

merates of the Grampians, the Lammermuirs, and the Cumbrian valleys, hold fragments of the neighbouring and but lately uplifted rocks; hence the absence of old red sandstone in Derbyshire, its great predominance and complication on the south-east border of Wales; hence the unmingled oceanic character of the limestone of Derbyshire and Ingleborough, contrasted with the divided, sandy, shaly, carbonaceous littoral group of Northumberland. The small extent of coal in many countries is merely a fact indicative of the previous revolutions which affected the primary strata there; while the abundance of coal in Great Britain confirms to us the conclusion drawn from other considerations, that in this region of the globe, soon after the formation of primary strata, much land had been raised above the sea.

But there is yet to be explained the excessive abundance of the vegetation of that early land, which should be capable, even when swept down into estuaries and the sea, of collecting into so enormous a mass of coal. On this point, if we turn our eyes on existing nature, nothing appears so likely to aid our conception as the damp forests on the Oronoko, Maranon, or Mississippi, from whose mere waste the mighty rivers roll every year to the Atlantic an immeasurable mass of trees and herbs, with soil, sand, and clay, which are in process of time arranged on the bed of the ocean, as we find the coal and its accompanying sands and clays to be. The analogy is strengthened by the general consent of botanists, in regarding the plants of which coal was formed to be decidedly analogous (though differing much) to tropical vegetation, and especially to the vegetation of a tropical region contiguous to the sea, where palms, cacteaceæ, and lycopodiaceæ might abound, and yet varied with mountain slopes on which tree ferns and pines might flourish. If further we suppose, with M. Brongniart, that the atmosphere of that early time might be loaded with an extra proportion of carbonic acid, against which no law of nature militates, (for