ACCORDING TO THE SOIL SPECIALIZATION…)))

(And some botanical science…)

Chamaedaphne calyculata

Ericaceae family:

Andromeda sp.

Calluna sp.

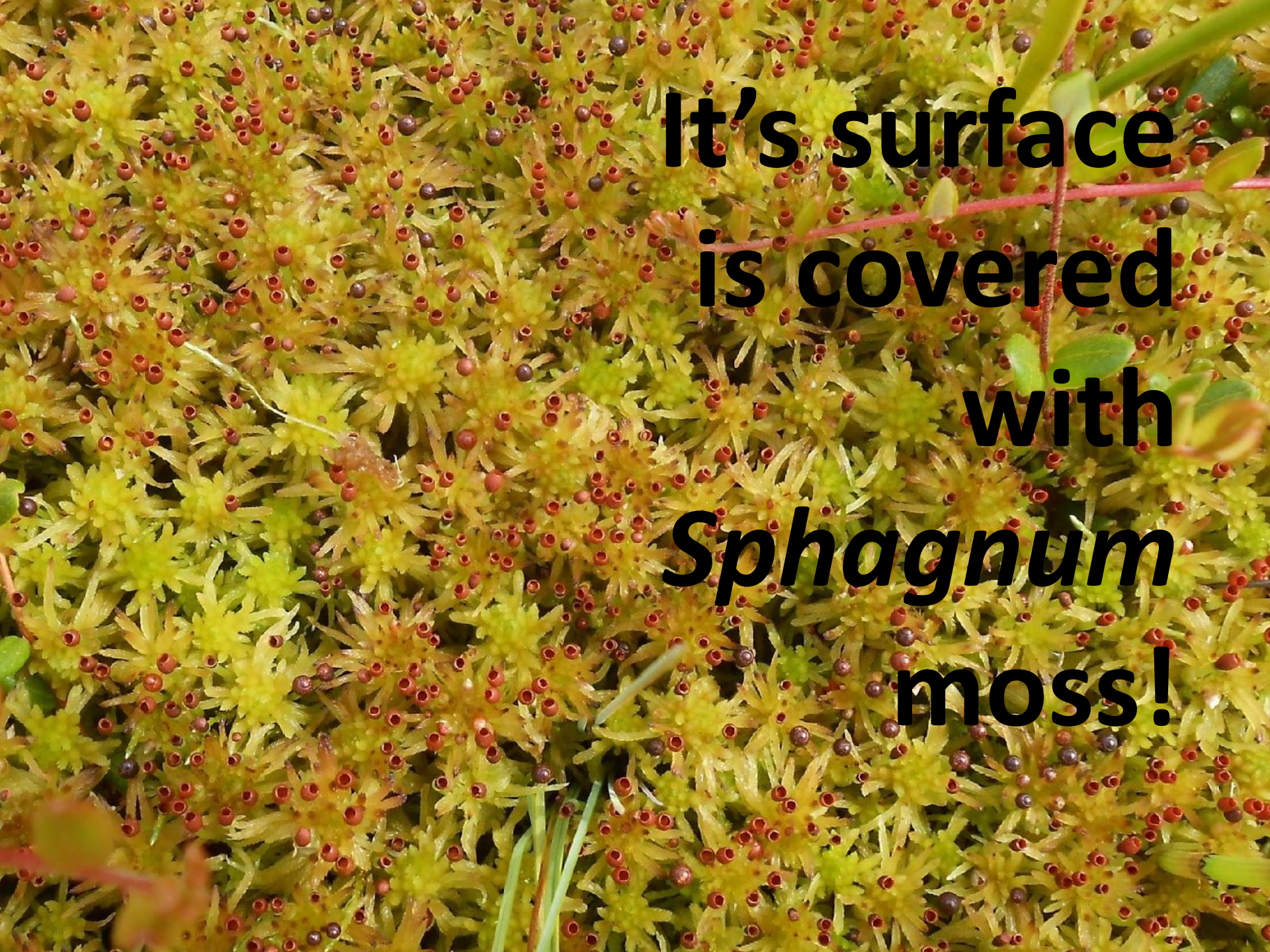
Ericaceae family:

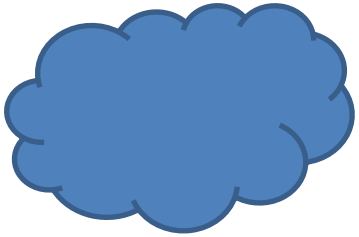
Vaccinium . . .

