56 Sargassum

Class	:	*Phaeophyceae*
Sub-class	:	*Cyclosporeae*
Order	:	*Fucales*
Family	:	*Sargassaceae*
Genus	:	*Sargassum*

Sargassum is commonly called ***gulf-weed.***

The name *Sargassum* was given by ***C. Agardh.***

It is a ***brown*** alga. It is included in the class ***Phaeophyceae*** and in the family ***Sargassaceae.***

It was first reported by ***Columbus*** in 1492 from ***'Sargasso sea'***, a part of the ***Pacific Ocean.***

The most abundant ***brown sea weed*** in India is *Sargassum.*

Occurrence

Sargassum is a common inhabitant of the ***tropical seas*** and ***oceans***. It includes about ***250 species***.

Of these, 15 species are found in ***India***. The important species are-

Sargassum tennerimum
Sargassum cinerium
Sargassum wightii
Sargassum ilicifolium.

Thallus Structure

Sargassum is a ***brown alga.***

It is commonly called ***gulf weed*** or ***sea weed.***

It is included in the class ***Phaeophyceae.***

It is a ***marine alga.***

It is an ***attached alga***. It grows to a height of ***30 cms.***

Fig. 56.1. *Sargassum* - *Thallus*.

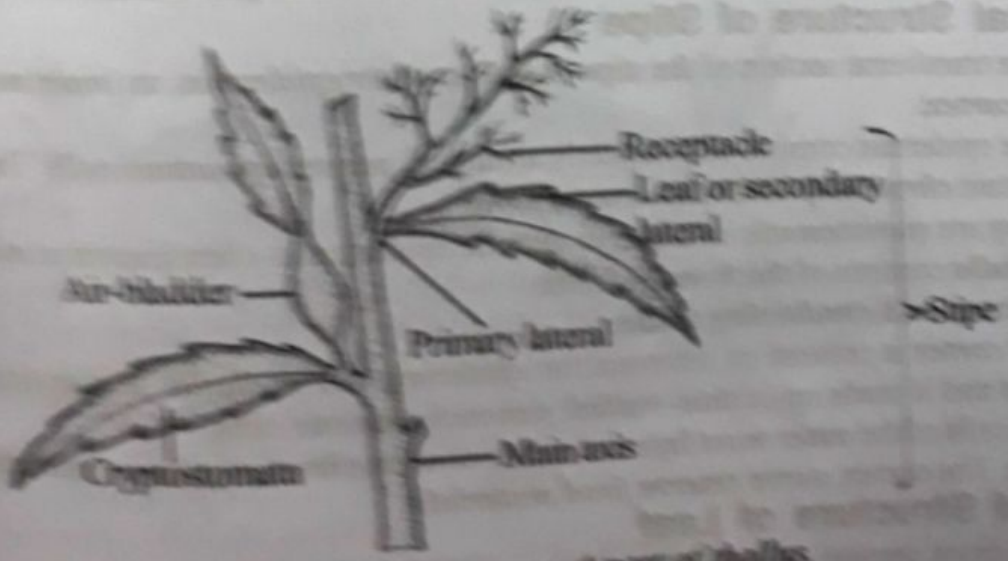

Fig. 56.2. *Sargassum* - *A part of thallus*.

The plant is a ***diploid sporophyte.*** *Sargassum* looks like an angiospermic plant.
It consists of a ***stipe*** and a ***holdfast.***
The stipe is made up of a ***main axis*** and ***lateral branches.***
The plant is attached to the substratum by a ***holdfast.***
The hold fast is ***broad*** and ***discoid.***
The ***mature*** plant is ***free-floating***.
The main axis of the stipe has ***two types of branches*** namely ***primary laterals*** and ***secondary laterals***.
The ***branches*** that ***arise*** directly from the ***main axis*** are called ***primary laterals.***
They have ***unlimited growth***.
The branches that arise from the primary laterals are called ***secondary laterals.*** They have ***limited growth.***
They look like ***'leaves'***.
The branches are ***monopodial*** in arrangement.
The 'leaves' have ***serrate*** or ***entire margin***.
They have ***no midrib***. Each leaf possesses a ***few pores*** on the ***upper surface***.
These pores are called ***cryptostomata***.
The cryptostomata lead to ***flask-shaped cavities*** called ***cryptoblasts***.
From the leaf axis, ***one*** or ***two spherical bodies arise***.
They are called ***air bladders***.
The air bladders are ***stalked***. They are the ***modified 'leaves'***.
The air bladders are also found at the ***base of a leaf*** and at ***the tip of a leaf***. The air bladder contains air. This helps the plant to float in the water.
They give ***buoyancy*** to the plants.
Some ***lateral branches*** in the leaf axils are ***repeatedly branched*** and are called ***fertile branches***.
These ***fertile branches*** are known as ***receptacles***.
The receptacles bear ***flask-shaped cavities*** called ***conceptacles***. The conceptacles contain ***sex organs***.
The ***growth*** takes place by the division of a ***four-sided apical cell.***

Internal Structure of Stipe

The transverse section of the stipe shows an ***outer epidermis,*** an ***inner medulla*** and a ***middle cortex.***
The epidermis consists of compactly arranged, ***parenchymatous cells***. The epidermal cells contain ***chromatophores*** and ***reserve foods***.
They are ***meristematic*** in nature so that the epidermis is often known as ***meristoderm***. The ***medulla*** consists of ***thick-walled*** cells.
It serves as a ***conducting tissue***.
The ***cortex*** is present in between the ***epidermis*** and ***medulla***. It is several layered in ***thickness*** and is made up of ***thin-walled, parenchymatous cells***.
The cells of the ***outer most layer*** of cortex contain ***chromatophores*** and help in ***photosynthesis***. The cortex ***stores reserve food materials***.

Internal Structure of Leaf

The cross section of leaf shows an ***outer epidermis,*** an ***inner medulla*** and ***middle cortex.***

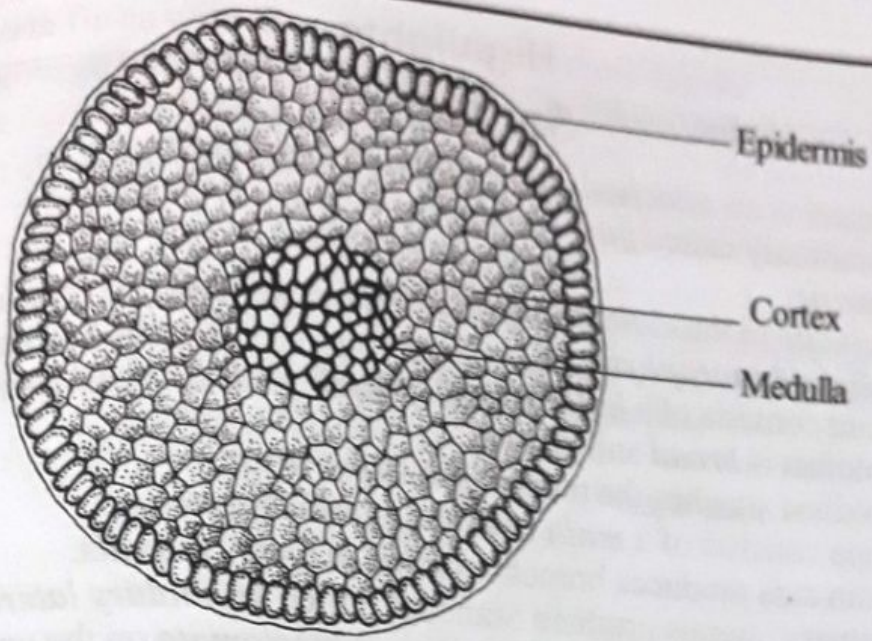

Fig.56.3: Sargassum - T.S. of stipe.

The ***epidermis*** is ***single-layered*** and it consists of closely arranged ***thin-walled*** cells.

The epidermal cells contain ***chromatophores.***

The ***chromatophores*** contain ***pigments*** such as ***chlorophyll-a*** and ***-c, fucoxanthin-a*** and ***-b, flavoxanthin, diatoxanthin, β -carotene*** and ***phycophenin.***

The epidermis therefore is ***photosynthetic*** in function. ***Fucosan*** is the ***reserve food material.***

The epidermis is followed by ***cortex.***

The cortex is made up of ***thin-walled polygonal cells***. It is ***storage*** in ***function***.

