SPORE PRODUCING ORGANS → These are called synangia. They are trilobed and trilocular structure in species of Psilotum but bilobed and bilocular structure in Tmesipteris.

Synangia occurs on aerial branches in the axil of bifid sporophyll.

DEVELOPMENT OF SYNANGIUM → Each chamber of synangium develops from a seperate initial cell which divides periclinally into the outer primary parietal cell and inner primary sporogenous cell. They form the jacket and sporogenous cells respectively. Finally spore mother cells are form from the sporogenous cells. They undergo meiosis to form the haploid spores.

MATURED SYNANGIUM →

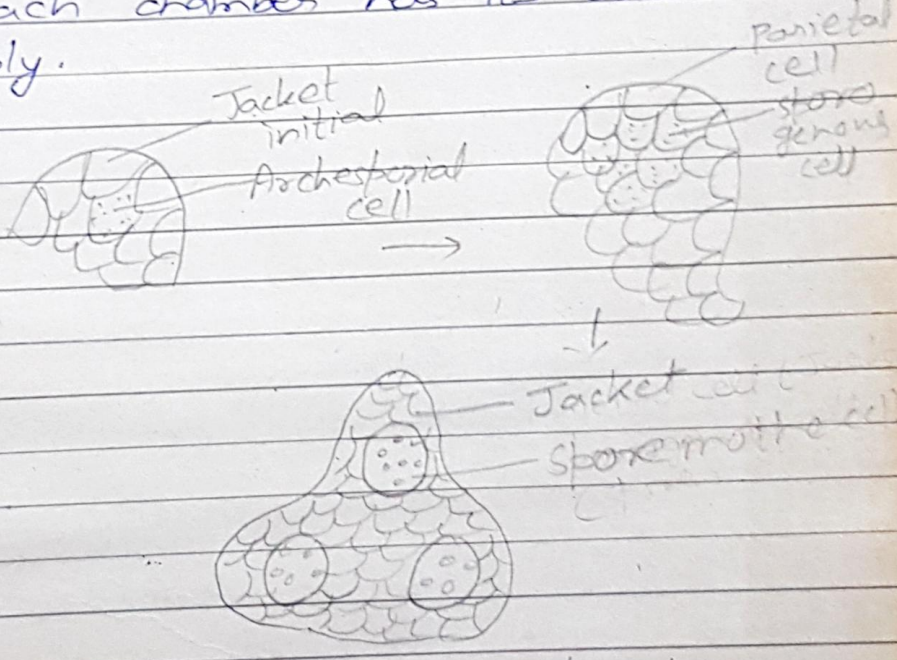
1. It is a trilobed and trilocular stucture in Psilotum but bilobed and bilocular in Tmesipteris.
2. It has a thick massive wall.
3. Spore cavity contains numerous spores.
4. All spores are of one type, indicating homosporous condition.
5. Synangium opens through a longitudinal slit to released the spores.

NATURE OF SYNANGIUM → Several views

have been advanced to explain the nature of Synangium. It has been regarded as a septed sporangium or synangium or an organ sui generis but its synan-gial nature has been supported on account of following facts.

(a) Each chamber of the synangium is develop from a seperate initial cell.

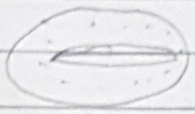
(b) Each chamber has its own vascular supply.



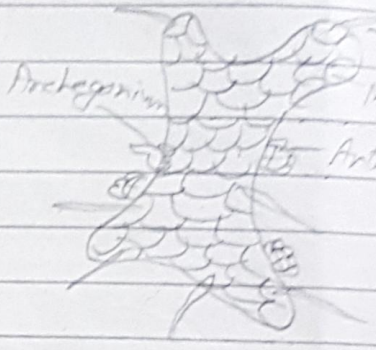
Various stages of development of Synangium

GAMETOPHYTE → Spore germination and gametophyte formation have been studied in detail by Darnell, Smith (1917). The spores are slow to germinate. They germinate by putting out a germ tube which develops an apical cells. That forms the mature gametophyte have been following characteristic —

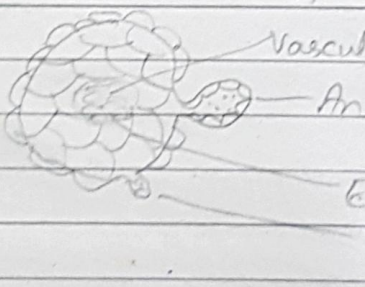
① Gametophyte is long and cylindrical.
② It is dichotomously branched.
③ It bears rhizoids.
④ It is monoecious.
⑤ Cells are infected with mycorrhizal or hyphae.



P. nudum Mature spore



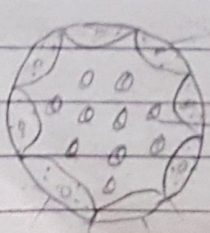
Apical meristem & distribution of sex organs.



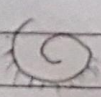
T.S of Large gametophyte showing vascular tissue.

SEX ORGANS

ANTHERIDIUM → The male sex organ antheridium is simple structure with a jacket. The cavity contains andro-cytes forming spiral, multiciliate male gametes like Ferns.

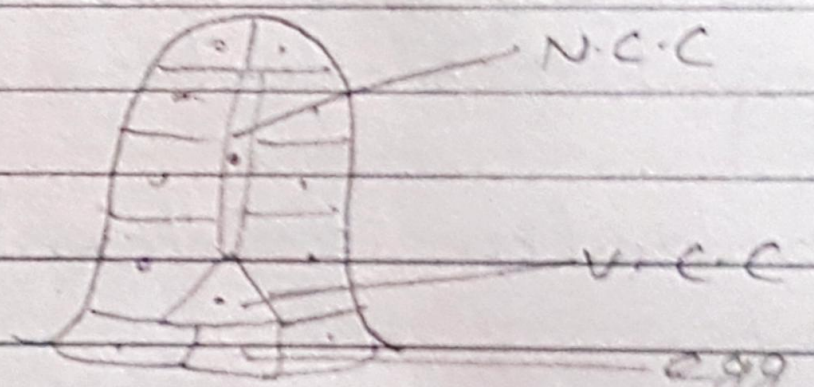


MATURED ANTHERIDIUM



MATURE ANTHEROZOIDS

ARCHEGONIUM → The flask like archegonium is simple and jacketed. The venter contain an egg and a V.C.C. Neck has one N.C.C.



MATURED ARCHEGONIUM

FERTILIZATION → It requires water and is of internal type.

EMBRYOGENY → It is of exoscopic type.