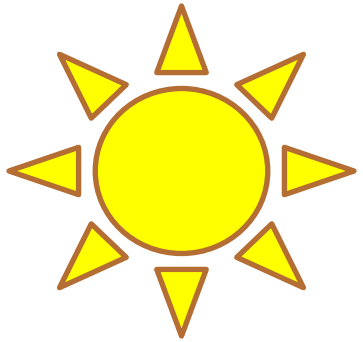
Chamaedaphne calyculata

Plants of the olygotrophic swamps

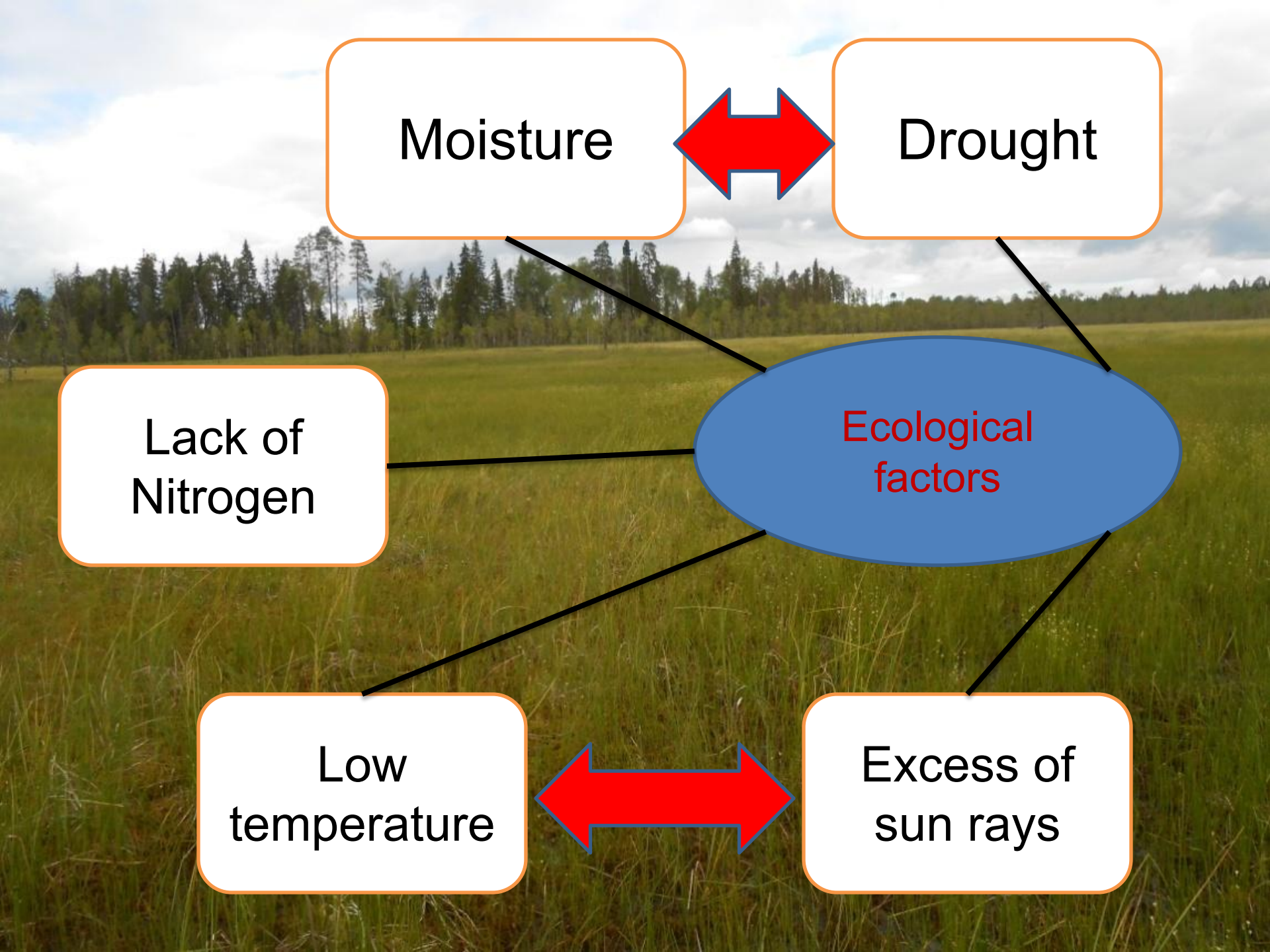
An olygotrophic swamp

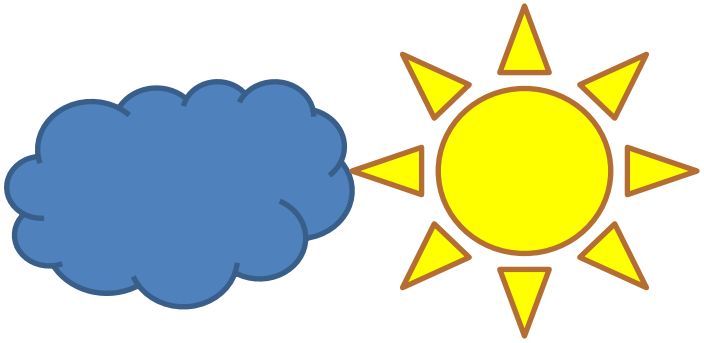

It's surface
is covered
with
Sphagnum
moss!





- There are a lot of ecological factors, which is *Chamaedaphne* affected by.


Moisture
Drought
Lack of Nitrogen
Ecological factors
Low temperature
Excess of sun rays



Ecological factors

Special characteristics

- Due to such severe conditions, plants of swamps, or OXYLOPHYTES as *Chamaedaphne*, have some special characteristics.

