

Early land plants (Cooksonia and Rhynia) :-

Cooksonia :- Cooksonia is an extinct grouping of primitive land plants. The earliest Cooksonia date from the middle Silurian till the end of the Devonian. It was found in the lower Devonian of Wales (Lang, 1935), but has not been fully worked out. Only the sporophyte phase of Cooksonia is currently known. Individuals were few centimeters high, dichotomously branched and bearing more or less globose sporangia at the end of the branches. Leaves and other appendages were absent. Much less has been known regarding the anatomy of the stem and the internal structure of the sporangium. Specimens of one species have a dark stripe in the centre of their stalks which has been interpreted as the earliest remains of water carrying tissue, while others lack this habit. Cooksonia is also regarded as a transition between primitive non-vascular bryophytes and vascular plant. It is likely that some fossil preserve a sporophyte generation which was dependent on gametophyte. However, no fossil record of gametophyte has been discovered till date.

Some of the species of Cooksonia are as follows -

Cooksonia pentoni, C. hemisphaerica, C. cambriensis

C. rananensis etc.

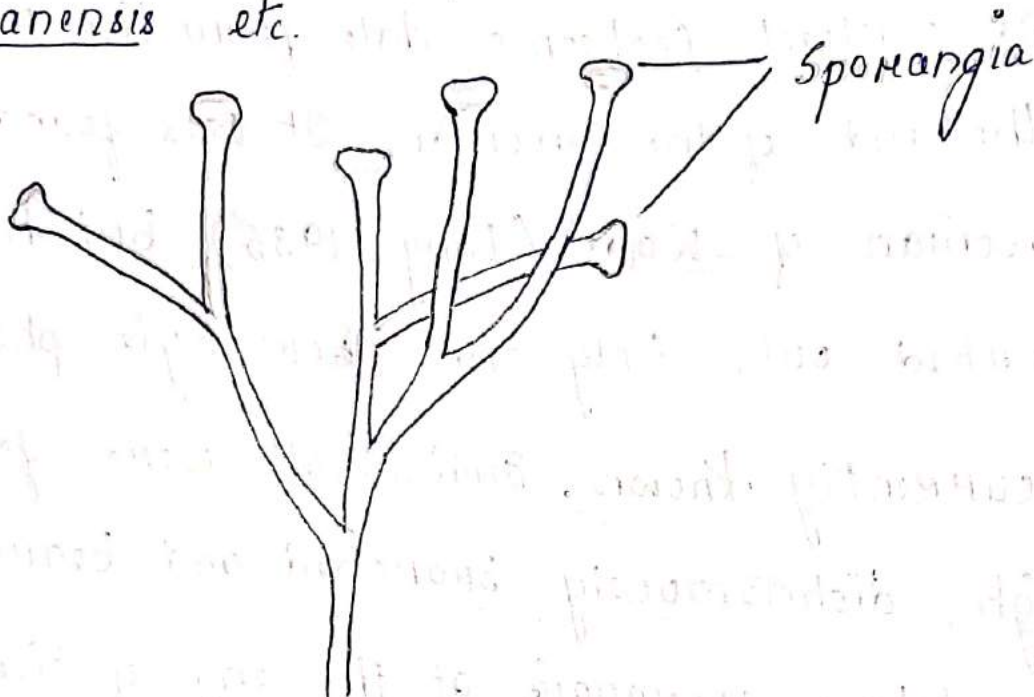


Fig:- Cooksonia sp

* W.H. Lang gave the genus name Cooksonia in honour of the Australian paleobotanist Isabel Cookson.

Rhynia :-

Classification

Division: Pteridophyta

Sub-division: Psilophytopsida

Order: Psilophytales

Family: Rhyniaceae

Genus: Rhynia

Rhynia is a simplest extinct vascular plant known only from single Middle Devonian deposit in Scotland. Uptill now two well-defined species viz. Rhynia gwynne-vaughani and Rhynia major have been described long time back by Kidston and Lang. (1917).

The plant body consisted of a slender horizontal, rhizomatous subterranean portion bearing rhizoids and erect aërial leafless cylindrical shoots. The aërial shoots were naked, dichotomously branched and tapered gradually. The plant body of R. major were larger, about 50 cm in height and 1.5 to 6.0 mm in diameter but those of R. gwynne-vaughani were 18-20 cm in height and 2 to 3 mm in diameter. R. gwynne-vaughani bore on its smooth stems oval or hemispherical, more or less lenticel-like parenchymatous protuberances. In some cases these protuberances, when situated at the base, bore rhizoids.

Internal morphology:- Both the subterranean and aerial portions were differentiated internally into epidermis, cortex and stele. The stele was protosteles with cylindrical strand of xylem completely ensheathed by phloem. The xylem contained annular tracheids only. The cortex was thick and covered by ~~thin~~ cuticle. The epidermis had stomata.