Many ***flask-shaped cavities*** lie embedded in the ***cortex***. These cavities are called ***cryptoblasts.*** They bear ***mucilage hairs.***

The ***medulla*** occurs at the ***middle*** of the ***cortex***. It consists of ***thick-walled cells***. It serves as a ***conducting tissue.***

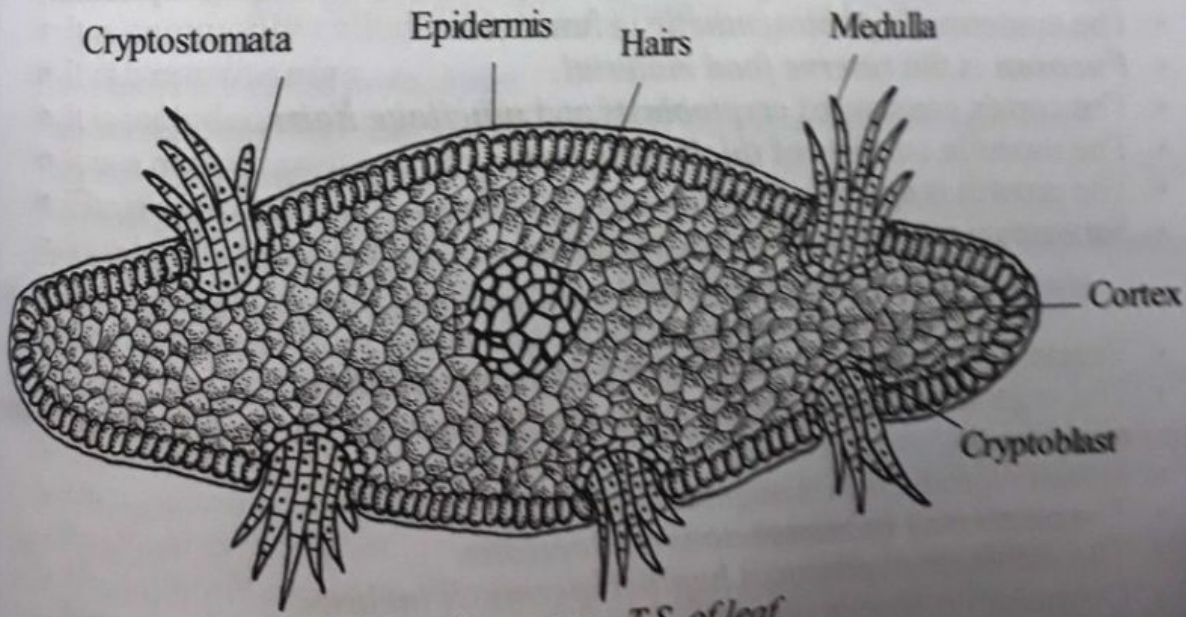

Fig.56.4: Sargassum -T.S. of leaf.

Highlights

Sargassum

- *Sargassum* is an ***attached, submerged, brown alga***.
- It is commonly called ***gulf-weed***.
- It is ***marine***.
- It is included in the class ***Phaeophyceae***.
- It is a ***diploid sporophyte***.
- The plant consists of a ***holdfast*** and a ***stipe***.
- The holdfast is ***broad*** and ***discoid***.
- The holdfast attaches the plant to the ***substratum***.
- The stipe consists of a ***main axis*** and ***lateral branches***.
- The main axis produces branches called ***primary laterals***.
- The primary laterals produce branches called ***secondary laterals*** or ***leaves***.
- Each leaf possesses a ***few pores*** called ***cryptostomata*** on the upper surface.
- The cryptostomata has a ***flask-shaped cavity*** called ***cryptoblast***.
- The leaf axils produce ***one*** or ***two spherical bodies*** called ***air bladders***.
- Air bladders are ***modified leaves***.
- Air bladders give ***buoyancy*** to the plants.
- Some lateral branches in the leaf axils are repeatedly branched and they are called ***fertile branches*** called ***receptacles***.
- The receptacles bear ***flask-shaped cavities*** called ***conceptacles***.
- The conceptacles contain ***sex organs***.
- The C.S. of thallus consists of an ***outer epidermis, middle cortex*** and ***inner medulla***.
- The epidermis consists of a ***single layer*** of ***cells***. The cells are ***thin walled***.
- The epidermal cells contain ***chromatophores***.
- The chromatophores contain pigments such as ***chlorophyll -a, -b, fucoxanthin -a, -b, flavoxanthin, diatoxanthin, β-carotene*** and ***phycophenin***.
- The epidermis is ***photosynthetic*** in function.
- ***Fucosan*** is the ***reserve food material***.
- The cortex consists of ***cryptoblasts*** and ***mucilage hairs***.
- The medulla consists of ***thick walled cells***.
- The growth is ***apical***.
- *Sargassum* reproduces by ***two*** methods.
    - *Vegetative reproduction*
    - *Sexual reproduction*.
- Vegetative reproduction takes place by ***fragmentation***.
- The vegetative thallus breaks into a few ***fragments***. The fragments grow into ***new plants***.
- Sexual reproduction is ***oogamous*** type.
- The plants may be ***monoecious*** or ***dioecious***.
- The antheridium produces ***haploid sperms*** by ***meiosis***.
- Oogonium produces ***haploid egg*** by ***meiosis***.

- The ***sperm*** fuses with the ***egg*** to form a ***diploid zygote***.
- The zygote ***germinates*** into a ***diploid sporophytic plant***.
- The life cycle is ***diplontic type***.
- The life cycle has ***no alternation of generation***.

Cryptoblasts

The cryptoblasts are ***flask-shaped cavities*** occurring on the ***leaves*** of *Sargassum*.
They are ***sterile bodies*** which ***communicate outside*** by means of ***cryptostomata***.
Many ***multiseriate hairs*** arise from the ***base of cryptoblast***.

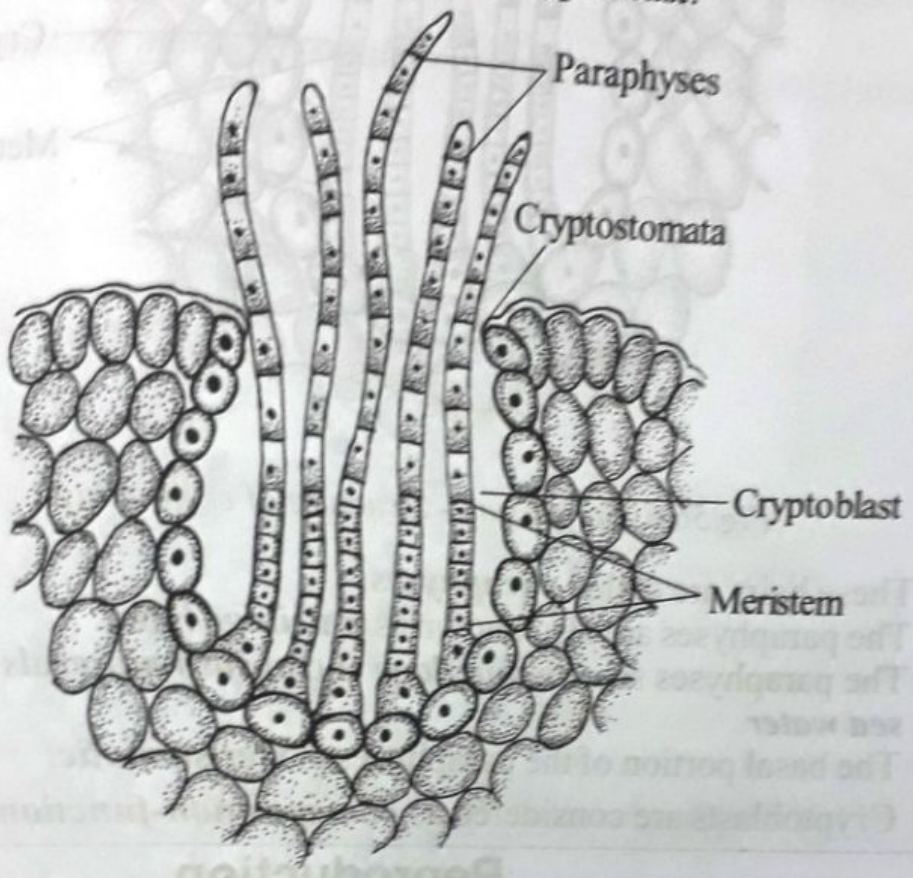

Fig.56.5: Sargassum - Structure of cryptoblast.

These ***hairs*** are called ***paraphyses***.
They ***secrete mucilage*** and ***absorb minerals*** and ***water*** from the ***sea-water.***
They are also known as ***mucilage hairs***.
The basal portion of the paraphyses is ***meristematic***.
Cryptoblasts are believed to be "***damaged nonfunctional conceptacles***", because in e cases the ***cryptoblasts*** contain ***reduced antheridial*** and ***oogonial initials.***

Highlights

Cryptoblasts

- *The cryptoblasts are flask-shaped cavities present on the upper surface of leaves of Sargassum.*
- The cryptoblasts open outside by the pores called ***cryptostomata***.
- Many ***multiseriate hairs*** arise from the base of the ***cryptoblast***.

