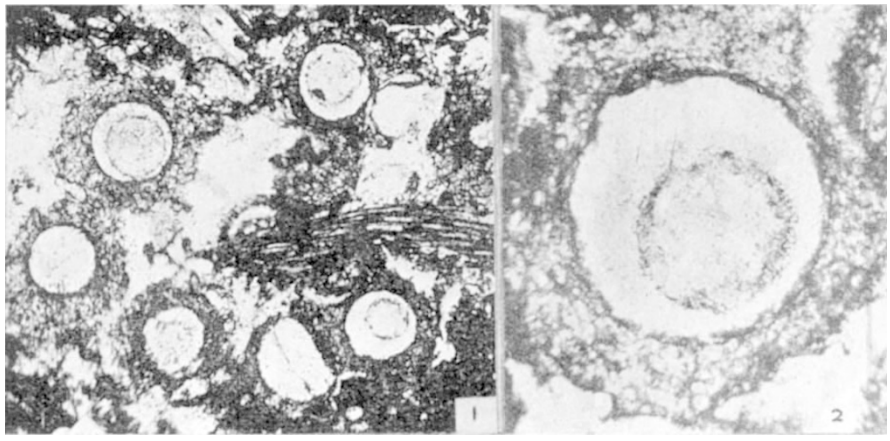

(1) Group of fructifications from Moorside Colliery. (2) Single fructification, showing ring of dark material in the perithecium cavity

reports of casts and impressions of perithecium-like structures from Tertiary rocks, but there are no previous records of a section of a fungus of this type from the Palæozoic.

It is thought that the fructifications are of a new species of ascomycete, and a detailed account and diagnosis will be published elsewhere.

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Secondary Growth in Petioles and the Partial-Shoot Theory of the Leaf

Isolated leaves are able to live independently in soil with root systems of their own induced from their petioles by the application of synthetic hormones[1]. Leaves of *Amaranthus gangeticus*, Linn. var. *tristis* were grown in soil with such root systems induced by an aqueous solution of β-indolyl butyric acid of the strength of five parts per million. After a month the petioles became thicker and stouter, and transverse sections, a photomicrograph of one of which is given in Fig. 1, revealed an anomalous type of secondary growth peculiar to the stem of the species.

Fig. 1. Transverse section of the petiole of a rooted leaf of *Amaranthus gangeticus*, Linn. var. *tristis*, showing an advanced stage of secondary growth

Fig. 2 depicts a transverse section of a petiole of a leaf of the same age attached to the plant and shows no secondary growth. Secondary growth is initiated outside the original vascular bundles by accessory cambium formed in distinct arcs. Small discrete groups of secondary xylem are cut off inwards and are embedded in parenchymatous conjunctive tissue whereas phloem is poorly developed. No interfascicular cambium is formed and secondary growth takes place within the primary bundles by the activation of the rudimentary fascicular cambium.

Secondary growth is also seen in the petioles of rooted leaves of *Chenopodium album*, Linn. and *Ipomœa batatas*, Lamk., and the types are the same as seen in their respective stems. It is known that auxin controls cambial growth[2]. In these cases it seems that the formation of accessory cambium and the activation of fascicular cambium are due to the synthetic hormone, which is also responsible for the root formation.

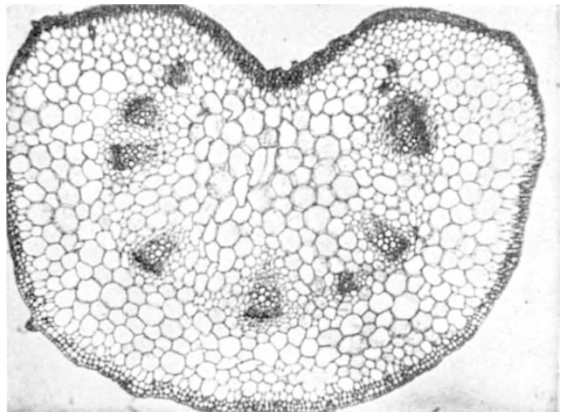

Fig. 2. Transverse section of the petiole of a rooted leaf of *Amaranthus gangeticus*, Linn. var. *tristis* of same age as that of the rooted leaf, but attached to the plant

The phenomenon of the production of secondary growth in petioles has a very important bearing in determining the morphological nature of the leaves. It is seen that the type of secondary growth in the petiole is the same as in the stem of a particular species and, in our opinion, this fact is one of the strongest pieces of evidence in support of the partial shoot theory of the leaf as elaborated by Arber[3].

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