For B.Sc. Part I (Hons.) Students (Paper- 1group A (Algae))

Algae: Range of thallus structure conti....

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Lecture No.17

(B) Branched filaments

- It is formed by repeated transverse divisions of lateral outgrowth of cells.
- The branching of filaments may be true or false.
- The false branch does not arise as lateral outgrowths but it is formed by breakage of trichome due to death or decay at the point of heterocyst.
- The broken end emerges out of the mucilaginous sheath in the form of a branch e.g., *Scytonema* (Cyanophyceae).
- In *Scytonema* false branching arise almost always in pairs at some distance from heterocyst.

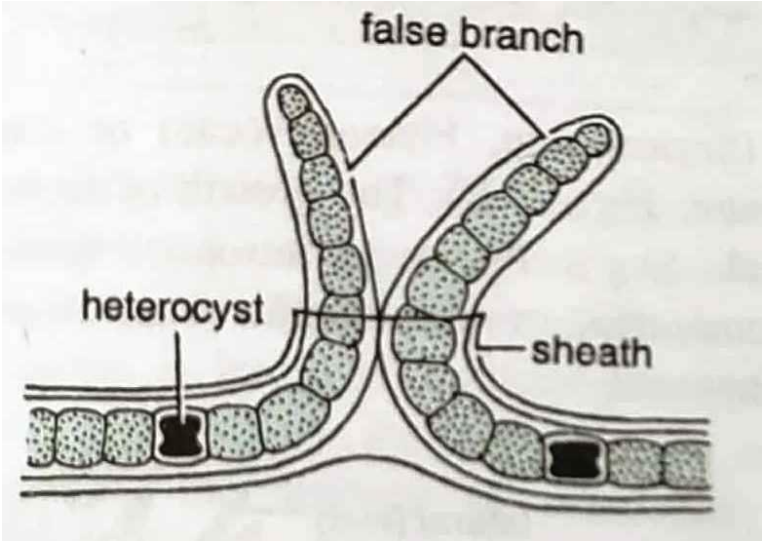

Figure: Branched filamentous algae; *Scytonema* (False branching)

❖ True branches which arise as lateral outgrowths , may results in the following three types of filaments.

i) Simple filaments

ii) Heterotrichous

iii) Pseudoparenchymatous

i) Simple filaments

- Simple branched filaments may be attached to the substratum by a basal cell .
- In such filaments branches may arise from any cells except basal cell.
- In *cladophora* branches arise just below the septa between two adjecent cells.

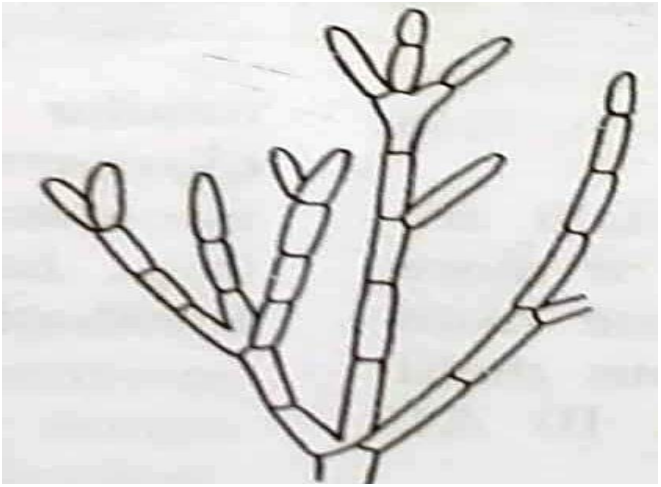

Figure: Branched filamentous algae ; *Cladophora* (Simple branching)

ii) Heterotrichous

In this type thallus is very much evolved and differentiated into prostrate and erect system.

e.g., *Fritschiella* , *Ectocarpus* , *Draparnaldiopsis* , *Coleochaete* , *Stigeoclonium*.

