RAJA N L KHAN WOMEN'S COLLEGE
(AUTONOMOUS)
PASCHIM MIDNAPORE
DEPT-BOTANY
PREPARED BY DR. RUMA HAJRA
2^{ND} SEMESTER 1^{ST} YEAR PAPER- C_4T

1. **Riccia:**

Vegetative Structure:
Plant body is thallose, dorsiventrally differentiated, prostate with dichotomous branching. Each dichotomy is linear to wedge-shaped and the median portion is thickened. There is a conspicuous longitudinal furrow on the dorsal side.

The ventral surface bears a corresponding ridge and a transverse row of scales, one cell in thickness, which are more crowded near the apex and overlap the growing point. Lower down, the scales are in two marginal rows, violet in colour. In addition, there are two types of rhizoids – smooth walled and tuberculate, being on the ventral ridge of the thallus.

In T.S. through the thallus, the following layers can be seen:
(a) Dorsal side bears a tissue in which there are a few vertical rows of chlorophyllose cells separated by narrow vertical air canals, so that the top of the thallus is porose. This is chlorophyllose or assimilatory tissue.

(b) Ventral region of the thallus is formed by a compact colourless parenchymatous tissue which serves as the storage region and often contains starch. One cell thick scales and unicellular rhizoids (smooth walled and tuberculate) are developed from the outermost layer of the ventral surface. Upper epidermis is one layered with colourless cells. Air pores are bounded by four epidermal cells as seen in tangential section. Lower epidermis is a continuous layer.

Reproductive Structure:
Plants are mostly monoecious but rarely dioceious. Sex organs develop singly and acropetally in a linear row on the dorsal median furrow. The mature antheridium is stalked, pear-shaped and its single layered jacket (wall) encloses a number of sperm or androcyte mother cells.

Mature archegonium is flask-shaped with a short stalk, a swollen basal venter containing the large egg together with a ventral canal cell and an elongated neck containing a row of four neck canal cells. Sex organs are embedded within the thallus and included in air chambers (antheridial and archegonial chambers).

Sporogonium is somewhat round, sac-like and embedded within the thallus. It contains a single layered jacket (gametophytic cells) enclosing many spores which are often in tetrads. Mature spores show 3 layers exosporium (outermost), mesosporium (middle) and endosporium (innermost). Spores often remain in tetrads (Fig 5.1).

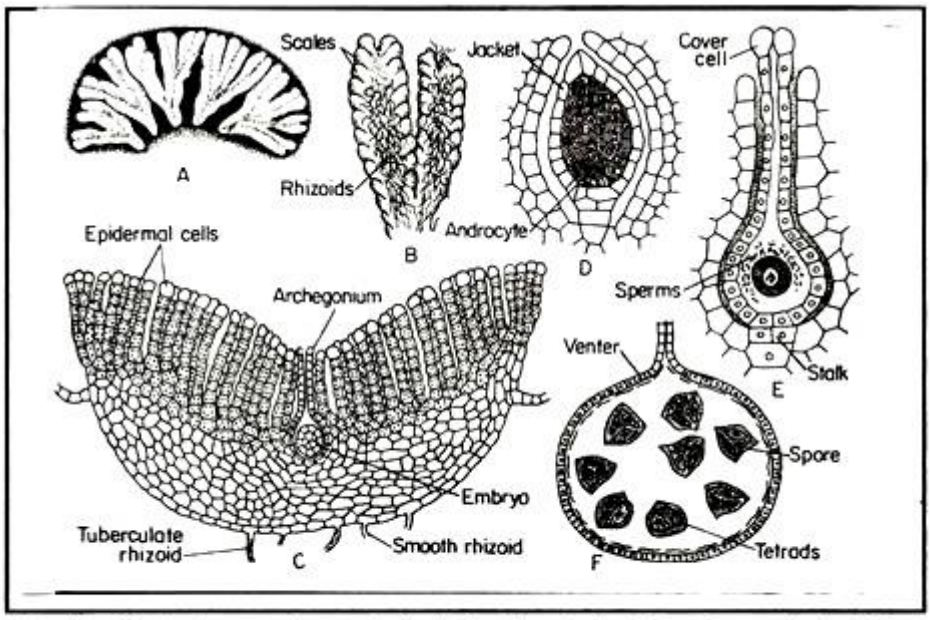

Fig 5.1. Riccia Sp.: A – Gametophytic thallus (dorsal view), B – Gametophytic thallus (ventral view), C – Vertical transverse section through gametophyte, D – Mature antheridium, E – Mature archegonium, F – Mature sporophyte.

Identification:

Thallus dorsiventrally flattened and prostrate; sporophytes simple and always of limited growth, columella absent inside capsule.

CLASS: HEPATICOPSIDA

Plant body prostrate, ribbon-shaped, dichotomously branched, dorsiventrally flattened; dorsal tissue layers green and with air canals or chambers; thallus with scales and rhizoids on ventral surface, sex organs on dorsal surface (embedded), sporophyte devoid of columella or elaterophore.

ORDER: MARCHANTIALES

Sporophyte having only sac-like capsule and embedded within the gametophytic thallus; thallus dichotomously branched with sex organs along the entire length of the median furrow.

