* Range of thallus organization.

⇒ The algae exhibit a great diversity in the organization of the plant body. The simplest forms are mobile or non-motile unicells (Chlamydomonas and Chlorella). In many species, the cells are grouped into aggregations called colonies. These assume various forms and may be a hollow sphere, a flat plate or a filament. The filamentous types are usually multicellular and the filament may be simple or branched or an aggregation of filaments or a highly organized thallus of a large size.

The most highly differentiated marine algae exhibit external differentiation and considerable size. Some of them possess a plant body consisting of parts that bear a superficial resemblance to the roots, leaves and stems of higher plants. The length of the main axis equals or surpasses the height of the tallest tree.

Algal thallus organization can be broadly classified into → Unicellular and multicellular thallus.

1) Unicellular algae:

(a) Motile unicellular: A single cell with flagella for locomotion. This group varies greatly in size and shape. They may be spherical, oblong, pear-shaped or elongated. Ex: Chlamydomonas.

(b) Non-motile: A single non-motile cell carrying out all essential functions of life. Flagella is absent. Ex: Chlorella, Synechococcus etc.

2) Multicellular algae:

I) Colony is formed by aggregation of individual cells. Colonial forms may be of -

(a) Motile colony: Motile flagellated cells aggregate together to form motile colonies. The colonies are either "plate-like" (eg: Gonium) or "spherical" (eg: Volvox). Often a coenobium.

(b) Non-motile colony: Individual cells in the colony lacks flagella. Ex: Pediastrum, Scenedesmus etc. Often a coenobium.

(c) Palmelloid or amorphous colony: Numerous non-motile cells remain irregularly aggregated within a common mucilaginous matrix, but they are independent and function as individuals. In contrast to coenobial

forms, the number of cells, shape and size is not definite in the palmelloid forms.
Ex: Tetraspora, Palmella etc.
Green

ⓓ Dendroid forms: The colony appears like a tree under the microscope. The number, shape and size of cells is indefinite and a mucilaginous thread is present at the base of each cell. Threads of different cells are united to form a branched structure. Ex: Ecballocystis, Dinobryon etc.
Green
Golden

II) Filamentous forms:

Cells are arranged one upon the other in a definite sequence by the formation of septa between the divided cells, and thereby forming filament. Filaments may be branched or unbranched.

ⓐ Unbranched filaments: Cells are arranged one above the other without any branching points. Ex: Spirogyra, Nostoc, Anabaena, Spirulina, ~~etc.~~ Ulothrix, Oedogonium etc.

ⓑ Branched filaments: Branched filaments may be of — simple, Heterotrichous, Pseudoparenchymatous and Pseudobranched.

i) Simple branched: A simple branched filament with single row of cells and a basal attaching

cell, holdfast or hapteron is common with many types. Ex: Cladophora, Ulothrix, Oedogonium, Bulbochaete etc.

ii) Heterotrichous forms: Presence of more than one type of filament. Plant body consists of a prostrate system from which an erect system develops. The erect system is composed of one or more and usually branched photosynthetic filaments. Ex: ~~Drapalna~~ Drapanaldia, Ectocarpus, Fritschiella etc.

Green Green Brown

iii) Pseudoparenchymatous forms: As indicated by the term pseudo = false, the plant body gives the appearance of parenchymatous construction. Pseudoparenchymatous forms are of two types — uniaxial and multiaxial construction. In uniaxial forms, the plant body consist of one main axis and all others are side branches. Ex: Batrachospermum etc. In multiaxial forms, main axis is made up of association of many pseudoparenchymatous threads, appearing as more than one axis. Ex: Chondrus, Polysiphonia.

Red

iv) Pseudobranched: A peculiar form of branching known as false-branching is observed in cyanophyceae. Ex: Scytonema.

III> Siphonaceous forms:

In a number of algae, belonging to Siphonales, the growth of the plant body takes place without the usual cross-wall formation i.e., no septation. Thus, a 'tube-like' multinucleate structure, or a coenocyte is produced. Ex: Vaucheria, Botrydium.

IV> Parenchymatous forms:

It is also a modification of the filamentous habit, with cell division in more than one plane. Depending upon the nature of cell division, the parenchymatous thalli may be 'leaf-like' or 'foliose' and 'flat', 'tubular' or highly developed structure. Ex: Chara, Laminaris, Fucus, Macrocystis, Porphyra etc.