

FORMATION OF BEDS OF COAL.

Coal, as we have said, is only the result of a partial decomposition of the plants which covered the earth during a geological period of immense duration. No one, now, has any doubt that this is its origin. In coal-mines it is not unusual to find fragments of the very plants whose trunks and leaves characterise the Coal-measures, or Carboniferous era. Immense trunks of trees have also been met with in the middle of a seam of coal. In the coal-mines of Treuil,* at St. Etienne, for instance, vertical trunks of fossil trees, resembling bamboos or large Equiseta, are not only mixed with the coal, but stand erect, traversing the overlying beds of micaceous sandstone in the manner represented in the engraving, which has been reproduced from a drawing by M. Ad. Brongniart (Fig. 69).

In England it is the same; entire trees are found lying across the coal-beds. Sir Charles Lyell tells us† that in Parkfield Colliery, South Staffordshire, there was discovered in 1854, upon a surface of about a quarter of an acre, a bed of coal which has furnished as many as seventy-three stumps of trees with their roots attached, some of the former measuring more than eight feet in circumference; their roots formed part of a seam of coal ten inches thick, resting on a layer of clay two inches thick, under which was a second forest resting on a band of coal from two to five feet thick. Underneath this, again, was a third forest, with large stumps of *Lepidodendra*, *Calamites*, and other trees.‡

In the lofty cliffs of the South Joggins, in the Bay of Fundy, in Nova Scotia, Sir Charles Lyell found in one portion of the coal-field 1,500 feet thick, as many as sixty-eight different surfaces, presenting evident traces of as many old soils of forests, where the trunks of the trees were still furnished with roots.§

We will endeavour to establish here the true geological origin of coal, in order that no doubt may exist in the minds of our readers on a subject of such importance. In order to explain the presence of coal in the depths of the earth, there are only two possible hypotheses. This vegetable débris may either result from the burying of plants brought from afar and transported by river or maritime currents, forming immense rafts, which may have grounded in different places and been covered subsequently by sedimentary deposits; or the trees may have grown on the spot where they

* "Elements of Geology," p. 480. † Ibid, p. 479. ‡ Ibid, p. 479. § Ibid, p. 483