It has been held to be an objection to the identification of the discigerous tissues above mentioned with those of *Sigillaria*, that the *Stigmariæ*, when their structure happens to be preserved, show merely scalariform tissue. To this it may be answered:—(1.) That, as Corda has shown*, some *Stigmariæ* have reticulated or multiporous tissues. (2.) The tissue of *Stigmaria* is not essentially different from the pseudo-scalariform fibres of the stem, and is arranged in a similar manner, showing that it is homologous rather with woody than with vascular tissue. (3.) Many *Stigmariæ* probably belong to *Favularia* and similar forms, or possibly even to Lepidodendroid plants†. In either case the structure would be unlike that of the stems of *Sigillaria* proper. (4.) Inasmuch as the proportions of pseudo-vascular and discigerous tissue may differ greatly in the stems of *Sigillariæ*, it would not be unreasonable to suppose that the tissue, which is more particularly important for the strengthening of the stem, should be absent, or in a feeble state of development, in the root. Something of this kind occurs in the roots of Cycads, and perhaps, if detailed examinations were made, might be found to be more general than is commonly supposed. (5.) The outer part of the axis, being left exposed by the decay of the loose cellular matter of the inner bark, may, in most cases, have perished. In my specimen of the axis of *Sigillaria*, above described, it is in parts much disorganized, and has disappeared, or been converted into coal, on one side.

The evidence included under the above heads is sufficient to show that the ordinary ribbed *Sigillariæ* referred to in my previous papers, possessed in their main trunks the following kinds of tissue, in proceeding from the circumference to the centre:—

(*a*) A dense cellular outer bark, usually in the state of compact coal—but when its structure is preserved, showing a tissue of thickened parenchymatous cells.

(*b*) A very thick inner bark, which has usually in great part perished, or been converted into coal, but which, in old trunks, contained a large quantity of prosenchymatous tissue, very tough and of great durability. This "bast-tissue" is comparable with that of the inner bark of modern Conifers, and constitutes much of the mineral charcoal of the coal-seams.

(*c*) An outer ligneous cylinder, composed of wood-cells, either with a single row of large bordered pores‡, in the manner of Pines

* Beiträge zur Flora der Vorwelt.

† Brown, in 1847, described, in the 'Proceedings' of this Society, Stigmaria-roots of *Lepidodendron*. Baily seems to have shown that such roots belong to the singular Lepidodendroid *Cyclostigma* of the Devonian of Ireland; and Schimper asserts a connexion of Stigmaria roots with trees which he refers to *Knorria*.

‡ These are the same with the wood-cells elsewhere called discigerous tissue, and to which I have applied the terms uniporous and multiporous. The markings on the walls are caused by an unlined portion of the cell-wall placed in a disk or depression, and this often surrounded by an hexagonal rim of thickened wall; but in all cases these structures are less pronounced than in *Dadoxylon*, and less regular in the walls of the same cell, as well as in different layers of the tissues of the axis.