Rhynia

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Kidston & Lang (1917) confused two anatomically similar plants but later segregated them as two different species. These were Rhynia major and Rhynia gwynne-vaughanii. Using a multifaceted approach, new material and modern techniques Dianne Edwards and collaborators, re-examined the early vascular plants and concluded that *Rhynia major* and *Rhynia gwynne-vaughanii* are very different both morphologically and anatomically, it is therefore preferable to recognize them differently and in different genera. While *Rhynia gwynne-vaughanii* was retained as the only species of the genus Rhynia, a new genus Aglaophyton was described to accommodate *R major* as *A major*. It was further emphasized that its conducting cells are not tracheids and do not have the thickenings similar to those of other vascular plants.

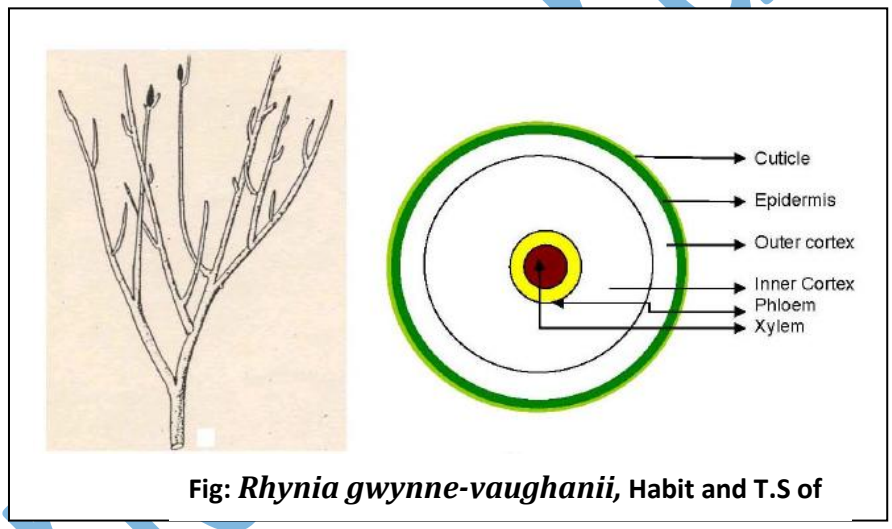

Fig: *Rhynia gwynne-vaughanii,* Habit and T.S of

Rhynia gwynne-vaughanii:

A small plant; rhizome prostrate with rhizoids; aerial axes arose from the prostrate axes, about 20cm tall, about 2mm in diameter, tapering distally, dichotomously forked (angle of dichotomy small, 20-30degree), profusely branched, both prostrate and upright axes with small hemispherical lumps or bulges scattered over the surface, lateral (adventitious) branches present. Adventitous branches probably helped in vegetative propagation. The stele of the adventitious branches was not in continuity with the stem stele. Sporangia terminal, fusiform, homosporous, usually overtopped by adventitious branches, 3-6mm long and 2.4mm wide, wall thick, without stomata, sporangia abscise after spore release. Spores about 40 micron in diameter.

A transverse section of stem shows a large cortex divisible into an outer cortex and an inner cortex with large proportion of air spaces and with photosynthetic function in its outermost cells (since the plant was with out leaves). Fungal hyphae present in the cortex, possibly entered after the death of the plant resulting in its disintegration. A hypodermis and an epidermis surround the cortex towards the outside. A few stomata and cuticle present. Protostele consisting of a slender xylem strand with broad annular or rarely spirally thickened tracheids and surrounded by phloem.

Rhynia major:

Edwards (1986) reasoned that R. major was non-vascular in nature. Kidston & Lang had initially described it as: Plants rootless and leafless, with an extensive horizontal rhizome, rhizoids in patches, (not all over), for reasons unknown some branches of the dichotomously branched rhizome grew upwards into aerial axes, about 60cm tall, diameter 6mm, naked, sparingly dichotomously branched or even unbranched. Sporangia terminal, homosporous, slightly more in diameter than the branch on which borne, up to 12mm long, 4mm broad; sporangial wall thick, differentiated in to three layers. Spores tetrahedral trilete about 65um diameter The internal structure of the stem was similar to that of *R. gwynne-vaughanii* except in the structure of the conducting cells.

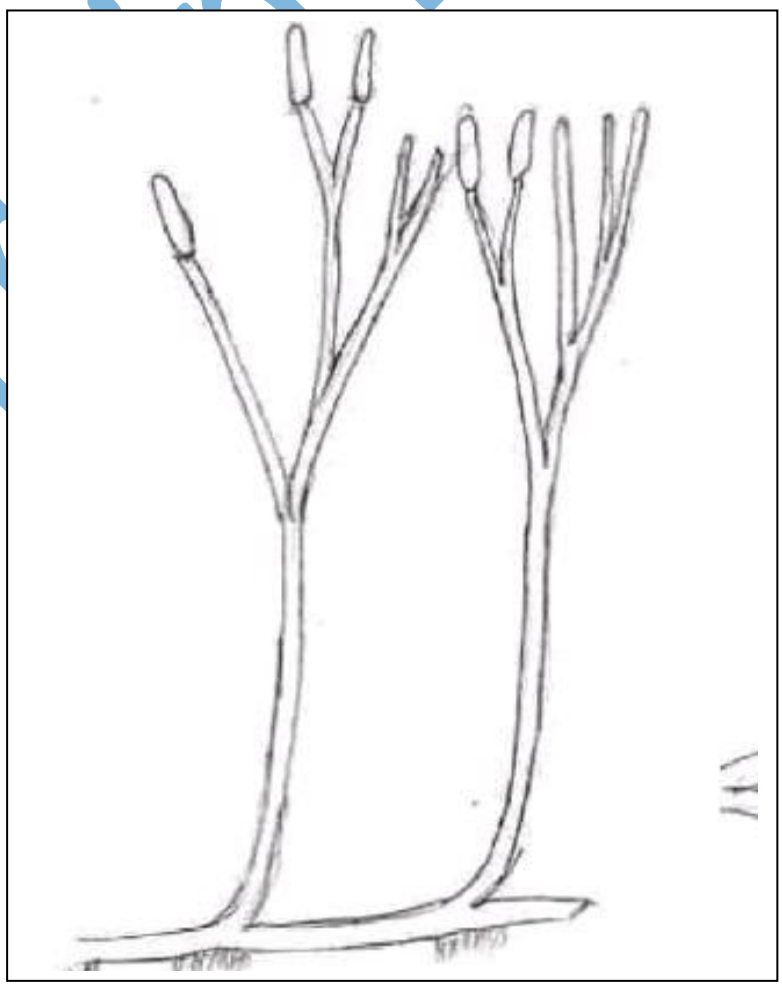

Fig: Habit of Rhynia Major