FAMILY: RICCIACEAE

Thallus linear to wedge-shaped internally composed of vertical rows of cells on the dorsal side, air canal present in between two vertical rows of cells; sporophyte sac-like and having one-layered jacket surrounding spores and nurse cells.

GENUS: RICCIA

2. Marchantia:

Vegetative Structure:

Plant body is thallose, dichotomously branched, dorsiventrally differentiated and prostrate. Dorsal surface of the thallus shows regular rhomboidal or polygonal areas with elevated pores at the centre of these areas.

There is a prominent midrib on the dorsal surface of the branches and corresponding ridge on the ventral surface. Ventral surface bears 3-4 rows of scales on each side of the ridge. In addition, there are two types of rhizoids in between the scales – smooth-walled and tuberculate.

In T.S. through thallus, the following layers of tissues can be noticed:

(a) The uppermost dorsal layer of cells i.e. upper epidermis is formed by quadrate cells.

(b) There are sub-epidermal air chambers with elevated air pores – at the centre of each chamber.

(c) There is presence of branched and un-branched photosynthetic filaments in air chambers (chlorophyllose or assimilatory tissue).

(d) Ventral part of the thallus possesses compact, colourless, parenchymatous cells (storage tissue).

(e) On the ventral surface scales and rhizoids is present arising from lower epidermis. In tangential section, air pores are seen as barrel-shaped structures formed by 4 – 8 superimposed tiers of concentric rings, each ring being composed of 4 – 5 cells. Four inward projections arising from the lowermost tier give it a star-shaped appearance (cruciate air pores).

Reproductive Structure:
Gemma cups are present on the dorsal surface of thallus along the midrib. Gemma cup possesses a large number of stalked gemmae. Gemmae are multi cellular stalked discoid bodies with constriction in the middle.

Plants are dioecious. The sex organs are borne on special branches (receptacles) called antheridiophore and archegoniophore. The antheridiophore shows a prismatic stalk bearing at its apex a disc which is usually 8-lobed; each lobe bears antheridia along a dorsal median row. Each antheridium is short-stalked and developed within the thallus in an antheridial chamber.

Mature antheridia show a single-layered jacket enclosing sperm mother cells. The archegoniophore or the carpocephalum also has a stalk and a disc. This disc bears 9 rays. Each ray has a row of archegonia hanging downward. A mature archegonium shows a swollen venter with an egg together with a ventral canal cell and neck canal cells in the neck region (Fig 5.2 & 5.3).

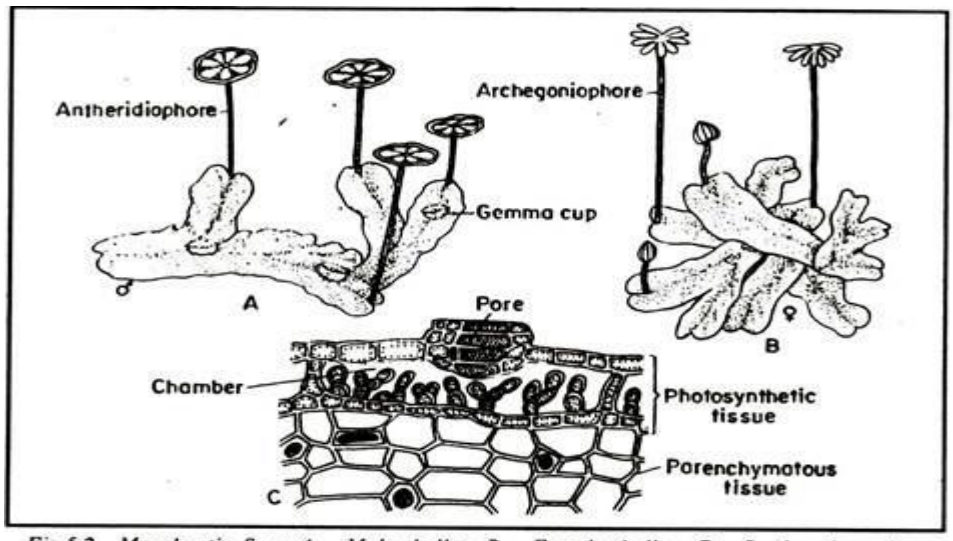

Fig 5.2. Marchantia Sp. : A – Male thallus, B – Female thallus, C – Section through gametophytic thallus.

Sporogonium:

Sporophyte is differentiated into foot, seta and capsule and protected by calyptra, perichaetium and perigynium. Mature capsule is elliptical and has a single-layered jacket and contains spores and elaters. Spores are very small and somewhat rounded. (Fig 5.3).

