

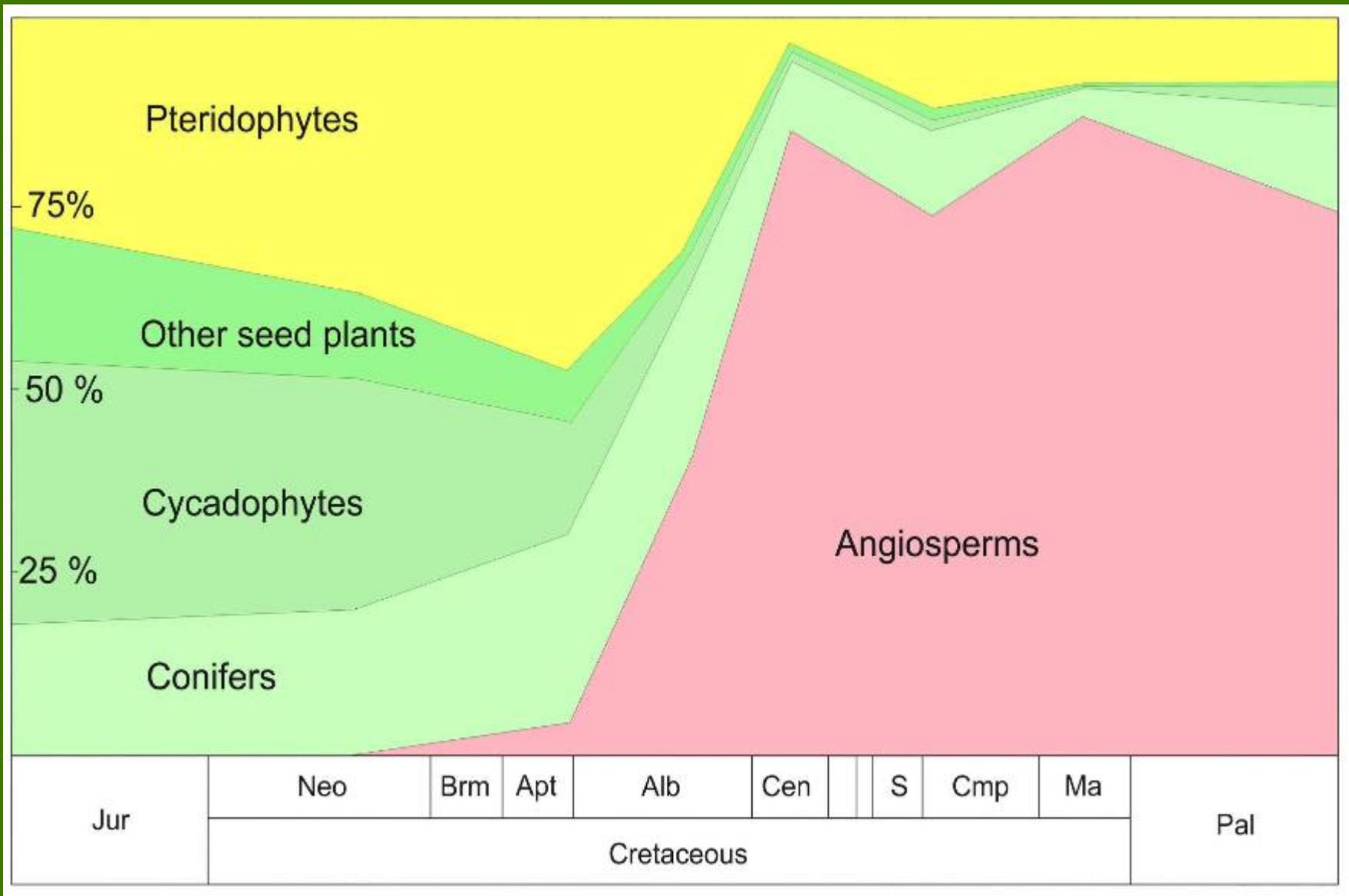
# Evolution of Flowering Plants

Patrick S. Herendeen  
Chicago Botanic Garden



CHICAGO  
BOTANIC  
GARDEN

Illustration: Lewis et al 2005. *Legumes of the World*. Royal Botanic Gardens Kew Press



