

fields: rapid development of vegetation in swamps, and periodical inundations of water charged with mud and sand."* That the bituminization of vegetables, and their subsequent consolidation by pressure into coal, might take place under the conditions here contemplated, we can readily conceive, from what is already known as to the conversion of peat into coal, in bogs of comparatively recent origin (page 48); but in the coal-measures we have vast alternations of strata that abound in marine remains. But rafts might be drifted into the tranquil depths of the ocean, and become covered with mud and sand; and a repetition of this process, at intervals, during a long period of time, would be sufficient to produce the appearances described. The occasional vertical position of the stems, and the admirable preservation of delicate leaves, do not appear to me to invalidate this inference; for in the entangled floating forests of the American rivers, trunks of trees often occur upright; and my distinguished friend, Admiral Sir Edward Codrington, informed me, that in the interior of the rafts, grasses and tender plants are often found entire. Such masses, therefore, might be drifted thousands of miles, and yet the imbedded fragile species, protected by the external network of entangled branches, remain uninjured; and, undergoing bituminization, while enveloped by the soft mud permeating the mass, might become changed into

* Bakewell's Geology.