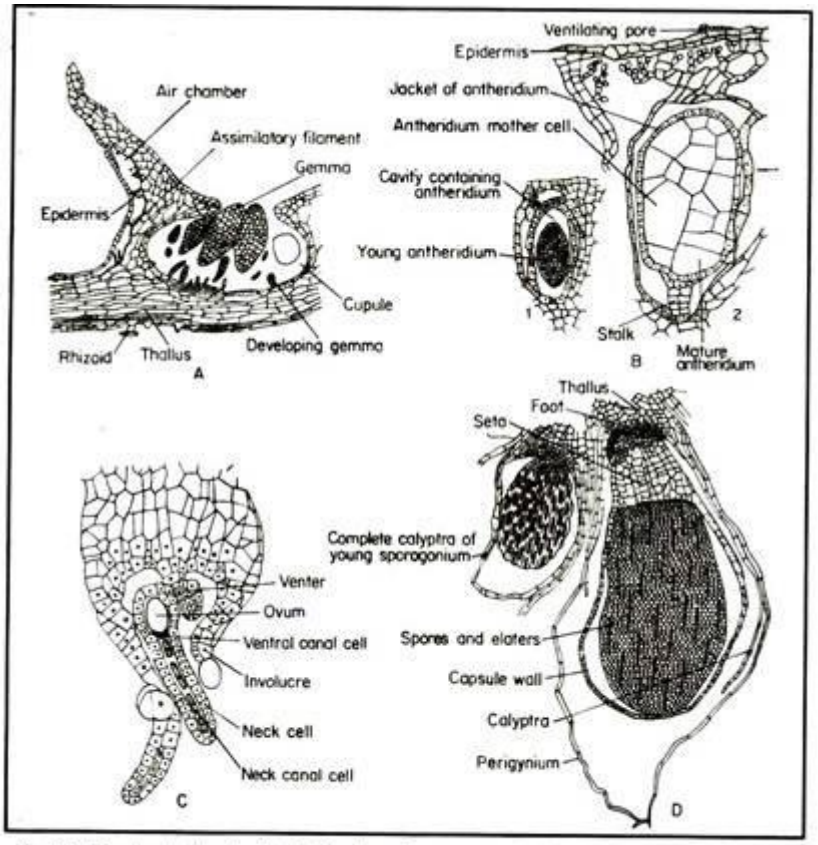

Fig 5.3. Marchantia Sp. : A – Vertical section of a gemma cup, B – V. S. through antheridiophore showing antheridium, C – V. S. through archegoniophore showing archegonium, D – L. S. of mature sporophyte.

Identification:
Thallus dorsiventrally flattened and prostrate, sporophyte simple and with limited growth columella absent inside the capsule.

CLASS: HEPATICOPSIDA

Plant body prostrate, ribbon-shaped, dichotomously branched, presence of dorsal chamber, sex organs on dorsal surface, sporophyte devoid of columella or elaterophore.

ORDER: MARCHANTIALES

Antheridia and archegonia localised on special branches- antheridiophore and archegoniaphore. Sporophyte differentiated into foot, seta and capsule, elaters present.

FAMILY: MARCHANTIACEAE

Air chambers present in a row, pores elevated, photosynthetic filaments present, presence of antheridiophore and archegoniophore, sporophyte with foot, seta and capsule. Capsule bears spores and elaters.

GENUS: MARCHANTIA

3. Pellia

Pellia, thallose member of the leafy liverworts, grows on moist soil, rocks and among mosses and grasses forming green or dark-green patches. It may also grow in running water.

There are 3 species of Pellia reported to be found in India:

i. P. epiphylla,
ii. P. fabbroniana and
iii. P. neesiana.

The Gametophyte of Pellia:

The gametophyte is a simple, green, dorsiventral and dichotomously or pinnately branched structure. The thallus is externally differentiated into a midrib and lateral wings, the latter constituting the chief photosynthetic organs of the plant. The margins of the wings are undulated. On the ventral surface are present several smooth-walled rhizoids and a few mucilaginous hairs.

The internal structure of the gametophyte is very simple. It is mainly made up of parenchyma cells. The midrib portion is several cells in thickness, while the margins gradually become one cell in thickness. The cells of the wing and the superficial cells of the midrib contain chloroplasts, and practically all the cells contain starch grains.

Reproduction in Pellia:

Pellia reproduces both by vegetative and sexual methods.

Vegetative reproduction takes place by three different ways:

(a) By the progressive growth of the thallus and subsequent death and decay of the older regions,
(b) By multicellular gemmae formed from the superficial cells of the thallus, and
(c) By the formation of underground tubers.

The plant is either monoecious or dioecious. The sex organs are borne dorsally on the midrib in two or more distinct rows. In homothallic species, antheridia are borne behind the archegonial clusters.

The antheridia develop from the superficial dorsal cells close to the apical cell. A mature antheridium is globose a sub-globose with a short stalk and a jacket, one cell in thickness. The antheridia are slightly embedded in the tissue of the gametophytes. At maturity they burst suddenly, thereby liberating the relatively large biflagellate antherozoids.

The archegonia also develop from the superficial cells on the dorsal side. The archegonium initials, which give rise to the archegonia, lie very close to the apical cell, but unlike Porella, the apical cell itself never develops into an archegonium. The archegonia grow in clusters in pit-like depressions and are surrounded by an involucre. A mature archegonium has a venture and a neck. The neck is not very sharply delimited from the venter. The wall of the venter and that of the basal part of the neck become two-celled thick before fertilization. The wall of the neck is composed of five vertical tiers of cells. The neck contains 4-6 neck canal cells and the venter contains a solitary ventral canal cell and an egg.

Fertilization takes place in presence of water. The antherozoids swim into the venter through the passage formed by the disintegration of the neck canal and ventral canal cells. But, only one antherozoid enters into the archegonium and fertilizes the egg. The fertilized egg surrounds itself by a wall and forms the oospore. With fertilization and formation of oospore, the sporophytic or diploid generation begins.

