Date: 2077/09/21

EXPERIMENT NO: 3

NAME OF EXPERIMENT: TO STUDY VEGETATIVE AND REPRODUCTIVE STRUCTURE OF SPIROGYRA

REQUIREMENTS

(a) APPARATUS

1. Watch glass
2. Slide
3. Needle
4. Brush
5. Blotting paper
6. Coverslip
7. microscope
8. Permanent sides of scalariform conjugation and lateral conjugation.

(b) MATERIAL

1. Fresh or preserved specimen of Spirogyra.

(c) CHEMICAL

1. Glycerine

LABORATORY WORK

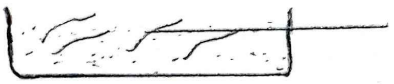
1. Some Spirogyra filament was taken in a watch glass.
2. Few filaments of Spirogyra were mounted on a slide with glycerine and coverslip.
3. The vegetative structure of Spirogyra was observed and studied under low and high power of the compound microscope.

TO STUDY VEGETATIVE AND REPRODUCTIVE STAUCTURE OF SPIROGYRA

Role No :
Date :

Systematic position

Division – Algae
Class – Chlorophyceae
Order – Conjugales
Family – Zygnemataceae
Genus – Spirogyra



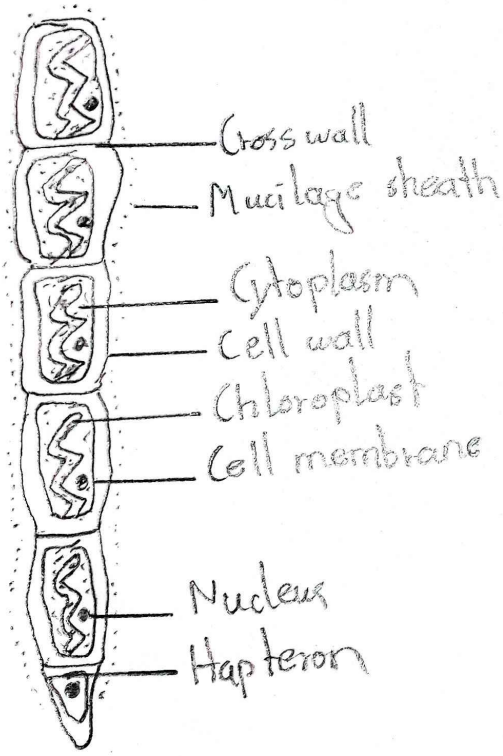


fig. filament in low power

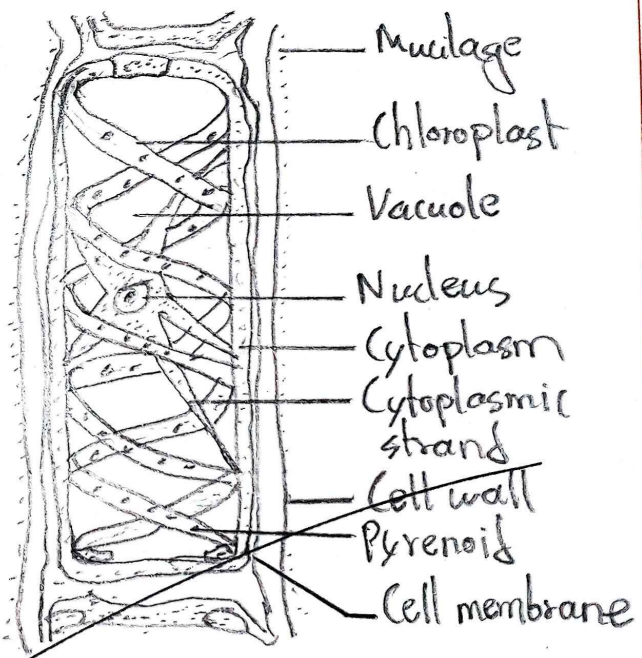


fig. a cell under high power

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4. A filament of Spirogyra and the enlarged single cell was sketched and labelled the parts.

COMMENTS

1. Spirogyra is a free-floating fresh water algae found in ponds, pools, lakes, etc.
2. It is commonly known as pond scum or water silk.
3. The plant body is multicellular unbranched filamentous type.
4. Each filament is a long unbranched thread having single ~~row~~ row of many cylindrical cells joined end to end.
5. All the cells are rectangular in shape and have thick two layered cell wall. The cell wall is made up of cellulose and pectin.
6. The pectin dissolves in water to form a slimy or mucilaginous sheath and gives the filament a slippery touch.
7. Each cell has a single central ~~large~~ vacuole, peripheral layer of cytoplasm and a nucleus.
8. Nucleus is centrally placed and is suspended in position by cytoplasmic strands, which join the peripheral cytoplasm.
9. Each cell contains spirally coiled structures, along the length, are called chloroplast. Chloroplast bears a large number of small rounded pyrenoids. Pyrenoids serve for storage of starch.

