

TASMANIAN CYCADOPHYTA.

By

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Plates I.-III.

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CYCADACEÆ.

Genus *Cycadites*, R. Brown.(Syn., *Mantellia*, Brongniart.)Species *Dowlingi*, sp. nov.

These fossils came to us from the Launceston Tertiary Basin formations at Harland's Rise, Evandale. I regard them as being intercalates derived from the Mesozoic Strata, but the evidence is not absolutely conclusive. All have suffered exceedingly rough usage from natural forces, and are completely pseudomorphed to iron oxide. The latter fact is a depressing one, as it removes all chance of microscopical details being available for determinative purposes. The material at hand is not restricted to a few stems, and other fragments of the apical outgrowths, but the really good specimens are in the minority, and no single specimen is complete enough to serve the desideratum of description, or as a holotype for taxonomic purposes.

In the hope that some histological details had escaped the mutations of time and circumstance an enormous amount of microscopical work was done on selected fragments, and a set of the clays, sandstones, and ferric concretions was passed in optical review. This work, although abortive as to the main object, supplied much data respecting the effect of ferric infiltration into the organic bodies, and the range of external concretion. The personal standard thus acquired proved of inestimable value during the course of the work, and helped me over many of the difficulties incidental to the highly pseudomorphed condition of the fossils. The macroscopic outlines of all woody structures are well preserved, but the finer microscopical details are only now and again glimpsed, and could not be photographically reproduced.

These are Museum specimens for which I desire the scientific status essential for exhibition purposes, and

failing aid from palæobotanists, I am placing them on record for the object named, and without any desire to poach upon the preserves of other scientific workers.

TAXONOMIC.

Dr. M. C. Stopes, in the British Museum Catalogue of Mesozoic Plants, page 297, calls attention to the real value of the numerical sequence of the woody rings in the separation of *Bennettites* from *Cycadites* (using, however, the original name of Buckland, viz., *Cycadeoides*, a synonym of *Mantellia*, of Brongniart), and this exceedingly valuable key serves me in good stead, as all our stems have more than two zones. Newell Arber quotes (Cat. Fos. Plants, Brit. Mus., Gloss. Flora, page 210) Zeiller as using the genus *Cycadites* for leaves from Gondwanaland, which brings the genus nearer home, and accordingly is here used for our fossils. The specific name I have linked with that of Mrs. Herbert Dowling, as a small compliment for her many gifts of Tertiary fossils to the Museum, including the specimens here dealt with. As I noted above, the chief object of this paper is to record the find, and as no leaves can be associated with the stems, all the evidence that the fruits and foliage might supply are missing. It must not, however, be forgotten that an isolated cycadaceous leaf from Lord's Hill, Hobart, was recorded by Dr. A. B. Walkom of recent years' (Pro. Roy. Soc., Tas., 1924, page 87). All things considered, and open to emendation, the classification adopted seems the best that is possible in the circumstances.

DESCRIPTIVE.

After passing a large amount of the material in review, it would appear that the range of useful determinative data is contained within six specimens, which are accordingly selected as cotypes.

COTYPE No. 1.

This is part of an elliptical stem, incomplete at both ends; the following are its dimensions:—

Lower elliptical end=186 mm. long × 75 mm. wide.

Upper elliptical end=160 mm. long × 73 mm. wide.

Total vertical height=115 mm.

The stem has two dissimilar faces, and suggests that it formed one of a group, since the outer face carried a well-massed group of leaves, that were just continued around the edges of the stem, but did not obtain upon the inner face. Figure 1 will illustrate the leaf scars bounded by the much

altered ramenta, and give a fair outline of the specimen as a whole. The reverse side is, centrally, vertically scarred and filled in with ramental lines. A personal inspection of this specimen reveals some minute details, together with several bud-scars, but no central parenchyma, or woody zones, have survived as in other specimens.

COTYPE No. 2.

This is selected to show a fractured transverse section of the stem, and although the nature of the material does not permit of grinding or smoothing, a clean fracture is moderately satisfactory. The items to be noted are the concentric woody layers, the central mass of germinative parenchyma, the incurving leaf-pits, and their altered ramenta.

COTYPE No. 3.

Here the central parenchyma is seen in face section, surrounded by the four normal woody layers. It is pitted, in places, as though by the impress of the protoxylem. The specimen is instructive in end view, which is not, however, photographically reproduced.

COTYPE No. 4.

This is an apical growth, the stem scar being still in evidence (at the truncated end), by which it was attached to the main stem. It should, therefore, be called a "cone," and is most likely immature. The various woody layers are well shown in the actual specimen. The rounded tubercles may have direct relationship to the attachment of the scales.

COTYPE No. 5.

