

ocean. It is not the business of the present work to propose theories, but to record facts; these facts are thus connected with the above discussion; if the violent elevation of the continents (or depression of the channel of the ocean) supposed in the last mentioned hypothesis really took place, it must have left traces in the disturbed, contorted, and highly inclined position of the strata, and these disturbances must be the greatest where the change of level has been the greatest, i. e. in the neighbourhood of the loftiest mountains.

The enquirer with this view will be led to examine what is the actual position of the strata; how far that position can be considered as having resulted from original formation, and how far it must have resulted from subsequent convulsions and derangement.

When beds recomposed from the fragments and detritus of older rocks (such as are called conglomerates and pudding-stones) which must previous to their consolidation have existed as loose gravel, occur among vertical or highly inclined strata, we may conclude with absolute certainty that this inclined position cannot have been original, but must have resulted from subsequent disturbance; for it is obviously physically impossible to support an aggregation of loose gravel in vertical or nearly vertical planes. A similar argument will apply where, among the inclined strata, thin beds distinguished by peculiar organic remains, are interposed; for we cannot imagine any combination of circumstances under which (previously to the consolidation of the matrix containing them) the detached joints of encrinites, or the loose shells of testacea, or the scattered pinnulæ of ferns, should have disposed themselves in thin vertical layers. It is manifestly absurd in these cases to attribute the vertical direction to the action of any crystallizing force, or any cause of the kind; no such causes could have placed a vertical bed of limestone containing encrinites, in contact with a vertical bed of coal-shale containing canes and fern leaves. Now such arguments will be found to apply strictly to a very large class of highly inclined strata, and it will therefore deserve consideration whether we can in any case (for the phænomena are always similar) ascribe the occurrence of vertical beds to these supposed causes.

Those remarkable dislocations of the strata called faults, are connected with the same question; these are breaks or fissures cutting across a mass of strata, accompanied by a sinking or depression of the portion of that mass on one side of the break, often amounting to many hundred feet. These phænomena have been from the nature of the workings most fully explored in our coal mines.