ART. XLVI.—*On the occurrence of a Tree-like fossil plant, Glyptodendron, in the Upper Silurian (Clinton) Rocks of Ohio;* by Professor E. W. CLAYPOLE, B.A., B.Sc. (London), of Antioch College, Yellow Springs, Ohio.

IN the month of July, 1877, while on a geological excursion in company with one of my students, Mr. Leven Siler, in the vicinity of Eaton, in Preble County, Ohio, the latter picked up and handed me a slab bearing the impression of a vegetable stem, which proved, on closer examination, to be that of a plant allied to Lepidodendron. As the beds in which we were working at the time lie at the very base of the "Clinton" of the Ohio Survey, and within a few feet of the break which marks the summit of the Cincinnati group of the Lower Silurian, the specimen immediately assumed unusual interest and importance; no *indisputable* traces of land-plants having then come to light from so low an horizon in America, and no remains of arborescent vegetation being known *with certainty* from strata of so old a date in the New or Old World.

The slab containing the impression was not taken out of the solid rock, but lay loose on the bank of Clinton limestone. This fact will naturally raise some question concerning its age in the mind of every geologist. Fortunately, however, we are not in this instance dependent upon such evidence. To any one practically familiar with the Clinton rocks as they crop out around the Cincinnati uplift no doubt can arise. The stone is a piece of yellow, rough, encrinital limestone, considerably weathered, with the characteristic appearance of the Clinton at Eaton and here. Moreover, by the side of the impression there lies embedded one of our commonest corals (Polyzoa?) closely resembling *Chætetes lycoperdon* (Hall) of the Clinton in New York, figured in the second volume of the New York Survey. Lastly, from the back of the slab I chipped out a small specimen of an *Illœnus*; either *Illœnus Daytonensis* (Hall and Whitfield, Ohio Pal., vol. ii, 1875), or *Illœnus Barriensis* (Murch. and Hall, 1862) (i. g. *Illœnus Ioxus* of Hall, 1847), the mould of which still remains in the slab. Its Silurian age is therefore placed beyond a doubt, no species of Illænus being known in America above the Niagara group.

In describing and naming it, my first thought was to place it in the genus Lepidodendron, as a provisional arrangement pending the discovery of more perfect specimens. But further study of the fossil and its nearest allies among the Sigillarids and Lepidodendrids has induced me to place it by itself in a new genus, which seems to form a connecting link between some other paleozoic genera. I append the following description:—

GLYPTODENDRON. Tree-like; stem cylindrical; surface marked with two parallel sets of ridges running spirally up the stem in opposite directions, crossing each other and thus forming rhomboidal areoles. Lower portion of areole depressed and probably representing or containing a leaf-scar. Depressed portion of areole (leaf-scar?) symmetrical (i. e. alike on the right and left sides.) Vascular scars, leaves, fruit, etc., unknown. The name is from the Greek γλύφω, I engrave, and alludes to the depressed areoles.

Glyptodendron Eatonense. Stem thick and trunk-like; the specimen from which this description was made measured when complete about six inches in diameter. Surface divided into rhomboidal areoles by two sets of narrow ridges parallel and equidistant, running spirally up the stem in opposite directions. These ridges cross each other nearly at right angles. The areoles thus formed measure about seven-sixteenths of an inch along each diagonal. Lower portion of areole deeply and evenly depressed and probably representing a sunken leaf-scar. Upper border of depressed portion rounded in outline and elevated, equalling in height the spiral ridges. No trace of the vascular scars can be seen in consequence of the roughness of the stone and the weathering it has undergone. Found near Eaton, Preble Co., Ohio.

Being anxious to have the opinion of some naturalist more experienced than myself in the subject of the Pre-carboniferous flora, I sent a drawing of the fossil to Dr. J. W. Dawson of Montreal, one of the best authorities on the subject on this continent. In his reply of Oct. 22, 1877, he expressed his conviction of the importance of the discovery, and, from an inspection of the drawing, suggested its resemblance to *L. tetragonum* St. or *Bergeria* of the Lower Carboniferous, and also to *Diplostegium*. He asked the full extent of the evidence of its age, and expressed a wish to see a cast before forming any opinion upon it. This was sent some time afterward, and in reply, Dr. Dawson has favored me with some notes upon it and with permission to use them here. He says, "The marks on your specimen, at first sight, resemble those of the *Lepidodendra* of the type of the *L. tetragonum* Sternb. (*Bergeria* of some authors), a very widely diffused type of Lower Carboniferous age, found about that horizon in Europe, America and Australia. They may, however, have belonged to a plant of the genus *Ulodendron* or *Lepidophloeus*, and since the vascular scars are not preserved, it is impossible to decide this question. It is further to be observed, that the areoles appear to be deeply depressed, being in this respect the reverse of the leaf-bases of *Lepidodendron*. It may possibly have belonged to a plant of the nature of a Tree-fern, or of a *Sigillaria* allied to *S. Menardi*, rather than to a true *Lepidoden-*

dron." "In speaking of the areoles, I take it for granted that the curvature of the cast represents that of the stem." "The specimen may, however, have been a bit of bark pressed out of shape."

My own opinion, after a careful examination of the original, is that the curvature of the cast *does* represent that of the stem, and consequently that Dr. Dawson's remarks on its resemblances are well founded. The bark of *Lepidodendra*, etc., when pressed as usually occurs in the Coal-measures, is constantly flattened. In a subsequent communication, Dr. Dawson alludes to the possibility suggested above, that the fossil may exhibit a composite character partaking of the character of more than one existing genus. The wide diffusion of the type which it most resembles in the Lower Carboniferous is good reason for believing that it is very ancient, and therefore its occurrence so low as the Clinton limestone is the less surprising.

In conclusion, I gladly express my indebtedness to Dr. J. W. Dawson, of Montreal, for valuable aid cheerfully rendered, and to Mr. Leo Lesquereux, of Columbus, in this State, for prompt and kind replies to letters of enquiry.