EARLY LANDPLANTS

CC2 PALEOBOTANY

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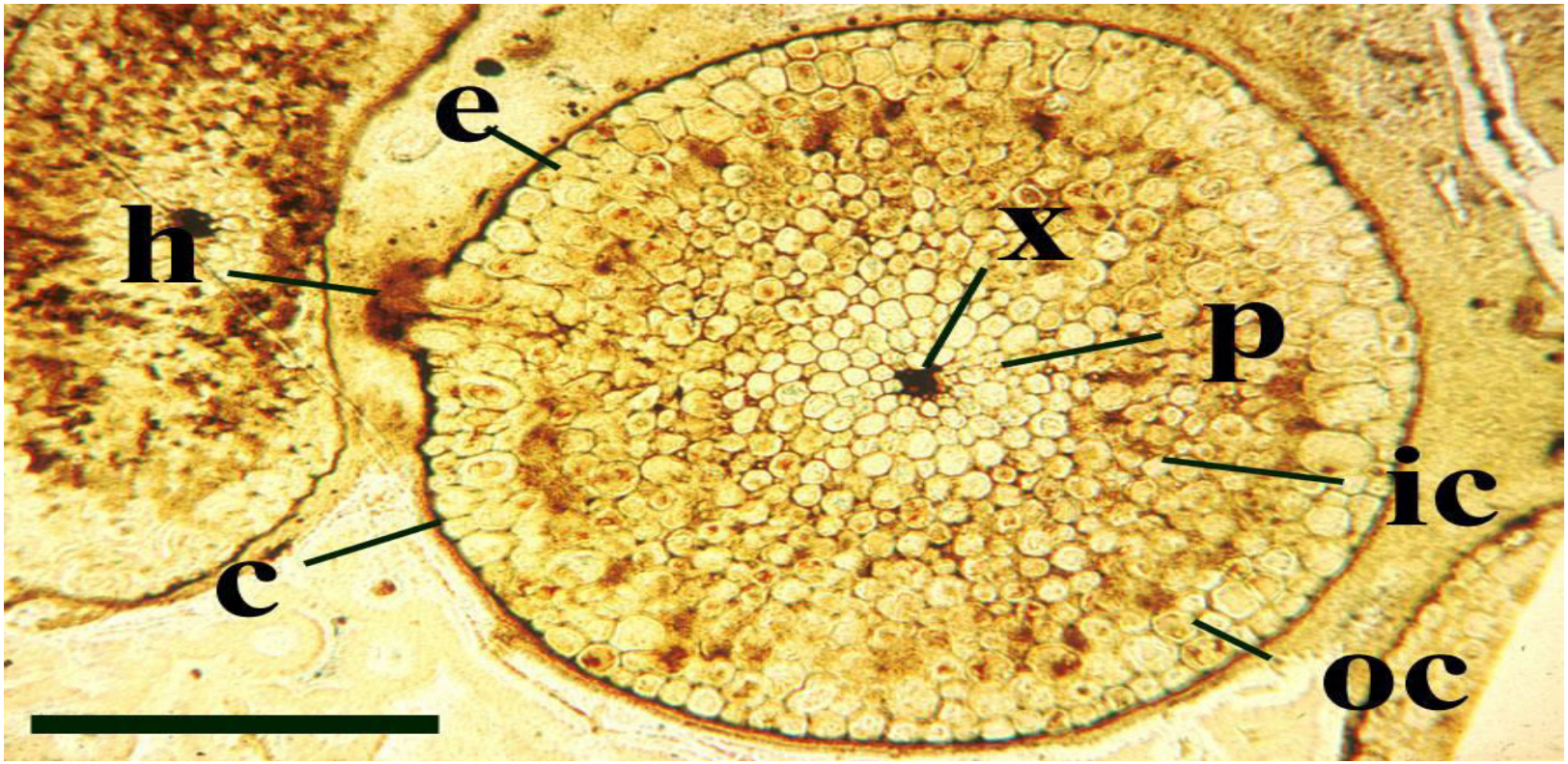

Cooksonia

- *Cooksonia* is the earliest known vascular plant; rangingin age from Middle Upper Silurian to Lower Devonian.
- Several species of *Cooksonia* have been described from various places likeIreland,Germany,S.Wales,N.Africa, N.America and many others.
- **MORPHOLOGY OF PLANT**
- Plant has dichotomously branched aerial axis terminated with sporangia.
- No report of basal part.
- Sporangia are of round to reniform in shape.
- Sporangia contain isospore with trilete aperture.

