trees of the same family, from which it is reasonable to assume that the seasonal changes were less marked than they are with us.

Everything announces that the time occupied in the deposition of the Carboniferous Limestone was one of vast duration. Professor Phillips calculates that, at the ordinary rate of progress, it would require 122,400 years to produce only sixty feet of coal. Geologists believe, moreover, that the upper coal-measures, where bed has been deposited upon bed, for ages upon ages, were accumulated under conditions of comparative tranquillity, but that the end of this period was marked by violent convulsions—by ruptures of the terrestrial crust, when the carboniferous rocks were upturned, contorted, dislocated by faults, and subsequently partially denuded, and thus appear now in depressions or basin-shaped concavities; and that upon this deranged and disturbed foundation a fourth geological system, called Permian, was constructed.

The fundamental character of the period we are about to study is the immense development of a vegetation which then covered much of the globe. The great thickness of the rocks which now represent the period in question, the variety of changes which are observed in these rocks wherever they are met with, lead to the conclusion that this phase in the Earth's history involved a long succession of time.

Coal, as we shall find, is composed of the mineralised remains of the vegetation which flourished in remote ages of the world. Buried under an enormous thickness of rocks, it has been preserved to our days, after being modified in its inward nature and external aspect. Having lost a portion of its elementary constituents, it has become transformed into a species of carbon, impregnated with those bituminous substances which are the ordinary products of the slow decomposition of vegetable matter.

Thus, coal, which supplies our manufactures and our furnaces, which is the fundamental agent of our productive and economic industry—the coal which warms our houses and furnishes the gas which lights our streets and dwellings—is the substance of the plants which formed the forests, the vegetation, and the marshes of the ancient world, at a period too distant for human chronology to calculate with anything like precision. We shall not say—with some persons, who believe that all in Nature was made with reference to man, and who thus form a very imperfect idea of the vast immensity of creation—that the vegetables of the ancient world have lived and multiplied only, some day, to prepare for man the agents of his economic and industrial occupations. We shall rather direct the attention of our young readers to the powers of modern science, which can thus, after