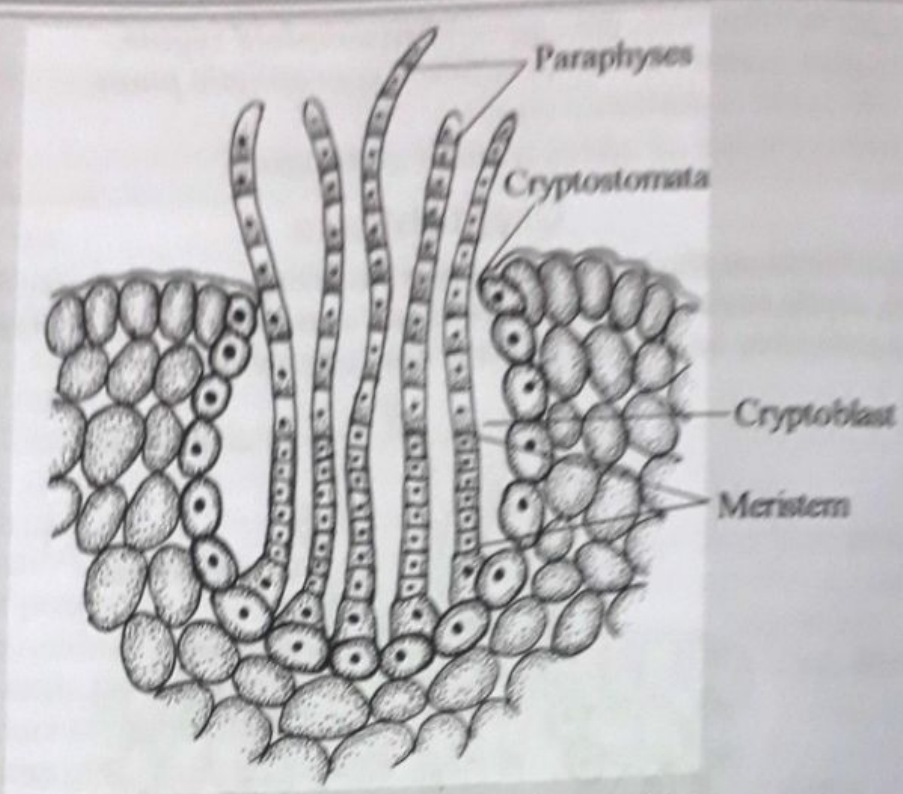

Fig. 56.6: Sargassum - Structure of cryptoblast.

- These hairs are called ***paraphyses***.
- The paraphyses are also known as ***mucilage hairs***.
- The paraphyses secrete ***mucilage*** and ***absorb minerals*** and ***water*** from the ***sea water***.
- The basal portion of the paraphyses is ***meristematic***.
- Cryptoblasts are considered as ***damaged non-functional conceptacles.***

Reproduction

Sargassum reproduces by ***two*** methods-

* *Vegetative reproduction*

* *Sexual reproduction.*

Vegetative Reproduction

The vegetative reproduction takes place by ***fragmentation***.

The ***vegetative thallus breaks accidentally*** into a few fragments.

These fragments then ***grow*** into ***new plants***.

In *Sargassum natans,* vegetative reproduction is the only mode of multiplication.

Sexual Reproduction

The sexual reproduction in *Sargassum* is ***oogamous type.***

The plant may be ***monoecious*** or ***dioecious***.

The sex organs are produced on fertile branches called ***receptacles***.

The receptacles contain ***flask-shaped cavities*** called ***conceptacles***.

A single receptacle contains hundreds of ***conceptacles***.

The conceptacles produce ***sex organs***.

The sex organs are ***antheridia*** and ***oogonia***.
A conceptacle may contain either ***antheridia*** or ***oognia***. Hence conceptacles are ***uni-sexual***.
The conceptacle containing ***antheridia*** is called ***male conceptacle*** and the conceptacle containing ***oogonia*** is called ***female conceptacle***.
The ***surface*** of the ***male conceptacle*** is ***smooth***.
But it is ***spinous*** in the ***female conceptacle***.
Plants of *Sargassum* are both ***monoecious*** and ***dioecious***.
In ***monoecious plants*** the ***male*** and ***female conceptacles*** are produced in the ***same plant***.
In ***dioecious plants***, the ***male*** and ***female conceptacles*** are produced in ***separate plants***.

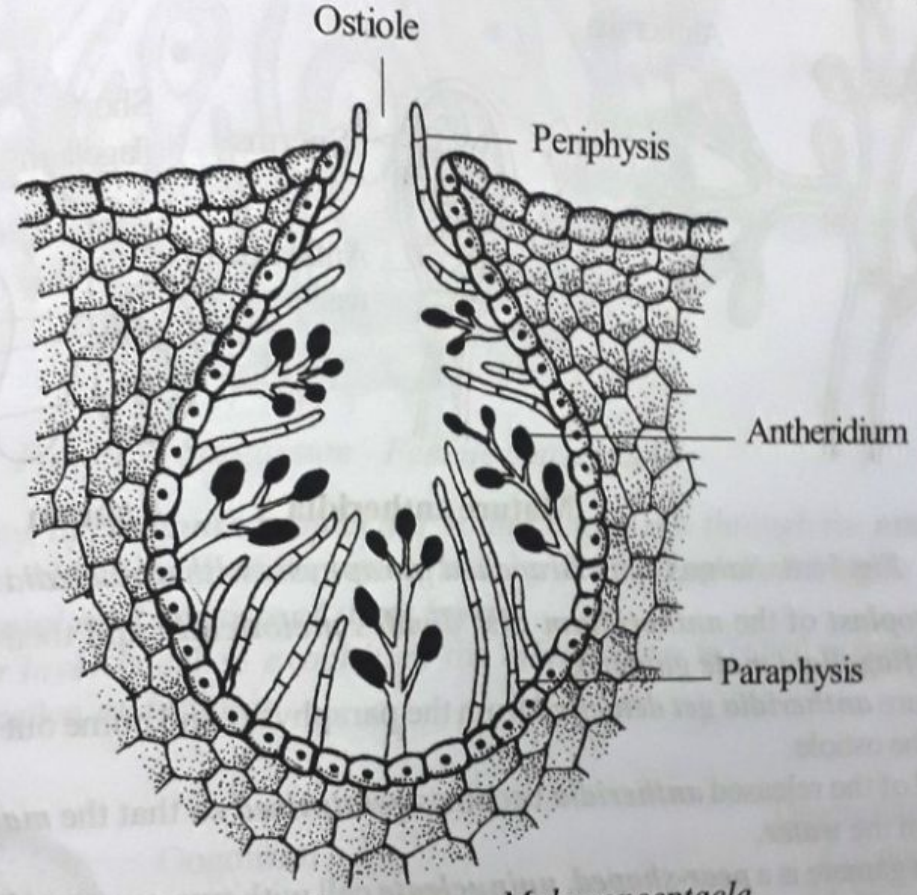

Fig.56.7: Sargassum - Male conceptacle.

Each conceptacle is a cavity embedded in the ***fertile receptacle***.
The wall of the conceptacle is ***one*** or ***two cells in thickness***.
The wall cells are ***compactly arranged*** and are ***rich*** in ***chromatophores***.
The conceptacle opens to the outside by means of ***ostiole***.
From the floor of the conceptacle, many ***unbranched filaments*** arise and ***extrude out*** through the ***ostiole***.
These filaments are called ***paraphyses***.
Each ***paraphysis*** is made up of ***colourless, barrel-shaped cells***.
Some short colourless hairs are found near the ***ostiole***. These hairs are known as ***periphyses***.

Antheridia

Antheridia are produced in ***male conceptacles*** on ***branched paraphyses***.

The basal portion of the paraphysis acts as the ***stalk*** of the ***antheridium***.

Each branch of the paraphysis may bear ***two*** or ***three antheridia***.

The ***mature antheridium*** is a ***small, ovoid structure*** that contains ***64 male gametes*** or ***spermatozoids***.

