

XXII.—Note on a New Species of *Lepidodendron* from Pettycur.
 (*Lepidodendron Pettycurense*). By R. Kidston, F.R.S. L. & E.,
 F.G.S., *Foreign Mem. Kaiserl. Mineral. Gesell. zu St Petersburg*.

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AMONG the undescribed species of plants occurring in the well-known material of Calciferous sandstone age found near Pettycur, Fife, is an interesting specimen belonging to the older type of *Lepidodendroid* structure which has a solid primary xylem.

Only two examples of this species are known to me; the larger, of which a portion is shown in the text figure, has a central stele 1.10 cm. by 0.90 cm. in diameter, and of this the solid primary xylem is 0.25 cm. by 0.15 cm. in size.

The slightly elliptical form of the axis is due to lateral pressure, as seen by the bands of flattened tracheids which occur in the primary xylem.

The axis of the smaller example is about 2.50 mm. by 2 mm. in diameter, of which the primary xylem is 1 mm. by 0.50 mm., but this specimen has also suffered from pressure.

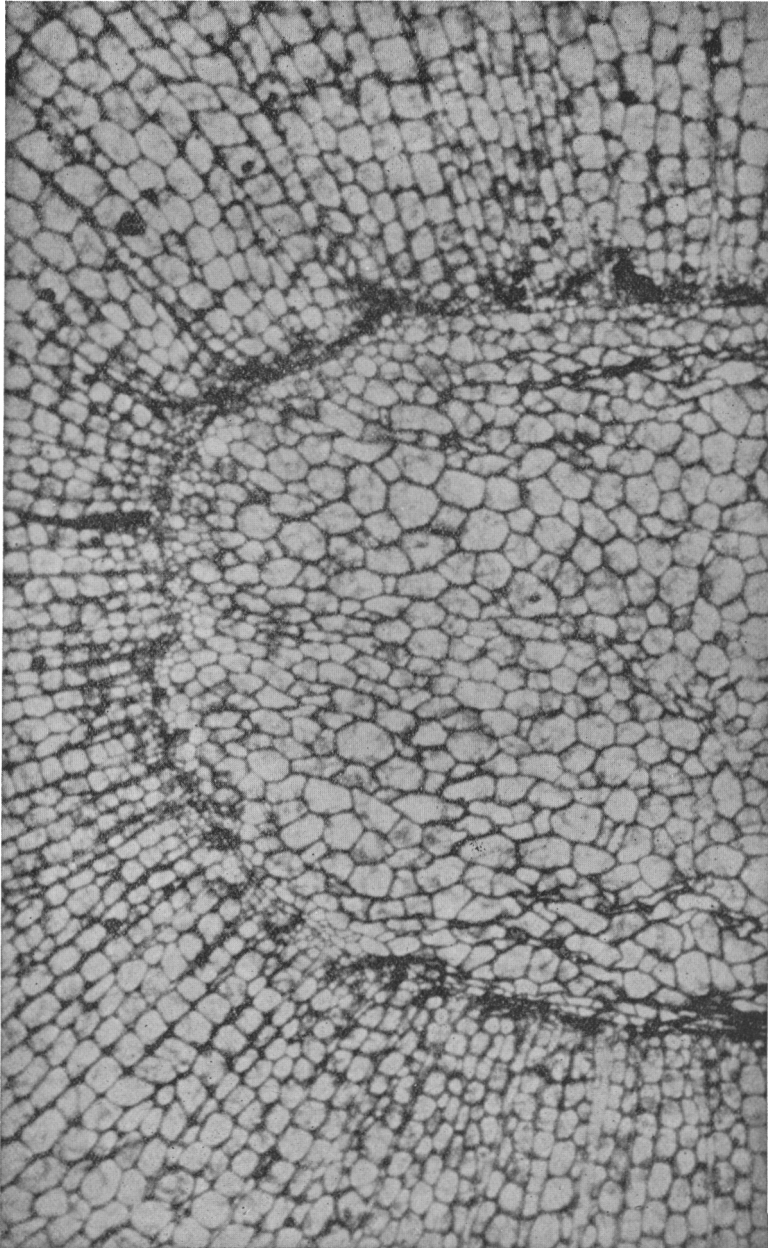
Returning to the specimen shown in the figure, as seen in transverse section, the primary xylem consists of a solid mass of tracheids, irregularly placed and varying in size, but the smaller tracheids are mixed with the larger without any order (*a*).

When close to the periphery of the primary xylem the tracheids become smaller and are surrounded by the protoxylem elements (*a'*), which form a narrow band, limiting the centripetal xylem, whose margin is smooth without the slightest trace of a corona.

The secondary or centrifugal xylem is formed of regular rows of tracheids which radiate outwards (*b*). Those next the protoxylem are of smaller size, but they increase regularly in diameter as they are traced outwards, until they equal or even exceed in size the largest tracheids of the primary xylem.

In longitudinal section the protoxylem elements and primary tracheids are very regular in their course, and bear scalariform thickenings. The tracheids of the secondary xylem which abut on the primary xylem are

slightly flexuous, but those immediately outside of them are very regular. They also show scalariform thickening.



Lepidozandron Pettycurense, Kidston. Transverse section of stele. *a*, primary xylem; *a'*, protoxylem; *b*, secondary xylem. $\times 60$.

The leaf trace, as seen in transverse section in its passage through the secondary xylem, consists of a small oval mass of narrow tracheids, of

which a few are larger than the others, but these do not seem to hold a very definite position in the bundle.

Lepidodendron Pettycurensense belongs to that section of *Lepidodendron* which possesses a solid stele, and which includes the culm species *Lepidodendron rhodumnense*, Renault, and *Lepidodendron saalfeldense*, Solms, though in neither of these has any secondary xylem been observed.

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