Redrawn from Crane 1987

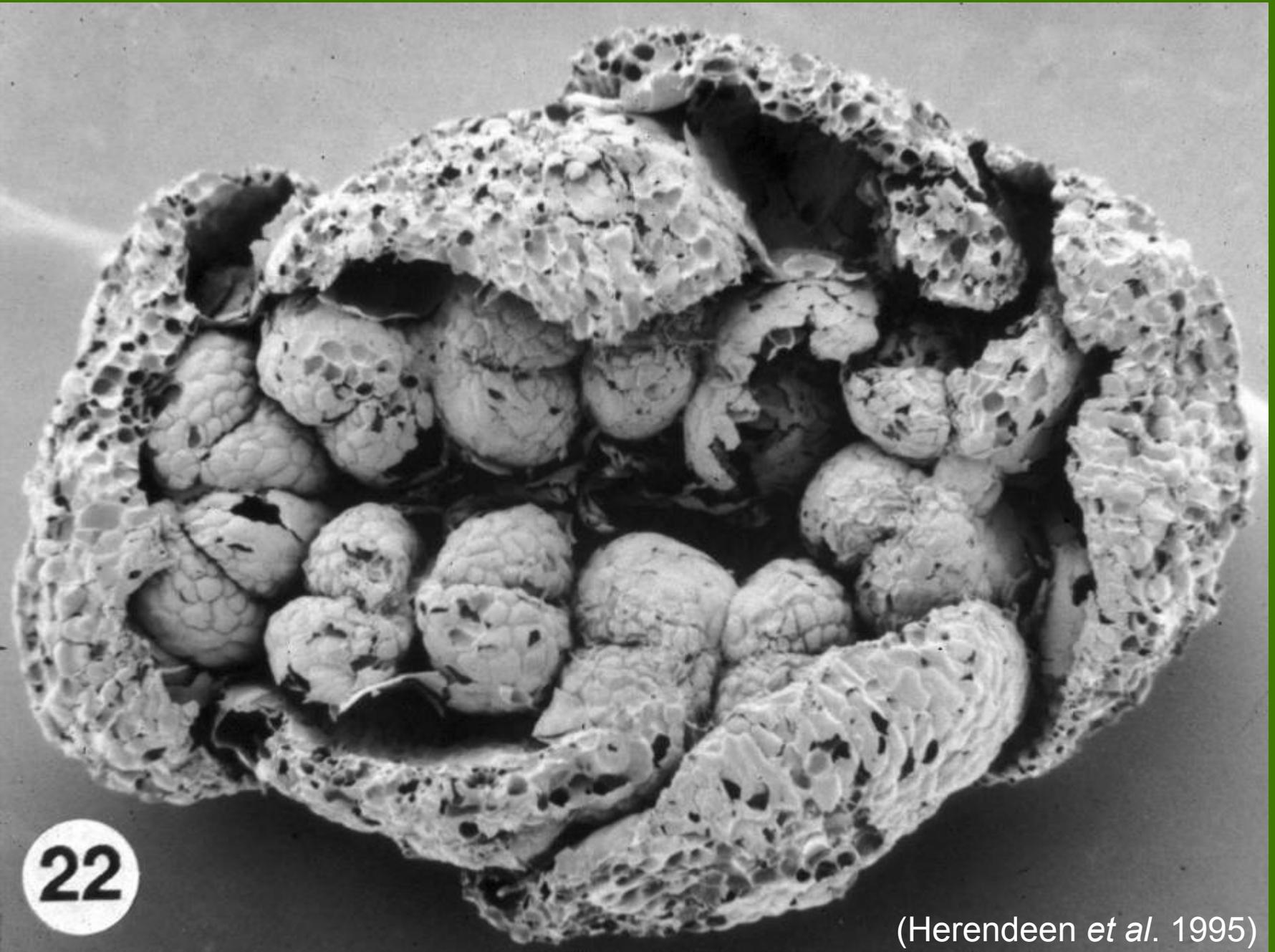
# Sanmiguelia Late Triassic



## What did the first flowers look like?

- Magnolia, Sarcandra, Amborella, or none of the above?
- Phylogenies of living plants are great, but they are not adequate to answer the question.
- We are not playing with a full deck!