The Sporophyte of Pellia:

The oospore enlarges filling the cavity of the venter. The venter by subsequent development forms the calyptra. Within each involucre, a single sporogonium (sporophyte) is developed and the remaining archegonia become abortive.

The oospore, by a transverse wall, forms a hypobasal cell and an epibasal cell. The hypobasal cell undergoes no further division but forms an haustorium. The sporogonium is wholly developed from the epibasal cell. The epibasal cell undergoes transverse divisions and from its four upper cells develop the capsule, while from the lower four develop the seta and the foot.

Within the capsule, by divisions, two regions are set apart, an outer wall of two layers of cells and an inner multi-layered mass. From the latter (endothecium) develops the sporogenous tissue and the sterile elaters. The elaters are long slender with double spiral thickenings on their walls. Some of the sterile cells become compact at the base of the capsule and form the elaterophore. The spore mother cells by meiotic division from the spore tetrads.

With reduction division and formation of spores the gametophytic or haploid generation begins.

The mature capsule is globose. It has an outer jacket consisting of two or more layers of cells. The outer layer has cells with rod-like thickenings on their radial walls. The sporogonium of Pellia requires about a year, after fertilization, for its complete development. The jacket of the mature capsule has four vertical rows of thin-walled cells which indicate the lines of dehiscence.

The New Gametophyte of Pellia:

In Pellia, the spores germinate while they still remain inside the capsule. Each spore forms a small, few-celled, ellipsoidal structure containing chloroplasts. These are set free in the cavity of the capsule by the disintegration of the spore wall.

Finally, they are liberated by the dehiscence of the capsule. The elaters and the elaterophore aid in the dehiscence of the capsule and also for the discharge of the spores. The spores, on falling upon a suitable substratum, germinate giving rise to new gametophytes.

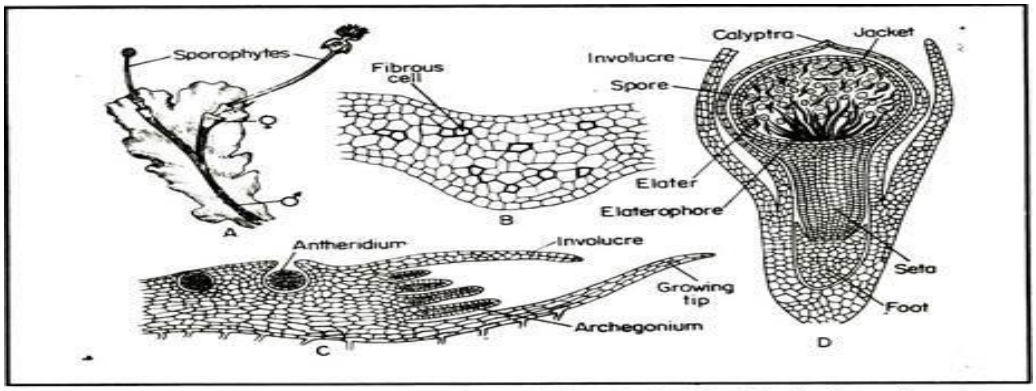

Fig 5.11. Pellia Sp. : A – Gametophytic thallus (Dorsal view), B – Section through gametophytic thallus, C – Section through the apical growing region of gametophyte showing sex organs ; D – Section through mature sporophyte.

4. **Funaria:**

Vegetative Structure:

The plant body is erect, branched with spirally arranged leaves. The leaves are more crowded near the apex where they appear like a rosette though actually arranged in three rows. Leaves are sessile, attached to the stem by a broad base, ovate-elongate, pointed at the apex and with a smooth margin. The plant bears rhizoids at the base.

Rhizoids are multicellular with oblique cross walls. A T.S. of the stem shows a small central strand of long, narrow, colourless, thin-walled cells devoid of protoplasm.

This is encircled externally by a cortex of chloroplast containing parenchymatous cells. The cortex also bears the leaf traces. The outermost layer is epidermis. The cross-section through leaf shows a well-defined midrib and one-layered lamina. Cells are elongated and thin-walled.

Reproductive Structure:

Plants are monoecious, the main sheet of the plant bears the antheridia. The female branch develops as a side-shoot. These shoots are terminated by clusters of antheridia or archegonia

surrounded by perichaetium. The paraphyses with swollen tips are intermingled with sex organs. Most of the species are dioecious. In male plant, the top leaves are specialised; coloured red or orange and form something like an involucre which is called perichaetium. Within the perichaetium, there is a cluster of antheridia and filamentous paraphyses.

The mature antheridium is a club-shaped structure with a short stalk and one-layered jacket. In female plant archegonial cluster develops at the tip. This cluster is surrounded by perichaetial leaves. There are mostly 3 archegonia in a cluster and some paraphyses. Each archegonium has stalk, venter, long neck, egg, ventral canal cell and neck canal cells.

Sporogonium:
It has a foot, a long seta and a capsule. The mature capsule is pear-shaped, almost horizontal and asymmetrical. The lowermost part is apophysis which connects the seta below. In T.S. it shows a thick wall, spore sac suspended in an air cavity and attached to the wall by trabeculae, columella, diaphragm and annulus with peristome teeth. The jacket wall bears stomata in the apophysis region. The peristome teeth are 32 in number and arranged in two rows of 16 each.