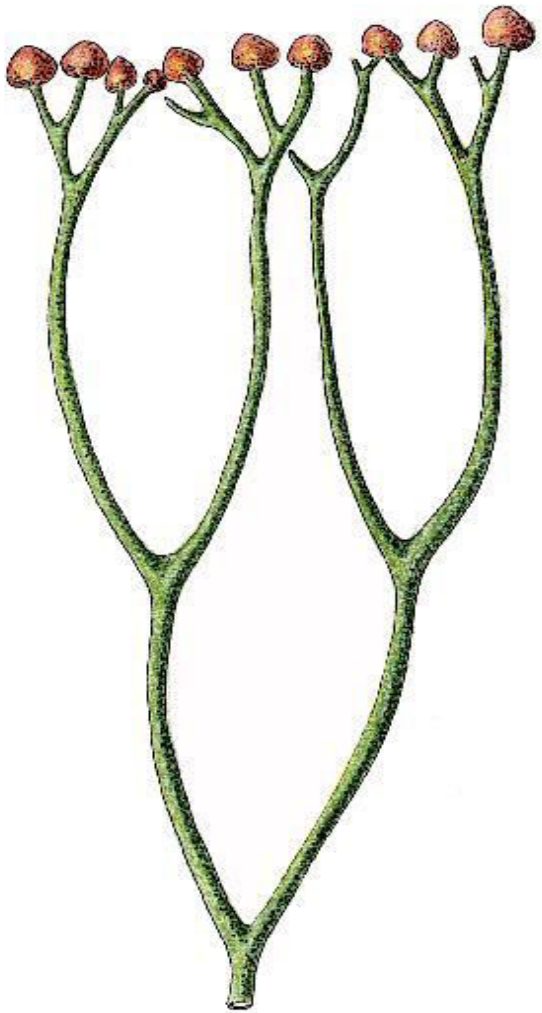

fig:Cooksonia caledonica

RHYNIA

- Most of the members of Rhyniopsida(early vascular plant) have been reported from the volcanic Rhynie chert deposit, found near the village of Rhynie in Scotland.
- The age of deposit- Lower Devonian.
- The plants of Rhynie chert were first published by Robert Kidston and WilliamH.Lang in a series of papers during 1917 to 1921.
- The most abundant form was *Rhynia*.
- *R.major* and *R.gwynne-vaughanii* ,two species of *Rhynia* were first described and classified by Kidston and Lang but later *R.major* has been transferred to a new genus,*Aglaophyton major*, by D. S.Edwards (1986)

R. GWYNNE-VAUGHANII PLANTBODY

- Prostrate rhizomatous stem and aerial axis.
- Plant height upto7 inches(18cm)
- Prostrate axis had numerous delicate rhizoids which performed the function of anchorage and absorption of water and nutrient from soil.
- Erect axis had both dichotomous and lateral branching.
- Dichotomous branched axes were terminated with ellipsoidal sporangia filled with isospores.
- Spores were thick walled and had trilete apeture.
- Entire plant surface was covered by cuticle.
- Aerial axes were photosynthetic having stomata.

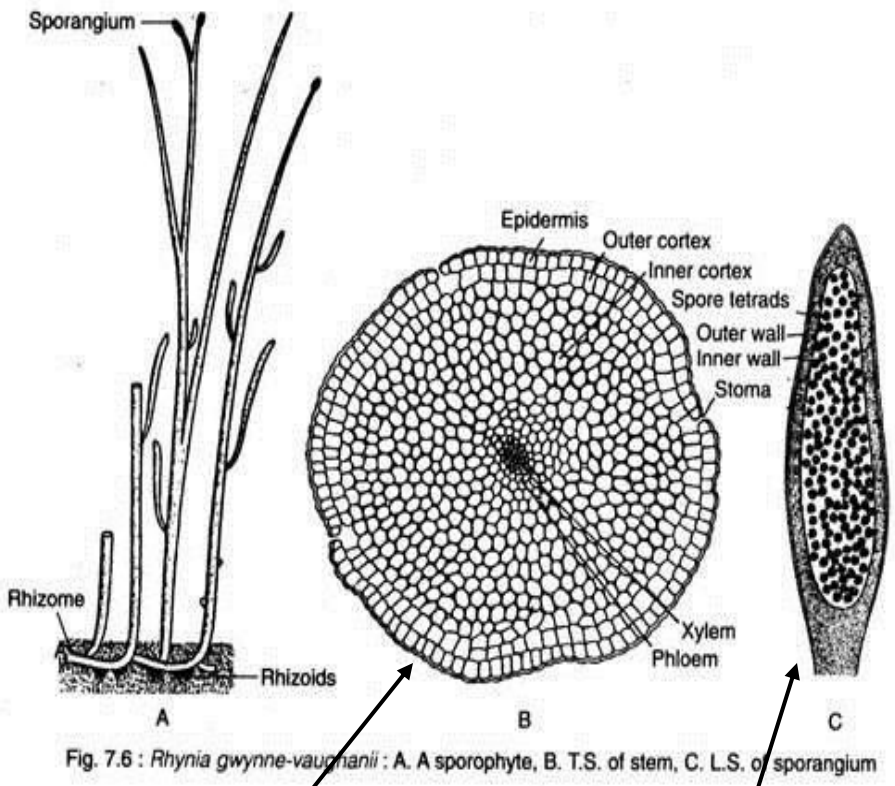

Fig. 7.6 : *Rhynia gwynne-vaughanii* : A. A sporophyte, B. T.S. of stem, C. L.S. of sporangium

