BSc PRACTICAL E-MANUAL OF BOTANY (CBCS)

Semester I

(As per Gauhati University Syllabus)

STUDY OF PHYCOLOGY

Edited by,

DEPARTMENT OF BOTANY

B.N. COLLEGE, DHUBRI

Aim of the experiment: To study vegetative and reproductive structures of the supplied specimen.

(i) Supplied Secimen: Ectocarpus sp.

Procedure :- On a clean slide a little amount of the supplied specimen is taken along with a drop of water. Then it is supplied with safranine and washed with water. Now removing the excess of water by a piece of bloting paper finally mounted on glycerine and observed under microscope and revealed the following structure.

Vegetative Structure :-

(i) The thallus is differentiated in to prostrate and erect system.
(ii) The Prostrate System is Profusely branched and remains attached to the Substratum.
(iii) Erect portion is made up of tuff of branched filament.
(iv) Cells are joined end to ends in single series and narrowed towards the apices.
(v) Protoplast of each cell is uninucleate, chloroplast and disc shaped.

Reproductive Structure :-

(i) Reproduction takes place by the formation of zoospores.
(ii) Two types of Sporangia are developed by two different thallus.
(iii) Unilocular Sporangia appears late rally containing many spore mother cells.

Identification :-

(ii) The plant lacks seeds and flowers …….. Cryptogams.
(iii) The plant is not differentiated in to root, stem and leaf ……. Thallophyta.
(iv) The plant possesses chlorophyll the green pigment …… Algae.
(v) The thallus is brown in colour, interlacking adjoining fillamentous diffinite single nucleus present thallus multicellular with hold fast …….. Phaeophyta.
(vi) Plants with two distinct, similar generation …….. Isogenerate.
(vii) The thallus is brown, interlacking adjoining filaments growth is intercalary and apical. The asexual reproductive units are zoospores, zoospore formation by haploid plants …… Ectocarpous.

(viii) Thallus is simple, hetero trichous , filament consisting of uniseriates branched threads , cells are uninucleate , saprophytic plant bears unilocular and plurilocular sporangia …… Ectocarpaceae.

(ix) The thallus is brown, marine, completes its life cycle alterhaling generations with a free living multilocular gametophytic generation …… Ectocarpus sp.

Conclusion :- From the above characters the supplied specimen is identified as Ectocarpus species

Systematic position

Sub division :- Algae
Class :- Phacophyceae
Order :- Ectocarpales
Family :- Ectocarpaceae
Genus :- Ectocarpus

