

A portion of T.S. of stem of Hydrilla.

2. Floating hydrophytes: → These plants float on water surface. They are of 2 or (2) types —

- (A) Free floating Hydrophytes.
- (B) Fixed floating Hydrophytes.

(A) Free floating: → These plants do not swim on the water surface. They have no contact with soil. They have contact only with water and air. These plants may travel a great distance by water currents. The roots of these plants are not fixed in the soil. The common examples are Lemna, Azolla, Pistia, Eichornia, Trapa, Sagittaria etc.

Anatomical characters: →

1. Presence of air cavities and air chambers.
2. Presence of stomata on the upper surface of epidermis.
3. In leaves, mesophyll is differentiated into palisade and spongy tissue.
4. Mechanical tissue is absent.
5. There is no secondary growth.
6. Trichocystoids are present.

5. Reduced conducting system: → conducting tissue is poorly developed. vascular tissue is found towards the centre of stem with very few bundles towards the periphery. secondary growth is completely absent in hydrophytes.

Types of hydrophytes: → On the basis of the relation with aquatic habit, hydrophytes will be classified into following three (3) groups: —

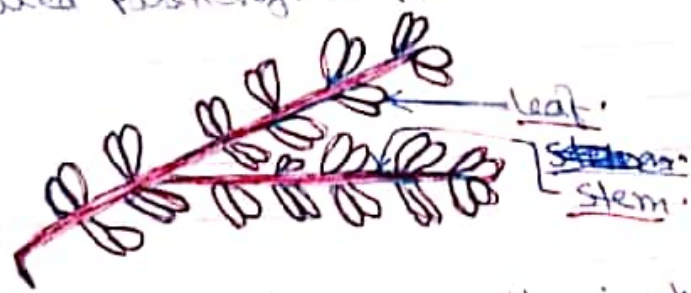
1. Submerged plants.
2. Floating plants.
3. Amphibious plants.

1. Submerged hydrophytes: → These plants are completely submerged. They grow under water. These plants are quite common in our country. They occur in deep tanks, Ponds & lakes etc. The common examples of hydrophytes (submerged) are as follows: —

- Monocot — Hydrilla, Potamogeton, Vallisneria etc.
- Dicot — Ceratophyllum, Utricularia.

Anatomical Characters: →

1. They possess big intercellular spaces.
2. Cuticle absent or poorly developed.
3. Normally epidermal cells possess chloroplast.
4. Stomata absent if present they are non-functional.
5. Mesophyll is not differentiated into palisade & spongy tissue.
6. Vascular tissue is very-much reduced.
7. Mechanical tissues are absent or extremely reduced.
8. There is no secondary growth.
9. Thin walled parenchyma present.



(A Portion of Hydrilla plant showing habit)

Q. → Describe the anatomical characters of hydrophytes.

Ans. → Introduction: →

Plants are divided into different groups on the basis of different characters. The plants which normally grow in swampy and marshy habitats are known as hydrophytes. On the point of ecological view Warming (1950) classified the plants into following three classes —

1. Hydrophytes.

2. Xerophytes.

3. Mesophytes.

Hydrophytes includes the plant which grow in water or in moist habit. The principal anatomical adaptations of hydrophytes are as follows: —