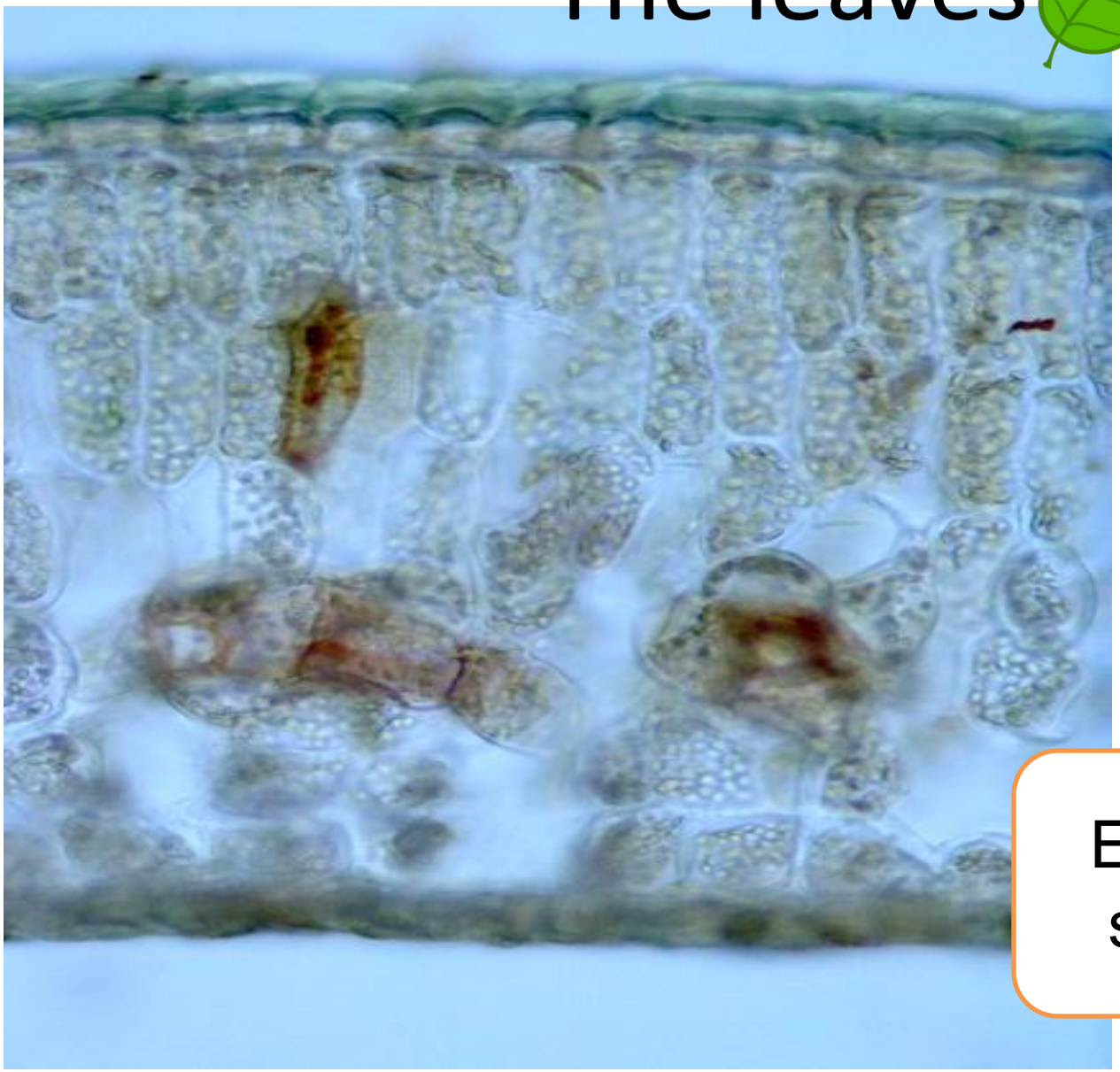
1. The leaves

Drought

Drought

The leaves

The leaves