Reproductive structure:- Asexual reproductive structures i.e. sporangia were borne singly on the tips of aerial branches. They were cylindrical with pointed ends and had a short stalk. A sporangium had a massive jacket several cells in thickness, in which the cells of outermost layer were thick walled. The sporangial cavity was filled up with many cutinized spore-tetrads. The spores were spherical, large and provided with a thick cuticle. Spores were homosporous.

The Gametophyte:-

Although the gametophytes are not known among the members of Psilophytales still some recent workers have suggested the presence of gametophytes. According to Menken (1958, '61), some of the rhizomatous axes may represent the persistent gametophytes of Rhynia.

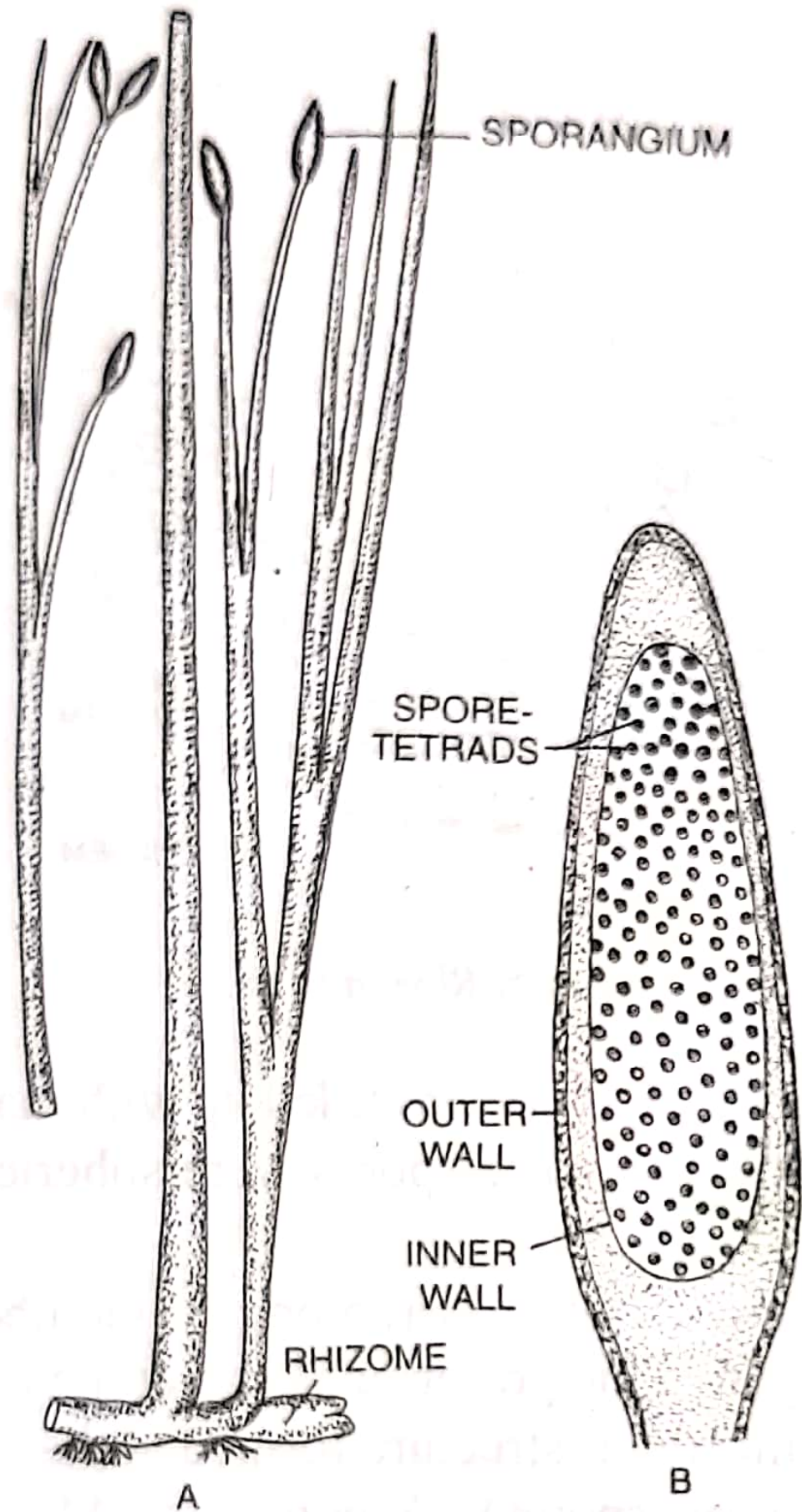


Fig.2.1— *Rhynia major*. A—Sporophyte (plant body). B—Sporangium in l.s.