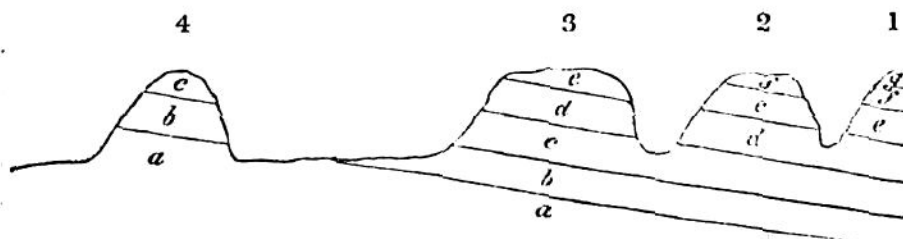


ever have been seriously defended. It is indeed the more extraordinary that a cause so manifestly inadequate, should ever have been embraced, since the fundamental fact of geology, namely, that the continents, now dry land, were once covered with the ocean, which is of necessity (however differently explained) common to every geological theory, involves in itself the admission of a cause fully adequate: for, however that ocean may have been brought to its present level, it could never (on any view of the matter) have drained off the surface of the lands it has deserted, without experiencing violent currents in its retreat; and in those currents (the existence of which no one can on any hypothesis dispute) might have been found a force far more commensurate to the effects to be accounted for.*

It is further necessary, as a preliminary to the discussion of this subject, to state a distinction to which we shall often have occasion to recur, arising from the direction of vallies relatively to that of the chains of hills among which they range: considered under this relation they may be divided into two classes, commonly distinguished as *longitudinal* and *transverse* vallies. The longitudinal valleys are those which pursue a course parallel to the direction of the chains which bound them; the transverse, those which cut transversely across the hill chains. Since the *direction of the chains of hills is very generally the same with the direction of their constituent strata*, it is unnecessary to add that the longitudinal vallies will in such cases be parallel to, and the transverse cut across, the strata among which they range.

To proceed to the phænomena on which the proofs of this agency of great aqueous currents in the formation of our vallies depend, we should begin with those which shew that they have been excavated in the strata subsequently to their original consolidation.



The nature of these proofs will be most clearly explained by the inspection of the accompanying diagram, which represents

* We do not at present enter into the question whether the vallies may not have been modified by other currents subsequent to the first retreat of the ocean from our continents.