

REPRODUCTIVE STRUCTURES OF THE GLOSSOPTERIDALES IN THE PLANT FOSSIL COLLECTION OF THE AUSTRALIAN MUSEUM

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SUMMARY

A new, Late Permian *Glossopteris* fructification genus *Squamella* is erected. It comprises cones (the 'terminal buds' of Walkom, 1928) which are aggregations of 'scale-fronds' bearing sporangia or seeds. The cones are borne terminally on branchlets which had foliage leaves in whorls or close spiral arrangement, and modified, gangamopteroid leaves preceded the cones. Scale-fronds were composed of a deciduous scale (the 'squamae' of *Glossopteris* assemblages) and a laminal segment. Fructifications were attached to the scale-fronds at the line of junction of scale and lamina. Three new species of the genus are described: *Squamella australis*, which is the male cone of *Glossopteris linearis* McCoy and is known in attachment to a leaf whorl of that species; *Squamella ampla*, which is referred to *Glossopteris ampla* Dana; and *Squamella ovulifera*, which is a female cone whose foliage is unknown. "*Lidgettonia australis* White 1964" is redescribed and emended and is incorporated in *Squamella australis*.

The description of *Glossopteris linearis* McCoy is amplified, on vegetative, reproductive and internal anatomical evidence.

Two new species of *Partha* are described, as well as examples of *Eretmonia*, *Rusangea* and *Lidgettonia*.

Multiovulate fructifications referable to *Dictyopteridium*, *Scutum*, and *Plumsteadia* (*Cistella*) are included, and a controversial fructification which may be referable to *Vannus*. Some specimens of *Rigbya arberioides* which might possibly be glossopteridalean are illustrated.

Part 1: Review of '*LIDGETTONIA AUSTRALIS* White' and formation of *SQUAMELLA* GEN NOV.

In 1964 (White, 1964) a series of progressively modified leaves, believed to be referable to *Glossopteris angustifolia* Bgt. was described, culminating in fertile 'scale-fronds' which bore fructifications at the line of junction of scale and lamina. The series and the fertile scale-fronds were named *Lidgettonia australis* as there was insufficient evidence available from the limited number of specimens from the Bowen Basin, Queensland, to create a new genus. The genus *Lidgettonia* Thomas 1958 was, at that time, the only glossopteridalean fructification which involved a modified small leaf.

Recently a great deal of research has been done in India (summarised by Surange and Chandra, 1975) and in Africa (summarised by Lacey et al., 1975) and a number of genera have been described in which reproductive structures are borne on small, modified leaves or scales.

In the Plant Fossil Collection of the Australian Museum are many fructifications referable to most *Glossopteris* reproductive structure genera so far described, and in addition, much material of '*Lidgettonia australis*'. The information is unusually complete and it is possible to describe the reproductive structures in detail, to show them attached

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