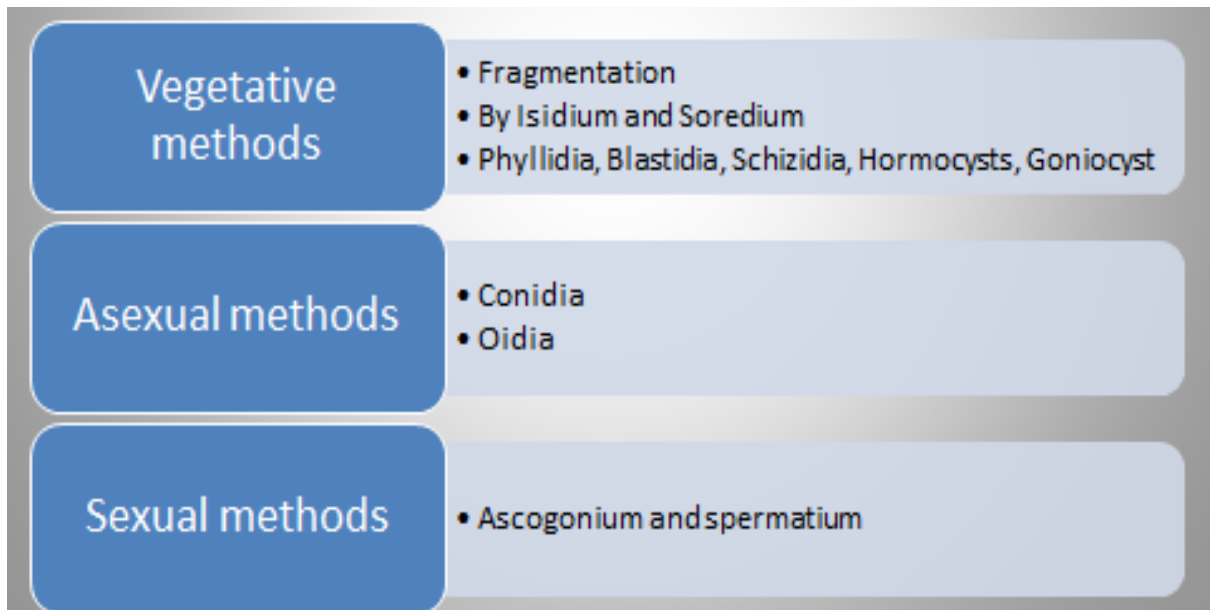


# Reproduction in lichens-

Reproduction in lichens takes place by the following methods-



## Vegetative Reproduction in lichens-

### 1. By Fragmentation

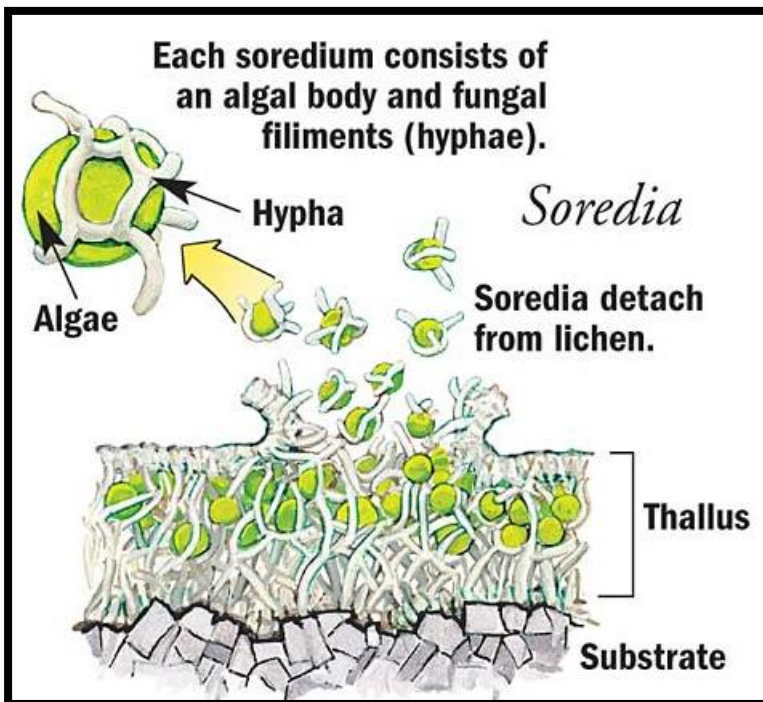
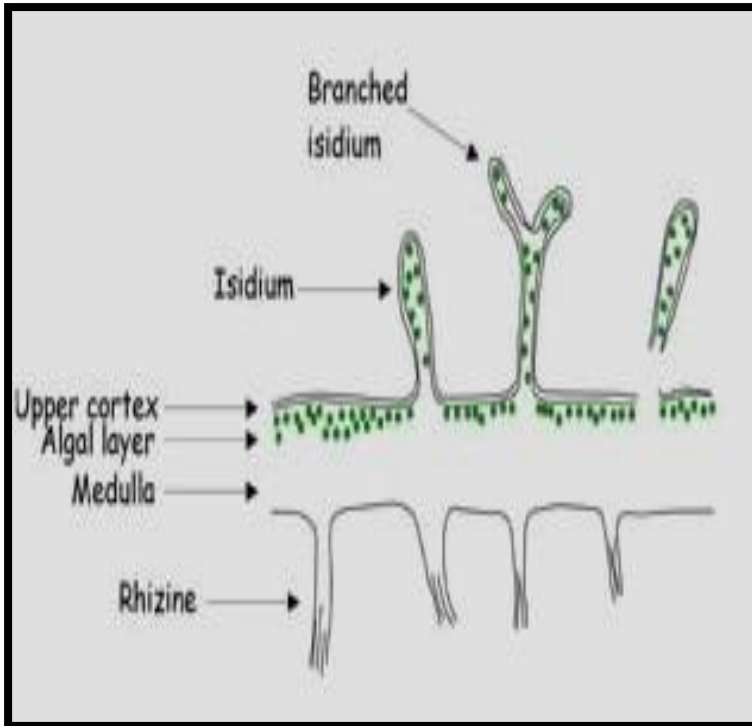
- The thallus breaks into small fragments
- Under favourable conditions, each thallus grows into a new thallus.