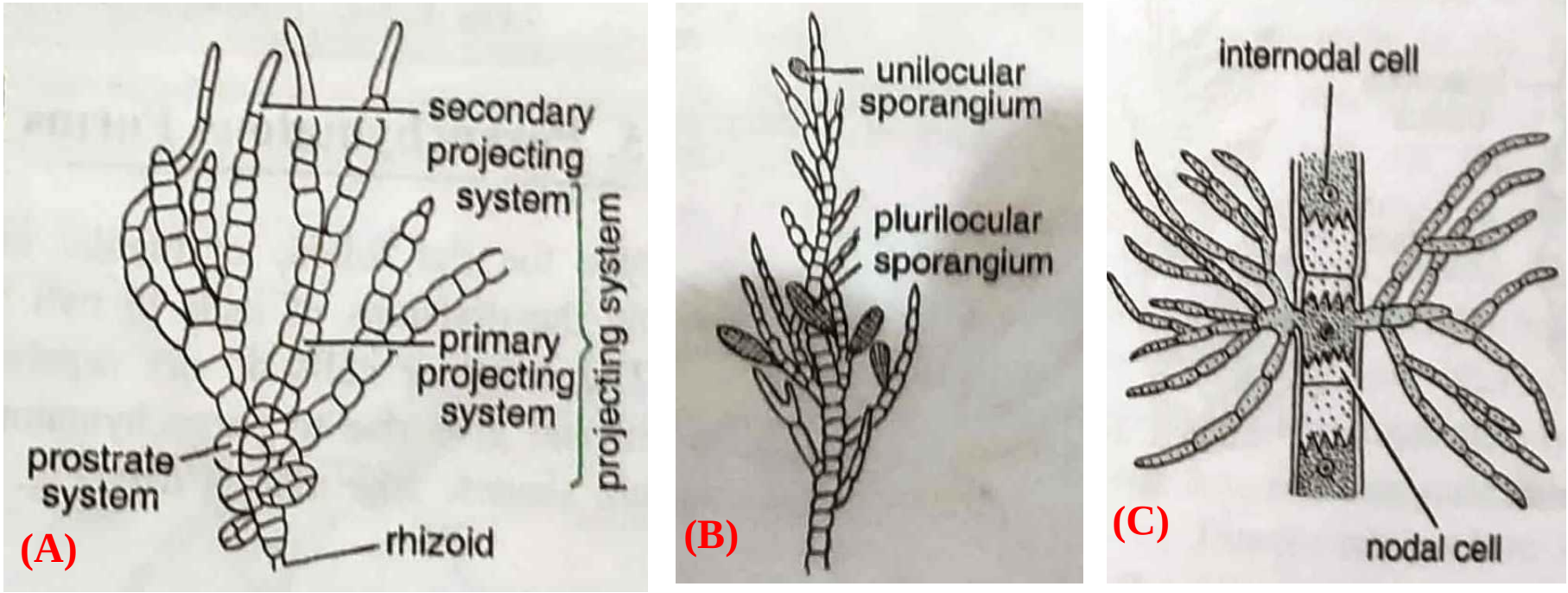

Figure: Heterotrichous branched filamentous algae; (A) *Fritschiella* (B) *Ectocarpus* (C) *Draparnaldiopsis*

