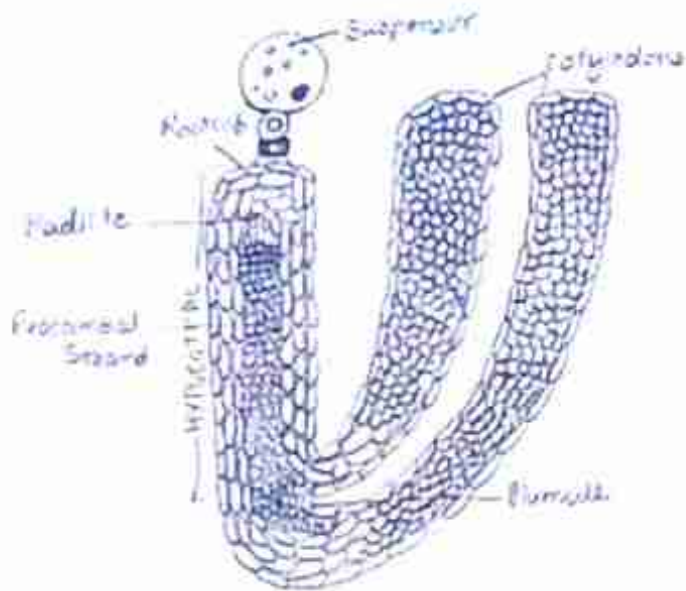




R. K. GROUP OF COLLEGE

BEHIND KALWAR POLICE STATION, KALWAR, JAIPUR (RAJ.)





Mosses and Embryos

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Object → To remove mature dicot embryo.

- crucifer embryo is typical of dicotyledons.
Ex. capsella bursa pastoris. However mustard seeds would be useful.

Procedure →

1. Take out growing and healthy seeds from the fruit.
2. Remove the seed coat while observing the seed under the dissecting microscope.
3. A curved embryo can be easily seen and separated.
4. Mount the embryo in glycerine and study.

Observation →

- The embryo consists of embryonal axis with a large lateral cotyledons. The cotyledons cover a small plumule.
- At other end is swollen suspension.
- The position of embryonal axis which is above the level of cotyledons is called epicotyl and below the level of cotyledon is hypocotyl.
- The pronounced curvature of cotyledons is due to their own enlargement and also of the hypocotyl.

Types of Ovals

The Ovals are of various types based on its orientation on the surface the orientation differs on the position of micropyle, chorion, and germ.

It is of following types:

1. Orthotrophic Ovals :- In this kind we observe in this type female micropyle and chorion is on one line in position of Placenta and Polygamete etc.

2. Paratrophic Ovals :- In this type the ovule are to inward oriented and the micropyle and chorion are in one line but some parallel of junction.
- The micropyle is in inward position.

Ex. - Helianthus, Aster etc.

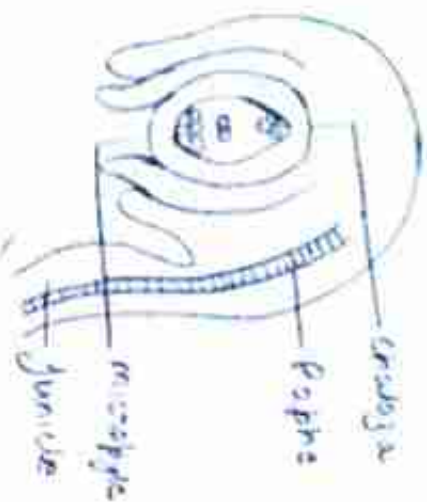
3. Heterotrophic Ovals :- In such ovule the micropyle and chorion are in one line but at 90° angle to junction.

Eg. Pterocarpus etc.

