

Rhynia

Prepared by

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Classification

Division - Petridophyta

Subdivision- Psilohytopsida

Order- Psilophytales

Family- Rhyniaceae

Genus- *Rhynia*

- Fossil of genus were discovered by Kidston and Lang in 1917 from Rhynie locality in Scotland.
- Only two species were there - :

Rhynia major

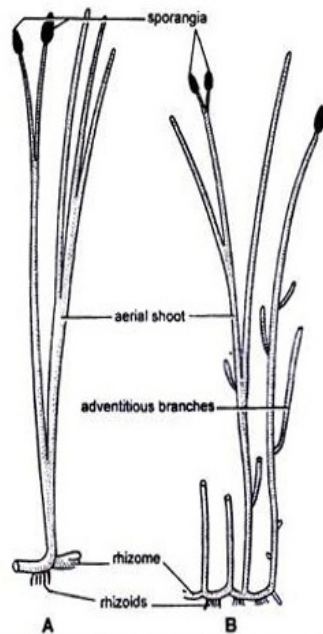
Rhynia gwynne-vaughani

- These grow near volcanoes saturated with acid water from hot springs.

Structure of Sporophyte

- Herbaceous
- The plant body consisted of a subterranean, creeping, cylindrical and dichotomously branched rhizome.

- Aerial branch also dichotomously branched.
- *Rhynia major* aerial shoot 50cm height and *Rhynia gwynne-vaughani* 20cm in height.
- Roots absent.
- These had no vascular connection with main axis.



- Aerial branches end on tapering vegetative apices or bear pear shaped terminal sporangia.

Figure 1:- *Rhynia* external - (A) *Rhynia major* (B) *Rhynia gwynne-vaughani*

Internal Structure

Internal organisation of the rhizome as well as of aerial shoot was very simple.

Epidermis

- Outer single layered with thick cuticle.
- Epidermis of aerial shoot was interrupted by stomata.
- Each stomata had two guard cells.

Cortex

- Cortex divided into outer and inner cortex, outer cortex was 1-4 layer, compact, polygonal parenchyma to us cells while inner cortex was spherical parenchyma to us cells with large space and main photosynthetic region. In some cortex fruiting bodies of fungal hyphae present.

Central cylinder

- Protostele present in aerial and rhizome.
- Xylem was surrounded by phloem.
- Xylem composed of tracheids with annular or spiral thickenings.
- Phloem 4-5 layers of thin walled elongated cells.
- Endodermis and pericycle absent.

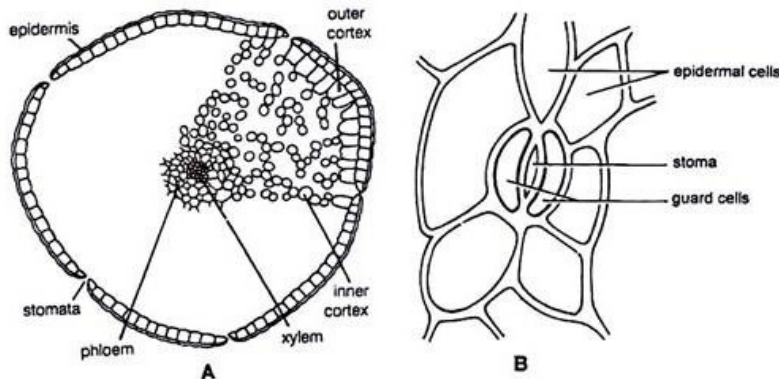


Figure 2:-*Rhynia* internal - (A) T. S. OF Aerial shoot (B) Stoma

Reproductive structure

- Sporangia borne singly on apices of some aerial shoot.
- Sporangia oval or slightly cylindrical.
- *Rhynia major* sporangia long while *Rhynia gwynne-vaughani* sporangia were small.
- Sporangia surrounded by multilayered jacket. Outer wall was thick, inner wall thin and rounded walled cell present which work as tapetum.

- Spores were numerous and formed by meiosis.
- Spores were homosporous and had typical triradiate markings.
- Spores are released by decay of sporangial jacket.

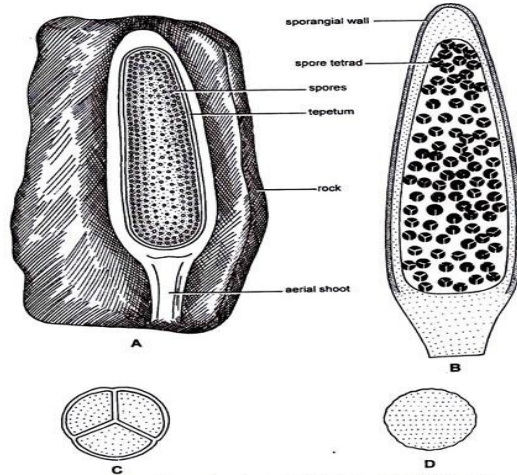


Figure3:- *Rhynia* sporangia - (A) L. S. Of sporangium of *Rhynia major*

(B) L. S. Of *Rhynia gwynne-vaughani*

(C) spore tetrad

(D) spore

Gametophyte

- No definite gametophyte present.
- Merker(1959)- rhizomatous part of *Rhynia* represent gametophyte as flask shaped cavities. Sporne (1966) did not agree with the fact because no antheridia and archegonia were observed.
- *Rhynia gwynne-vaughani* axis was gametophytic but the question of gametophyte in *Rhynia* is still an open one.

Photographs were taken from Google.

Books cited-

1. Saxena. R. S., 2019, Text Book B. Sc. Botany-1.
2. Vashishta, P. C., 1971, Pteridophyta, Botany for degree students.