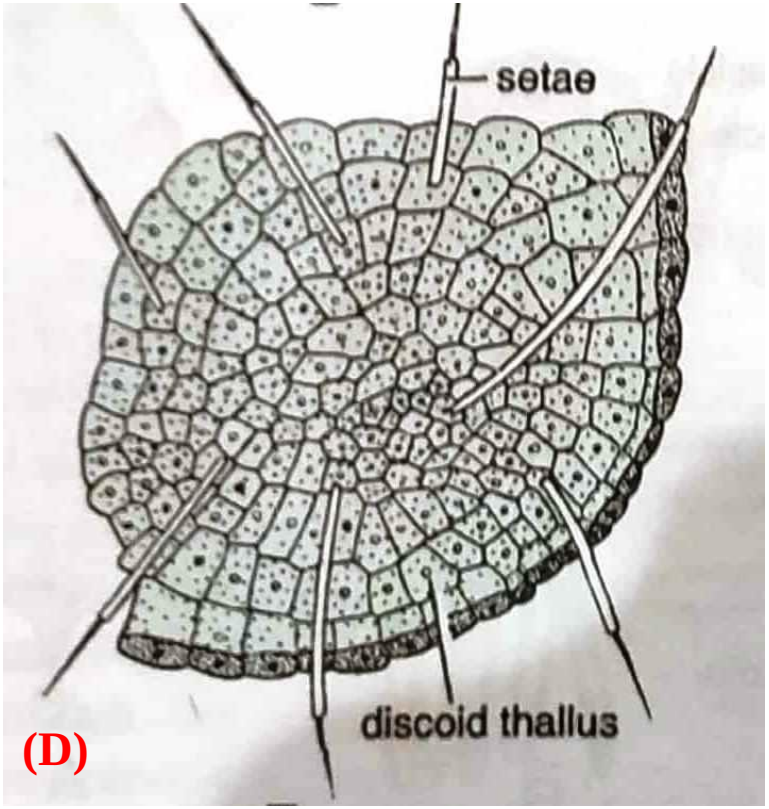

Figure : (D) *Coleochaete*

➢ Both prostrate and erect systems may be well developed (*Fritschiella* , *Ectocarpus)* or there is progressive elimination of prostrate system (*Draparnaldiopsis)* or erect system (*Coleochaete)*

iii) Pseudoparenchymatous

In many filamentous forms one or more central or axial filaments, together with their branches form a parenchymatous structure .

If a pseudoparenchymatous thallus is formed by the branches of only one filament, it is called uniaxial (e.g., *Batrachospermum).*

If branches of more than one filaments are involved, it is said to be multiaxial *(e.g., Polysiphonia).*

