EPIPHYTES

- Plants that seek accommodation in other plants but do not absorb food from them are called epiphytes. Most epiphytes grow upon various types of plants.
- Common epiphytic orchids are *Dendrobium, Vanda, Bulbophyllum, Raphidophora, Scindapsus,* etc. Mostly they belong to family Orchidaceae and Araceae. *Vittaria* and *Drymoglossum* are epiphytic ferns.
- In temperate regions of Himalayas, all classes of epiphytes ranging from algae, lichens, mosses to pteridophytes and orchids are found.

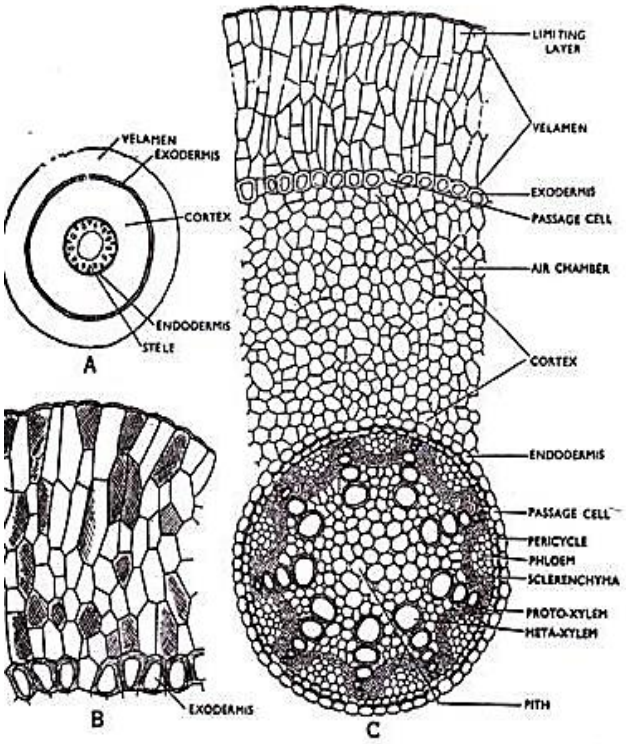
General adaptive features of Epiphytes: -

1. **Dispersal –** Seeds are light and very small, eg. *Vanda*. Sometimes they are provided with long hairs and allied structures so that they may be easily conveyed by the wind on the trunks and branches where they are easily lodged in the fissures or holes. Fruits of epiphytic orchids like *Scindapsus* and *Rhaphidophora* are fleshy berries which are eaten by birds and conveyed in their beaks for lodgement on tree trunks.
2. **Fixation –** Climbing roots are present in *Scindapsus* and *Pothos* to fix the epiphytes to trunks of trees. In case of *Vanda* and other orchids, there are attaching roots called clinging roots. Often, division of labour is observed between attaching and absorbing roots.
3. **Provision of water –** Epiphytic phanerogams mainly face this problem. In orchids, special aerial roots are developed; these roots are provided with spongy sheath, called as 'velamen' by means of which they can absorb moisture from the atmosphere. In some like *Dendrobium* and V*anda,* cortical tissues of aerial roots show chloroplasts.
4. **Obtaining food –** Epiphytes obtain their food in various ways. Carbon dioxide is taken from the air; mineral matter and humus accumulated within roots or within specialized leaves, like pocket leaves or mantle leaves as seen in some ferns like *Asplenium nidus*.
5. **Body construction –** Whole structure of the shoot varies greatly in epiphytes. Some species like *Tillandsia usneoides* are rootless. Some orchids like *Polyrrhiza funalis* consist almost entirely of green roots. In *Dischidia* (Asclepiadaceae), one of the leaves form pitcher; this pitcher is provided with freely branching absorptive roots by the help of which plant absorbs water from the pitcher.

6. **Leaves –** Epiphytes usually have succulent leaf with thick cuticle and sunken stomata. They need to conserve water as their root is not in soil and have limited water supply.

Ecological Anatomy of Epiphytes:

Internal structure of *Vanda* root:



Root of orchid. A. Complete transverse section (diagrammatic) ; B. Velamen with exodermis (enlarged). C. A portion of the root in transverse section.

- Aerial epiphytic root of *Vanda* thick, fleshy, unbranched and silvery white in colour.
- Outermost layer is a modification of multiple epidermis. These layers are parchment like dead and empty.
- Cells are polygonal in shape and can absorb moisture from atmosphere. The tissue is called velamen tissue.
- Next to the velamen tissue is the single-layered exodermis.
- Following this is the cortex with some air chambers.
- Endodermis also thick-walled but with thin-walled passage cells.
- Xylem and phloem radially arranged and well developed.