

Rhynia

Rhynia - of which two well defined sps R. major and R. gwynnevaughani was discovered by Mackie in 1913 from middle Devonian Rhynie chert in Scotland and was fully described by Kidston and Lang in 1917. This rediscovery established the Psilophytales as a separate and distinct taxon.

There is evidence that these plants were of gregarious habit growing in swampy marshes near volcanoes where the atmosphere contained sulphurous vapour and the soil was acidic. The reconstructions are from silicified petrification. The systematic position is as follows -

- Psilophyta
- Psilophytopsida
- Psilophytales
- Rhyniaceae
- Rhynia

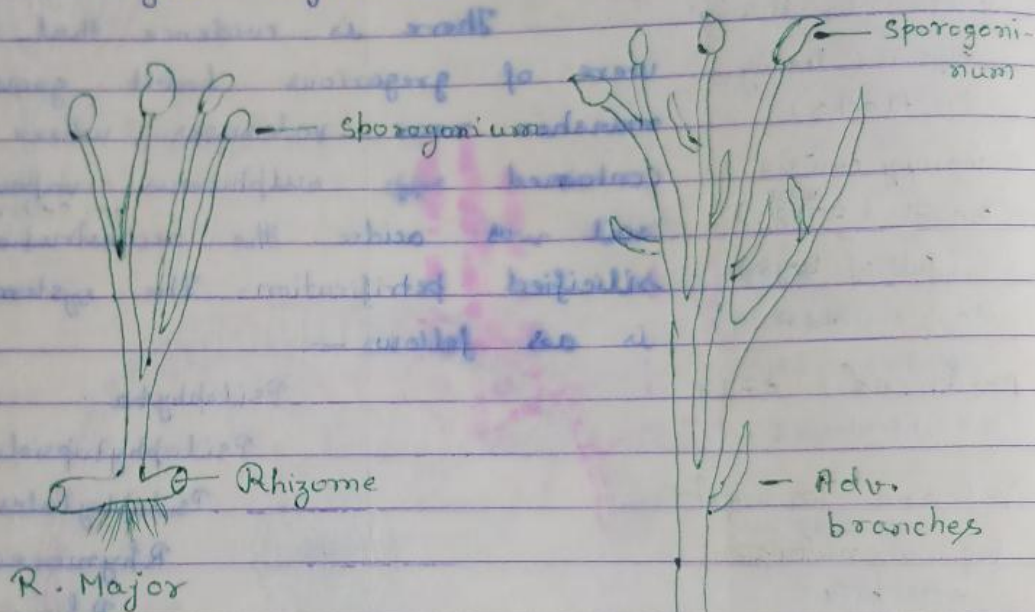
Discovery - भारत
 taxon - नया
 sulphurous - सल्फ्यूरस
 evidence - प्रमाण
 gregarious - समूह
 swampy - दलदली
 Marsh - मार्श
 Volcano - ज्वालामुखी
 silicified - सिलिका
 petrification - पत्थर
 bore - झेरा
 sparsely - संज्ञ
 Naked - अच्छाया

The adult sporophyte

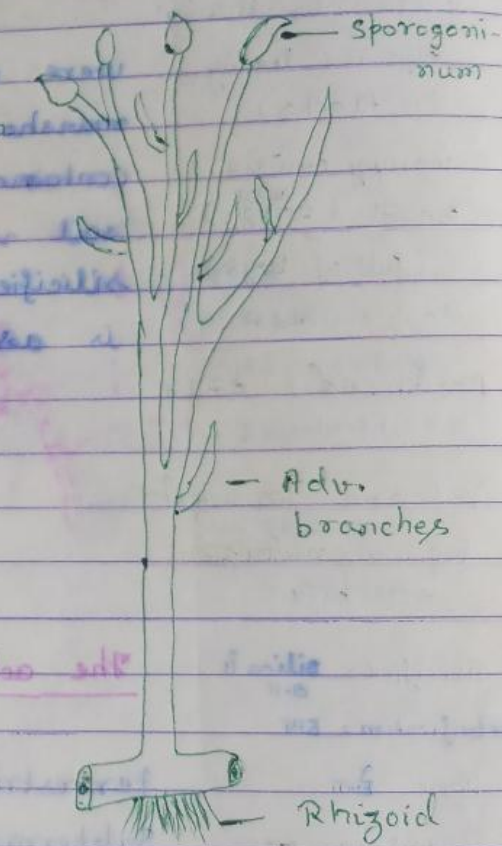
Rhynia - the most primitive terrestrial sporophyte consists of a cylindrical 'subterranean rhizome' - that bore upright, leafless, erect, cylindrical aerial shoots which branched dichotomously, though rarely nigrescens. The rhizome bore rhizoids. The sub to trifurcate asexual stems taper gradually and minutely to the base to the tip. The tips were bluntly or the branches either are pointed or sub to acute. The upright oval sporangia which were few in number, lighter than the stems. Both the rhizome and aerial stem bore a - similar horizontally similar, except stomata

