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Department of Botany
Class: Deg.I(Hons.)
Paper: II(Bryophyta)
Topic: Anthoceros(contd.)
Lecture No.-180
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General account of Anthoceros(contd.):

Sexual Reproduction in Anthoceros (contd.):

Archegonium of Anthoceros:

Archegonia develop in the flesh of the thallus on dorsal surface. The place of an archegonium on a thallus can be identified by the presence of a mucilage mound.

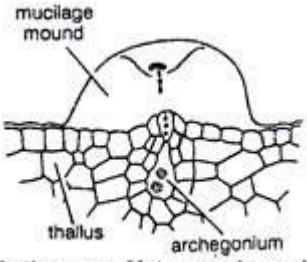

Fig. 5. *Anthoceros*. Mature archegonium with mucilage mound.

Structure:

A mature archegonium consists of two to four cover cells, an axial row of four to six neck canal cells, a venter canal cell and an egg. The jacket layer is not distinct from the other vegetative cells like other Bryophyte.

Development:

The development of the archegonium starts on the dorsal surface of the thallus from a single superficial cell which acts as an archegonial initial. It can be differentiated from other cells by its dense protoplasm.

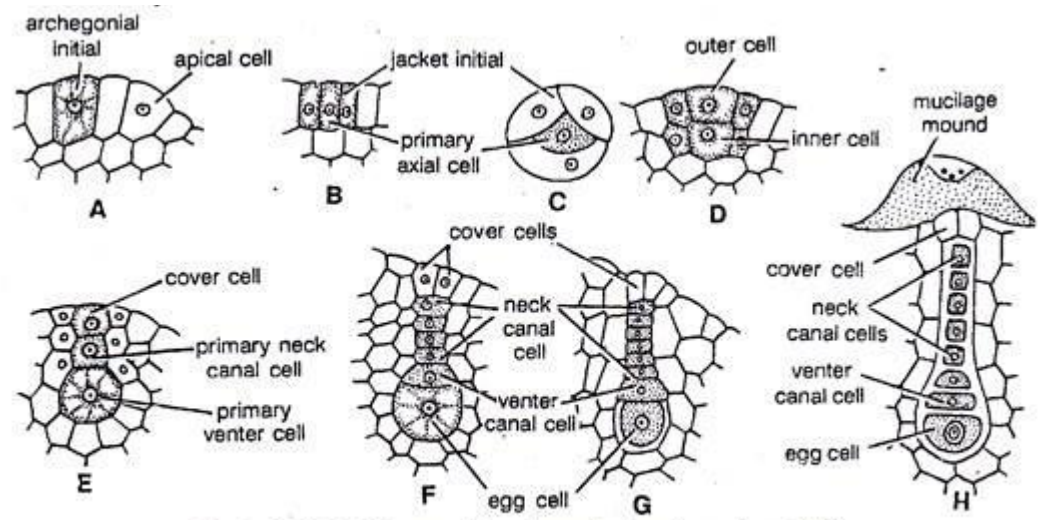

Fig. 6. (A-H). *Anthoceros.* Development of archegonium. (A-H). Successive stages in the development of archegonium.

The archegonial initial may divide by transverse division to form an upper primary archegonial cell and lower primary stalk cell or it may directly functions as primary archegonial cell.

The primary archegonial cell divides by three' successive intersecting walls or periclinal vertical walls to form the three peripheral initials or jacket initials and a fourth median cell, the primary axial cell. Jacket initials divide by transverse divisions to form into two tiers of three cells each. The cells of the upper tier divide by anticlinal division to form six cells.

These cells divide transversely to form a jacket of six rows of sterile neck cells. The three cells of the lower tier divide by transverse and vertical divisions to form venter wall. Since the archegonium is embedded in the thallus, it is difficult to

trace the development of the cells and to distinguish them from the vegetative cells.

The primary axial cells divide by a transverse division to form an outer cell and inner (central) cell. The outer cell divides by a transverse division to form terminal cover initial and inner primary neck canal cell.

The inner cell directly functions as primary venter cell and divide only once to form upper small venter canal cell and a lower large egg. Primary neck canal cell divides by series of transverse divisions to form four to six neck canal cells. Cover initial divided by one two vertical division to form two to four rosette like cover cell at the tip of the neck.

Fertilization:

Water is essential for fertilization. In the mature archegonium, the venter canal cell, neck canal cells disintegrate and form a mucilaginous mass. It absorbs water, swells up and becomes out of the archegonial neck by pushing the cover cells apart. This mucilaginous mass becomes continuous with the mucilage mound and in this way an open passage down to egg is formed.

The mucilaginous mass consists of chemical substances. Many antherozoids caught in the mucilage enter in the archegonial neck because of the chemotactic response, reach upto the egg, and fertilization is effected. Prior to fertilization, egg enlarges and fills the cavity of the venter. Fusion of both male and female nuclei results in the formation of diploid zygote or oospore. Fertilization ends the gametophytic phase.