

underclays of the coal-seams of the Island of Cape Breton, in Nova Scotia.

In a specimen of one of these, represented in the annexed figure (fig. 481), the spread of the roots was 16 feet, and some of them sent out rootlets, in all directions, into the surrounding clay.

In the sea-cliffs of the South Joggins in Nova Scotia I examined several erect *Sigillariæ*, in company with Mr. Dawson, and we found that from the lower extremities of the trunk they sent out *Stigmaria* as roots. All the stools of the fossil trees dug out by us divided into four parts, and these again bifurcated, forming eight roots, which were also dichotomous when traceable far enough.

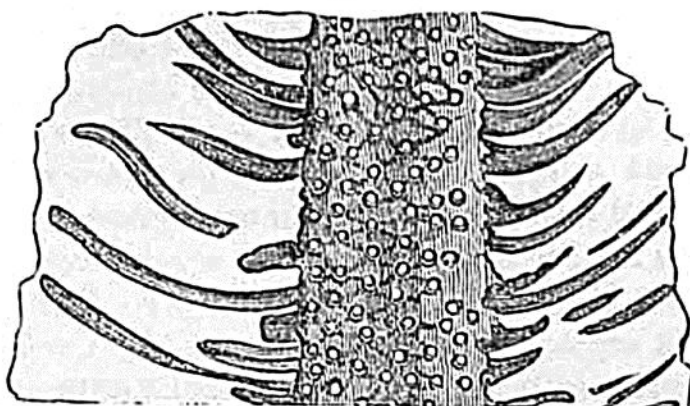
The manner of attachment of the fibres to the stem resembles that of a ball and socket joint, the base of each rootlet being concave, and fitting on to a tubercle (see figs. 482 and 483). Rows of these tubercles are

Fig. 482.



Surface of another individual of same species, showing form of tubercles. (Foss. Flo. 34.)

Fig. 483.



*Stigmaria ficoides*, Brong. One-fourth of nat. size. (Foss. Flo. 32.)

arranged spirally round each root, which has always a medullary cavity and woody texture, much resembling that of *Sigillaria*, the structure of the vessels being, like it, scalariform.

*Coniferæ*.—The coniferous trees of this period are referred to five genera; the woody structure of some of them showing that they were allied to the Araucarian division of pines, more than to any of our common European firs. Some of their trunks exceeded 44 feet in height. Many, if not all of them, seem to have differed from living *Coniferæ*, in having large piths; for Professor Williamson has demonstrated the fossil of the coal-measures called *Sternbergia* to be the pith of these trees, or rather the cast of cavities formed by the sinking or partial absorption of the original medullary axis (see figs. 484 and 485). This peculiar type of pith is observed in living plants of very different families, such as the common Walnut and the White Jasmine, in which the pith becomes so reduced as simply to form a thin lining of the medullary cavity, across which transverse plates of pith extend horizontally, so as to divide the cylindrical hollow into discoid interspaces. When these last have been filled up with inorganic matter, they constitute an axis to which, before their true nature was known, the provisional name of *Sternbergia* (*d, d*, fig. 484) was given.