

Quadrant II – Transcript and Related Materials

Programme	: Bachelor of Science (Third Year)
Subject	: Botany
Course Code	: BOC105
Course Title	: Classical Taxonomy and Phylogeny
Unit III	: Origin and evolution of Angiosperms
Module Name	: A general account of Origin with special reference to Caytonialean
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A general account of Origin with special reference to Caytonialean

Pteridosperms or seed ferns, are heterogenous group of extinct plants with true seeds and fern like habit.

Caytoniales belongs to Pteridosperms, which is considered as a possible angiosperm ancestor.

Caytonialean theory

Angiosperms arose from Pteridosperms or seed ferns, often placed in the order Lyginopteridales but more commonly under Caytoniales.

Caytoniaceae was described from the Jurassic of Cayton Bay in Yorkshire by Thomas and subsequently from Greenland, England and Canada.

The group appeared in the late Triassic and disappeared towards the end of the Cretaceous.

Fossil record

Sagenopteris

Leaves

- The leaves were borne on twigs and not the trunk
- These had two pairs of leaflet (rarely 3-6 leaflet)
- Leaves were net veined

Caytonanthus (male structure)

- Had rachis with branching pinnae
- Each with a synangium of four microsporangia

Caytonia (seed bearing structure)

- Had rachis with two rows of stalked cupules
- Each cupule contained several ovules borne in such a way that the cupule is recurved, with a lip like projection (often called stigmatic surface) near the point of attachment

Opinions on the theory

- Discovery of pollen grains within the ovules was thought to suggest their true gymnosperm position, rather than being angiosperm ancestors
- **Krassilov** (1977) and **Doyle** (1978) regarded cupule as homologous to the carpel
- **Gaussen** (1964) and **Stebbins** (1974) considered it to be outer integument of the ovule
- Cladistics studies of **Doyle** and **Donoghue** (1987) support the Caytoniales-angiosperm lineage
- **Thorne** (1996) agreed that angiosperms probably evolved during late Jurassic from some group of seed ferns