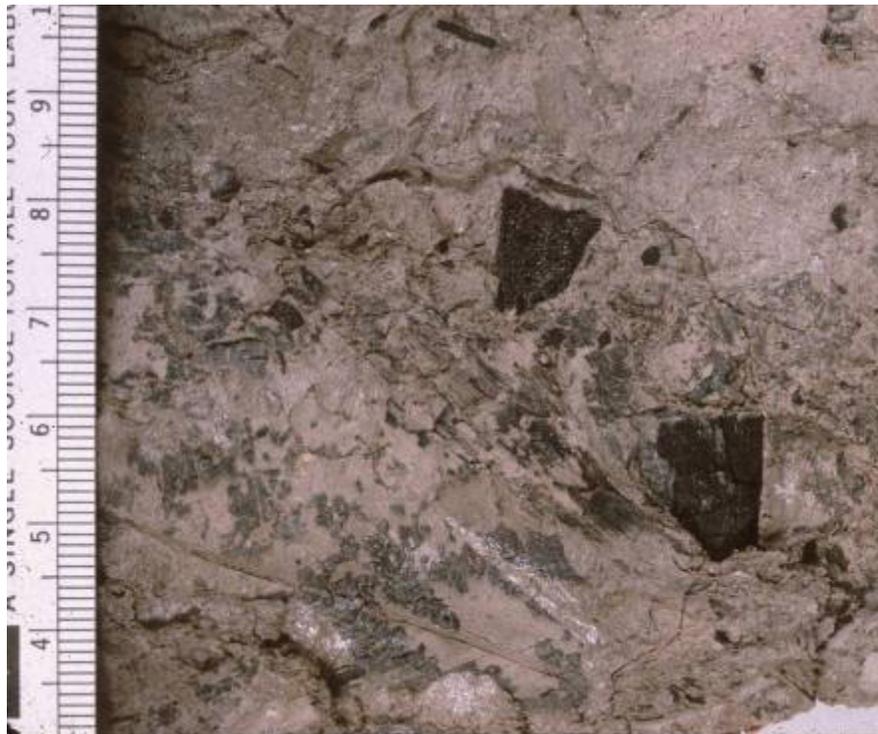




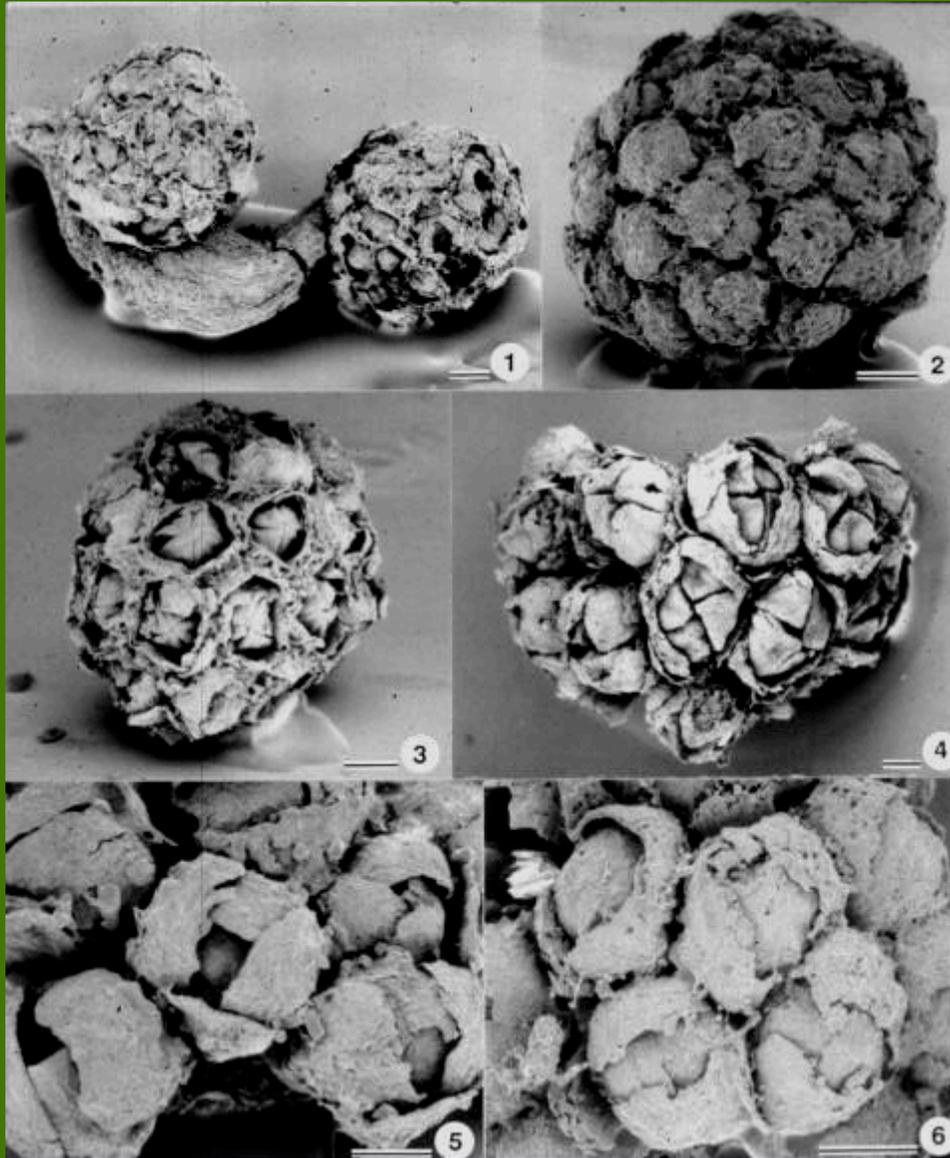
22