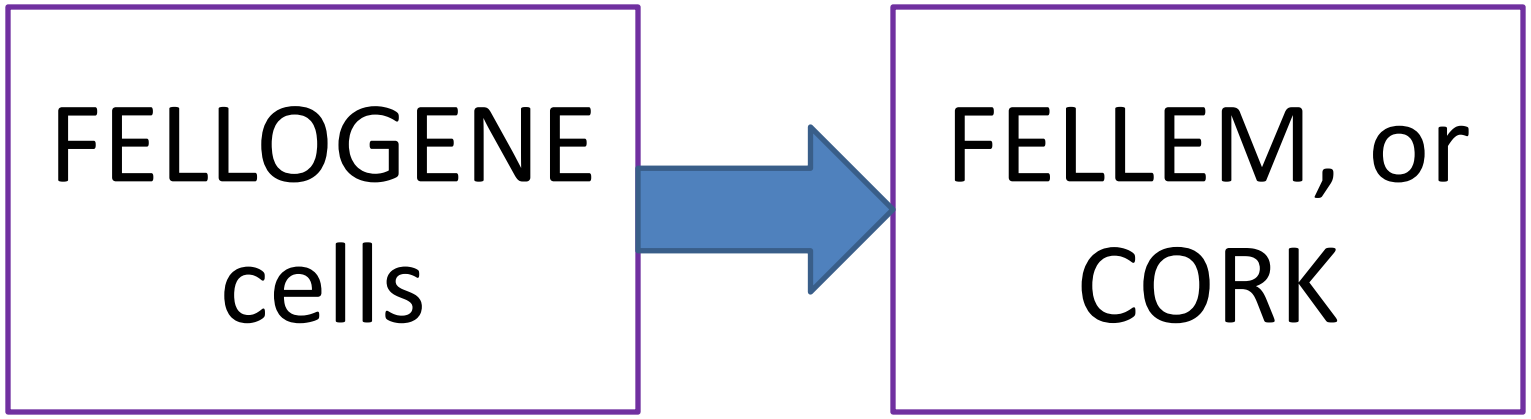
Drought

Excess of sun rays

leaves of *Andromeda*
are placed at an angle to the horizon.