Anatomical adaptation: →

1. Presence of spongy tissue system.

2. Reduced root system.

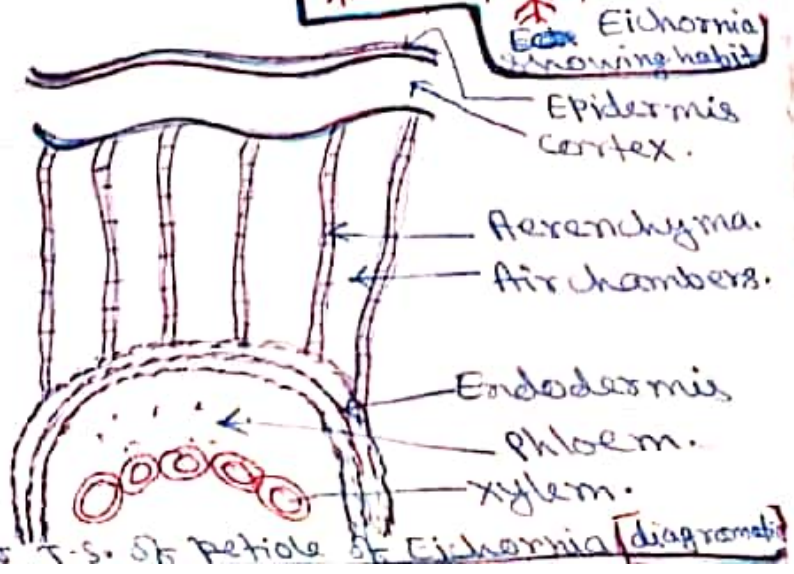
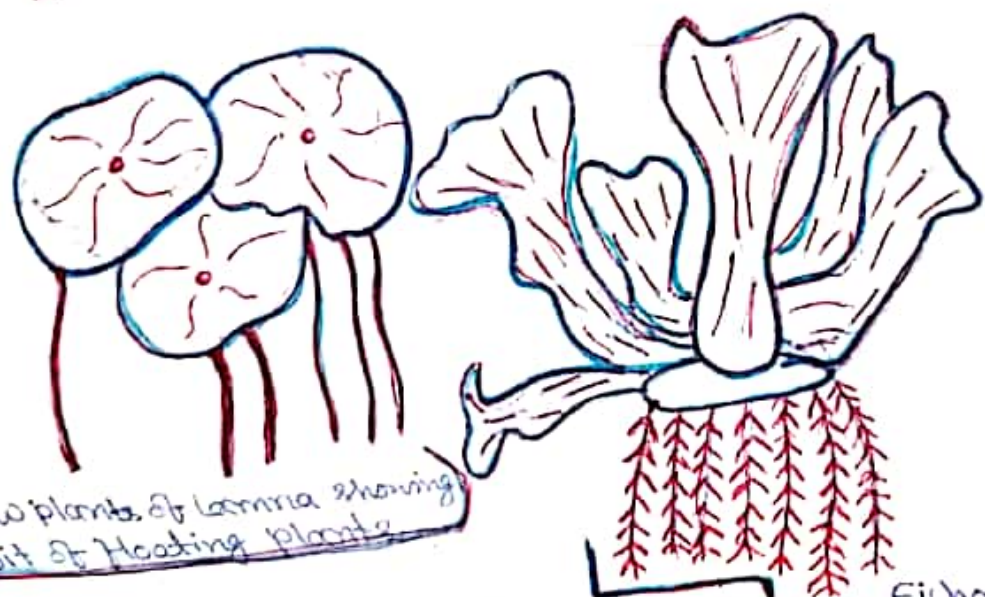
3. Presence of thin cuticle.