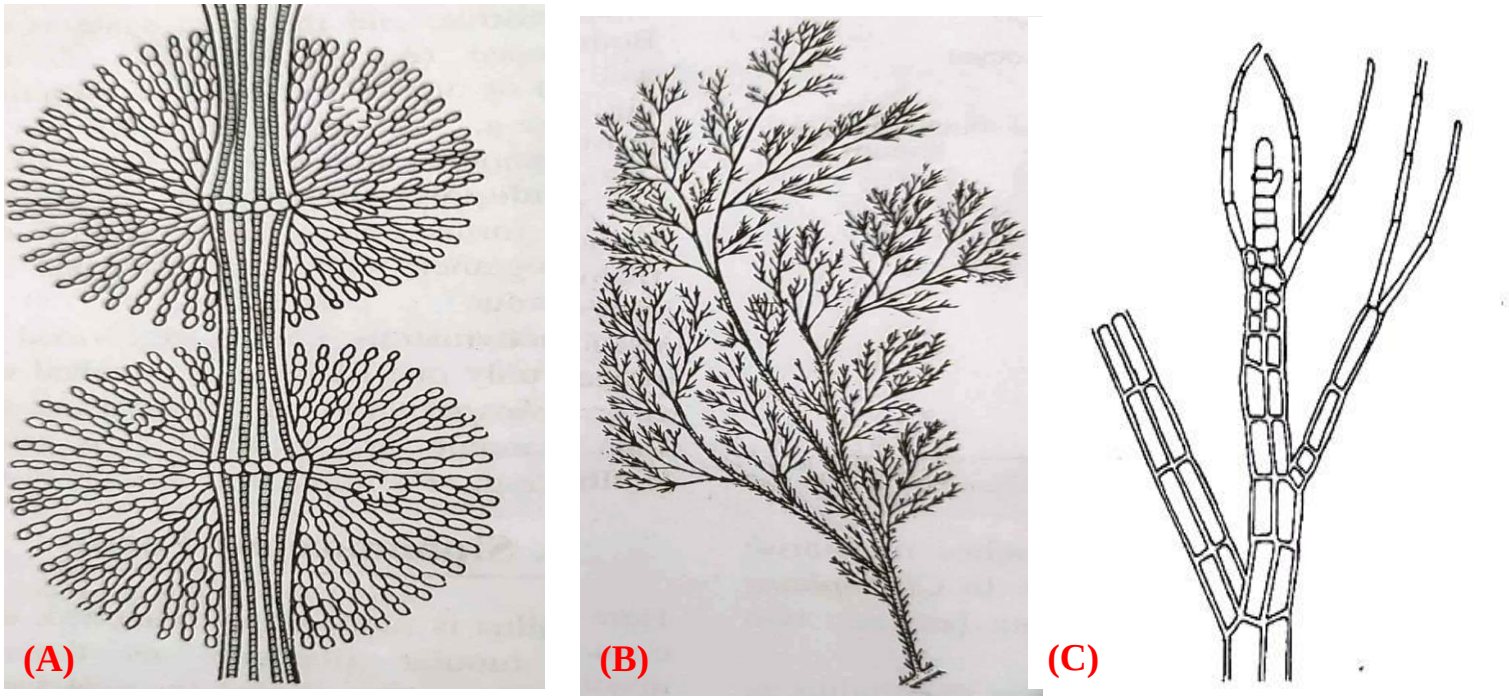

Figure: Pseudoparenchymatous algae ; (A) (*Batrachospermum*), (B-C) *Polysiphonia*

4. Siphonaceous forms

➢ In siphonaceous forms thallus is made up of branched, aseptate, coenocytic, tubular filaments as the nuclear divisions are not accompanied by wall formation.