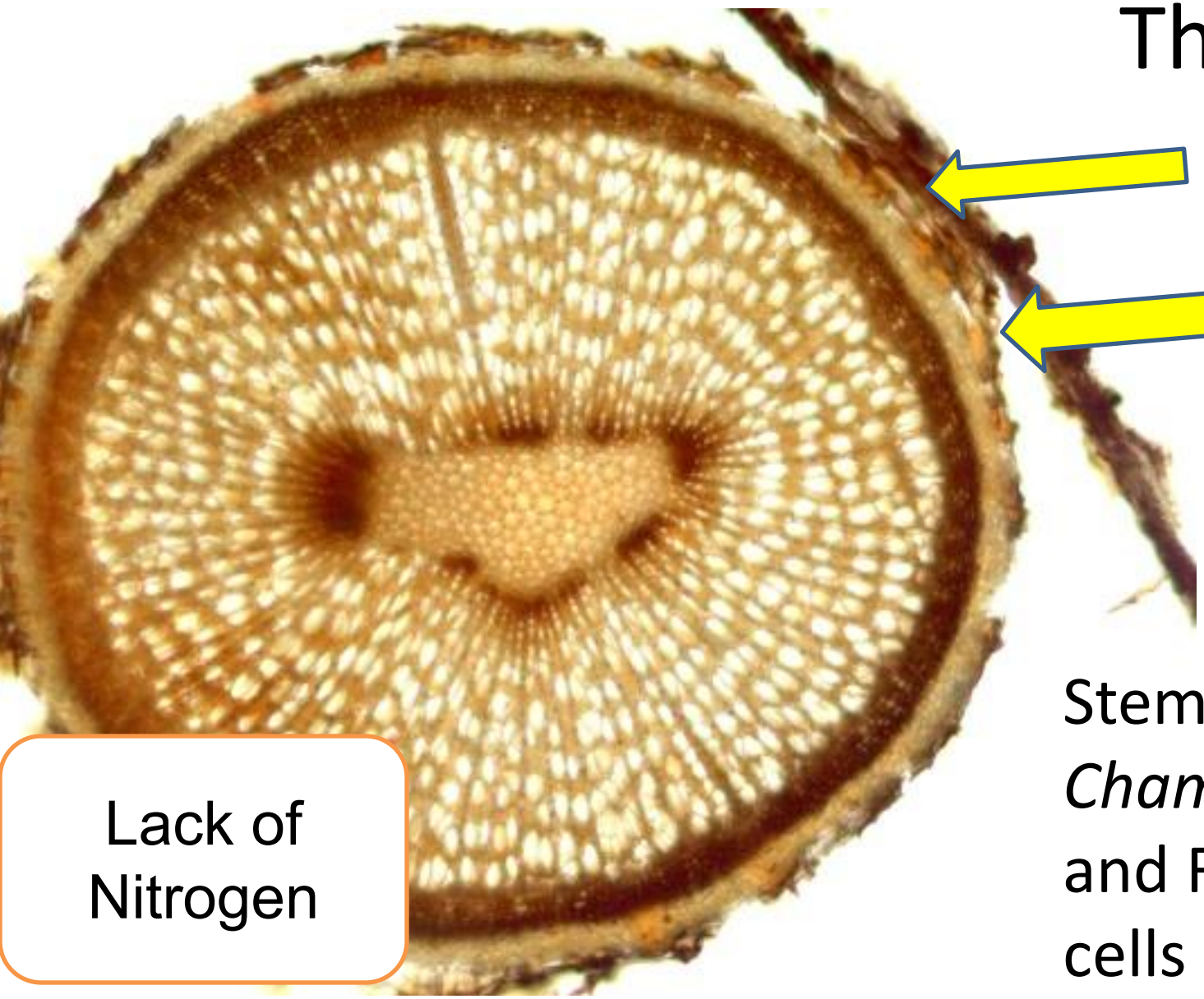
Excess of
sun rays

2. The stem



Lack of Nitrogen

The stem



Lack of Nitrogen

Stem of *Chamaedaphne*, and FELLOGENE cells

The stem. Tannins in the cork

A stem of *Andromeda, Ericaceae*

- ….has some special cells, which produce fellem.

1. Lack of nutrition

- Olygotrophic swamps are water reservoirs which are poor with organic matter, actually with nitrogen compounds.

- For example, plants of *Ericaceae* family –

- *Andromeda polifolia*,
- Подбел многолистный,

Chamaedaphne calyculata, …

…Мирт болотный,…

- These cells, or FELLOGENE cells, also are A BORDER between a stem and some outer tissues, which are to be separated from the stem.
- Эти клетки, или клетки ФЕЛЛОГЕНА, также находятся на ГРАНИЦЕ стебля и других тканей коры, которые затем отваливаются от стебля.

- So the parts of tissues located ABOVE the FELLOGENE separate from the stem. It leads to decrease in nutrition losses during growing season.

2. Low temperature

- These swamps are regions with relatively low-temperatured soil.
- Олиготрофные болота – зоны со сравнительно низкой температурой почвы.

