

## CHAPTER VIII.

## ON THE LOWER OR GREAT COAL FORMATION.

The Geological Position and Structure of Coal Districts, called Coal-Fields.—Dislocation and Disturbances of Coal Strata by Faults and Dykes.—Mineral Coal, Anthracite, Plumbago, Wood-Coal or Lignite.—Iron-Stone accompanying Coal Strata.—On Carbon as an original Constituent Part of the Globe.—On the Origin of Coal Strata, and their Deposition in Fresh-Water Lakes or Marshes.—Numerous Repetitions of the same Series of Beds in the same Coal-Field.—Precautions necessary in the Establishment of Iron Furnaces.—On the Mode of searching for Coal.—Hints to landed Proprietors on the Probability of finding Coal in Districts where it has not yet been discovered.—On the Formation of Coal-Beds in Fresh-Water Lakes.—On the Conversion of Vegetable Matter into Coal.—Imperfect Coal Formations.—Salt Springs in Coal Strata.—Coal Mines in France and North America.—Observations on the Consumption of Coal in England, and the Period when the Coal-Beds will be exhausted.

IN the transition rocks covering the primary, described in the preceding chapter, we very rarely, indeed, discover any remains of vegetables, either terrestrial or marine. Carbon, which is the principal constituent element of all plants, is seldom found as a mineral substance in these rocks; for, with a very few exceptions, all the vestiges of organic forms which they contain, are of marine animals. Hence we are led to infer, that there were but few islands, or tracts of dry land, rising above the ancient ocean, in which these marine calcareous beds were formed or deposited. The attention of the geological student is now required to contemplate a most important and extensive change in the condition of the globe,—at least, of that part of it which forms the subject of the present chapter. Over the marine rock formations before described, we find a series of strata, two thousand feet or more in aggregate depth, in which remains of marine animals are extremely rare, but which contain, almost exclusively, the remains of terrestrial plants, or such as have grown either on dry land or in marshes. Carbon, in the form of coal, constitutes also numerous beds in the series, varying in thickness from a few inches to thirty feet or more, and alternating with beds of sandstone, indurated clay, and shale or schistose clay. The remains of vegetables are distributed in greater or less abundance throughout the whole series, which, taken together, are called by miners, in the north, *coal-measures*. The coal strata were, doubtless, deposited in the vicinity of extensive tracts of dry land, containing rivers, marshes, fresh-water lakes, and mountains: the marine beds which are the foundation of the series of coal strata, and also surround them, must, therefore, have been raised from the bottom of the ancient deep, before the vast accumulation of vegetable matter could be formed. To whatever cause we attribute this change in the condition of the globe, it appears to have been attended with another re-