Calamites, but of *Calamodendron*, rests on different grounds, and is supported by the fact that some of the larger stems which may be supposed to represent the external surface of *Calamodendron*, have tumid nodes similar to those of the branches of *Asterophyllites*. Stems of this kind are sometimes found in an erect position in the Coal-measures of Nova Scotia, and are manifestly distinct from those of ordinary Calamites.

5. The microscopic structure of *Calamites* is not precisely identical with that of *Calamodendron*, though the latter may be regarded as a more advanced type of the former. The Calamites have a thin outer coat with lacunæ, or air-cells, like those of modern *Equiseta*; and the tissue intervening between these contains large vasiform tubes marked on the surface with numerous rows of small pores ("multiporous tissue" of my papers on the Structures in Coal, &c.), and which bear some resemblance to the fibres of *Dictyoxylon* as described by Williamson (Pl. IX. fig. 19). This structure has been illustrated by Goeppert, Unger, Schimper, and others; and I have verified it by the microscopic examination of numerous flattened Calamite-stems in the shales and coarse coals. Facts of this kind kind were mentioned in my paper on the 'Structures in Coal.'

The *Calamodendra*, on the other hand, are casts of the medullary cavities of stems having a thick woody envelope disposed in wedges separated by intervening tracts of cellular tissue, which, according to Williamson, are of the nature of large medullary rays, while smaller medullary rays occur in the intervening wedges, and presenting the same discigerous and pseudo-scalariform tissues observed in *Sigillaria*. I have represented in Plate IX. two forms of *Calamodendron* with the tissues found attached to them. These stems, no doubt, have lacunæ like those of Calamites, and resemble them in general arrangement of parts, but differ in the much greater development of the woody tissue, and, in some species at least, in the character of this tissue.

6. The fructification of Calamites I have not found in connexion with the stems. I have no doubt, however, that some of the spikes of fructification described by authors as the fruit of *Calamites*, really belong to these plants. There has, however, been some confusion between the fruit of *Calamites* and *Asterophyllites*, which demands attention from those who have access to the specimens.

It results from the facts above stated that the true equisetaceous Calamites are well known to us by their external forms, habit of growth, and foliage, as well as by their internal structure; and on all these grounds no reasonable doubt can be entertained as to their affinities. Whether, as Schimper supposes, they were merely annual stems like those of modern *Equiseta*, admits of more doubt. In the equable climate of the Coal-period such stems may have continued growing from year to year. Nor do I think that their rhizomata were relatively so important as those of *Equiseta*. In some of the species, at least, the erect stem itself, fortified by adventitious roots, and partly buried by increasing deposits of sediment, seems to