SCALARIFORM CONJUGATION

1. It is the common method of sexual reproduction in which two filaments of Spirogyra come together and line up side-by-side.
2. A small dome-shaped protuberance called transverse tube appears in their longitudinal walls facing each other.
3. The transverse tubes connect the two filaments and appear as a ladder like structure.
4. The contact wall between the two transverse tubes gets dissolved and forming passage called conjugation tube between the cells of two filaments.
5. The cells connected through conjugation tubes are called gametangia. The protoplasm of gametangia looses water and curls up to form the male and female gametes.
6. Both male and female gametes are naked, non-motile and non-ciliated.
7. The male gamete passes through the conjugation tube into the next filament consisting female gametes. Therefore, the opposite cell becomes empty.
8. The male and female gametes are morphologically alike and are called isogametes.
9. The two isogametes fuse to form a zygospore.
10. The conjugation occurs between two opposite cells of the filaments by forming conjugation between their cells. Then, it appears as a ladder like structure.

11. Zygospore is circular and dark ~~brown~~ with three concentric layers of cell wall (exine, mesine and intine).

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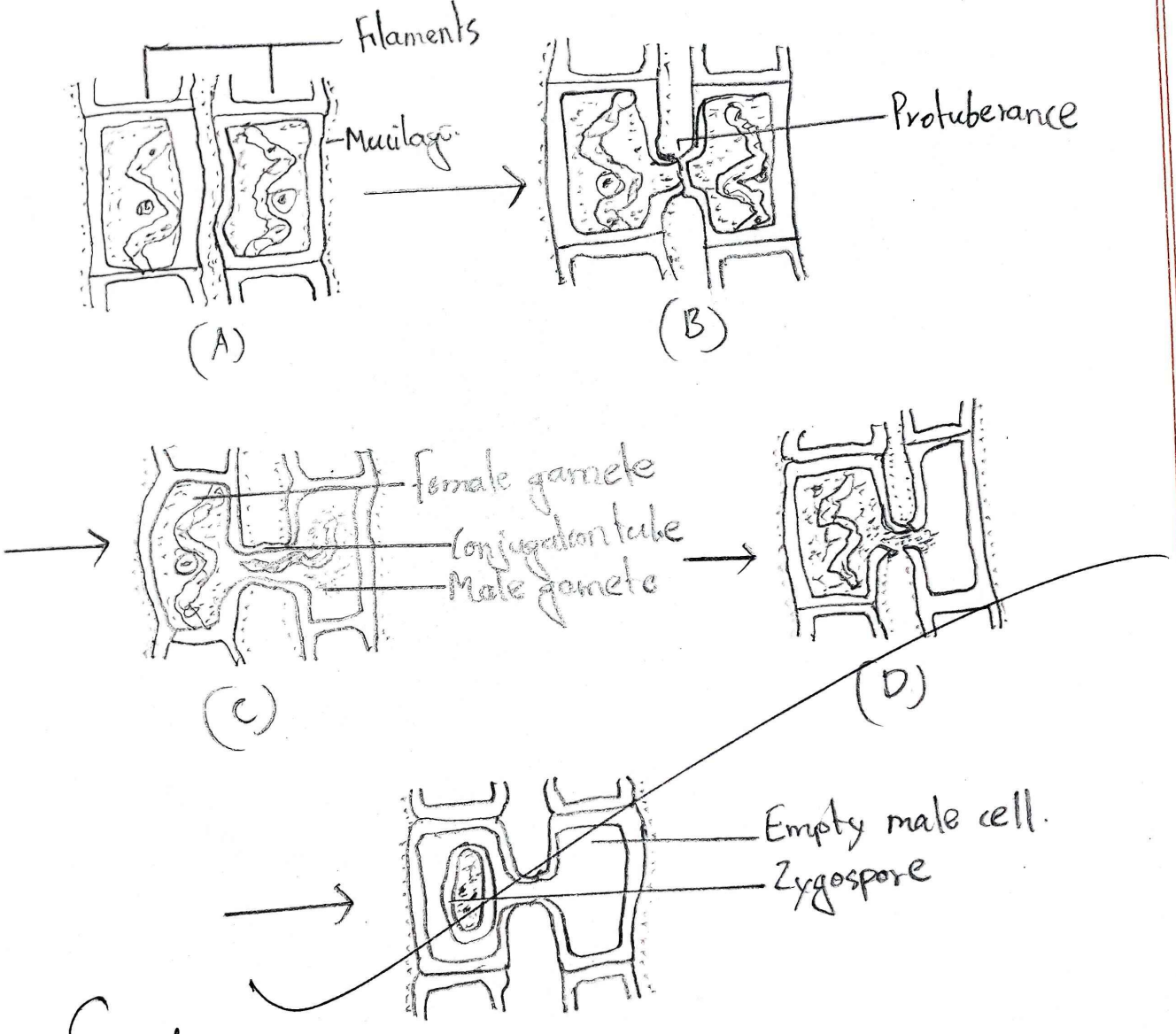

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fig. Scalariform Conjugation