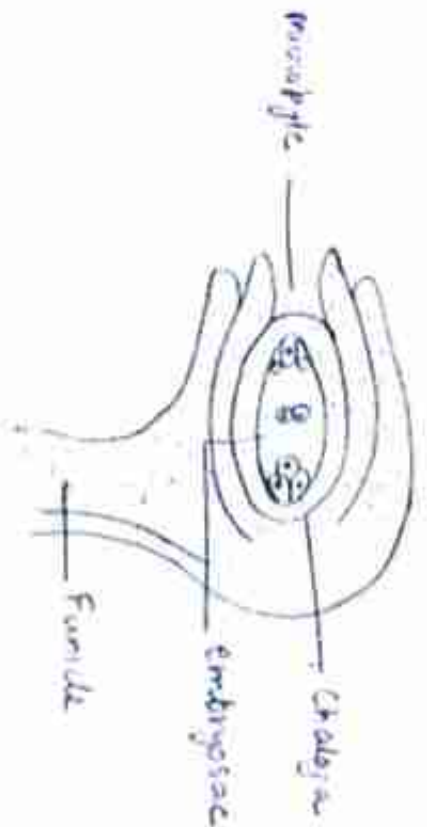




Cystobolus ovule



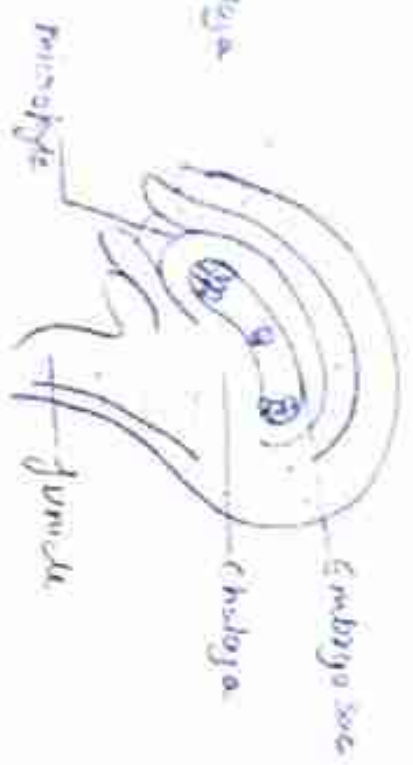
Cratichneum ovule



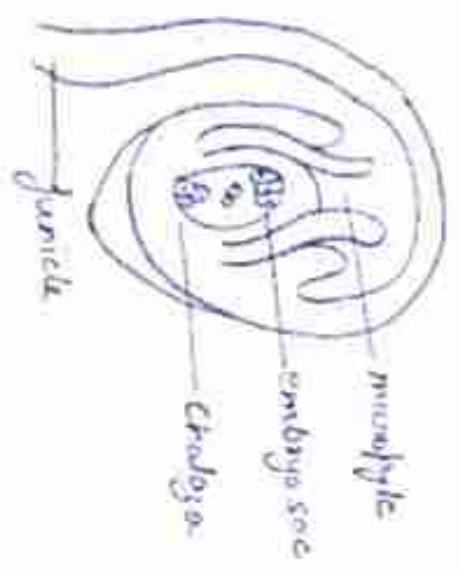
Merisandropous ovule



Cyclophorus trapezoid ovule



Amphitropous ovule



Crataephus ovule

4. Camphylotropus Ovale :- In such ovule the micropyle and chalazae are not in one line.

- It is curved by but the embryo is straight.

ex. Egg, Mustard etc.

5. Amphitropus Ovale :- The anterior part of the ovule is so curved that the embryo also shows curvature and becomes horse shoe shaped.

- Such type of ovules are found in family Phytaceae.

ex. Poppy etc.

6. Circinotropus Ovale :- In such types of ovules the female gamete continuously and curve 180° to 360°.

- Micropyle and chalazae remain in one line.

- The unilateral growth gives an appearance of that integument.

- It is found in members of Euphorbia.

ex. Euphorbia etc.



Preparation of Pencil Glue

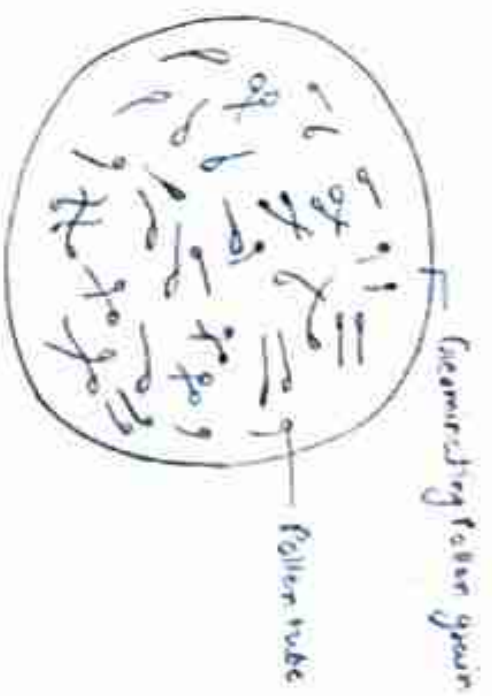
Materials required :-

Portion of Distillatum (sugar, sugar),
Other portion: Sugar (sugar), paper, aluminium
(sugar), also a dry distillate, easily available, fruit, sugar,
slide, cassette, microscope, water etc.

