

far as I have examined, the remains of vegetables exclusively, but no beds of workable coal occur in it. Where the strata crop or basset out, this rock forms abrupt and picturesque cliffs. Above the grit, are laid the regular series of coal-measures or strata, comprising sandstone of various qualities, indurated clay called *clunch*, ironstone, softer argillaceous beds called *bind*, and schistose argillaceous beds, called shale. There are also two argillaceous strata containing numerous shells allied to fresh-water muscles, and hence called *Muscle-bind*.

A gentleman extensively engaged in the working of coal mines in this district, had an approximate measure taken of the thickness of the different beds, which he sent me, and it was published in the first edition of this work; from which "it appears, that the total depth taken on the level line of the measure of the whole Derbyshire strata, including part of Nottinghamshire, is thirteen hundred and ten yards, in which are thirty different beds of coal, varying in thickness from six inches to eleven feet, making the total thickness of coal twenty-six yards: of course the above estimate can be regarded only as an approximation to truth, since the thickness of the strata was taken upon a level line, and not perpendicular to the line of their inclination or dip." Making an allowance for excess in the above measurement, the true thickness of the strata may fairly be estimated at about two thousand five hundred feet.

What is particularly deserving of notice in the bed of limestone-shale before mentioned, below the coal-measures, and above the mountain limestone, is, that this bed presents a transition from marine calcareous strata with animal remains, to fresh-water strata with terrestrial vegetables: as both occur in different parts of the bed, it would imply, that the subjacent limestone had been gradually but unequally raised above the sea, and during its elevation some parts remained immersed in the ocean, while other parts were covered with vegetable depositions. In the western side of Durham and Northumberland, the alternations of coal of inferior quality, with beds of mountain limestone, are more distinct, and the transition from marine to fresh-water formations on a larger scale: both prove that the elevation of the beds above the sea was effected by the operation of an elevating force acting slowly, or at distant intervals,—a subject which it is proposed to advert to in another part of the volume.

Coal-fields, as before stated, are of limited extent, and the strata frequently dip to a common centre, being often arranged in basin-shaped concavities, which appear to have been originally detached lakes, that were gradually filled by repeated depositions of carbonaceous and mineral matter. In some of the larger coal-fields, the original form of the lake cannot be traced, but in the smaller ones it is distinctly preserved.

The different strata under a bed of coal are frequently similar to the strata over it; and the same series is again repeated, in some