

of America and Europe the species of any of our ordinary trees, as oaks, birches, or maples, may almost be counted on one's fingers, Schimper in his vegetable palæontology enumerates about eighty species of Carboniferous *Sigillariæ*; and while on the one hand many of these are so imperfectly known that they may be regarded as uncertain, on the other hand many species must yet remain to be discovered.* Now, in so vast a number of species there must be a great range of organisation, and, indeed, it has already been attempted to subdivide them into several generic groups. The present state of the question appears to me to be this, that in these *Sigillariæ* we have a group divisible into several forms, some of which will eventually be classed with the *Lepidodendra* as lycopods, while others will be found to be naked-seeded phænogams, allied to the pines and cycads, and to a remarkable group of trees known as *Cordaites*, which we must shortly notice.

Before considering other forms of Carboniferous vegetation, let us glance at the accumulation of coal, and the agency of the forests of *Sigillariæ* therein. Let us imagine; in the first instance, such trees as those represented in the figures, growing thickly together over vast swampy flats, with quantities of undergrowth of ferns and other plants beneath their shade, and accumulating from age to age in a moist soil and climate a vast thickness of vegetable mould and trunks of trees, and spores and spore-cases, and we have the conditions necessary for the growth of coal. Many years ago it was observed by Sir William Logan that in the coal-field of South Wales it was the rule with rare exceptions that, under every bed of coal, there is a bed of clay filled with roots of the *Stigmara*, already referred to as the root of *Sigillaria*. This dis-

* In a recent memoir (Berlin, 1887) Stur has raised the number of species in one subdivision of the *Sigillariæ* (the *Favulariæ*) to forty-seven!