ANATOMICAL FEATURES

- Central xylem was surrounded by 4-5 layers of phloem i.e hadrocentric in protostelic configuration.xylem possessed annular tracheids.
- There was no endodermis and pericycle.
- The cortex was massive, outer cortex consisted of large compactly arranged hypodermal cells;inner cortex consisted of loosely aranged chlorenchymatous cells(photosynthetic) with large air space.
- Epidermis was interrupted by stomataand were heavily cuticularised.

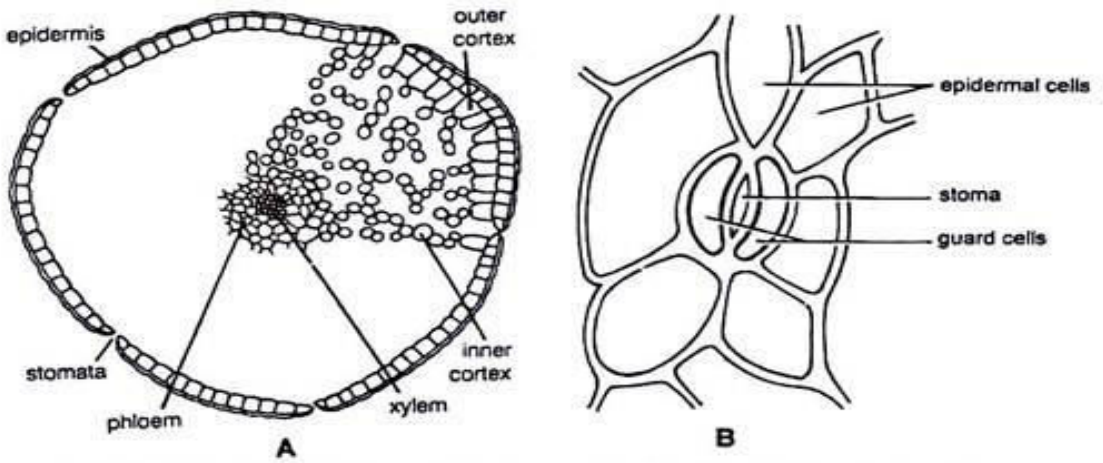

Fig. 2 (A–B). Rhynia. Internal Structure : A. T. S. of aerial shoot, B. a stoma

WHY *R.MAJOR* WAS TRANSFERRED TO *AGLAOPHYTON MAJOR?*

- D.S.Edwards suggested that *Aglaophyton major* was a non vascular plant having a rather different branching pattern in comparison to Rhynia.
- *A.major* plant having no central xylem strand.
- The angle of dichotomy was wider over 60 degree.
- The central conducting strand comprised of thin walled elongated cells without having characteristic wall thickening of vascular plants.
- Sporangia were terminal and fusiform in shape packed with trilete isospores.
- For these above reasons, *Rhynia major* was transferred to a new genus *Aglaophyton major,a* nonvascular plant with a pteridophytic lifecycle.

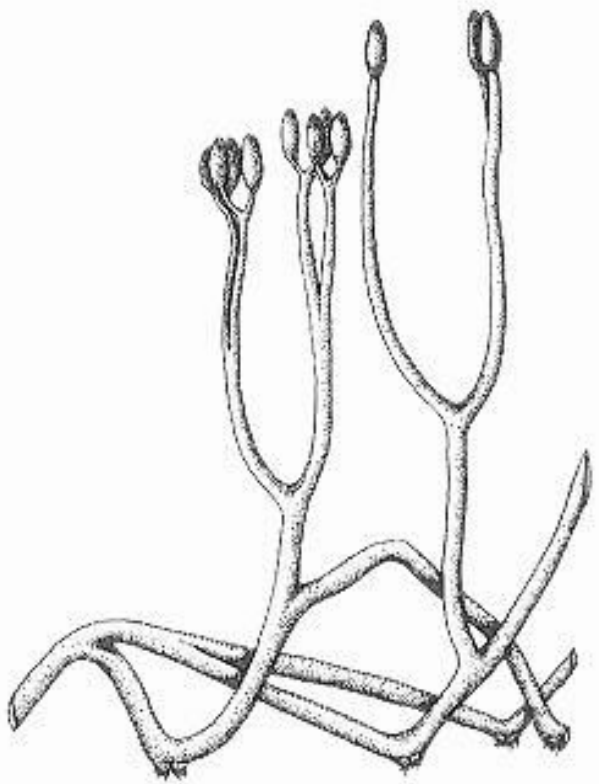

Fig: *Aglaophyton major*

THANK YOU