

The genus *Protopteris* of Sternberg, though the original species (*P. punctata*) appears as a *Lepidodendron* in his earlier plate (Plate 4), and as a *Sigillaria* (*S. punctata*) in Brongniart's great work, is a true tree-fern; and the structure of one species (*P. Cottai*) has been beautifully figured by Corda. The species hitherto described are from the Carboniferous and Permian.

The second specimen of this species represents a lower part of the stem. It is thirteen inches long and about four inches in diameter, and is covered with a mass of flattened aërial roots lying parallel to each other, in the manner of the *Psaronites* of the coal-formation and of *P. Erianus* of the Upper Erian or Devonian.

4. *Asteropteris noveboracensis*, gen. and sp. n.—The genus *Asteropteris* is established for stems of ferns having the axial portion composed of vertical radiating plates of scalariform tissue embedded in parenchyma, and having the outer cylinder composed of elongated cells traversed by leaf-bundles of the type of those of *Zygopteris*.

The only species known to me is represented by a stem 2·5 centimetres in diameter, slightly wrinkled and pitted externally, perhaps by traces of aërial roots which have perished. The transverse section shows in the centre four vertical plates of scalariform or imperfectly reticulated tissue, placed at right angles to each other, and united in the middle of the stem. At a short distance from the centre, each of these plates divides into two or three, so as to form an axis of from ten to twelve radiating plates, with remains of cellular tissue filling the angular interspaces. The greatest diameter of this axis is about 1·5 centimetre. Exterior to the axis the stem consists of elongated cells, with somewhat thick walls, and more dense toward the circumference. The walls of these cells present a curious reticulated appearance, apparently caused by the cracking of the ligneous lining in consequence of contraction in the process of carbonization. Embedded in this outer cylinder are about twelve vascular bundles, each with a dumb-bell-shaped group of scalariform vessels enclosed in a sheath of thick-walled fibres. Each bundle is opposite to one of the rays of the central axis. The specimen shows about two inches of the length of the stem, and is somewhat bent, apparently by pressure, at one end.

This stem is evidently that of a small tree-fern of a type, so far as known to me, not before described,* and constituting a very complex and symmetrical form of the group of Palæozoic ferns allied

* Prof. Williamson, to whom I have sent a tracing of the structure, agrees with me that it is new.