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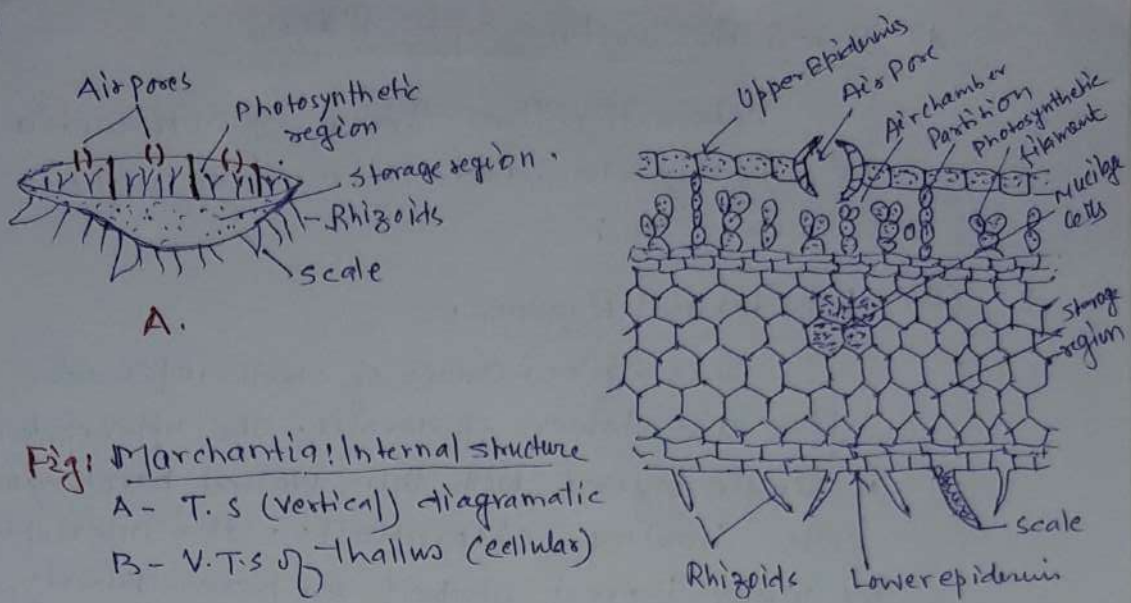


Fig: Marchantia: Internal structure  
A - T.S (Vertical) diagrammatic  
B - V.T.S of Thallus (cellular)

### (C) Storage Region :-

Just below the photosynthetic region lies the storage region. It consists of a uniform tissue made up of relatively large, colourless, thin walled polygonal cells which are parenchymatous. Cells of storage region lack chloroplasts but contain starch and protein grains. Isolated cells may contain a single large oil ~~cell~~ body or may be filled with mucilage.

The developmental process of the air chamber of Marchantia has been well described by Apostolakis et al. (1982), Apostolakis & Galatis (1985) and Ishizaki et al. (2013).

On Line Study Material (e-content).

①

College: S.S. college, J'bad.

Date: 29.07.2020

Department: Botany

Time: 11.00 - 12.00

Subject: Bryophyta

Name of the Teacher: Dr. S.S. Sharma.

Topic: Marchantia

Class: B.Sc (Bot) H - PI (H)

Medium of Teaching: WhatsApp  
college website.

Biototechnology - P<sub>1</sub> sub.

Structure of Marchantia Thallus

1. Taxonomic Position: -

Division — Bryophyta

Class — Hepaticopsida

Order — Marchantiales

Family — Marchantiaceae

Genus — Marchantia.

2. Habit and Habitat: -

The genus Marchantia includes about 65 species distributed all over the world. In India, only 11 species have been reported. All the species are terrestrial growing on moist, <sup>cool and</sup> shady places, i.e., damp soil, moist rocks, moist & shady walls and banks of streams. In India, they are found mainly in Himalayas and very few species occur in plains and hills. The common Indian species are — M. polymorpha, M. nepalensis, M. palmata, M. indica, M. simlana.

3. Structure of Marchantia Thallus (veg): -

Plant body is thalloid, prostrate, flat, dorsiventral and dichotomously branched. The apex of each branch has notch.

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#### 4) Internal Structure of Thallus.

(3)

Internally the thallus of *Marchantia* is clearly divided into three regions. These are:

##### (a) Epidermal Region :-

This region consists of well defined upper and lower epidermis. The upper epidermis is single layered with thin walled parenchymatous cells having chloroplasts. It is interrupted by many barrel shaped air pores which communicate with the air chambers. The pore remains surrounded by 4-8 superimposed tiers of cells. ~~Below the upper epidermis~~ a number of air chambers are found which remain ~~separated~~ separated by partition wall. The lower epidermis possesses rhizoids and multicellular scales.

##### (b) Photosynthetic Region :-

Just below the upper epidermis a number of air chambers are found in a single horizontal layer. The chambers are separated from one another by partition which are one cell thick and 3-4 cells in height. From the floor of the each chamber, short, simple or branched filaments of green cells arise which are called "assimilatory" or "photosynthetic filaments". Each cell of the assimilatory filaments contain numerous ovoid chloroplasts.

(2)

The thallus is deep green in colour and is provided with midrib on dorsal surface.

On dorsal surface along the mid-rib, there are cup like structures are found which are known as 'gemma cup'. ~~At~~ Mature thallus bears male and female sex. organs called antheridiophore and archegoniophore are found. They bear antheridia and archegonia respectively.

The ventral surface (lower) of the thallus bears numerous multicellular scales, and unicellular rhizoids. Rhizoids are of two types - smooth walled rhizoids and tuberculate rhizoids. Rhizoids absorb water and solutes and also help in attachment of the thallus to the substratum. Tuberculate rhizoids have peg like ingrowths in their inner walls.

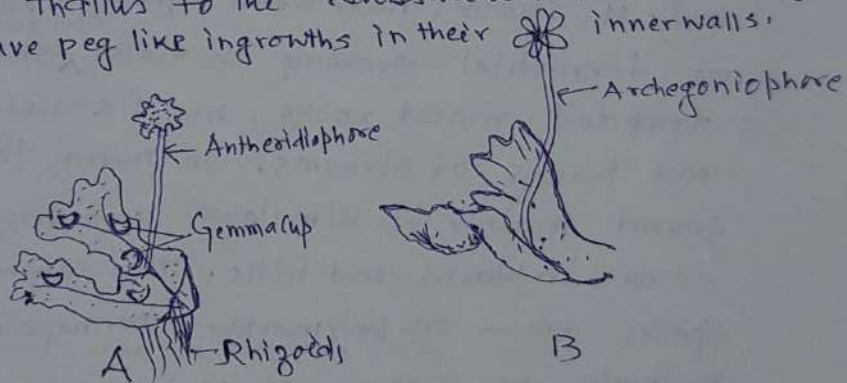


Fig. Marchantia.

a) Thallus with antheridiophore

b) Thallus with archegoniophore.

Scales are also of two types -

- i) Appendiculate - large, wedge shaped  $\Delta$   $\rightarrow$  PTD.
- ii) Ligulate  $\rightarrow$  simple, small, tongue shaped.