

1. That the aërial stems of ordinary Calamites had a thin cortical layer, with lacunæ and fibrous bundles and multiporous vessels—the whole not differing much from the structure of modern Equiseta.

2. Certain arborescent forms, perhaps allied to the true Calamites, as well as possibly the old underground stems of ordinary species,* assumed a thick-walled character in which the tissues resembled the wedges of an exogen, and abundance of pseudo-scalariform fibres were developed, while the ribbing of the external surface became obsolete or was replaced by a mere irregular wrinkling.

3. Sufficient discrimination has not been exercised in separating casts of the internal cavities of Calamites and Calamodendron from those representing other surfaces and the proper external surface.

4. There is no excuse for attributing to Calamites the foliage of Annularia, Asterophyllites, and Sphenophyllum, since these leaves have not been found attached to true Calamite stems, and since the structure of the stems of Asterophyllites as described by Williamson, and that of Sphenophyllum as described by the writer,† are essentially different from those of Calamites.

5. As the species above described indicates, good external characters can be found for establishing species of this genus, and these species are of value as marks of geological age.

Genus ARCHÆOCALAMITES, Sternberg.

This genus has been established to include certain Calamites of the Devonian and Lower Carboniferous, in which the furrows on the stem do not alternate at the nodes or joints, and the leaves in one species at least bifurcate. *C. radiatus*, Brongniart, is the typical species. In North America it occurs in the Erian, probably as low as the Middle Erian. In Europe it has so far been recognised in the Lower Carboniferous only. I have, however, seen stems from alleged Devonian beds in Devonshire which may have belonged to this species.

Family ASTEROPHYLLITEÆ; *Genus* ASTEROPHYLLITES, Brongniart.

Stems ribbed and jointed like the *Calamites*, but with inflated nodes and a stout internal woody cylinder, which has been described by Williamson. From the joints proceeded whorls of leaves or of branchlets, bearing leaves which differed from those of *Calamites* in their having a distinct middle rib or vein. The fructification con-

* Williamson, "Transactions of the Royal Society." McNab, in "Proceedings of the Edinburgh Botanical Society."

† "Journal of the Geological Society," 1866.