4. Absence of mechanical tissues.

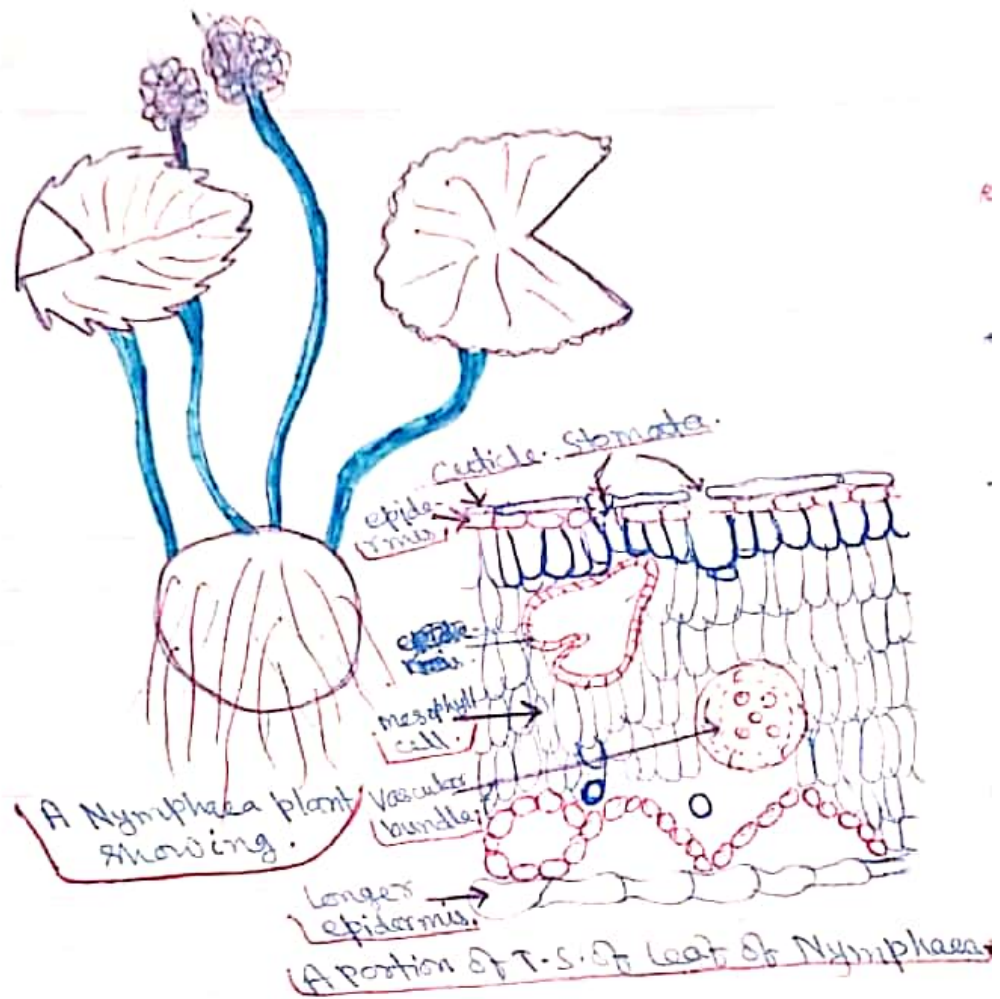
B Fixed Floating hydrophytes: → The root of these plants are fixed in the mud. The leaf and other parts float on the water surface. The common examples are - Lotus, Nymphaea, Jussiaea, Mussellia, Victoria etc.

Anatomical characters: →

1. Air spaces are much developed.
2. Upper epidermis covered by waxy coating.
3. Stomata are present on the upper surface of leaves.
4. In leaves the mesophyll is well differentiated into palisad and spongy tissue.
5. There is no secondary growth.
6. In Jussiaea respiratory (lenticel) not are present.
7. Mechanical tissue is normally absent.



A portion of T.S. of Petiole of Eichhornia (diagram)