### 2. By Isidium

- Stalked, branched or unbranched outgrowth formed on the thallus surface.
- Consist of algal and fungal hyphae covered by definite cortex.

### 3. By Soredium

- Minute, rounded, powdery vegetative reproductive bodies in lichen formed on the thallus surface.
- Consists of few algal cells, surrounded by fungal hyphae.



## Asexual Reproduction in lichens-

### 1. Conidia

- Conidia develop in multihypal structures known as conidiomata.

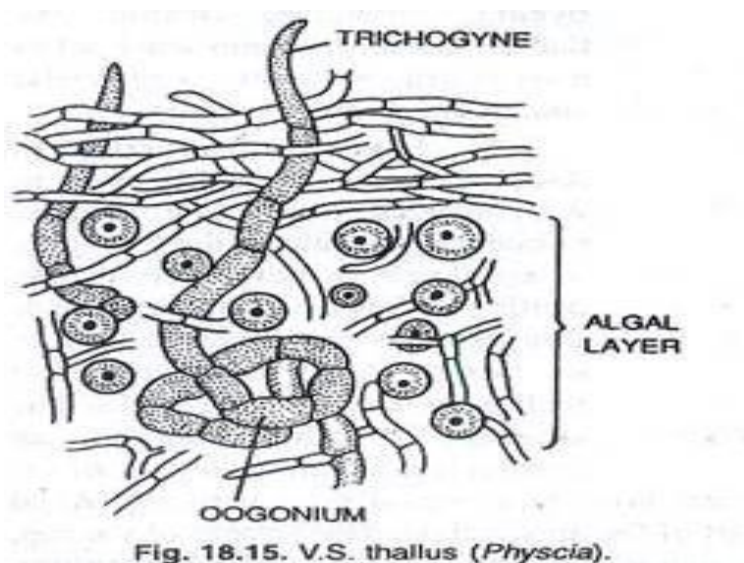
- Conidiomata is embedded in a flask shaped pycnidia.
- Each conidia germinates by means of hyphae, which when comes in contact of proper phycobiont, produces a lichen.

## 2. Oidia

- Hyphae of some lichens break up into small fragments, called oidia.
- Each oidium germinates into a hyphae.

## Sexual Reproduction in lichens-

- In lichens only the fungal partners reproduce sexually.
- The sexually reproducing lichens are either ascolichens or basidiolichens.
- Ascomycetes produce their sexual propagules (called ascospores) within microscopic organs called asci.
- Basidiomycetes produce their sexual propagules (called basidiospores) on microscopic organs called basidia.
- The most commonly seen ascospore-producing structures are apothecia, typically disc-like to cup-like and found growing from the thallus surface.



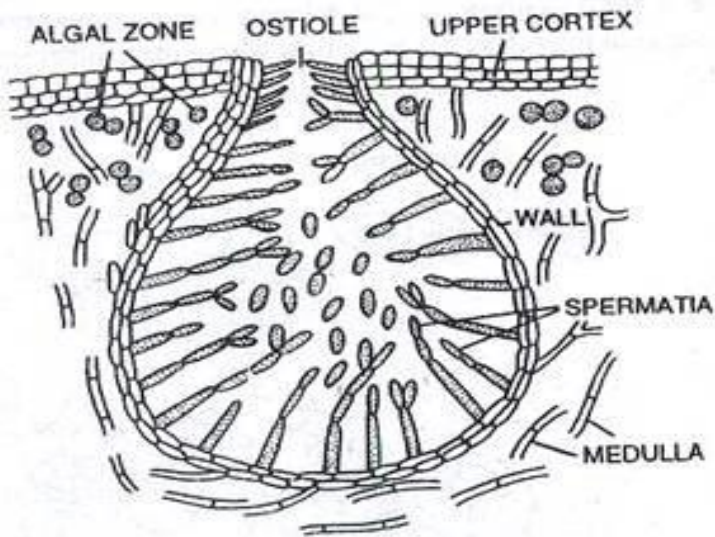


Fig. 18.13. Diagrammatic representation of spermatogonium (pycnium) of *Physcia*.