Procedure :-

1. Prepare 15% sugar solution by dissolving 15gm sugar solution by dissolving 15gm sugar in 100ml of water, add a pinch of tartaric acid, sugar, clean the cavity slide and place a drop of this solution in the cavity.
2. Remove mixture carefully from glass. Remove the excess from the cavity and the brush from the cavity. Wash the brush with distilled water.
3. Place a cassette over the cavity.
4. Allow the slide to remain as such for a few hours. Remove the cassette on glass and clean slide in a case of sugar.





Germination of pollen grain

- The lower slide of cover slip with germinated pollen grains should be in contact with saffron.

Observe the slide :-

- Numerous germinated pollen grain are seen.
- A pollen grain has exine and intine where pollen tube comes it shows nucleus and two small male gametes.

Preparation of pollen grain for study

Following are steps in preparation of slide for pollen study.

Material → The pollen from material (anther) is collected fresh or freshmum anther can be used.

Procedure → The anthers are picked by clean forceps for preparation of slide.

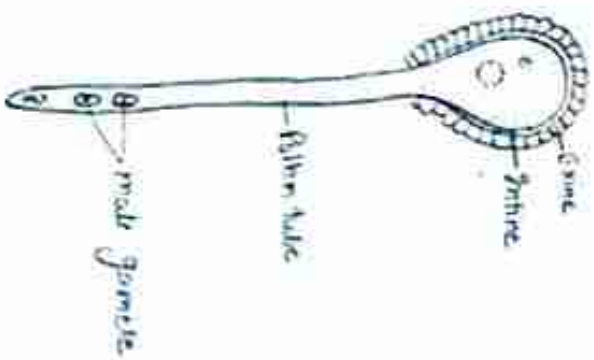
- The anthers are trapped by needle on clean slide.

- The mass of pollen grain picked up by the first and of forceps and transferred to the centre of anther where microscope.

- A drop of alcohol is added to the pollen grain this release oily and mucous substance in the form of a ring around pollen upto 3-4 drops of alcohol used.

- The ring is wiped clean with cotton swab with alcohol procedure and observation. A small pellet of glucose, jelly prepared with material given is taken it placed over the mass of pollen grains cover slip is also placed over the pellet.





Structure of Pollen



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- A small piece of paraffin wax is placed to cover slip.
- Both jelly and wax are warmed over the flame of spirit lamp in such a way that while the jelly spreads a little, the remaining vacant space below the cover slip is occupied by wax.

MONOCOT EMBRYO

Object :-

Study of slide of longitudinal section of monocot (maize) seed.

Observation :-

- It is a fruit caryopsis where fruit wall is fused with seed coat.
- The grain consist of seed coat fruit wall endosperm, cotyledon, plumule and radicle.
- Grain shows two region the larger portion is endosperm and small portion is embryo.
- Endosperm is a nutritive tissue which stores large amount of starch.

The embryo consists of:

(a) Shield shaped cotyledon called scutellum

(b) The embryonal axis.

- Radicle is surrounded by a root sheath called coleoptila.

Structure of Mature Anther

Object :- Study of TS of mature anther.

Observation :- An anther is four chambered.

- The wall layer consist of an outer epidermis and endothecium, one to three middle layer and one inner most tapetum.

- The tapetum at maturity is multinucleate and contains dense cytoplasm which is digested and up by the developing microspores prior to dehiscence the tapetum and also the middle layer degenerates.

- The microspores on pollen grain are all just emerged in tetrad later these separate and grow as individual pollen grain dispersed throughout the anther. Each shows characteristic shape, size and structure.

T.S of seed coat of *Cicer arietinum*.

The seed coat of *cis* is brown to yellow, with its hard in top and smooth at bottom. Seed coat is brown in colour from outer and light yellow in colour from inner side. In embryo there are 2 cotyledons are present.

Seed coat $\rightarrow$ There are 3 main regions are differentiated.

Epidermis $\rightarrow$ This is outer most is. Palisade layer where cells are large long and narrow. The length of cells are ~~long~~ are different and surface of seed coat is ridged and smooth.

Sub epidermis $\rightarrow$ This layer is made up of small cells.

Parenchyma $\rightarrow$ This layer contains spongy parenchyma outer layer cells are large and inner layer cell are small in size.



Figure 10.10