

rocks may have been formed. The heat, perhaps, may not have been excessive when the coal-measures originated, but the entire absence of frost, with a warm and damp atmosphere, may have enabled tropical forms to flourish in latitudes far distant from the line. Huge swamps in a rainy climate, standing above the level of the surrounding firm land, and supporting a dense forest, may have spread far and wide, invading the plains, like some European peat-mosses when they burst; and the frequent submergence of these masses of vegetable matter beneath seas or estuaries, as often as the land sunk down during subterranean movements, may have given rise to the deposition of strata of mud, sand, or limestone, immediately upon the vegetable matter. The conversion of successive surfaces into dry land, where other swamps supporting trees may have formed, might give origin to a continued series of coal-measures of great thickness. In some kinds of coal, the vegetable texture is apparent throughout under the microscope; in others, it has only partially disappeared; but even in this coal the flattened trunks of trees of the genera *Lepidodendron*, *Sigillaria*, and others, converted into pure coal, are occasionally met with, and erect fossil trees are observed in the overlying strata, terminating downwards in seams of coal. The chemical processes by which vegetable matter buried in the earth is gradually turned into coal and anthracite has been already explained (see above, p. 72.).

Before concluding the remarks which are naturally suggested by a visit to the Great Dismal, I shall say a few words on a popular doctrine, favoured by some geologists, respecting an atmosphere highly charged with