

more in a single district,) separated from each other by intervening deposits of clay and sand ?

It seems certain that the coal-strata were deposited within, and perhaps along, the borders of great accumulations of water, whether fresh or salt; the testacea occurring in them sufficiently prove this; and, as we have seen, it is also certain that in some periods of the coal-formation (and more especially with regard to those beds of coal which are occasionally associated with the millstone-grit and limestone shales to be described in the next section) the water was salt, and that the evidence of its ever having been otherwise is far from convincing. It hardly seems necessary therefore to have recourse to a series of reciprocating inundations of the sea and fresh-water lakes; but we may more naturally suppose these deposits to have been entirely formed within the former, and their disposition in limited basins seems farther to indicate that they were accumulated in friths or æstuaries.

Now the partial filling up of lakes and æstuaries offers us the only analogies in the actual order of things with which we can compare the deposits of coal; for in such situations we often find a series of strata of peat, and sometimes submerged wood, alternating with others of sand, clay, and gravel, and presenting therefore the model of a coal-field on a small scale, and in an immature state.

The lignites of Bovey Tracey, which seem evidently to have been accumulated (but at an earlier period) in the filling up of an æstuary, are disposed in regular strata (see the section given in the first volume of Parkinson's *Organic Remains*) alternating with clay and gravel evidently derived from the detritus of the neighbouring granitic chains. The thickness of the beds in this instance, and the structure of the whole deposit, give it a still nearer resemblance to a regular coal-field. We must here suppose the wintry torrents to have swept away a part of the vegetation of the neighbouring hills and buried them in the æstuary, together with the alluvial detritus collected in its course; the latter would, from its gravity, have sunk first and formed the floor; the wood would have floated till, having lost its more volatile parts by decomposition and become saturated with moisture, it likewise subsided upon these, being perhaps also loaded by fresh alluvia drifted down upon its surface; the reiterated devastations of successive seasons must have produced the repetition and alternation of the beds.

In this instance, then, it is evident that these or similar causes must have acted; and if we suppose a like order of causes to have operated more extensively and for a longer period during