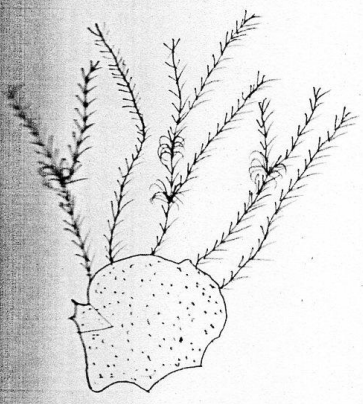

Fig:- Habit of Ectocarpus

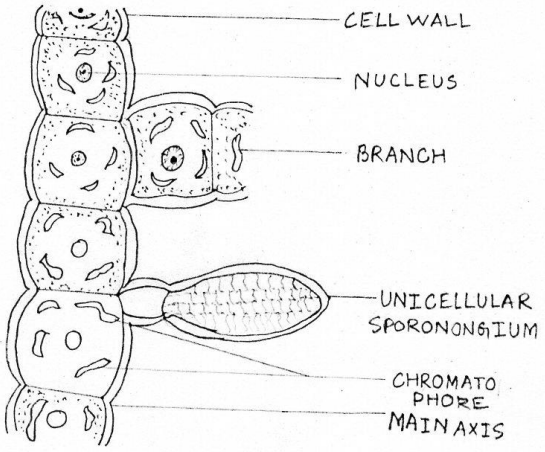

Fig:- A branch with unicellular sporangium

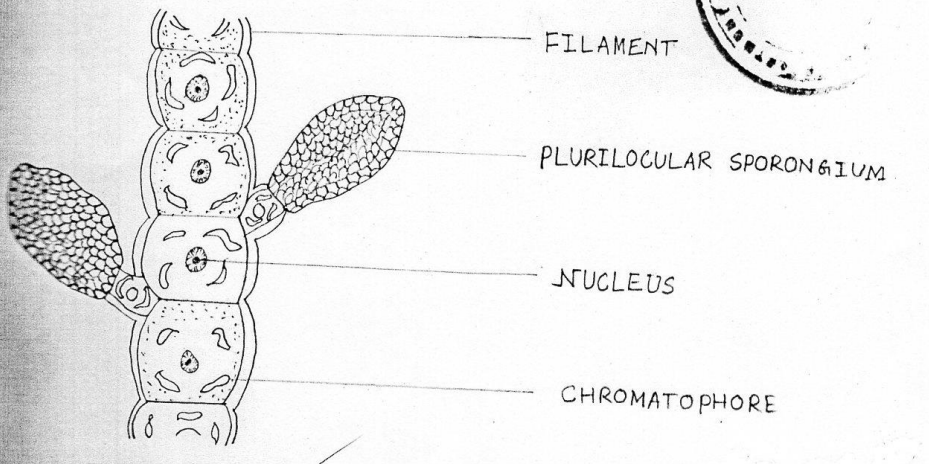

Fig:- Filament with plurilocular sporangium

Aim of the experiment: To study vegetative and reproductive structures of the supplied specimen.

Supplied Specimen : Polysiphonia sp.

Procedure :- On a clean slide a little amount of the supplied specimen is taken along with a drop of water. Then it is stained with safranine and washed with water. Now removing the excess of water by a piece of bloting paper finally mounted on glycerine and observed under microscope and revealed the following structure.

Vegetative Structure :-

(i) The plant body is small and frequently branched.

(ii) The plant body is composed of siphon like ralos of united cells.

(iii) The vegetative body is erect, filamentous and with fasiculated branching. The Terminal cells of the branching are called the trichoblast. Trichoblast cells are uninucleate and colourless.

Reproductive Structure :-

(i) The plant body is heterothallic or may be homothallic.

(ii) The male sex organs the spermatangia develops in a dense cluster upon the fertile trichoblast of male thallus.

(iii) The female sex organs, the carpogenium is produced upon a greatly reduced fertile trichoblast of a female gametophyte.

(iv) Asexual reproduction is effected by tetrasporic plant.

Identification :-

(i) The plant lacks seeds and flowers …… Cryptogams.

(ii) The plant is not differentiated into root, stem, leaf …… Thallophyte.

(iii) The plant possesses green pigment, chlorophyll …… Algae.

(iv) The thallus is multicellular branched possesses red pigment, sexual reproduction is oogamous type ……. Rhodophyta.

(v) Sexual reproduction is oogamous type …….. Rhodophyceae.

(vi) Thallus is filamentous, growth is apical, pit connection present, motile cells absent ……. Florideae.

(vii) Growth is apical, axial filament corticated and thus polysiphonous diplobiontic life cycle ……. Ceromiales.

(viii) Polysip St. of the thallus the carpogonial branch is four celled, cells are binucleate, cystocarp, becomes enclosed is a pirominent pericarp with a definite aperture ……. Rhodomelaceae.

(ix) Polysiphonous nature of the thallus, pericentral siphones surrounding and acial siphon is present, trichoblast bears sex organs …… polysiphonia.

Conclusion :- from the above characters the supplied specimen is Identified as Polysiphonia species.