(Herendeen *et al.* 1995)

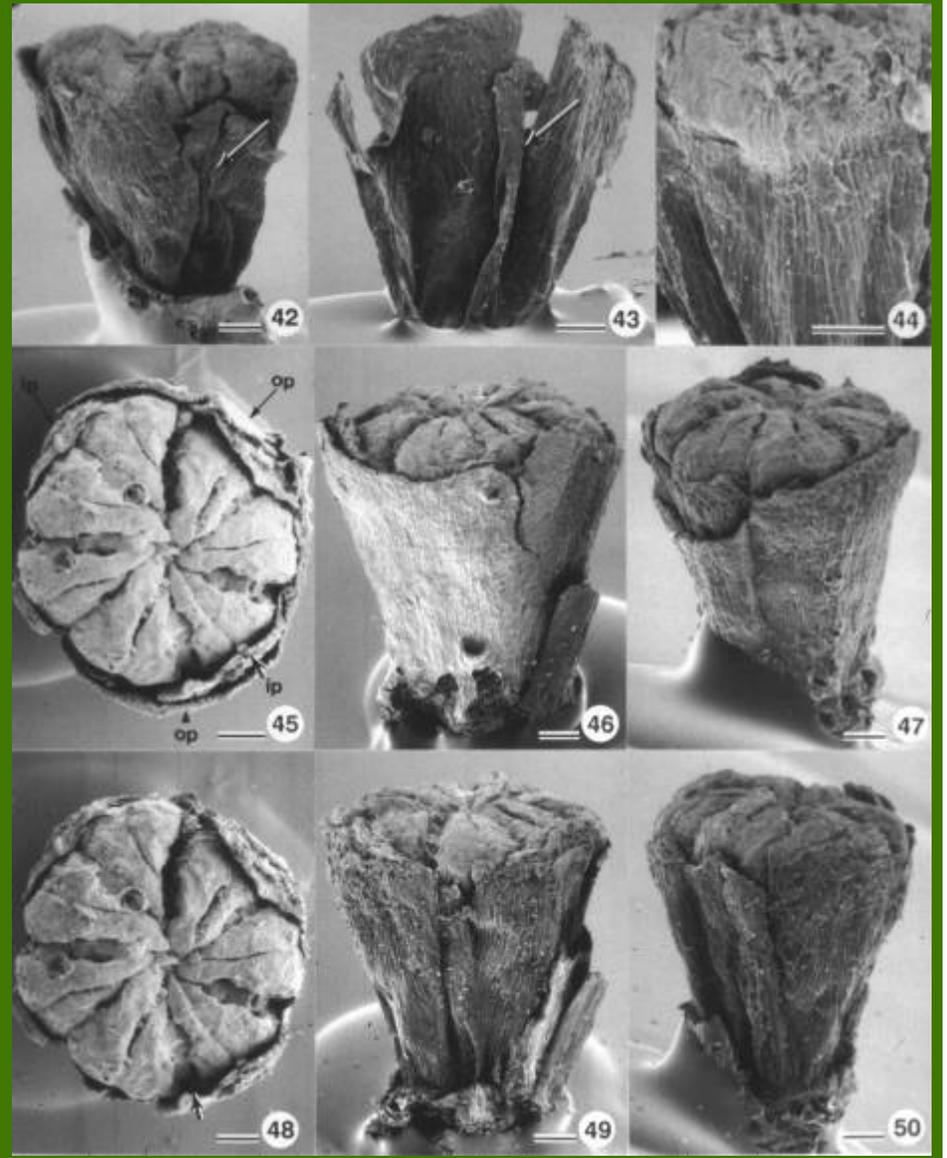
*Protomagaceae* from the Santonian of Georgia