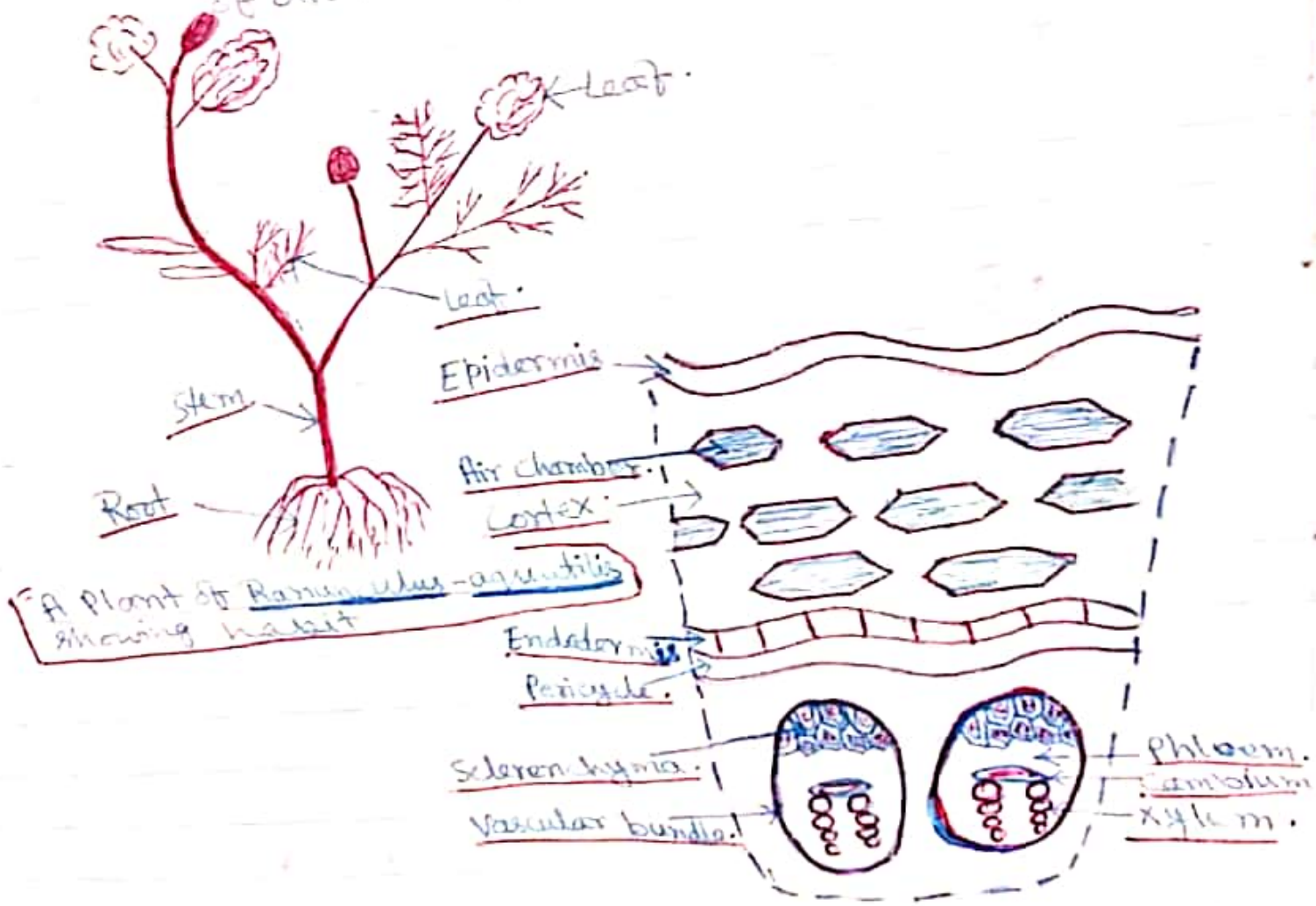


[3] Amphibious Hydrophytes: → These plants grow in shallow water. They extend their shoots above the water surface. Their roots, parts of stem and often portions of leaves ^{are} under water; but a few portion and often most of the root is aerial. Actually these plants are well adapted aerial; as well as aquatic life. The common example of this plants are Typha, Ranunculus-aquatilis, Ipomea, sagittaria, Alismia, Reticula, Cyperus, Species eastasia etc.

Anatomical characters: →

1. The epidermal cells of root have cuticle.
2. The cortex of root possess air spaces.
3. Root hair are distinct.
4. Distinct endodermis and pericycle are present.
5. The vascular tissue is well developed and distinct.

11. ... developed ...
12. In Typha leaf these are scattered at angles. Such condition is absent in the ... of other amphibious plants.



A plant of Ranunculus-aquatilis showing habit

A portion of T.S. of stem of R. aquatilis.