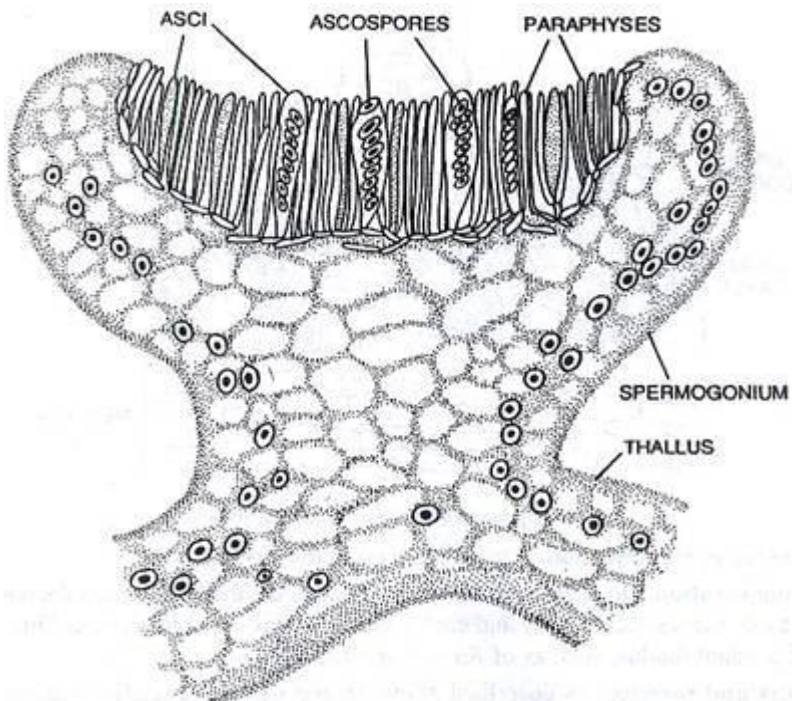
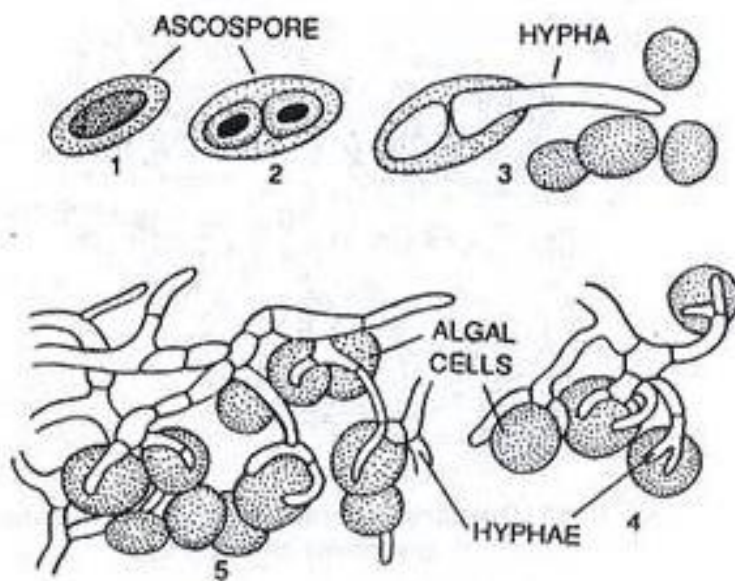


Fig. 18.14. V.S. apothecium (*Physcia*).



**Fig. 18.16.** Germination of ascospores and its association with algal cells to form lichen.

- The female reproductive organ is an ascogonium (cargogonium) which develops from hyphae deep in the algal layer. It is a long multicellular hypha, the coiled base of it is the oogonium and the straight portion above it is the trichogyne.
- The male reproductive body is spermagonium (pycnium). It is flask shaped cavity immersed in the thallus and opens to the exterior by small ostiole. The fertile hyphae lining the inner surface of the spermagonium produce large number of small non-motile gametes, spermatia. The spermatia are functional male gametes.
- The spermatia are lodged against the sticky protruding tips of trichogynes.
- The growing trichogyne comes in contact with spermatia.
- The walls of contact dissolve and the male nucleus gradually passes downward to the oogonium, where it fuses with the female nucleus of the egg and the fertilization is effected.
- Numerous branched, septate, ascogenous hyphae develop from the oogonium.

- **The ultimate or penultimate cells of the ascogenous hyphae develop into asci.**
- **The development of asci and ascospores resembles to that of typical ascomycetes.**
- **Spores are shed only during moist weather.**
- **On germination, a spore produces a germ tube which grows in all directions and as soon as it comes in contact with a suitable alga, additional branches are formed to engulf the alga.**
- **Combined growth of the fungal and the algae continues and result in a lichen.**
- **In absence of the suitable alga, the germ tube dies.**