

CALAMITES

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CALAMITES

- ▶ *Calamites*, genus of tree-sized, spore-bearing plant that lived during the carboniferous and Permian periods(about 360 to 250 million years ago).
- ▶ *Calamites* had a well-defined node-internode architecture similar to modern horsetails, and its branches and leaves emerged in whorls from these nodes.
- ▶ Its upright stems were woody and connected by an underground runner; however, the central part of the stem was hollow, and fossils of *Calamites* are commonly preserved as casts of this hollow central portion.
- ▶ *Calamites* grew to 20 meters (about 66 feet) tall, standing mostly along the sandy banks of rivers, and had the ability to sprout vigorously from underground rhizomes when the upper portions of the plants were damaged.
- ▶ The remains of *Calamites* and other treelike plants from the carboniferous period were transformed into the coal used as a source of energy today.
- ▶ A virtually identical plant from the Triassic period (about 250 to 200 million years ago) is called *Neocalamites*.



STEM

- ▶ The stem form-genus is called *Calamites* which was initially applied to fragments of pith costs. The surface of the stem had longitudinal ridges and furrows like *Equisetum*.
- ▶ The young stem shows differentiation of cortical tissue: an outer sclerotic zone and an inner thin-walled parenchymatous zone.
- ▶ There is a prominent delicate pith at the Centre of the stem which disorganizes in mature shoots to form a central pith cavity at the internodes.
- ▶ The vascular bundles are conjoint collateral and open. Secondary growth in the stem took place by the activity of a cambium.

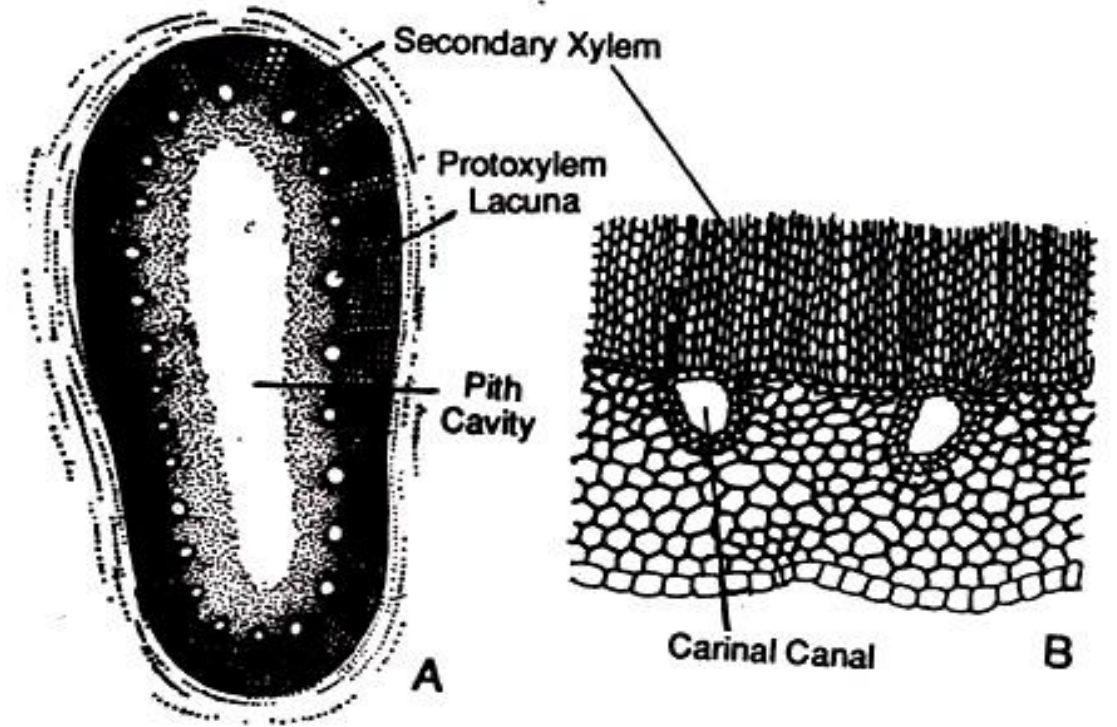


Fig. 97. *Calamites* : Anatomy of Stem (after secondary growth)
A. Ground Plan of Cross Section, B. A Sector enlarged

Root

- ▶ The adventitious roots of Calamites are referred as Astromylon.
- ▶ Internally, there is parenchymatous pith. The primary stele comprises of a ring of exarch bundles.
- ▶ The important internal feature of root is the absence of carinal canal. In rare instances, cortical lacuna is present which reminds the vallecular canal of Equisetum.
- ▶ Secondary growth has also been reported in Astromylon.

Leaves

- ▶ These leaves are whorled in arrangement and mostly found on the smallest twigs.
- ▶ The *Annularia* leaves are disposed in an oblique plane to the branch which form stellate patterns at each node.
- ▶ The mesophyll cells made up of palisade parenchyma are present in between the vein sheath and the epidermis.
- ▶ Stomata are arranged parallel to the long axis and are scattered all over the surfaces.

Strobilus :

- ▶ The strobili associated with the Calamitean stem are given the name Calamostachys.
- ▶ In this, the strobilus had a central axis bearing whorls of sporangiophores. Alternating with the whorls of sporangiophores were whorls of sterile appendages called bracts.



References:

1. Practical Manual of Pteridophyta----- S. Sundara Rajan
2. Nan Crystal Arens-----Professor of Geoscience, Hobart and William Smith Colleges, Geneva, New York.