

in the course of this era, the Subcarboniferous limestone was forming from immense Crinoidal plantations in the seas.\*

Another extermination took place of all the beautiful life of the waters, and a conglomerate or sandstone was spread over the encrinital bed: and this introduced the true coal period of the Carboniferous Age;—for it ended in leaving the continent, which had been in long-continued oscillations, quite emerged. Over the regions where encrinites were blooming, stretch out vast wet prairies or marshes of the luxuriant coal vegetation. The old system of oscillations of the surface still continues, and many times the continent sinks to rise again,—in the sinking, extinguishing all continental life, and exposing the surface to new depositions of sandstone, clays, or limestone, over the accumulated vegetable remains; in the rise, depopulating the seas by drying them up, and preparing the soil for verdure again; or at times, convulsive movements of the crust carrying the seas over the land, leaving destruction behind. And thus, by repeated alternations, the coal period passes, some six thousand feet of rock and coal-beds being formed in Pennsylvania, and fourteen thousand feet in Nova Scotia.

I have passed on in rapid review, in order to draw attention to the series or succession of changes, instead of details.† So brief an outline may lead a mind not familiar with the subject to regard the elapsed time as short; whereas to one who follows out the various alternations and the whole order of events, the idea of *time immeasurable* becomes almost oppressive.

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\* This Subcarboniferous limestone is sparingly represented in Pennsylvania among the sandstones and shales; but according to Prof. W. B. Rogers it increases to the southward, and in Virginia acquires a thickness of 1500 to 2000 feet.

† The names given to the subdivisions of the Palæozoic rocks are the same that have been laid down by the New York Geologists, whose assiduous and successful labors in a territory of so great geological importance, entitle them to pronounce upon the nomenclature of American Rocks. I have varied from the ordinary use of the terms only in applying them to the periods and epochs when the rocks were formed, so as to recognize thereby the historical bearing of geological facts. The Periods and Epochs thus made out are as follows—excluding minor subdivisions which may make Sub-epochs, and not attempting to give the parallel subdivisions for the West. On this subject, the volumes and papers by Prof. Hall especially should be consulted.