The outer teeth are thick-walled, larger and brownish in colour and with transverse lars at the tip. The peristome teeth are arthrodontous, diplolepideous and epicranoid i.e. the outermost cells of the capsule apex form a dome-shaped operculum which keeps the teeth covered. The spores are small, round and smooth walled. Calyptra is small, hood-like and deciduous. (Fig. 5.19).

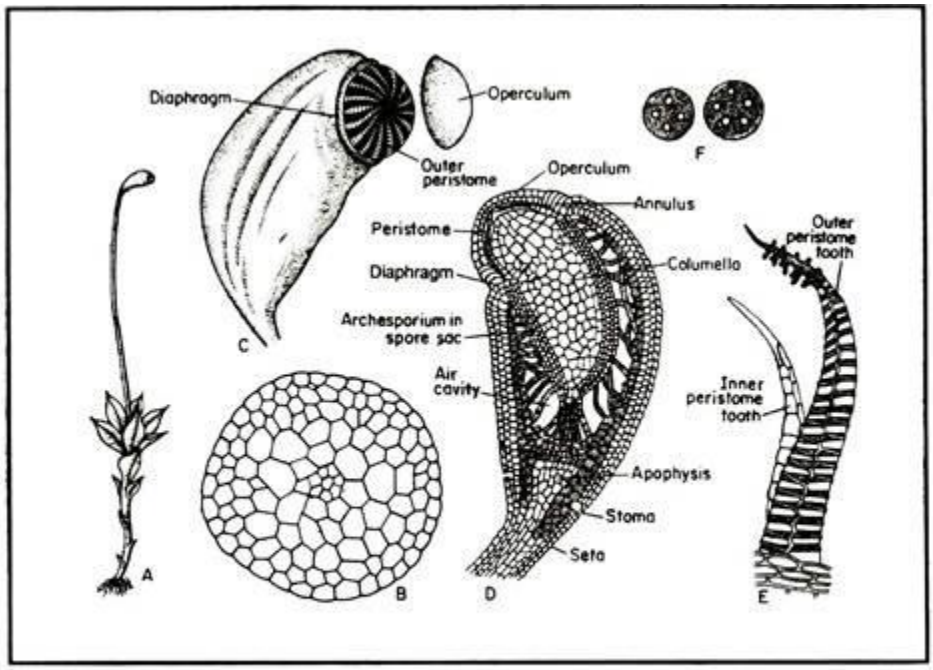

Fig 5.19. Funaria Sp. : A – Gametophytic plant with capsule, B – Section through stem axis, C – Capsule, D – Section through capsule, E – Peristome teeth, F – Spores.

Identification:
Presence of leafy gametophyte with multicellular rhizoids having oblique cross-wall, capsule with many layer jackets.

CLASS: BRYOPSIDA

Seta well-developed, pseudopodium absent, peristome and operculum present.

SUB CLASS: BRYIDAE

Peristome teeth thin, membranous and articulate.

SECTION: ARTHRODONTEAE

Plants radially symmetrical, sporophyte well-differentiated, acrocarpous, diplolepideous, epicranoid.

ORDER: FUNARIALES

Peristome teeth 32 in number, arranged in two rows – outer (exostome) consists of 16 and inner (endostome) consists of 16 teeth; inner teeth thin and outer thick and vertically striate.

FAMILY: FUNARIACEAE

Peristome teeth in two rows – 16 in each row, outer teeth thick with transverse bars, capsule asymmetrical, nodding, spore small, rounded, calyptra deciduous and hood-like.

GENUS: FUNARIA

5. Sphagnum:

Vegetative Structure:

Plant body is erect, leafy, and bears rhizoids at the base (when young). The stem has whorls of lateral branches at intervals. Leaves are small, thin without midrib and spirally arranged on the axis. The main stem has fewer leaves. The leaves are sessile ovate-elongate, with smooth margin and acute apex.

In T.S. through the stem, the following layers can be noticed:

(a) An en-sheathing cortex of large hyaline cells. Cortex is multilayered on the main stem and one-layered on branch stems.

(b) Internal to the cortex is the central cylinder formed by smaller, vertically elongated cells.

(c) In addition, there are a few species where in the cortical layer there may be the presence of retort cells.

Leaves show: –
(a) Hyaline cells and

(b) Chlorophyllose cells.

Hyaline cells are large, rhomboidal with spiral thickening bands and simple pores. The chlorophyllose cells are smaller, long, narrow and remain lining the hyaline cells. They have chloroplasts.

Reproductive Structure:
Plant body may be monoecious or dioecious. Antheridia and archegonia are borne on special separate antheridial and archegonial branches. Antheridial branches are lateral but archegonial branches may be lateral or apical in position.

Antheridial branch has a long axis with spirally arranged leaves and antheridia lying in between them. Antheridia are globose and long-stalked with a single-layered jacket. Archegonial branch has a few large perichaetial leaves enclosing three archegonia. A mature archegonium shows a stalk, a twisted neck 8-9 neck canal cells, a ventral canal cell and an egg.

