and Cardiocarpa in the soil of the Sigillaria forests, as I have studied this at the South Joggins. The other is that the rings of fruit-scars on the branches of Sigillaria are homologous with leaf-scars, not with branches, and therefore should have borne single carpels and not cones or spikes of inflorescence. These are merely suggestions, but I have no doubt they will be vindicated by future discoveries, which will, I have no doubt, show that in the family *Sigillariaceæ* we have really two families, one possibly of gymnospermous rank, or at least approaching to this, the other allied to the Lepidodendra.

CRYPTOGAMIA.

(*Acrogenes.*)

Family LEPIDODENDREÆ; *Genus* LEPIDODENDRON, Sternberg.

These are arboreal Lycopods having linear one-nerved leaves, stems branching dichotomously, and with ovate or rhombic leaf-bases bearing rhombic leaf-scars, often very prominent. The fruit is in scaly strobiles, terminal or lateral, and there are usually, if not always, macrospores and microspores in each strobile. The young branches and stems have a central pith, a cylinder of scalariform tubes sending out ascending bundles to the leaves through a thick cellular and fibrous inner bark, and externally a dense cortex confluent with or consisting of the leaf-bases. Older stems have a second or outer layer of scalariform fibres in wedges with medullary rays, and strengthening the stem by a true exogenous growth, much as in the Diploxylon type of Sigillaria. The development of this exogenous cylinder is different in amount and rate in different species.* This different development of the exogenous axis is accompanied with appropriate external appearances in the stems, and the changes which take place in their markings. These are of three kinds. In some species the areoles, at first close together, become, in the process of the expansion of the stem, separated by intervening spaces of bark in a perfectly regular manner; so that in old stems, while widely separated, they still retain their arrangement, while in young stems they are quite close to one another. This is the case in *L. corrugatum*. In other species the leaf-scars or bases increase in size in the old stems, still retaining their forms and their contiguity to each other. This is the case in *L. undulatum*, and generally in those *Lepidodendra* which have large leaf-bases. In these species the

* See "Memoirs of Dr. Williamson," in "Philosophical Transactions," for ample details.