

this coal was of newer date than that of the Appalachians, and was about the age of the Oolite or Lias, a conclusion which, after a careful examination of the evidence on the spot, and of all the organic remains which I could collect, appears to me to come very near the truth. If we embrace this conclusion, these rocks are the only ones hitherto known in all Canada and the United States, which we can prove, by their organic remains, to be of contemporaneous origin with the Oolitic or Jurassic formation of Europe. The tract of country occupied by the crystalline rocks, granite, gneiss, hornblende-schist, and others, which runs parallel to the Alleghany Mountains, and between them and the sea, is in this part of Virginia about seventy miles broad. In the midst of this area occurs the coal-field alluded to, twenty-six miles long, and varying in breadth from four to twelve miles. The James river flows through the middle of it, about fifteen miles from its northern extremity, while the Appomattox river traverses it near its southern borders. The beds lie in a trough (see section, fig. 4, p. 213), the lowest of them usually highly inclined where they crop out along the margin of the basin, while the strata higher in the series, occupying the central parts of the area, and which are devoid of organic remains and of coal, are nearly horizontal.

A great portion of these coal-measures consists of quartzose sandstone and coarse grit, entirely composed of the detritus of the neighboring granitic and syenitic rocks. Dark carbonaceous shales and clays, occasionally charged with iron ores, abound in the proximity of the coal-seams, and numerous impressions of plants, chiefly ferns and Zamites, are met with in shales, together with flattened and prostrate stems of Calamites and Equisetum. These last, however, the Calamites and Equisetum, are very commonly met with in a vertical position, more or less compressed perpendicularly. I entertain no doubt that the greater number of these plants standing erect in the beds above and between the seams of coal which I saw at points many miles distant from each other, have grown in the places where they are now buried in sand and mud, and this fact implies the gradual accumulation of the coal-measures during a slow and repeated subsidence of the whole region.