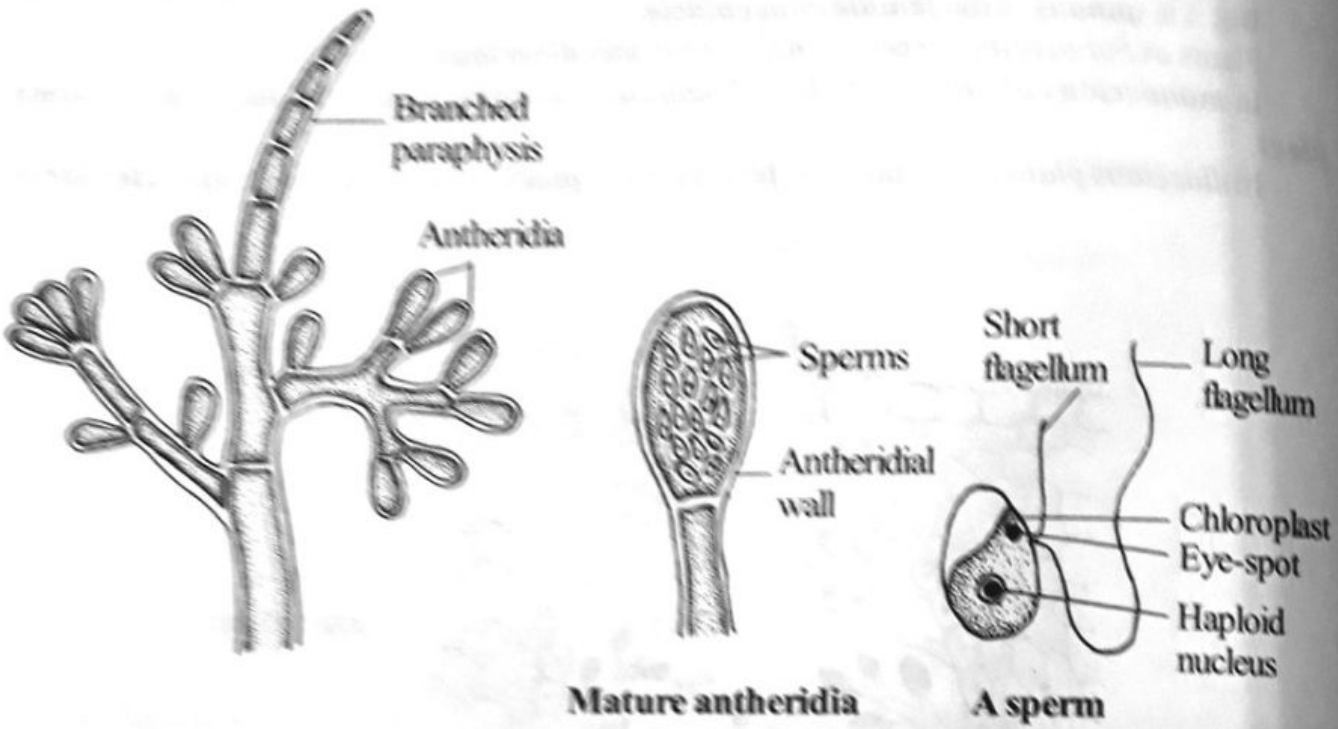

Fig.56.8: Sargassum - Branched paraphysis with antheridia

The ***protoplast*** of the ***antheridium*** first ***divides meiotically*** and then ***mitotically*** to produce ***64 biflagellate male gametes***.

The mature ***antheridia get detached*** from the paraphyses and come out of the conceptacle through the ostiole.

The ***wall*** of the released ***antheridia*** becomes ***gelatinised*** so that the ***male gametes*** are ***released*** free in the ***water***.

The male gamete is a ***pear-shaped, uninucleate*** cell with two ***unequal lateral flagella***.

One flagellum is ***short*** and it directs ***upwards***.

The other flagellum is ***long*** and it ***directs downwards***.

The body of the gamete contains a ***haploid nucleus,*** an ***eye-spot, vestigial chromatophores*** and ***blepheroblasts***.

Oogonia

The oogonia are produced in ***female conceptacles***. Each female conceptacle bears ***2-8 oogonia***.

The oogonia are ***sessile*** and lie embedded in the wall of the ***female conceptacles***.

The ***diploid nucleus*** of the ***young oogonium*** divides ***meiotically*** and ***mitotically*** to form ***eight haploid daughter nuclei***.

Out of these, ***seven daughter nuclei degenerate*** and the remaining ***one nucleus*** with its surrounding ***cytoplasm matures*** into an ***ovum*** or ***egg***.

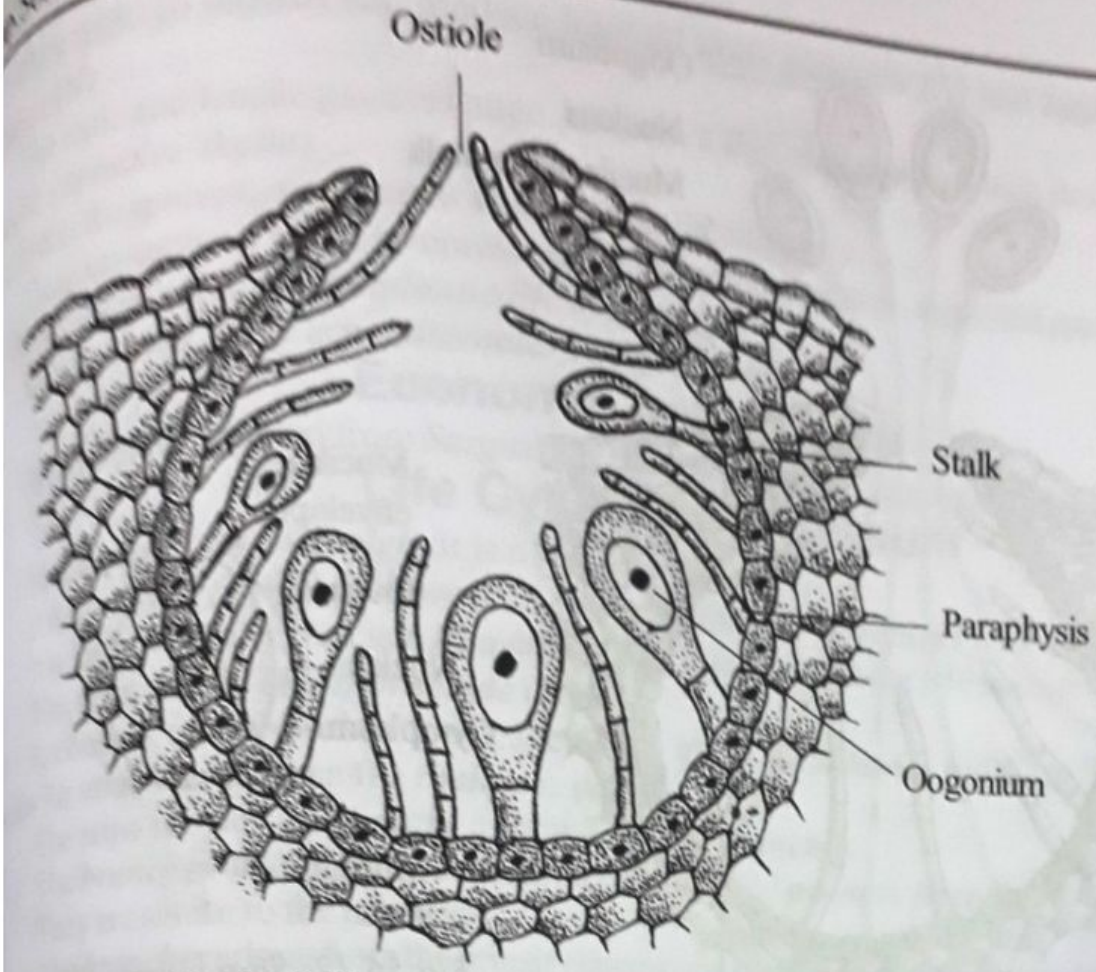

Fig.56.9: Sargassum - Female conceptacle.

At maturity, the ***oogonia project out*** of the conceptacle through the ***ostiole***. But they remain attached with the wall of the conceptacle by means of ***gelatinous stalks***.

The ***oogonial wall*** consists of ***three layers***.

The ***outer layer*** is called ***exochiton***, the ***middle layer*** is called ***mesochiton*** and the ***inner layer*** is called ***endochiton***.

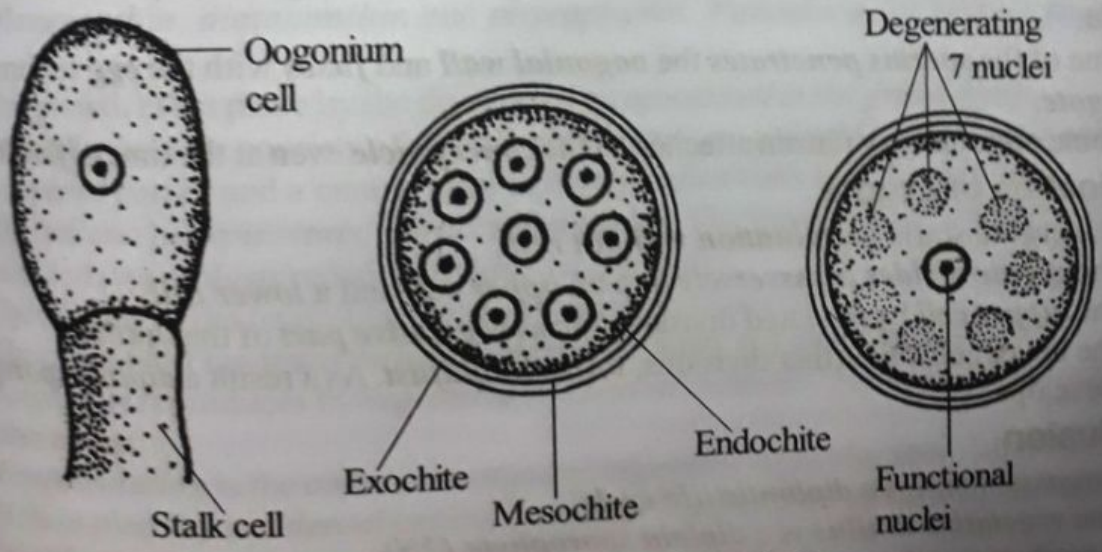

Fig.56.10: Sargassum - Oogonium.