e.g., *Vaucheria* , *Botrydium*

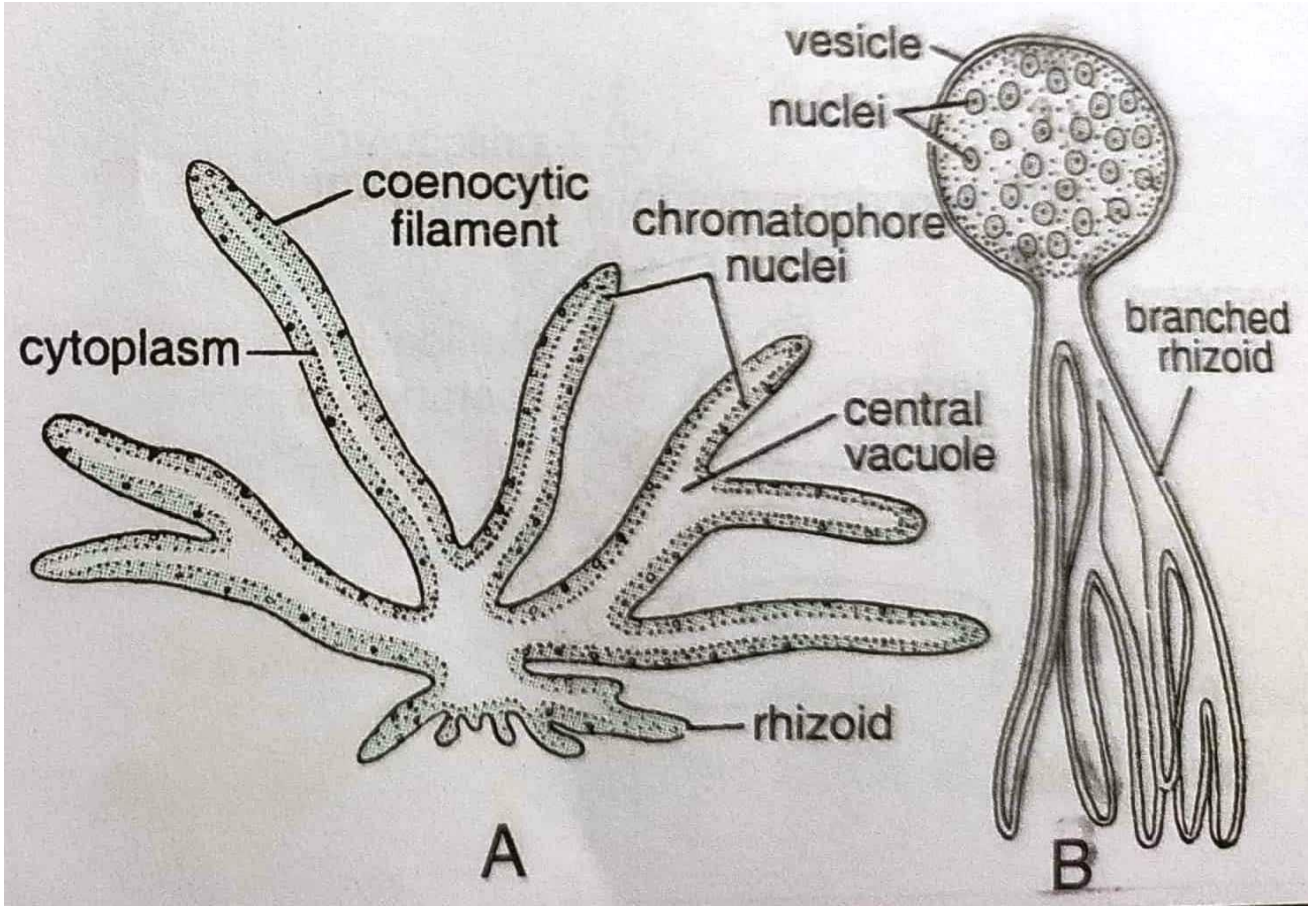

Figure : Siphonaceous algae ; (A) *Vaucheria* (B) *Botrydium*

5. Parenchymatous forms

- In parenchymatous forms the flat foliose or tubular thalli are formed by the divisions of cells in two or more planes.
- The daughter cells do not separate from the parent and give rise to parenchymatous thalli of various shapes , like flat (*Ulva)* tubular (*Scytosiphon* , Phaeophyceae) or complex (*Sargassum).*
- Growth of such thalli are apical *(e.g., Fucus, Dictyota),* Intercalary (e.g., Laminaria) or Trichothallic (e.g., *Porphyra* , Rhodophyceae)

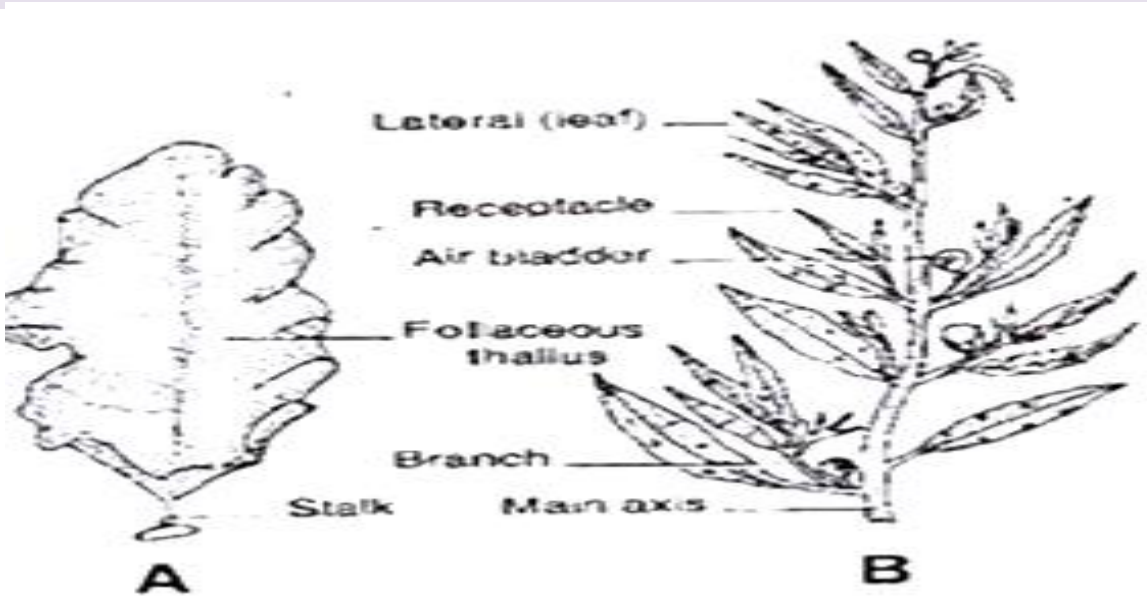

Figure . Parenchymatous algae : (A) *Ulva* (B) *Sargassum*

Note: Figures are taken from the A text book of Botany by Singh, Pandey, Jain (Fifth edition) and internet source.

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Thank You!!!