

is of vegetable origin, the plants from which it has originated, must have suffered an incomparably greater change than those of more recent coal formations. Their composition and their texture, afford evidence of a long operation of the fluid in which the changes were produced; and their situation, proves that the substance of the plants, though not entirely dissolved, was yet much comminuted, and was kept floating and swimming, and then precipitated. How can we, in any other way, account for the layers of sandstone and slate-clay, with which coal regularly alternates, so that from one to sixty alternate beds have been enumerated? How can we explain the combination of mineral coal with slate-clay, or account for the appearance of bituminous shale, flinty slate, of iron-pyrites and iron-ore, in the midst of mineral coal itself? We do not, however, admit of a repeated uncovering and covering of the land with water, and of a renewal of vegetation for every particular bed of coal; far from it, for violent inundations exhibit very different phenomena. These formations, like pure mineral formations, bear the evident impress of a lengthened operation, and of gentle precipitations; and whoever still entertains doubts regarding this, may have them completely removed by the condition in which vegetable remains are frequently found in the coal formations, by the perfect preservation of the most delicately shaped fern leaves, by the upright position of stems, and by other appearances of a similar character. It is also an important objection against the universality of the cover of water, notwithstanding the wide extent of beds of coal, that they are sometimes accompanied with fossil remains of fresh-water shells, from