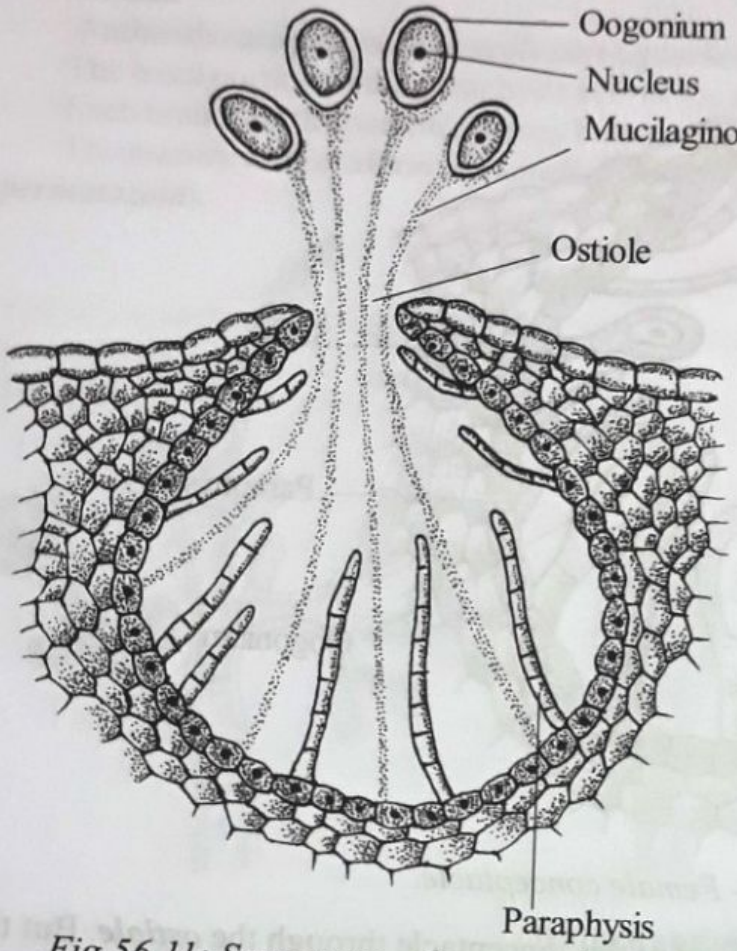

Fig.56.11: Sargassum - Conceptacle with extruded oogonia.

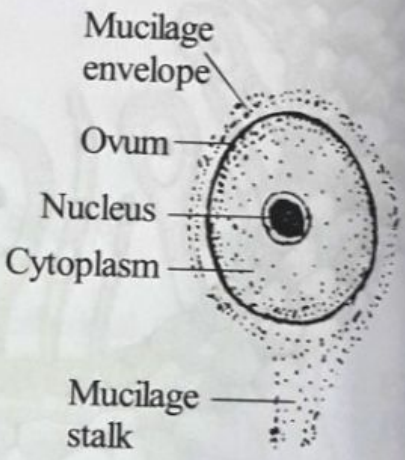

Fig.56.12: Sargassum - Structure of mature oogonium.

The egg or ovum is ***haploid***. The ***mature oogonium*** is ***discharged*** into the ***water.***

Fertilization

The released ***male gametes*** swim in water and approach the ***oogonia***.

The ***male gametes*** or ***spermatozoids*** are attached to the oogonium by their anterior ***short flagella***.

One of the ***sperms penetrates*** the ***oogonial wall*** and ***fuses*** with the ***egg*** to form a ***diploid zygote***.

Some oogonia may remain attached to the ***conceptacle*** even at the time of ***fertilization.***

Germination of Zygote

The ***zygote*** starts ***germination without rest***.

The ***zygote divides transversely*** into an ***upper cell*** and a ***lower cell***.

The ***upper cell*** by repeated divisions forms ***vegetative part*** of the ***thallus***.

The lower cell, on further divisions, forms a ***holdfast***. As a result a ***diploid sporophytic plant*** develops.

Conclusion

Sargassum exhibits ***diplontic life cycle***.

The ***vegetative thallus*** is a ***diploid sporophyte (2N)***.

It produces ***male*** and ***female sex organs*** called ***antheridia*** and ***oogonia.***

They undergo ***meiosis*** and produce ***haploid male gametes (N)*** and ***haploid female gametes*** (N).

The male and female gametes unite to form a ***diploid zygote***, which develops into a ***diploid vegetative thallus***.

Here, the ***sporophytic phase*** is ***dominant*** in the life cycle.

The gametophytic phase is represented only by the ***gametes***, ***eggs*** and ***spermatozoids***.

So the life cycle is known as ***diplontic life cycle.***

In *Sargassum*, there is ***no alternation of generation***.

Economic Importance

Mannitol is extracted from *Sargassum tennerimum* and *Sargassum wightii.*

Life Cycle of *Sargassum*

Sargassum is a ***brown alga.*** It is a ***sea-weed.***

It is commonly called ***Gulf weed.*** It is ***freely floating*** in ***tropical seas*** and ***oceans***.

It is included under the class ***Phaeophyceae.*** It includes about 250 species.

The plant is a ***diploid sporophyte*** (2N).

It consists of a ***branched axis*** called ***stipe*** and a basal broad ***holdfast.*** The ***holdfast*** helps for ***attachment*** when the ***thallus*** is ***young***.

The ***stipe*** is made up of ***main axis*** and ***lateral branches***.

The ***branches*** arising from the ***main axis*** are called ***primary laterals.***

They are similar to the main axis.

The ***branches*** arising from the primary laterals are known as ***secondary laterals*** or ***'leaves'***.

The secondary lateral is ***leaf-like*** with ***serrate*** or ***entire*** margin. It has no ***midrib.***

The base of the ***secondary laterals*** is modified into an ***air bladder.***

One or ***two repeatedly branched fertile lateral branches*** arise from the axil of the leaves.

These fertile branches are called ***receptacles.***

They bear ***sex organs*** in cavities called ***conceptacles.*** Some of these branches end in ***air bladders.***

The chromatophores contain ***chlorophyll-a*** and ***-c, fucoxanthin-a*** and ***-c, β- carotenes, flavoxanthin, diatoxanthin*** and ***phycophenin. Fucosan*** is the ***reserve food material.***

The growth takes place by the division of an ***apical cell*** at the ***growing tip***.

Internally the stipe consists of ***three regions***. They are a ***single*** layered ***outer epidermis, multilayered cortex*** and a central core of ***thick-walled cells*** called ***medulla.***

The leaf also has ***epidermis, cortex*** and ***medulla.*** The leaves contain many ***flask-shaped*** cavities called ***cryptoblasts*** remain embedded in the cortex.

The opening of the cryptoblast is known as ***cryptostomata.***

The cryptoblast has many uniseriate ***mucilage hairs*** or ***paraphyses.***

Sargassum reproduces by ***vegetative*** and ***sexual methods.*** The asexual reproduction is altogether absent.

Fragmentation is the common method of ***vegetative reproduction***.

It takes place by ***accidental breakdown*** of the ***thallus***. The ***detached fragments grow into new plants***.

