

BOTANY(GENERAL)

SEMESTER-II

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PTERIDOPHYTA:

Systematic Position:

Division: Pteridophyta

Class: Pteropsida

Order: Filicales

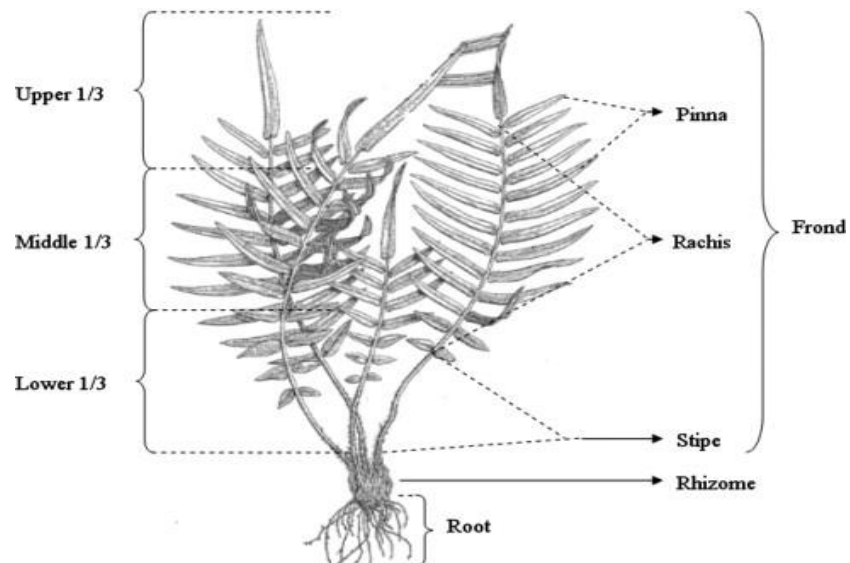
Family: Polypodiaceae

Genus: *Pteris*

Indian species are: *P.vitata*,
P.Glandiflora etc.

External morphology of the Sporophyte:

PTERIS:



The sporophytic plant body consists of a basal rhizome, covered with brown scales. Adventitious roots are developed from the lower part of the rhizome. Leaves are large, petiolate and pinnately compound. Each leaf consists of a central axis from which lateral leaflets or pinnae are developed. Each pinnae is sessile, dark green, has a midrib with bifurcate venation near the margin. Fertile leaflet bears sorus on the ventral surface throughout the margin, which is continuous type and called as coenosorus. Immature sorus is greenish but mature sorus is dark brown in colour.

Transverse Section(T.S.) of fertile leaflet:

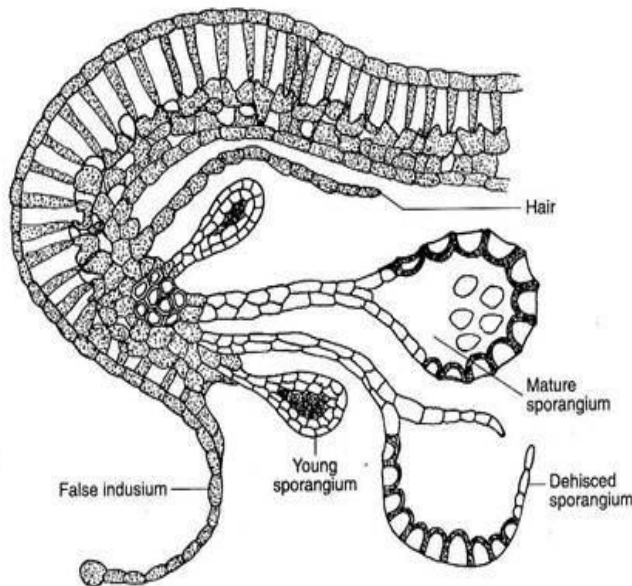


Fig. 7.104 : *Pteris* : T.S. of pinnule showing sorus (a portion)

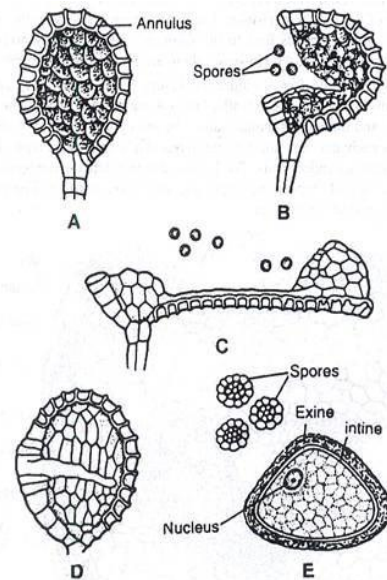


Fig. 31.6. (A-D). Structure and dehiscence of sporangium in *Pteris vittata* ; E-F. Structure of spore.

T.S. of fertile leaflet shows upper and lower epidermis, stomata are present at the lower surface. Mesophyll parenchyma tissue is present in between upper and lower epidermis, vascular bundles are present at the centre. A group of sporangia are developed on both sides of the lower surface. A single sporangium is stalked with globose spore sac consists of outer thick walled cells called as annulus and inner thin walled cells called as stomium enclosing many spores. Pteris is homosporous , so all spores are similar in size and shape. Each spore is triangular with outer wall layer called as exine and an inner layer called as intine enclosing dense cytoplasm and prominent nucleus.

