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stone, retaining their rotundity of form even when prostrate; and are thoroughly penetrated with silica except the thin coaly bark. Not only are Algæ incapable of occurring in this way, but even the less dense and durable land plants, as Sigillariæ and Lepidodendra are never found thus preserved. Only the extremely durable trunks of coniferous trees are capable of preservation under such circumstances. In the very beds in which these occur, *Lepidodendra*, tree ferns and *Psilophyton*, are flattened into mere coaly films. This absolutely proves, to any one having experience in the mode of occurrence of fossil plants, that here we have to deal with a strong and durable woody plant.

These considerations were dwelt on in my published descriptions of Prototaxites, but they naturally have more weight in my judgment than in that of Mr. Carruthers. Geologists and palæontologists will appreciate them.

2. *Microscopic Structure*.—It would be tedious to go into the numerous scarcely relevant points which Mr. Carruthers raises on this subject. I may say in general that his errors arise from neglect to observe that he has to deal not with a recent but a fossil wood, that this wood belongs to a time when very generalized and humble types of gymnosperms existed, and that the affinities of the plant are to be sought with Taxineæ, and especially with fossil Taxineæ, rather than with ordinary pines.

Mr. C., after describing Prototaxites according to his own views of its structure, expresses the opinion that "the merest tyro in histological botany" may see that the plant could not be phænogamous. But if the said tyro will take the trouble to refer to the beautiful memoir on the Devonian of Thuringia, by Richter and Unger,* and to study the figures and descriptions of *Aporoxylon primigenium*,† *Stigmaria annularis*, *Calamopteris debilis*, and *Calamosyrinx Devonicus*, he will find that there are Devonian plants referred by those eminent palæontologists to Gymnosperms and higher Cryptogams, which fall as far short of Mr. Carruthers' standard as Prototaxites itself. Nothing can be more fallacious in fossil botany than comparisons which overlook the structures of those primitive palæozoic trees which in so many interesting ways connect our modern gymnosperms with the cryptogams.

*-Trans., Vienna Academy, 1856.

† I have elsewhere compared Aporoxylon with Prototaxites, 'Jour. Geol. Soc.' 1862, p. 306. Report on Devonian plants.