Sporogonium:
The mature sporophyte shows a spherical capsule and a bulbous foot connected by a very short neck. The whole sporophyte is covered by calyptra and perichaetial leaves. Capsule shows a jacket of 4 to 6 layers and the spore sac full of spores overarches the dome-shaped columella. The upper part of jacket forms an operculum with an annulus. The capsule is raised above by a long seta-like gametophytic structure called pseudopodium (Fig 5.16).

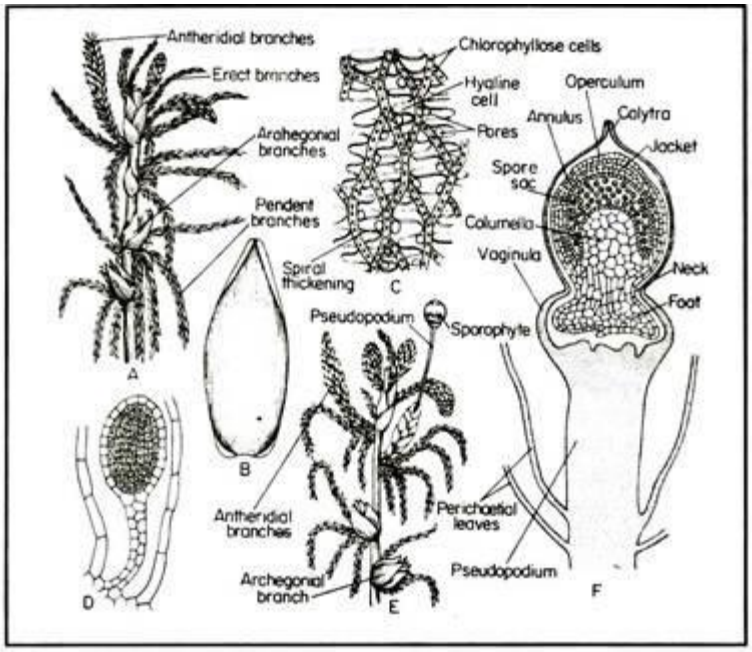

Fig 5.16 . Sphagnum Sp. : A – Gametophytic thallus, B – Leaf (magnified), C – Cells of the leaf, D – Mature antheridium, E – Gometophytic thallus with sex organs, F – Section through sporophyte showing capsule.

Identification:
Presence of leafy gametophyte with multicellular rhizoids having oblique cross-walls. Capsule has many layered jacket, spore sac devoid of elaters, columella, annulus and operculum present.

CLASS: BRYOPSIDA

Leaves without midrib and composed of two markedly different types of cells, chlorophyllose cells and hyaline cells, antheridia borne axially but archegonia borne in terminal position, Capsule opens by an operculum but lacks peristome.

SUB CLASS: SPHAGNIDAE

Single order.

ORDER: SPHAGNALES

Single family.

FAMILY: SPHAGNACEAE

Single genera.

GENUS: SPHAGNUM

6. Anthoceros:

Vegetative Structure:

Thallus is sub-orbicular and variously lobed without a sharply defined midrib. Air-chambers and scales are absent, but slit-like pores and smooth rhizoids are present on the under surface of the thallus. Thallus is prostrate, dorsiventrally differentiated, rarely dichotomously branched and also has a dark-green colour.

In T.S. through thallus, there is very little tissue differentiation. It is composed of uniform, thin-walled, parenchymatous cells which are many cells deep in the middle. Epidermal cells are somewhat smaller and compact with chloroplasts. But the dermal cells are angular, larger with chloroplasts.

Chloroplasts are one in each cell and have pyrenoids. There are a few cavities inside the dermal zone which are full of mucilage and have blue green algal colonies i.e. Nostoc. The cavities open to the exterior through slit-like pores. Rhizoids are unicellular and smooth-walled (Fig 5.14).

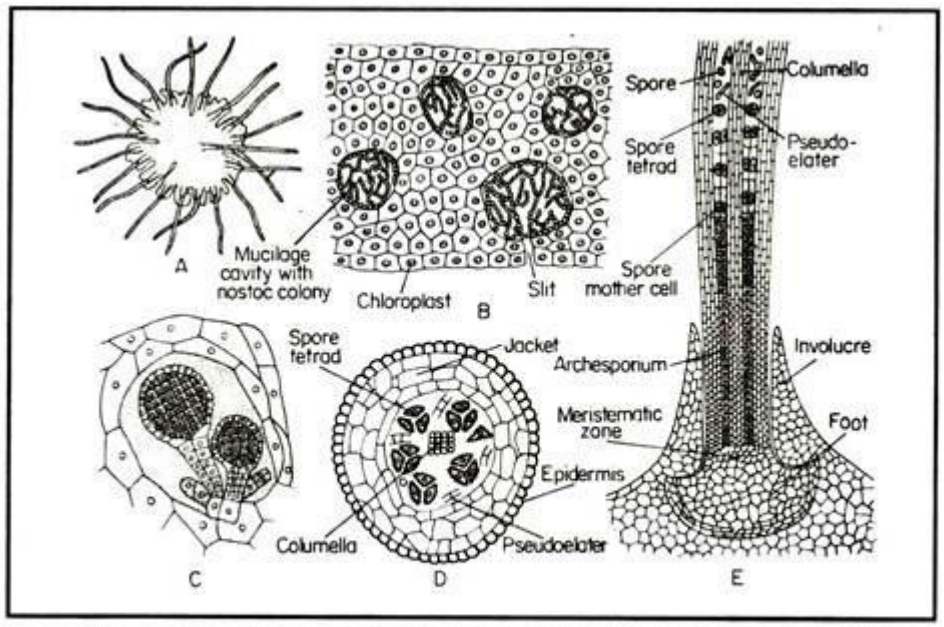

Fig 5.14. Anthoceros Sp. : A – Gametophytic thallus, B – Section through gametophytic thallus, C – Section through gametophyte showing sex organs, D – T.S. through sporophyte, E – L. S. through sporophyte.

