dinally ribbed and jointed stems so frequent in the coal-formation, and of which the common *C. Suckovii* is a typical form. The most perfect of these stems represent the outer surface immediately within the epidermis, in which case transverse lines or constrictions mark the nodes, and at the nodes there are rounded spots, sometimes indicating radial processes of the pith, first described by Williamson; in other cases, the attachment of branchlets, or in some specimens both. But some specimens show the outer surface of the epidermis, in which case the transverse nodal lines are usually invisible, though the scars of branchlets may appear. In still other examples the whole of the outer tissues have perished, and the so-called Calamite is a cast of the interior of the stem, showing merely longitudinal ribbing and transverse nodal constrictions. In studying these plants *in situ* in the erect Calamite brakes of the coal-formation of Nova Scotia, one soon becomes familiar with these appearances, but they are evidently unknown to the majority of palæobotanists, though described in detail more than twenty years ago.

When the outer surface is preserved it is sometimes seen to bear verticils of long needle-like leaves (*C. Cistii*), or of branchlets with secondary whorls of similar leaves (*C. Suckovii* and *C. undulatus*). No Calamite known to me bears broad one-nerved leaves like those of *Asterophyllites* and *Annularia*, though the larger stems of these plants have been described as Calamites, and the term *Calamocladus* has been used to include both groups. The base of the Calamite stem usually terminates in a blunt point, and may be attached to a rhizome, or several stems may bud out from each other in a group or stool. The roots are long and cylindrical, sometimes branching. The fruit consists of spikes of spore-cases, borne in whorls and subtended by linear floral leaves. To these strobiles the name Calamostachys has been given.

Williamson has shown that the stem of Calamites consists of a central pith or cavity of large size surrounded by a cylinder consisting of alternate wedges of woody and cellular matter, with vertical canals at the inner sides of the wedges, and slender medullary rays. The thick cellular wedges intervening between the woody wedges he calls primary medullary rays; the smaller medullary rays in the wedges, secondary medullary rays. There is thus a highly complex exogenous stem based on the same principle with the stem of a common *Equisetum*, but with much greater strength and complexity.

Williamson has also shown that there are different sub-types of these stems. More especially he refers to the three following: