

Origin of siphonostele =

- Siphonostele has originated by the development of pith in the center of protostele.
- The process of medullation of protostele has been viewed according to (i) Intra-stelar origin of pith and (ii) Extra-stelar origin of pith.

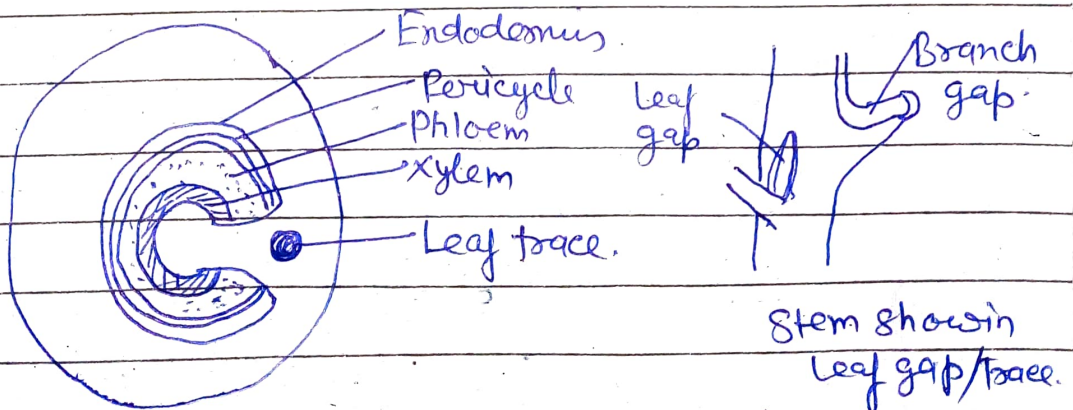
[I] - Intra-stelar origin of pith =

- According to this view pith originated as a result of transformation of tracheary elements of the central xylem core into parenchyma.

[II] - Extra-stelar origin of pith =

- According to this view protostele has transformed into a siphonostele due to migration of cortical cells in to stelar axis.
- Openings, such as leaf and branch gaps probably provided passage for the invasion of parenchyma.

Modifications form leaf gap or branch trace



Ectophloic selenostele.

Modifications of siphonostele =

➤ Depending on the presence of non-overlapping or overlapping gaps: solenostele, Dictyostele and Polycyclic steles are recognised.

➤ A siphonostele with non-overlapping leaf gap is known as solenostele. The solenostele may be ectophloic or amphiphloic.

➤ Many ferns like Dryopteris, Pteris have very small rhizome with crowded leaves. Consequently the leaf gaps overlap with each other.

➤ So the siphonostele with overlapping leaf gaps is known as dictyostele.

➤ A dictyostele has many scattered vascular strands, each of these strands is called a meristele.

➤ Faty

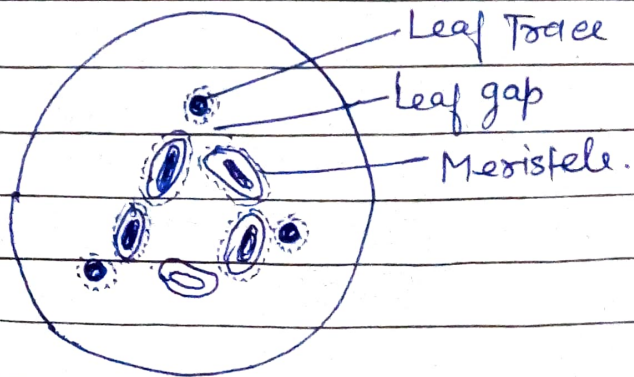
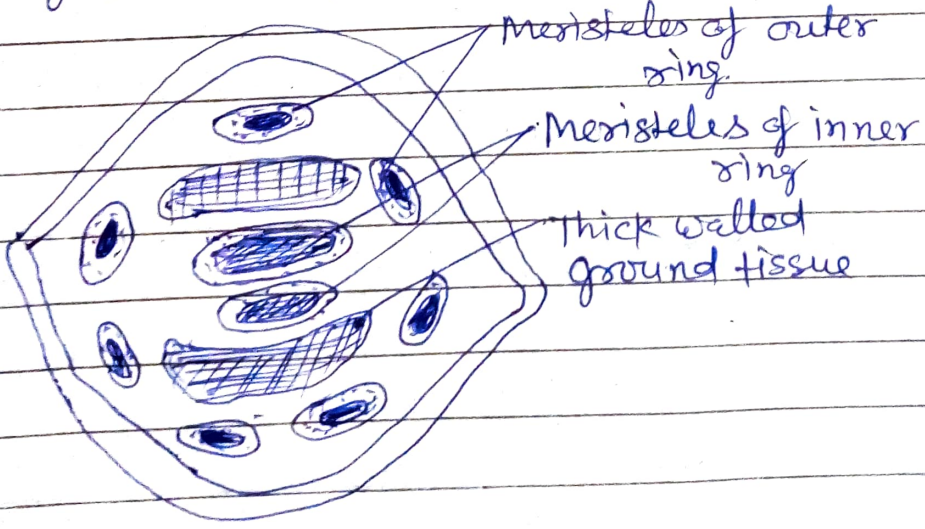


Fig - Dictyostele as seen in T.S.

Polycyclic Stele-

- If stelar structure possess two or more concentric rings of vascular tissue and are called polycyclic.
- There are two rings of vascular tissue in *Pteridium* spp., three in *Montania pectinata* and four in *Pteris podophylla*.
- If in a polycyclic stele the outer cylinder is solenostelic is called polycyclic solenostele.
- If the outer cylinder is diacyostelic, it is known as polycyclic diacyostele stele.



Poly cyclic stele.