Gametophytic Generation:

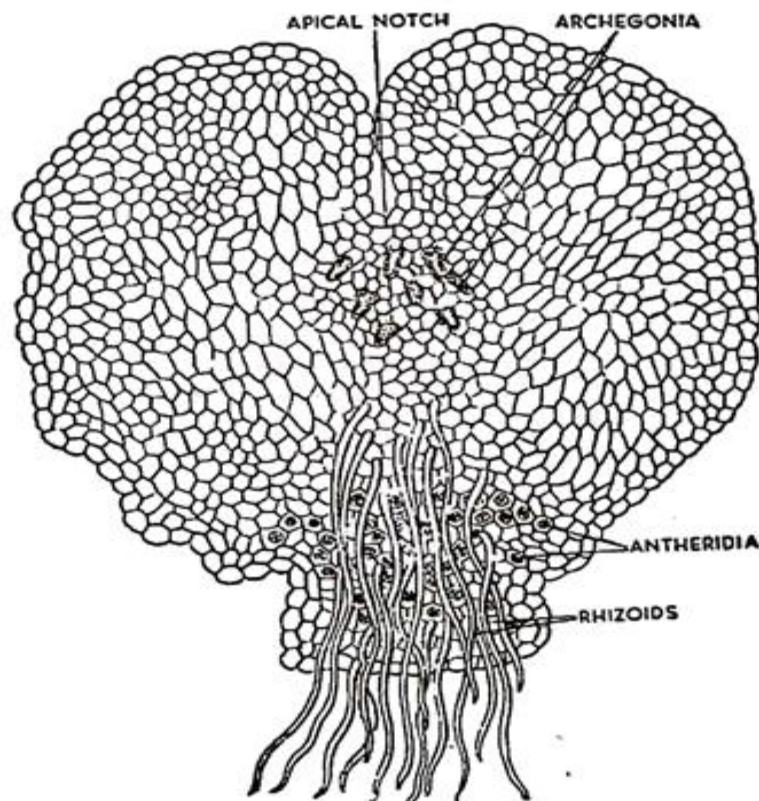


Fig. 212. Mature prothallus (gametophyte) of fern viewed from below.

Spore is the first cell of gametophytic generation. The spore after liberation of the sporangia germinate to produce prothallus. Mature prothallus or gametophyte is heart shaped, monoecious and protandrous. Antheridia appear first and are confined to the basal central region along with the rhizoids. Archegonia are develops in groups near the apical knotch. After maturation of antheridia and arche gonia , fertilization takes place, which produce diploid zygote, zygote develops into embryo and embryo after repeated division produce new sporophytic plant body.

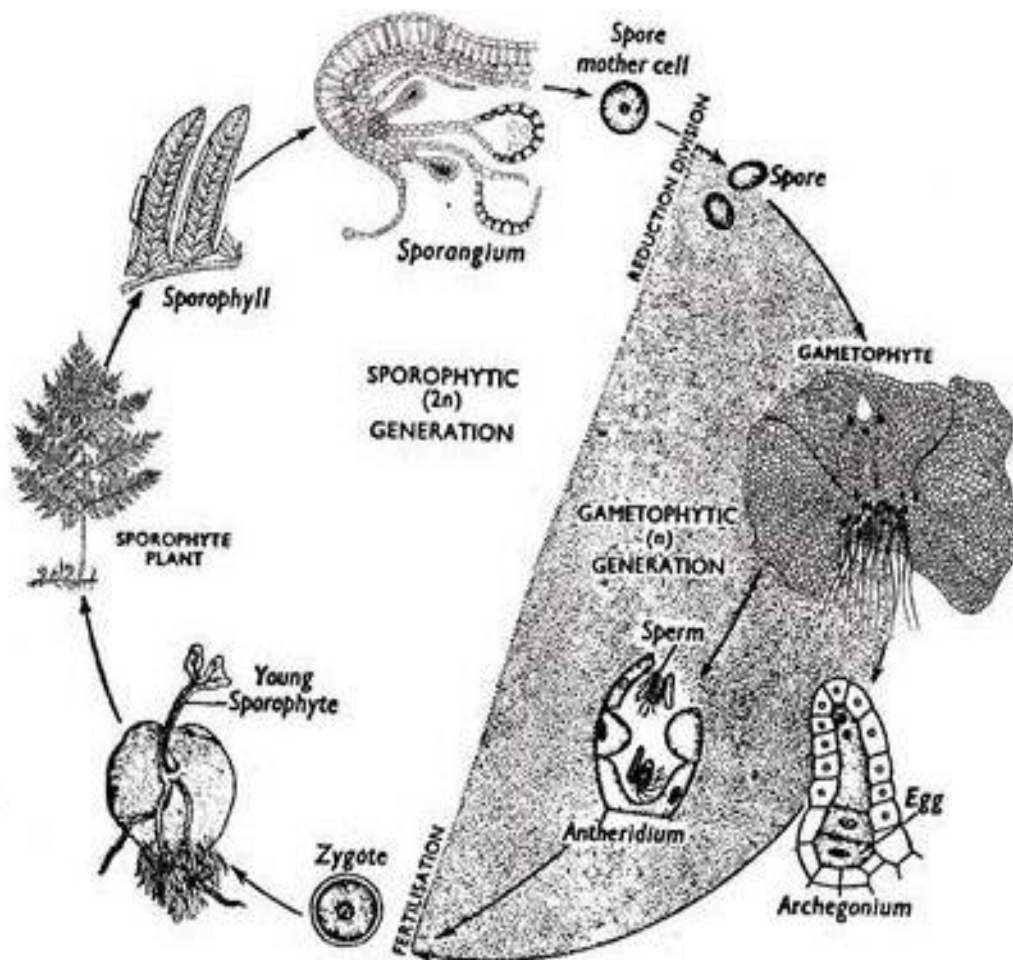


Fig. 7.110 : Life cycle of *Pteris*