Reproductive Structure:

Plants are dioecious or monoecious. Both antheridia and archegonia are embedded in the dorsal surface of the thallus along the midrib region. Antheridia arise in groups and are included in antheridial chambers. Archegonia are solitary and without air-chambers.

A mature antheridium shows a more or less slender stalk bearing a club-shaped or spherical antheridium which has a jacket one layer in thickness containing the androcytes inside. A mature archegonium has an egg, a ventral canal cell and 4 – 6 neck canal cells.

Sporogonium:
Mature sporophyte shows a bulbous foot, and slender, erect smooth cylindrical capsule standing out like a bristle from the thallus (2 to 15 cms. long). There is no seta but an intermediate zone of a few layers of meristematic cells in its place is present.

The base of the capsule is en-sheathed by an involucre up to a certain height. The capsule jacket is several layers in thickness. Spores and simple or branched pseudo elaters in alternating layers and central columella are present (Fig 5.14).

Identification:
Sporophyte with indefinite growth due to the presence of intercalary meristem at the base of capsule, sex organs embedded in the thallus, cells of thallus bear one chloroplasts in each with pyrenoid.

CLASS: ANTHOCEROTOPSIDA

Gametophytic thallus dorsiventrally flattened, internally gametophytic tissues not differentiated.

ORDER: ANTHOCEROTALES

Sporophytes are erect on the thallus, project out of the thallus, central columella present.

FAMILY: ANTHOCEROTACEAE

Thallus dark-greenish, prostrate and dorsiventrally flattened, spores black in colour.

GENUS: ANTHOCEROS

7. Porella:

Vegetative Structure:
Plant body is flat, dorsiventral with a bi- or tripinnately branched leafy axis with no rhizoids in mature plants. There are 3 rows of leaves – 2 lateral and one smaller row on the ventral side termed amphigastria. Leaves are thin without midrib and one cell in thickness. Lateral leaves are two-lobed – upper larger lobe is antical

lobe and the lower smaller lobe is the postical lobe or lobule. The arrangement of leaves is incubers.

In T.S. through the stem, there is an only epidermal and cortical cell layer. The peripheral cells of cortex are smaller with slightly thicker walls while the central cells are larger with thinner walls.

Reproductive Structure:
Plants are dioecious. The male plant is smaller with the antheridial branches projecting out at-sight angles from the axis. The leaves on the antheridial branch are closely imbricate and a single antheridium is borne in the axil of each leaf. The mature antheridium is globular with a long stalk. The jacket is one-layered, but the lower part is 2 – 3 layered.

The female plant bears archegonial branches with enlarged perichaetial bracts. The lower bracts form an involucre while the upper two coalesce to form a perianth within which the archegonia develop. A mature archegonium shows a venter with the egg, the ventral canal cell and a neck with neck canal cells (Fig 5.12).

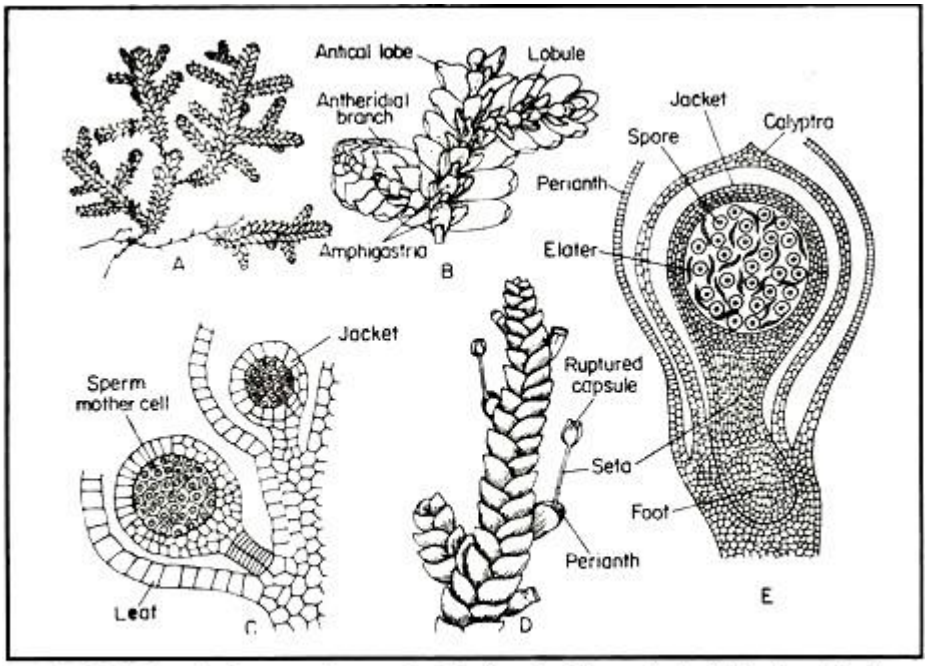

Fig 5.12. Porella Sp. : A – Gametophytic thallus, B – Gametophytic thallus (magnified), C – Section through gametophyte showing sex organs, D – Magnified gametophytic thallus showing sporophytes, E – Section through sporophytes.

