

pure jet. The characters of this substance and an imperfect coal called cannel-coal are the same, and their external appearances have frequently a close analogy.

From these remarks it will be seen that we may trace a succession of changes from vegetation to coal, which, independent of all argument, is a sufficient proof of the origin of the coal-beds. But there is no point of resemblance between the vegetables of the coal measures and of the submarine forests, which have been formed in comparatively recent times, or are now being formed. They are in both instances mingled with mineral deposits, but the plants belonging to the recent deposits have no points of distinction from those which are now growing on the surface. The oak, beech, elm, alder, and hazel, have all been found in the submarine forests, and with them the hazel-nut, as well as common household utensils and partly obliterated coins, all which are evidences of a recent formation. But the vegetables found in the beds associated with the coal have no feature in common with those now found in England.

The remains of plants in the coal measures are, according to the opinion of the most celebrated botanists, such as could only have existed in at least tropical regions. Now if these plants grew in a country that had a temperature at least as warm as the tropics, one of two things must have happened: either they were drifted by water from some very distant place, or, if they grew on or near the place where their remains are found, the temperature of the earth must have changed since the formation of the coal measures.

The state of the vegetable remains forbids, according to the opinion of some geologists, the supposition that they were brought from any distance to their present situations by water. They are generally found lying flat, with their stems and leaves parallel to the direction of the strata, but this is not universally the case. Mr. Witham states that he has found them in a vertical position, and especially notices the occurrence of a number of fossil vegetables beneath the high main coal at Newcastle, which had their roots fixed in a seam of coal, and presented an appearance as if they had been imbedded in the spot on which they were growing, and the same fact has been observed at St. Etienne by M. Brogniart. These facts are considered to oppose the supposition that the vegetable remains were drifted from