The sexual reproduction is ***oogamous type.***

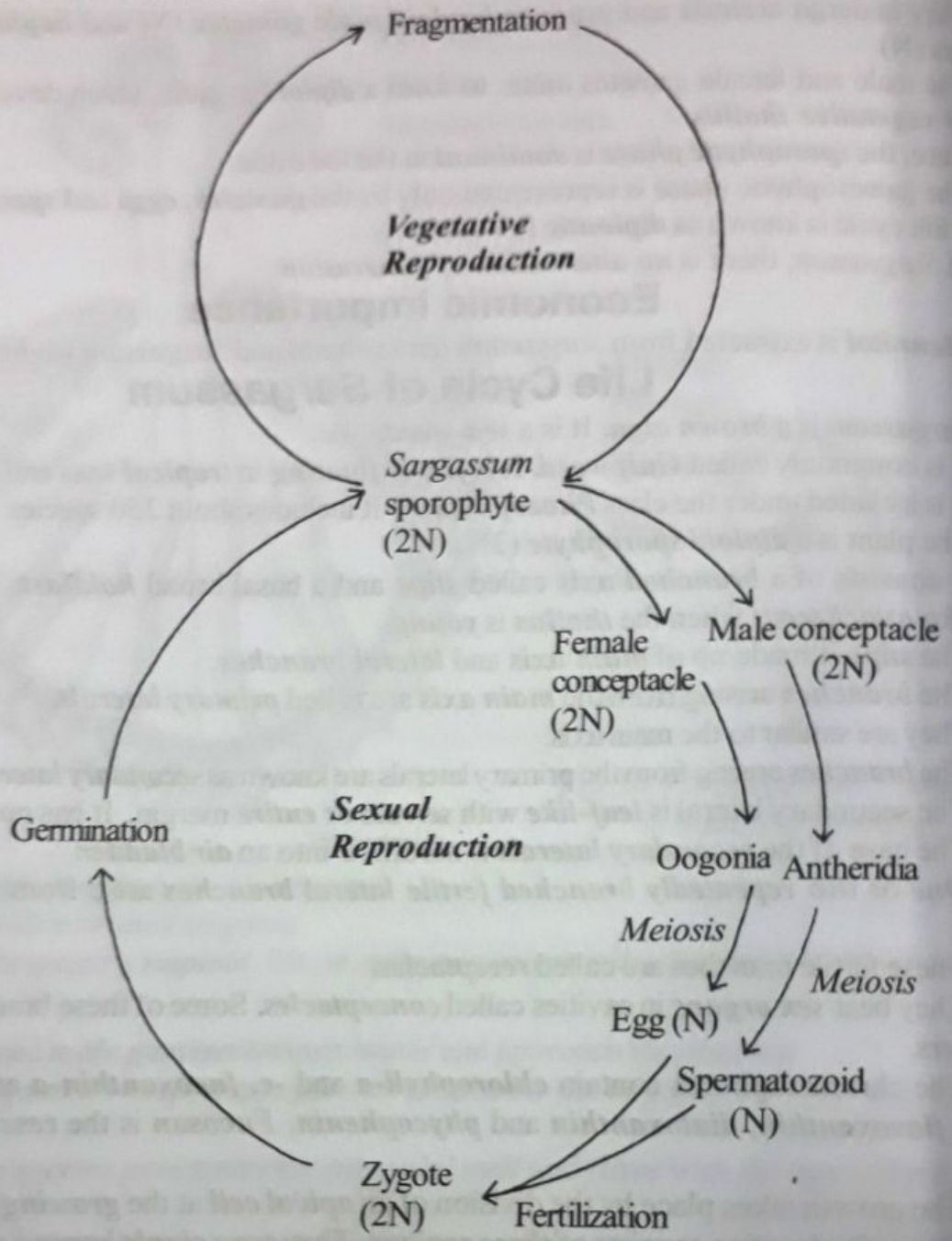

Fig.56.13: Sargassum - Graphic life cycle.

The ***male sex*** organs are called ***antheridia*** and the ***female sex organs*** are called ***oogonia.*** They are produced in the ***conceptacles*** of fertile branches called ***receptacles.***

The conceptacles are always ***unisexual***. The plants may either be ***monoecious*** or ***dioecious.*** The ***male conceptacle*** is ***smooth,*** but the ***female one*** is ***spinous.***

The conceptacle is a ***small cavity*** embedded in the ***fertile receptacle***.

The wall of the cavity is ***one*** or ***two cells thick***. The cells are closely arranged and ***rich in chromatophores***.

The opening of the conceptacle is known as ***ostiole.***

From the floor of the conceptacle many unbranched hairs called ***paraphyses*** arise and extrude through the ostiole. Some short colourless hairs called ***periphyses*** are found near the ostiole.

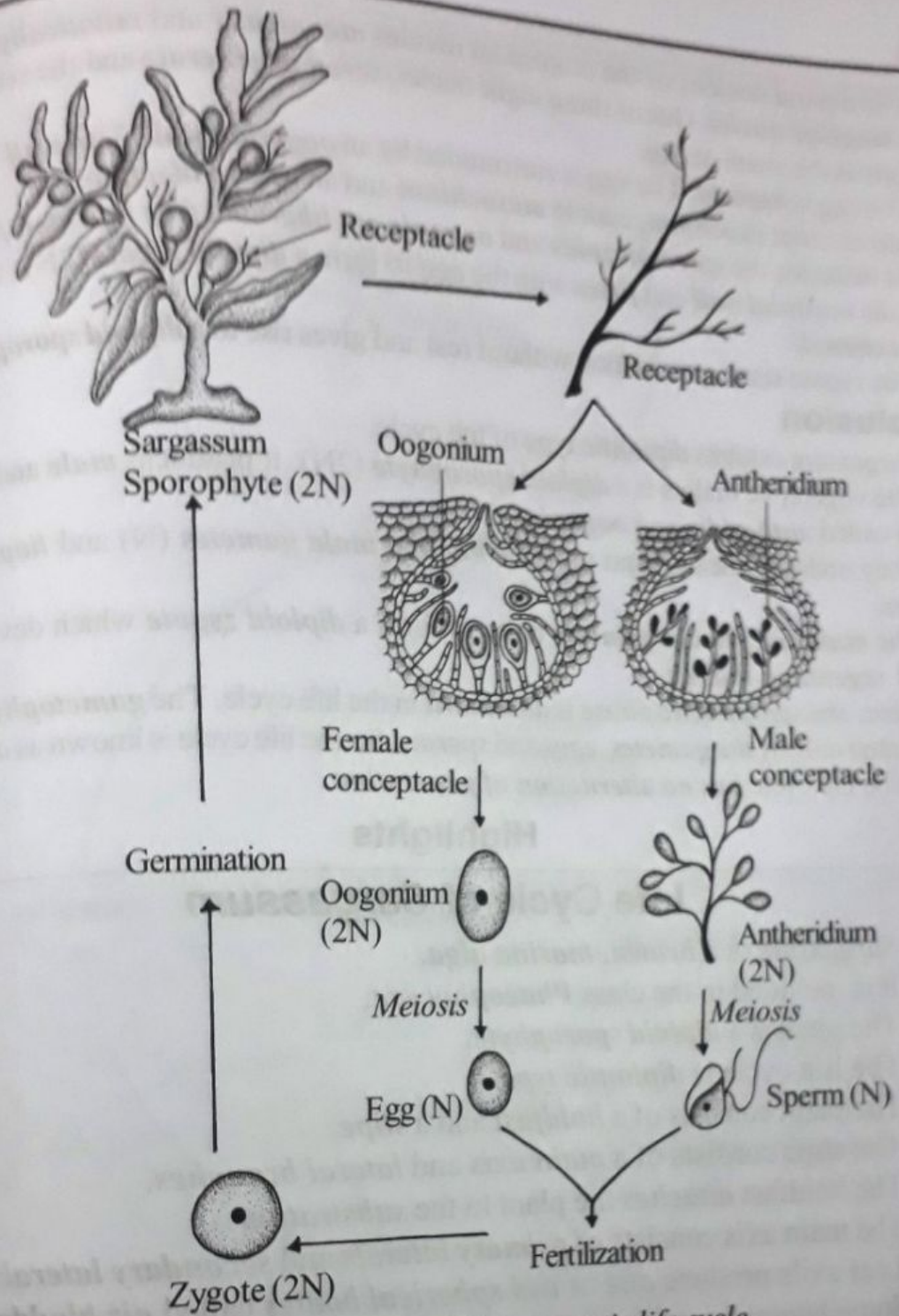

Fig.56.14: Sargassum - Diagrammatic life cycle.

The ***antheridia*** are produced on ***branched paraphysis*** in the ***male conceptacle***. The branches of the paraphysis bear 2-3 ***ovoid antheridia.***

The protoplast of the antheridium ***first divides meiotically*** and then ***mitotically*** to produce ***64 biflagellate spermatozoids*** or ***male gametes.***

The sperm is a ***pear-shaped, uninucleate*** cell with ***two unequal lateral flagella.*** Of these two, the ***long flagellum*** directs downwards and the ***short one directs upwards***. The ***male gamete*** is ***haploid.***

The oogonia are produced in ***female conceptacles***.

Each female conceptacle bears ***2-8 sessile oogonia***.

The diploid nucleus of the oogonium divides ***meiotically*** and ***mitotically*** to produce ***eight daughter nuclei***. Out of these eight nuclei, ***seven degenerate*** and the remaining ***one*** functions as the ***ovum*** or ***egg.***

The egg is ***haploid.*** The egg is surrounded by an ***oogonial wall***. This ***wall*** is differentiated into an outer ***exochiton,*** middle ***mesochiton*** and an inner ***endochiton.***

At maturity, the ***spermatozoids*** and ***oogonia*** are ***liberated free in water***. A ***sperm dissolves*** the ***oogonial wall*** and ***fuses*** with the ***egg*** to form a ***diploid zygote*** (2N). The fertilization is ***external.***

The zygote starts germination without rest and gives rise to a ***diploid sporophytic plant.***

Conclusion

Sargassum exhibits ***diplontic*** type of life cycle.