Sporogonium:

Sporophyte consists of a spherical capsule, a short seta and a bulbous foot. The capsule wall is 2 to 5 layers thick. Inside the capsule there are a number of spores and elaters (Fig 5.12).

Identification:
Thallus dorsiventrally flattened and prostrate, sporophyte simple and devoid of columella.

CLASS: HEPATICOPSIDA

Absence of air-chambers in the gametophytic tissue, capsule wall multilayered foot and seta distinct.

ORDER: JUNGERMANNIALES

Usually the whole gametophytic body or at least the reproductive part foliaceous, archegonia formed apically.

SUB ORDER: JUNGERMANNINEAE

The whole gametophytic plant body foliaceous, leaves nerveless, on the ventral side prominent amphigastria present, sporophyte stalked and covered by conspicuous perianth which resembles the foliage leaves.

FAMILY: PORELLACEAE

Plant body flat with bi- or tri-pinnately branched leafy axis, ventral smaller row forming amphigastria.

GENUS: PORELLA

8. Plagiochasma:

Vegetative Structure:

Thallus is long, lobed, and flat, dorsiventrally differentiated, dichotomously branched and with undulated margins. Apex of the thallus is notched. Dorsal surface is dark-green. Ventral surface is purplish and bears scales and rhizoids. Midrib is inconspicuous and gradually passing into the lamina.

In T.S. of the thallus, the following layers are noticed:

(a) Upper epidermis with simple pores,

(b) Dorsal air-chambers,

(c) Parenchymatous cell zone,

(d) Ventral layer with multicellular scales and rhizoids which are unicellular, smooth-walled and tuberculate.

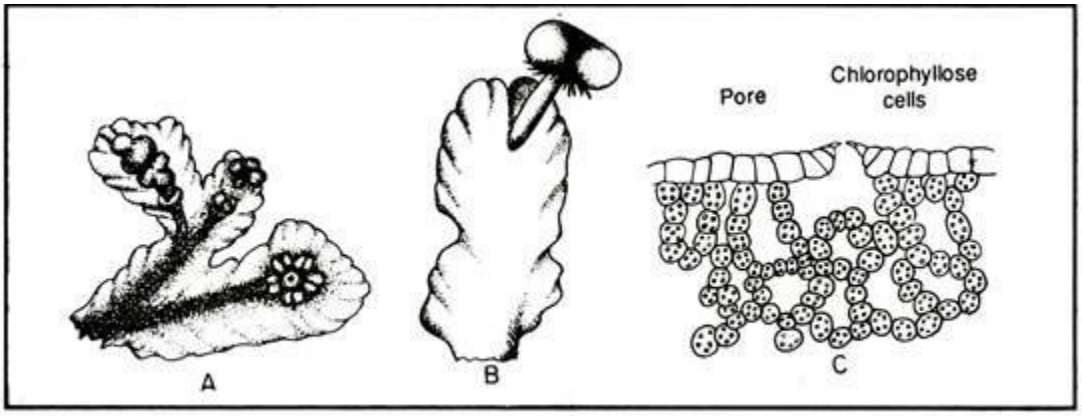

Fig 5.10. Plagiochasma Sp.: A & B – Male and female gametophyte, C – Section through gametophytic thallus.

Reproductive Structure:
Plants are monoecious. Receptacles are always located at apex to begin with, becoming dorsal by the formation of apical adventitious shoots. Male receptacle is formed one after another, or a male receptacle may be followed by a female receptacle. Male receptacle is sessile, horse-shoe-shaped and surrounded by linear scales. Air-chambers with simple pores lies between the antheridia.

Female receptacle is also sessile when young, but at maturity stalked. The stalk arises from the dorsal side of the thallus, and is devoid of rhizoidal furrow, but has scales at base and apex. Female receptacle is more or less concave on the dorsal surface, with barrel-shaped pores and is 2 – 9 lobed. It is surrounded by involucres which are large, inflated, bivalved and margin folded inwardly. Each involucre contains one archegonium.

Sporogonium:
With capsule, short seta and a foot capsule is spherical with single-layered jacket. Spores are yellowish and reticulate-lamellate. Elaters are short and bi-or trispiral.

Identification:
Thallus dorsiventrally flattened and prostrate, sporophyte, simple and with limited growth, columella absent.

CLASS: HEPATICOPSIDA

Plant body prostrate, sex organs on dorsal surface, sporophyte devoid of columella or elaterophores.

ORDER: MARCHANTIALES

Sex organs develops in a cluster on a specialised stalk, sporophyte differentiated into foot, seta and capsule.

FAMILY: MARCHANITACEAE

Plants with air-chambers and pores, ventral surface with scales, capsule in involucres, plants without gemmae cup, male receptacle sessile and horse-shoe-shaped, sessile receptacle distinctly dorsal.

GENUS: PLAGIOCHASMA