photosynthetic cortical cells which were absent in rhizomatous stem.

In the centre is a slender protostele with a small central xylem surrounded by phloem. Endodermis and pericycle was absent. The cortex is divisible into outer and inner zones. The epidermis is single layered.



R. Major



R. gwynne-vaughani

Reproductive structure

merely = केवल, सिर्फ
 simply
 devoted = समर्पित
 a piece = टुकड़ा

The sporangium was merely a modified terminal part of the axis devoted for spore production. The sporangium was oval or cylindrical structures with a pointed ends at the apices of the dichotomies. The thick sporangial wall was divisible into an epidermis denoting the outermost cuticularized layer - a 3 celled

thick middle layer and an uniseriate tapetal cells. The sporangial cavity was packed with numerous spore tetrads or free spores. The sporangia did not exhibit any sign of its dehiscence. The spores were spherical, large and covered with a thick cuticle.

speculation = धारणा, विचार

specimen = sample

pattern = स्वरूप

प्रमाण

Gametophyte - There is some speculation and controversy regarding the gametophyte because there was no trace of prothallial structure in the fossilized specimen discovered from the 'Rhynie chert'.

Puri (1961) is of opinion that

Rhynie had a homologous gametophyte and according to him, some of the plants described as sporophytes may be gametophytes eg. some smaller *R. gwynne-vaughani* may be gametophyte of the larger *R. major*.

may be = होसकता है

संभव है

उदाहरण के लिए

suggest = संकेत करना

Recently = हाल ही में

अब

This suggests a vesicular gametophyte which is uncommon, though not completely absent among pteridophytes. Recently Lemoigne

uncommon = सामान्य

नहीं पाया जाता है

(1968, 69) has demonstrated the occurrence

of archegonia with four celled tops of their necks and egg cells in *R. gwynne-vaughani* and claims the gametophyte nature of *R. gwynne-vaughani*.

claim =

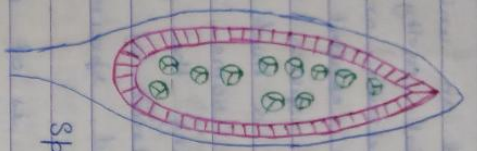
दवाव जतलाना

Although a few putative archegonia have been figured but up to date no clear antheridia have been observed and the evidence for these fossils being gametophyte is still equivocal.

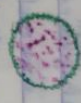
equivocal = दो या अनेक
अर्थों में, द्विअर्थी

putative = न sterile

न fertile



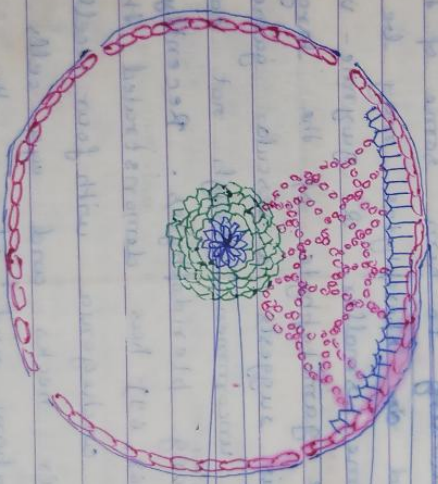
Sporogonium



Spore



Spore tetrad



Cuticle

Epidermis

Outer cortex

Inner cortex

Phloem

Xylem

Handwritten notes describing the structure and function of the stem, including terms like 'aerial shoot', 'phloem', and 'xylem'.

Additional handwritten notes at the bottom of the page.