Systematic position

Sub division :- Algae
Class :- Rhodophyceae
Order :- Ceramiales
Family :- Rhodomelaceae
Genus :- Polysiphonia

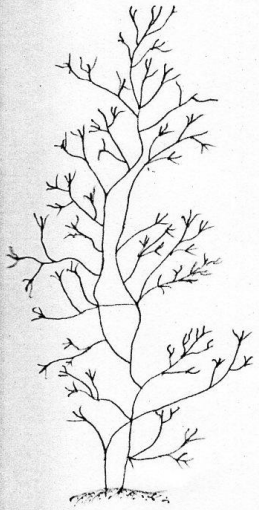

Fig:- Thallus to show habit

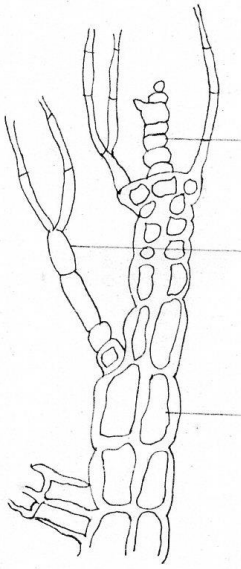

Fig :- A part of thallus with branches

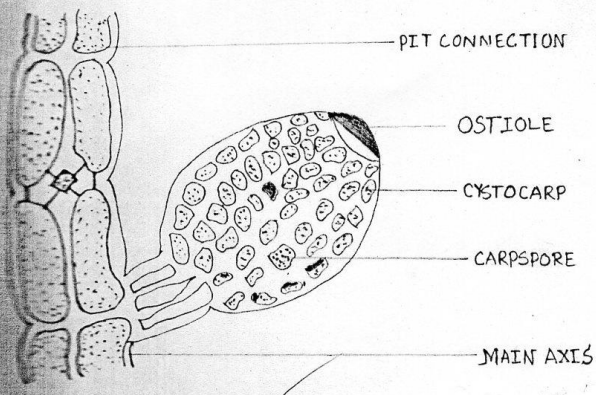

Fig:- A part of thallus with cystocarp

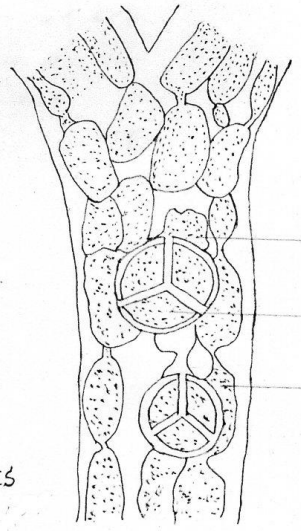

Fig:- A part of thallus with tetraspore

Aim of the experiment: To study vegetative and reproductive structures of the supplied specimen.

Supplied Secimen : Volvox sp.

Procedure :- On a clean slide a little amount of the supplied specimen is taken along with a drop of water. Then it is stained with safranine and washed with water. Now removing the excess of water by a piece of bloting paper finally mounted on glycerine and observed under microscope and revealed the following structure.

Vegetative Structure :-

(i) The Vegetative body in a colonied form.

(ii) The coehobium is a small spherical, hollow mucilaginous mass.

(iii) Numerous small pear shaped motile cells having two flagella occur in a single layer towards periphery.

(iv) The motile cells are inter connected with each other by cytoplasmic strands with the gelatinous matrix.

Reproductive Structure :-

(i) In the mature colony there occurs some spherical structure with dense eytoplasm , known as daughter colony.

(ii) Daughter colonies may be formed either sexually or by the union of male and female gameted or sexually by gonidia.

Identification :-

(i) The plants lack seeds flowers ……. Cryptogam.

(ii) The plant is not differentiated in to root, stem, leaf……. Thallophyta.

(iii) The thallus is green is colour due to chlorophyll pigment ……. Algae.

(iv) Difinite nucleus chloroplast and central vacudes are present with in……. Chlorophyta.

(v) The plant is grass green in colour …….. Chlorophyceae.

(vi) The plant is a motile colony consists of individual unicells fernished with two flagella ……. Volvocales.

(vii) The individual motile cells are aggregated by a common gelatinous envelop to form a colony . The colony is flat , spherical motile cells are arranged in specific manner …… Volvocaceae.

(viii) The colony is not an individual but an association of some motile cells. The motile cells have their own gelatinoces envelop and reproduction takes place both sexually & asexually method …… Volvox.

Conclusion :- From the above character the supplied speciment is identified as Volvox species .