The vegetative thallus is a ***diploid sporophyte*** (2N). It produces ***male*** and ***female sex organs*** called ***antheridia*** and ***oogonia.***

They undergo meiosis and produce ***haploid male gametes*** (N) and ***haploid female gametes.***

The ***male*** and ***female gametes*** unite to form a ***diploid zygote*** which develops into a ***diploid vegetative thallus***.

Here, the ***sporophytic phase*** is ***dominant*** in the life cycle. The ***gametophytic phase*** is represented only by ***the gametes***, ***eggs*** and ***sperms.*** So the life cycle is known as ***diplontic life cycle.*** The life cycle ***has no alternation of generation***.

Highlights

Life Cycle of *Sargassum*

- *Sargassum* is a ***brown, marine alga.***
- It is included in the class ***Phaeophyceae***.
- The plant is a ***diploid sporophyte***.
- The life cycle is ***diplontic type***.
- The plant consists of a ***holdfast*** and a ***stipe***.
- The stipe consists of a ***main axis*** and ***lateral branches***.
- The holdfast ***attaches*** the plant to the ***substratum***.
- The main axis consists of ***primary laterals*** and ***secondary laterals*** or ***leaves.***
- Leaf axils produce ***one*** or ***two spherical bodies*** called ***air bladders***.
- Some lateral branches present in the leaf axils are called ***fertile branches.***
- The fertile branches are called ***receptacles***.
- The receptacles bear ***flask-shaped cavities*** called ***conceptacles***.
- The conceptacles produce ***sex organs***.
- Reproduction takes place by ***two*** methods.
    - *Vegetative reproduction*
    - *Sexual reproduction.*
- Vegetative reproduction takes place by ***fragmentation.***
- The thallus breaks into ***fragments***.

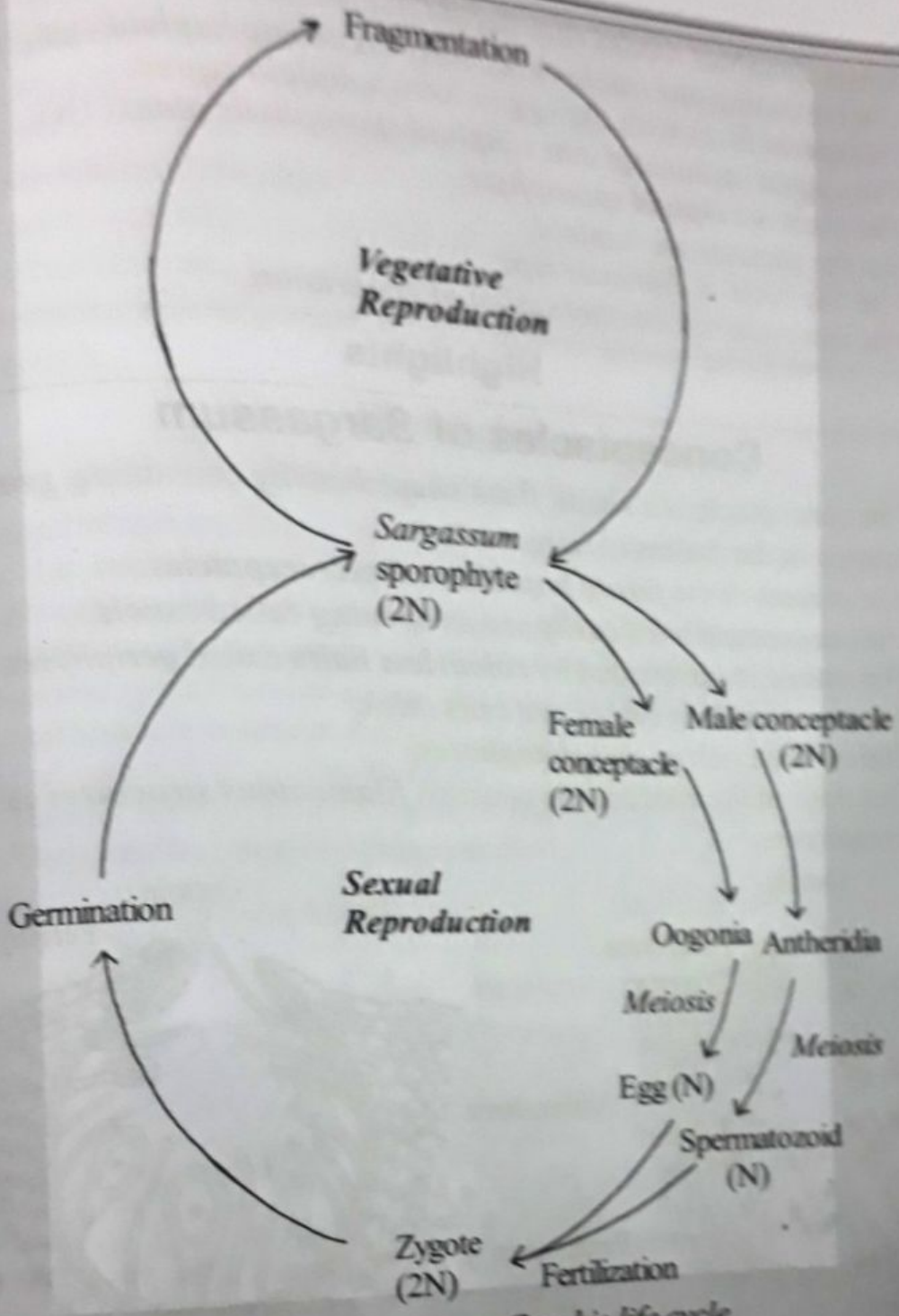

Fig.56.15: Sargassum - Graphic life cycle.

- The fragments grow into new ***diploid sporophytic plants***.
- Sexual reproduction is ***oogamous type***.
- The plants are both ***monoecious*** and ***dioecious***.
- ***Male sex organ*** or ***antheridium*** is produced in the ***male conceptacles***.
- The antheridium produces ***64 biflagellate haploid spermatozoids*** by ***meiosis***.
- ***Female sex organ*** or ***oogonium*** is produced in the ***female conceptacles***.
- Oogonium produces ***8 daughter nuclei*** by ***meiosis***.

- ***Seven daughter nuclei degenerate***.
- The remaining ***one nucleus*** becomes the ***single haploid egg***.
- The ***sperm*** fuses with the ***egg*** to form a ***diploid zygote***.
- The zygote germinates into a ***diploid sporophytic plant*** (2N).
- The plant is a ***diploid sporophyte***.
- But the gametes are ***haploid***.
- The life cycle is ***diplontic type***.
- The life cycle has ***no alternation of generation***.

Highlights

Conceptacles of *Sargassum*

- The conceptacle is a ***small, flask shaped cavity*** containing ***gametangia*** present in the thallus of *Sargassum*.
- It is present in the ***fertile branches*** called ***receptacles***.
- The conceptacle has a ***cavity*** and an ***opening*** called ***ostiole***.
- The ostiole is surrounded by ***colourless hairs*** called ***periphyses***.
- The conceptacle is ***one*** or ***two cells thick.***
- The cells are rich in ***chromatophores.***
- The floor of the conceptacle contains ***filamentous structures*** called ***paraphyses.***

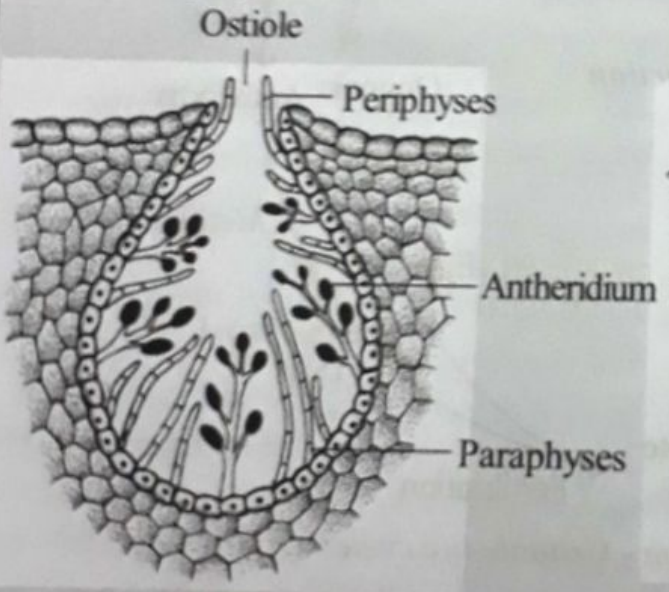

Fig.56.16: Sargassum - Male conceptacle.