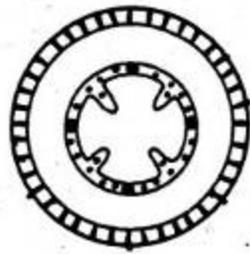




**Staminate flowers**



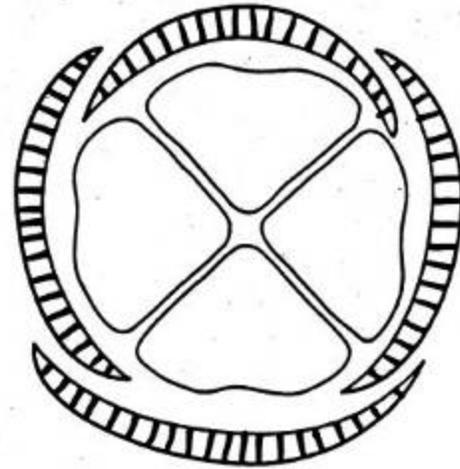
**Pistillate flowers**



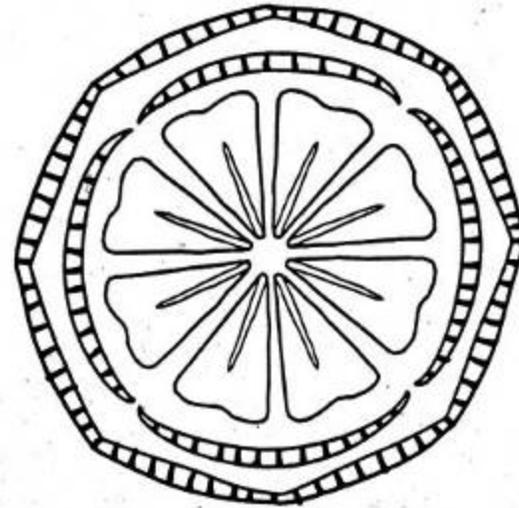
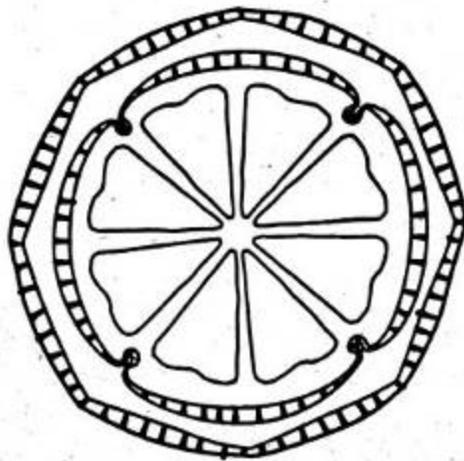
A