This is either a bud, or very young detached stem. It supplies a developmental note in the item of the outer (fourth in adult specimens) woody zone, which is seen to be double, thus bringing up the xylem zones to six in number. In a few older specimens some slight evidence of this can be detected, but obviously it is only a growth character.

COTYPE No. 6.

This is another young specimen which shows some likeness to the figure given by Curruthers, and reproduced by Dr. Stopes, at page 31 of *Cretaceous Flora*, Vol. II., Brit. Mus. Cat. Mesozoic Plants. The item to be noted is the penetration of the basal ends of the leaves to the woody zone. We have many such specimens showing stages of this imagination. Here we miss the silica impregnated specimen, for which iron is but a poor substitute. Most of the speci-

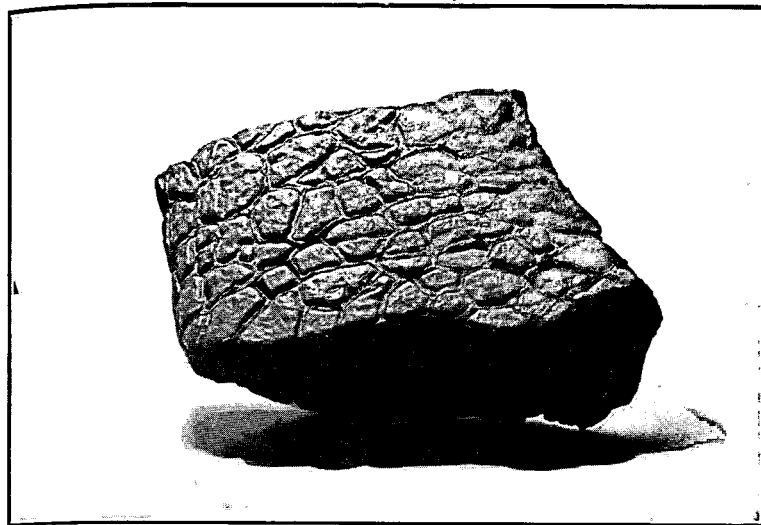


Fig. 1. Matured stem, showing leaf-scars.

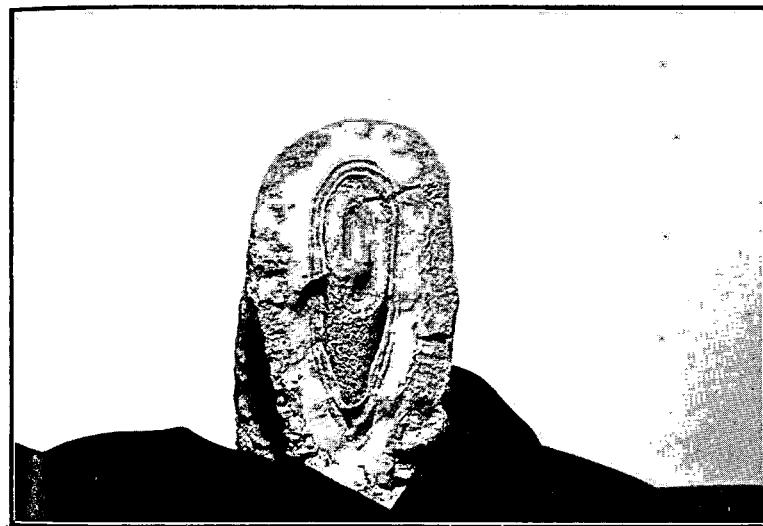


Fig. 2. Transverse section, showing woody layers.
Cycadites dowlingi, sp. nov.

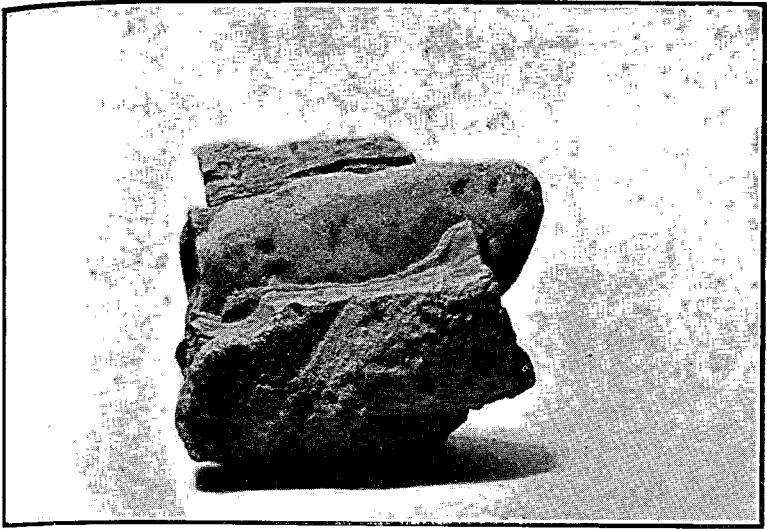


Fig. 3. Fractured vertical section.



