

## **Topic-Bryophyte II**

Subject- Botany

- i. *Kashyap contribution in study of Bryophyte*
- ii. *Bryophytes reflects ancestor of Pteridophyte*
- iii. *Spore dispersal in Bryophyte*

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*Kashyap the most famous Bryologist , provided most momentous contribution in his field which are as-*

- I. first of all they state that the formation of adventitious shoot from the stalk and disc of archegoniophore in *M. palmata*
- II. The sps ie *Pellia epiphylla* , *P. endiviefolia*,*P.fabroniana* ,occur in Himalayan region but he could not come across specimens which could be definitely referred to *P neesiana*. According to him *p. endviefolia* is common through out the western and Kumayoon Himalaya from 5000-8000ft,while *P. epiphylla* is quite common in Sikkim and eastern Himalaya.
- III. In (1919,1929) he reported *Himalayensis* as dioecious but Mehra and Handoo (1953) found it to be monoecious but pretandrous.
- IV. In 1929 he described both *Notothyales indica*,*N.levieria* as dioecious.
- V. In 1919hey also focus on vegetative thallus of bryopsida which have reduced air chambers and pore the same are better developed in the disc of archegoniophore and antheridiophore
- VI. Kashyap 1919 along with several bryologist believe that the simplest sporophyte of *Riccia* is not primitive type but is reduced type evolved as a result of descending or regressive evolution.

- VII. They also postulated that the hepaticopsida may have arisen from the pteridophyte. Since there are many features common to the groups i.e. algae and pteridophyte.

## Bryophyte reflects ancestor of Pteridophyte

According to Church (1919) the well developed sporophyte of anthocerotopsida and bryopsida with complex photosynthetic tissue focuses toward the ancestor character of pteridophyte due to presence of following features-

1. The erect leafy sporophyte become permanently attached to the gametophyte.
2. The leaves of the erect sporophyte were lost due to intense insolation and desiccation.
3. The air spaces in the photosynthetic system disappeared due to more and more dependence on the gametophyte.
4. The photosynthetic itself become reduced.
5. The stomata first become functionless.

Thus according to Church the well developed sporophyte of anthocerotopsida and bryopsida with complex photosynthetic tissue containing intercellular tissue and epidermis with functional stomata are primitive and nearer to ancestral type of pteridophyte.

## Spore Dispersal in Bryophyte

Although there is no special mechanism of spore dispersal in bryophyte, But this spore dispersal mechanism continues by different methods in different sps of bryophyte –

- i. In Riccia the wall of capsule disintegrate before the spores are mature and the later remain enclosed in the outer layer of calyptras inside tissue of thallus.
- ii. In the Hepaticopsida and Bryopsida the seta elongates rapidly after the spores are formed, and the calyptra is ruptured. In the bryopsida the

- seta elongates after the capsule has been pushed through above the calyptra in dehisces.
- iii. In a large no jungermaniales the mature capsule splits from the apex to the base into four valves along predetermined longitudinal lines of dehiscence which usually backwards.
  - iv. In marchantiales , specially these have ring like thickening on the cells of the wall ,the dehiscence of the capsule start at the periphery of the apical cap, which is marked by more or less zig zag line .In some marchantiales which have no ring like thickening in the cell wall eg- reboulia , Mania, cryptomitrium, the upper part of the wall of the capsule comes off as a lid and the lower part remains in intact cap.In anthoceros the capsule dehisces by 1to 4 slits along predetermined longitudinal lines of dehiscence.
  - v. In mosses like sphagnum Braunia ,aulacopilum ,the capsule is covered by an operculum which simply falls off hen the spores are mature and thus liberated.