

seasons might be ascertained in geological periods, however minute."

18. VERTICAL TREES IN CARBONIFEROUS STRATA.—The occurrence of the trunks of fossil trees in a vertical position, has already been noticed; the petrified forest of Portland, with its beds of vegetable mould, having early drawn our attention to this phenomenon (page 361). Stems of plants, standing erect in the strata, occur in many coal mines; and an interesting example is described by my friend M. Alexandre Brongniart, a distinguished French philosopher, as occurring at Tréuille, near St. Etienne, in the department of the Loire. This mine is most favourable for observation, for it is, in truth, a quarry in the open air, and exposes a natural section of the strata, which consist of clay, slate and coal; with four layers of compact iron ore, in flattened nodules, which are accompanied, and even penetrated, by vegetable remains. The upper ten feet of the quarry is composed of micaceous sandstone, in some instances stratified, and in others possessing a slaty structure. In this bed are numerous vertical stems traversing all the strata, and appearing like a fossil forest of plants resembling the bamboo, or large equiseta, turned into stone, in the places where they grew. The stems are of two kinds: the one long and slender, from one to four inches in diameter, and nine or ten feet high, being simply jointed and striated solid cylinders of sandstone, with a thin coaly envelopement, or crust.