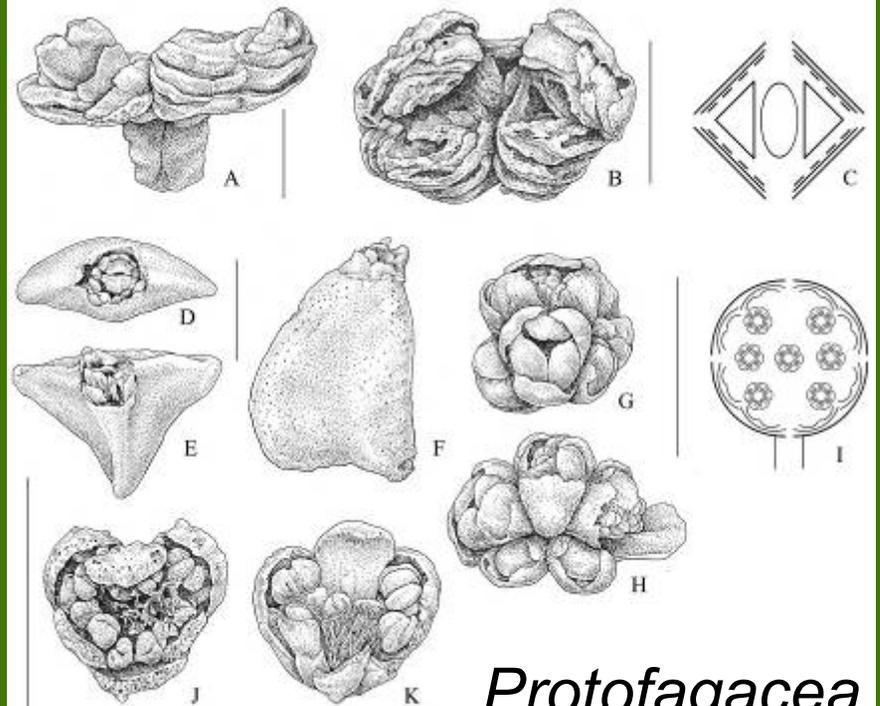
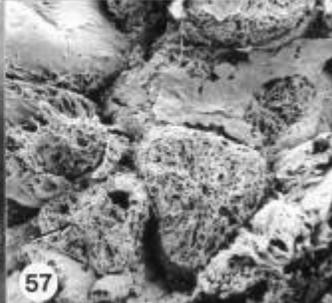
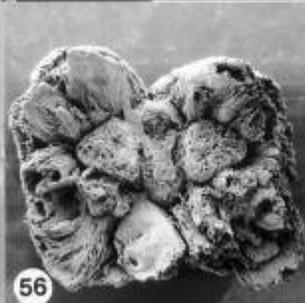
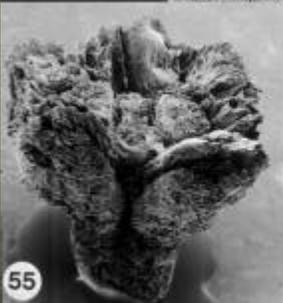
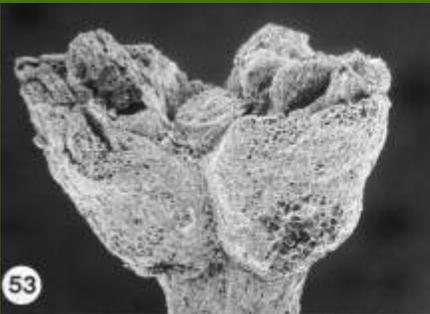
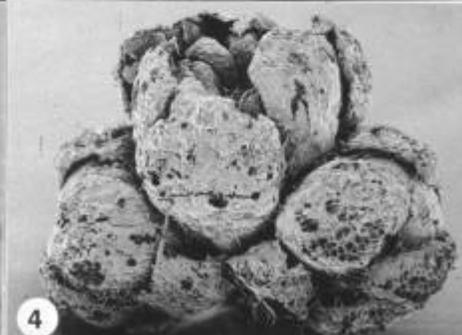
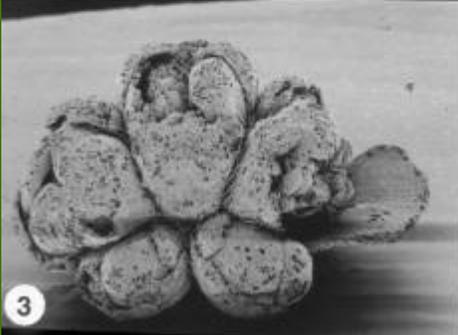
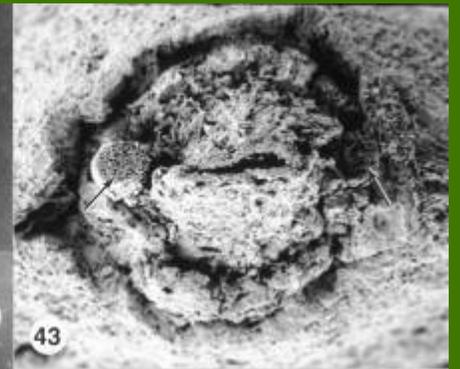
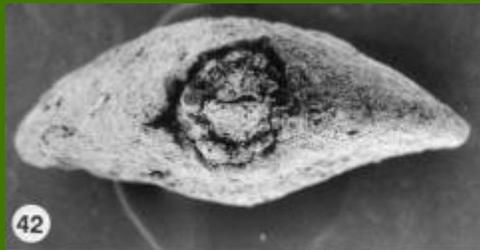
B



C







*Protofagacea*

Drawings by P. von Knorring





- We need data from the fossil record to document extinct biological diversity
- Late Cretaceous floras are providing exceptional documentation of numerous lineages of rosid and asterid lineages, as well as other groups
- Many of them reveal interesting phylogenetic, taxonomic, and morphological questions