Fig. 4. Cone in vertical section.
Cycadites dowlingi, sp. nov.

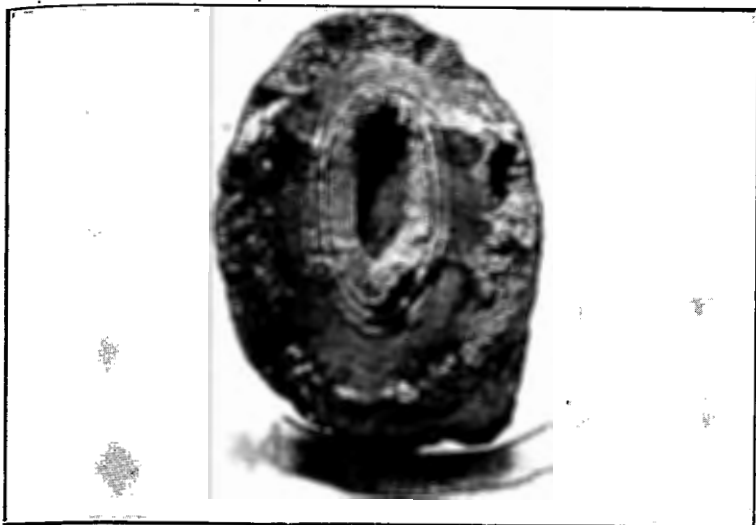


Fig. 5. Bud in transverse section.

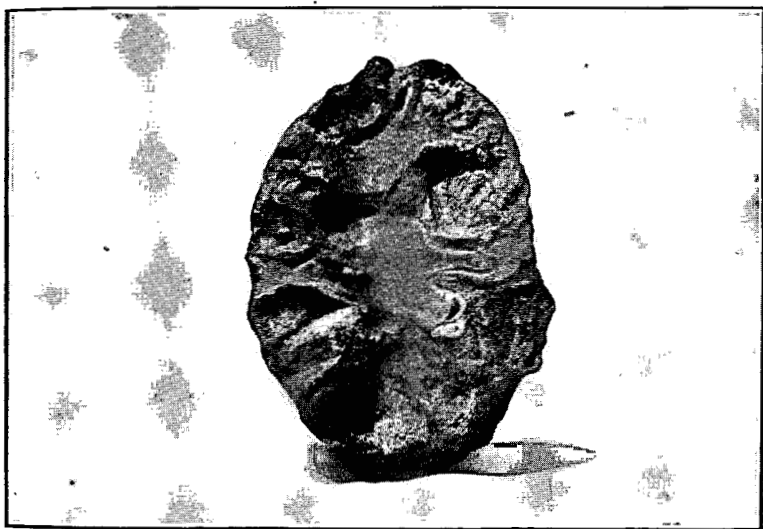


Fig. 6. Smaller bud in transverse section.
Cycadites dowlingi, sp. nov.

mens have been crushed, rolled, and distorted, prior to ferric infiltration, but better ones may come along from time to time. If a specific character is needed, the consistently four-fold nature of the vascular axis, and the dual state of the outer layer, during early growth, should be set against the taxonomic item. As already stated these few notes are purely tentative, the outcome of a Curator's exhibition needs.

NAMES OF AUTHORS WHOSE WORKS WERE CONSULTED.

Arber, Newell.
 Buckland, W.
 Balfour, J. Hutton.
 Curruthers, W.
 Decaisne and Le Maout.
 Ethridge and Jack.
 Fiestmantel, O.
 Johnston, R. M.
 Kerner, Anton von Marilaun.
 Lesquereux, L.
 Stopes, M. C.
 Scott, D. H.
 Seward, A. C.
 Sternberg, C. G. von.
 Walkom, A. B.

For the actual collecting of a large number of specimens I am indebted to my son and his wife, Mr. and Mrs. E. O. G. Scott, they having devoted their leisure time to the necessary field work.

DESCRIPTION OF THE PLATES.

PLATE I.

- Fig. 1.—Matured stem—fragmental—showing leaf-scars.
 Fig. 2.—A fractured transverse section, showing the woody layers—the outer being always wider than the total mass of the inner three.

PLATE II.

- Fig. 3.—A fractured vertical section.
 Fig. 4.—A cone in vertical section, the truncated end being basic.

PLATE III.

- Fig. 5.—A bud, in transverse section, that yields a growth note.
 Fig. 6.—A still smaller bud, in transverse section, showing leaf stems penetrating to the woody layers.