

Gaspé sections in a state of perfection unusual with palæozoic plants. It is characterized by slender, bifurcating, ridged stems, proceeding from a horizontal rhizoma, which sends forth numerous rootlets. The rhizomata, evidently *in situ*, clothe some beds of indurated clay with a mat of creeping and occasionally bifurcating cylindrical stems, filling the beds below with their vertical rootlets. They attain a diameter of an inch or more, though usually smaller, and a length of at least three feet. They are irregularly dotted with minute linear punctures, the marks probably of rammenta; and at intervals there are circular areoles with central pits, like those of *Stigmaria*, but irregularly disposed, and giving origin to the roots, which, however, unlike those of *Stigmaria*, subdivide in descending into the soil. Apart from the stems, these rhizomata might be included in the genus *Karstenia* or *Halongia*, or even as abnormal species in *Stigmaria* (fig. 1 *a*). The aerial stems vary from a fourth to a tenth of an inch in diameter at their origin, rise obliquely from the rhizoma, and bifurcate very regularly. The extreme points divide nearly at right angles, and in some, probably young, branches the ultimate branchlets bend into a spiral curve with a somewhat unilateral arrangement of the leaflets. In the shale overlying the small coal-seam above-mentioned, there are immense numbers of these little branchlets, rolled so closely as to resemble spiral shells. They probably indicate a circinate vernation like that of ferns. (See figs. 1 *b*, *c*, *d*.) The surface of the stems is very smooth and glossy, quite destitute of scars, but marked with numerous interrupted ridges spirally arranged, and sometimes seen to project a little at the upper ends, as if rudimentary leaves. This leaf-like character is more distinct toward the extremities of the branches; but the leaves are not sufficiently well preserved to show anything more than that they are slender and acicular.

The greater part of the specimens are flattened, with the epidermis alone preserved in a coal-like state; but a few fragments were found with the internal structure remaining. It consists of a slender axis of scalariform vessels, surrounded by a space now occupied by calcar, but showing in parts the remains of a loose cellular tissue. Externally to this is a cylinder of well-preserved, elongated, woody cells, without distinguishable pores, but with traces of very delicate spiral fibres. (Fig. 2 *g*, *h*, *i*, *k*.)

The structure and external appearance above described indicate affinities with the *Lycopodiaceæ*, and especially with the genus