

But although we may safely attribute these effects to running water, yet we shall find on examination that the agency of the streams which at present flow through our vallies (to whose long continued action they have sometimes been ascribed) is quite inadequate to afford a satisfactory solution of the phænomena. The proofs of this assertion are not merely the apparent disproportion between this cause and the effect to be accounted for, and the entire absence of any streams in many vallies (those of the chalky districts especially), but we find a still more decisive refutation in a phænomenon of common occurrence,—the intersection of two series of vallies, the one extending longitudinally along the base of a chain of hills, and the other cutting transversely across that chain, under such circumstances that no stream could have risen to a sufficient height to form the transverse vallies by excavating a passage through the crest of the chain, but must have discharged its waters at a level far inferior to that required for this effect, through the longitudinal valley at its base. The details of this configuration of surface, and the arguments arising from it, will be treated with the detail they require in the body of the work under the proper head; here they can only be alluded to; and it will thus be seen that large sheets of water sweeping over the face of an extensive tract at once, can alone account for the phænomena. Almost all the vallies of the Weald of Kent, Surrey, and Sussex, present this combination of circumstances, as do many others of those which traverse the chalk range in various parts of the island; and a circuit of a few miles round Bristol, alone affords no less than ten instances of the same kind.

The same agency that has excavated the vallies, appears also to have swept off the superior strata from extensive tracts which they once covered; the proofs of this are to be found in insulated hills, or *outliers* of those strata placed at considerable distances from their continuous range, with which they have every appearance of having been once connected; in the abrupt and truncated escarpments which form the usual terminations of the strata; and in the very great quantity of their debris scattered frequently over tracts far distant from those where they still exist in situ. This stripping off the superstrata is appropriately termed *denudation*.

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only excepted cases are, when the direction of the valley coincides with that of a fault, or dislocation and subsidence of the strata, and these are of the very rarest occurrence. A glance at Mr. Smith's or Mr. Greenough's map will at once shew that all the principal transverse vallies throughout the island, do actually exhibit the same strata on both sides.