

therefore, we find great and conformable beds of limestone, such as those described by Sir William Logan in the Laurentian of Canada, we naturally imagine a quiet sea bottom, in which multitudes of animals of humble organization were accumulating limestone in their hard parts, and depositing this in gradually increasing thickness from age to age. Any attempts to account otherwise for these thick and greatly extended beds, regularly interstratified with other deposits, have so far been failures, and have arisen either from a want of comprehension of the nature and magnitude of the appearances to be explained, or from the error of mistaking the true bedded limestones for veins of calcareous spar.

The Laurentian rocks contain great quantities of carbon, in the form of graphite or plumbago. This does not occur wholly, or even principally, in veins or fissures, but in the substance of the limestone and gneiss, and in regular layers. So abundant is it, that I have estimated the amount of carbon in one division of the Lower Laurentian of the Ottawa district at an aggregate thickness of not less than twenty to thirty feet, an amount comparable with that in the true coal formation itself. Now we know of no agency existing in present or in past geological time capable of deoxidizing carbonic acid, and fixing its carbon as an ingredient in permanent rocks, except vegetable life. Unless, therefore, we suppose that there existed in the Laurentian age a vast abundance of vegetation, either in the sea or on the land, we have no means of explaining the Laurentian graphite.

The Laurentian formation contains great beds of oxide of iron, sometimes seventy feet in thickness. Here, again, we have an evidence of organic action; for it is the deoxidizing power of vegetable matter which has in all the later formations been the efficient cause in producing bedded deposits of iron. This is the case in modern bog and lake ores, in the clay ironstones of the coal measures, and apparently, also, in the great