

rine creatures swarmed, and lived, and died upon the grounds that had often aforetime been the seat of terrestrial vegetation. Thus, perhaps, a bed of calcareous sediments, destined to become a limestone, was interpolated among the couches of sand, and shale, and vegetable matter.

The theatre of these changing scenes was the whole of that area now covered by the coal-measures of the country (see Fig. 57), as well as large portions of the intervening regions, from which the coal has been swept by the besom of geological denudation. In the later ages of geological history, wasting agencies have moved over the surface of the country, scoring through the solid rocks, scooping out lake-basins, carrying away entire formations, and exposing deeply-seated strata over wide areas.

The duration of the vicissitudes which I have sketched was inconceivably great. The amount of vegetable matter in a single coal-seam six inches thick is greater than the most luxuriant vegetation of the present day would furnish in twelve hundred years. Boussingault calculates that luxuriant vegetation at the present day takes from the atmosphere about half a ton of carbon per acre annually, or fifty tons per acre in a century. Fifty tons of stone-coal, spread evenly over an acre of surface, would make a layer of less than one third of an inch. But suppose it to be half an inch; then the time required for the accumulation of a seam of coal three feet thick—the thinnest which can be worked to advantage—would be seven thousand two hundred years. If the aggregate thickness of all the seams of coal in any basin amounts to sixty feet, the time required for its accumulation would be one hundred and forty-four thousand years. In the coal-measures of Nova Scotia are seventy-six seams of coal, of which one is twenty-two feet thick, and another thirty-seven. The