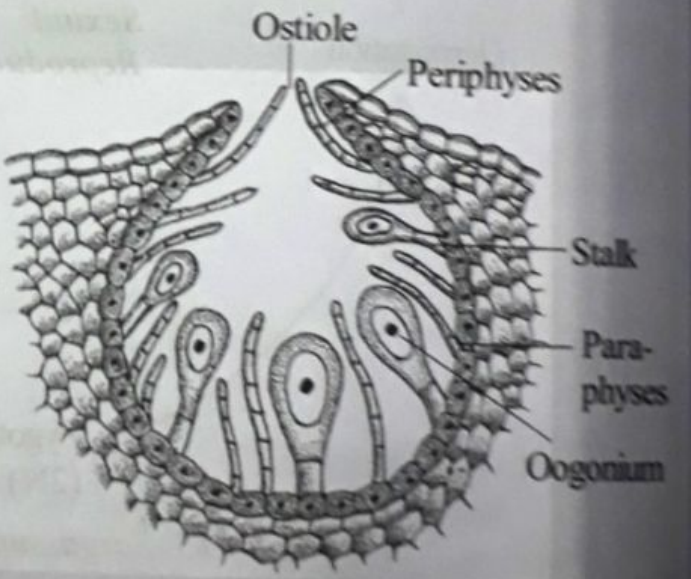

Fig.56.17: Sargassum - Female conceptacle.

- The conceptacles are ***unisexual***; they may be ***male*** or ***female.***
- The male conceptacle contains ***antheridia***.
- The female conceptacle contains ***oogonia***.
- In the male conceptacle, ***branched paraphyses*** intermingle with ***unbranched paraphyses***.
- The branched paraphyses bear ***antheridia***.

- The female conceptacle contains ***sessile oogonia***.
- The oogonia are intermingled with ***unbranched paraphyses***.
- The antheridia produce ***sperms***.
- The sperms come out through the ***ostiole***.
- The oogonia produce ***eggs***.
- The sperms reach the egg through the ***ostiole*** of ***female conceptacle.***
- The sperm fertilizes the egg in the ***female conceptacle***.
- The resulting zygote germinates into ***diploid sporophytic plant*** in the conceptacle.

Highlights

Male Conceptacle

- The male conceptacle is a ***small, flask-shaped*** cavity containing ***antheridia*** present in the thallus of *Sargassum*.
- It is present in the ***fertile branches*** called ***receptacles***.
- The conceptacle has a ***cavity*** and an opening called ***ostiole***.
- The ostiole is surrounded by ***colourless hairs*** called ***periphyses***.
- The conceptacle is ***one*** or ***two cells thick***.
- The cells are rich in ***chromatophores***.
- The floor of the conceptacle contains filamentous structures called ***paraphyses***. They may be branched or unbranched.

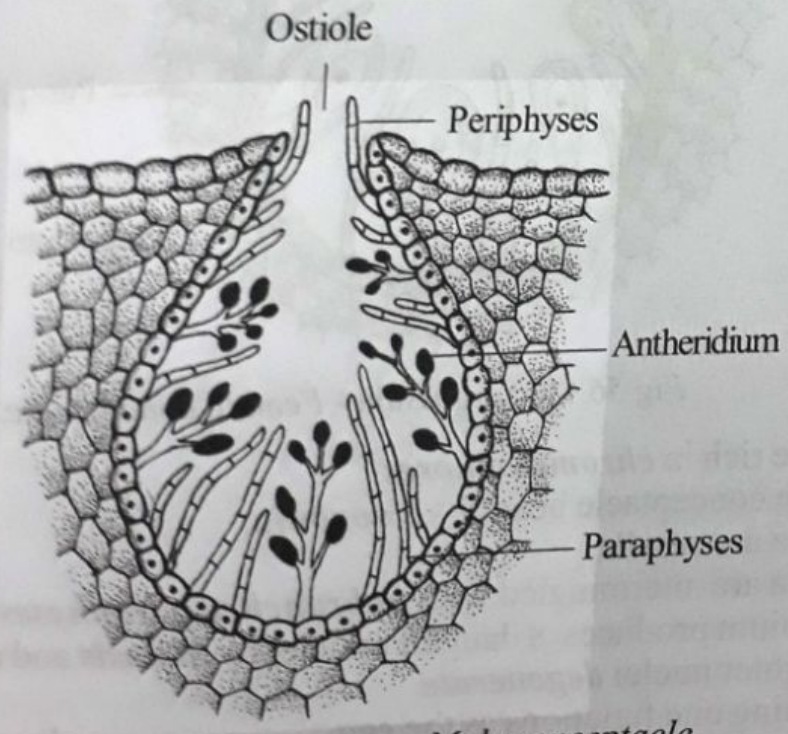

Fig.56.18: Sargassum - Male conceptacle.

- The branched paraphyses bear ***antheridia***.
- The basal portion of the paraphysis acts as the ***stalk*** of the antheridium.
- Each branch of the paraphysis may bear ***two*** or ***three antheridia***.

- The mature antheridium is a ***small, ovoid structure***.
- Each antheridium produces 64 ***male gametes***, by ***meiosis*** and ***mitosis***.
- The mature antheridia get ***detached*** from the paraphyses and come out of the conceptacle through the ***ostiole***.
- The male gametes are released in water by the rupture of the antheridial wall.

Highlights

Female Conceptacle

- The female conceptacle is a ***small, flask-shaped*** cavity containing ***oogonia*** present in the thallus of *Sargassum*.
- It is present in the ***fertile branches*** called ***receptacles***.
- The conceptacle has a ***cavity*** and an opening called ***ostiole***.
- The ostiole is surrounded by colourless hairs called ***periphyses***.
- The conceptacle is ***one*** or ***two cells thick***.

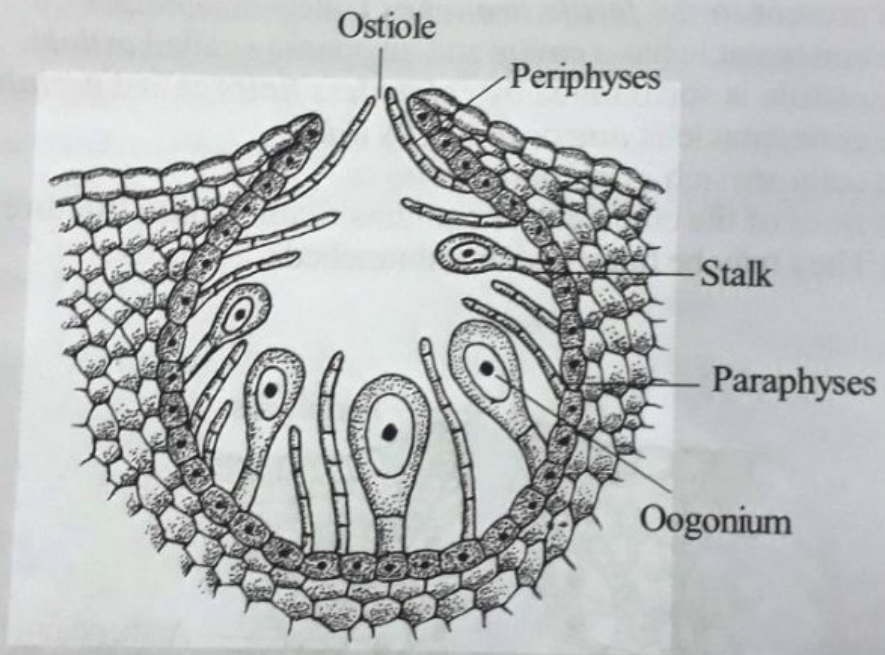

Fig.56.19: Sargassum - Female conceptacle.

- The cells are rich in ***chromatophores***.
- Each female conceptacle bears 2 - 8 ***oogonia***.
- The oogonia are ***sessile***.
- The oogonia are intermingled with ***unbranched paraphyses***.
- Each oogonium produces 8 daughter nuclei by ***meiosis*** and ***mitosis.***
- Seven daughter nuclei ***degenerate***.
- The remaining one functions as the ***egg***.

Highlights

Receptacle

- Receptacle is the ***fertile branch*** of *Sargassum* producing ***sex organs***.

- The receptacles bear ***flask-shaped*** cavities called ***conceptacles***.
- A single receptacle contains ***hundreds*** of ***conceptacles***.
- The conceptacles produce ***sex organs***.
- The sex organs are ***antheridia*** and ***oogonia***.
- The conceptacles are ***unisexual***.
- A conceptacle may contain either ***antheridia*** or ***oogonia***.
- The conceptacle containing ***antheridia*** is called ***male conceptacle***.
- The conceptacle containing ***oogonia*** is called ***female conceptacle***.
- The surface of male conceptacle is ***smooth***.
- The surface of female conceptacle is ***spinous***.
- The antheridium produces haploid sperms by ***meiosis*** and ***mitosis***.
- The oogonium produces ***haploid egg*** by ***meiosis*** and ***mitosis***.