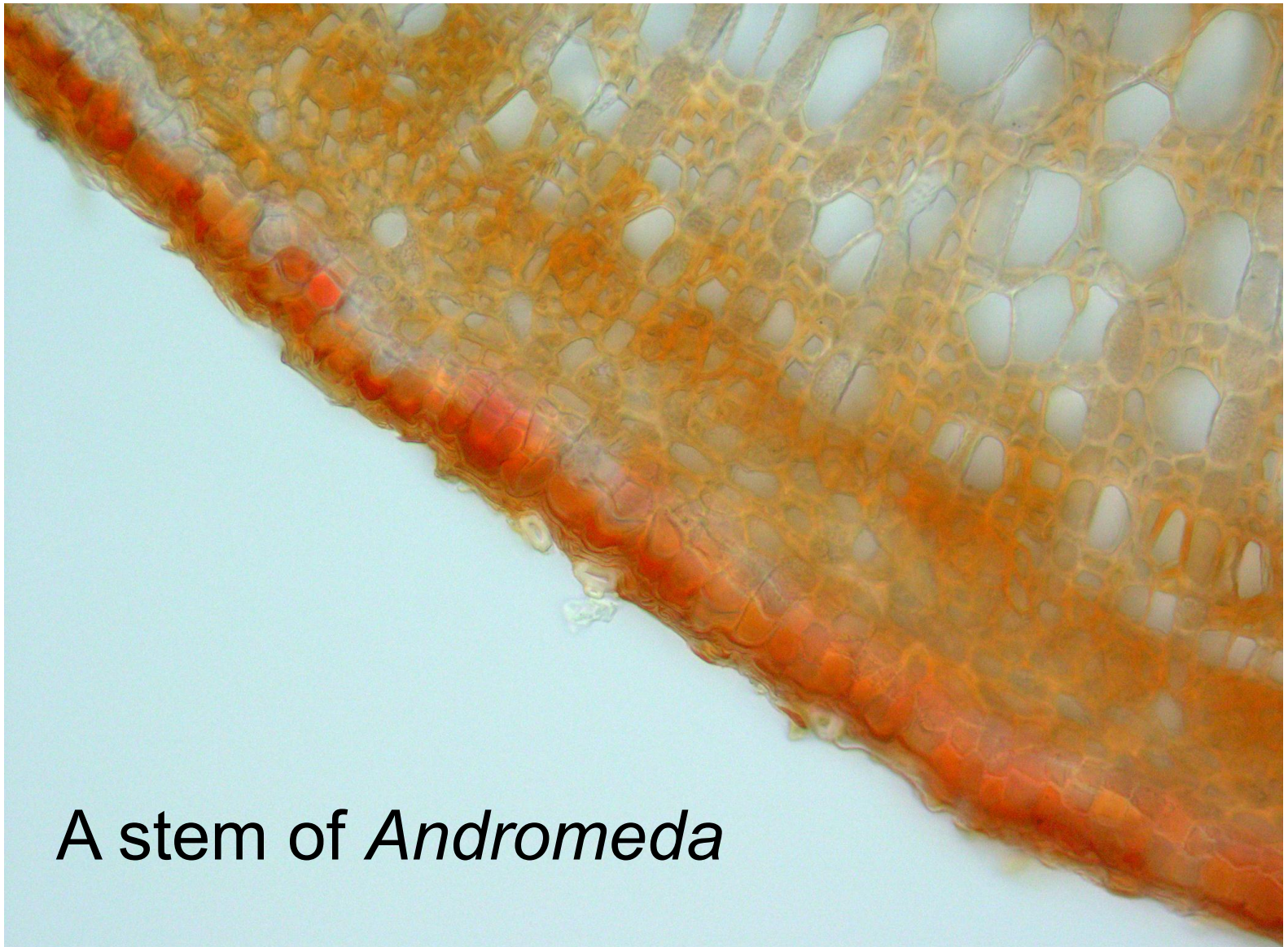
- It influences badly on roots, because absorption of water is complicated.
- Это плохо влияет на корни, т.к. всасывание воды [при низких температурах] затруднено.

- On the other side, the sun rays reach plants very fast, which makes all the aerial runners warmer.

But leaves of *Chamaedaphne (мирт)* also have double layers of photosynthetic tissue to accumulate more sun rays.

- As a result, subterranean organs of OXYLOPHYTES are subjected to cold, but aerial ones are overheated.

Tannins in the cork

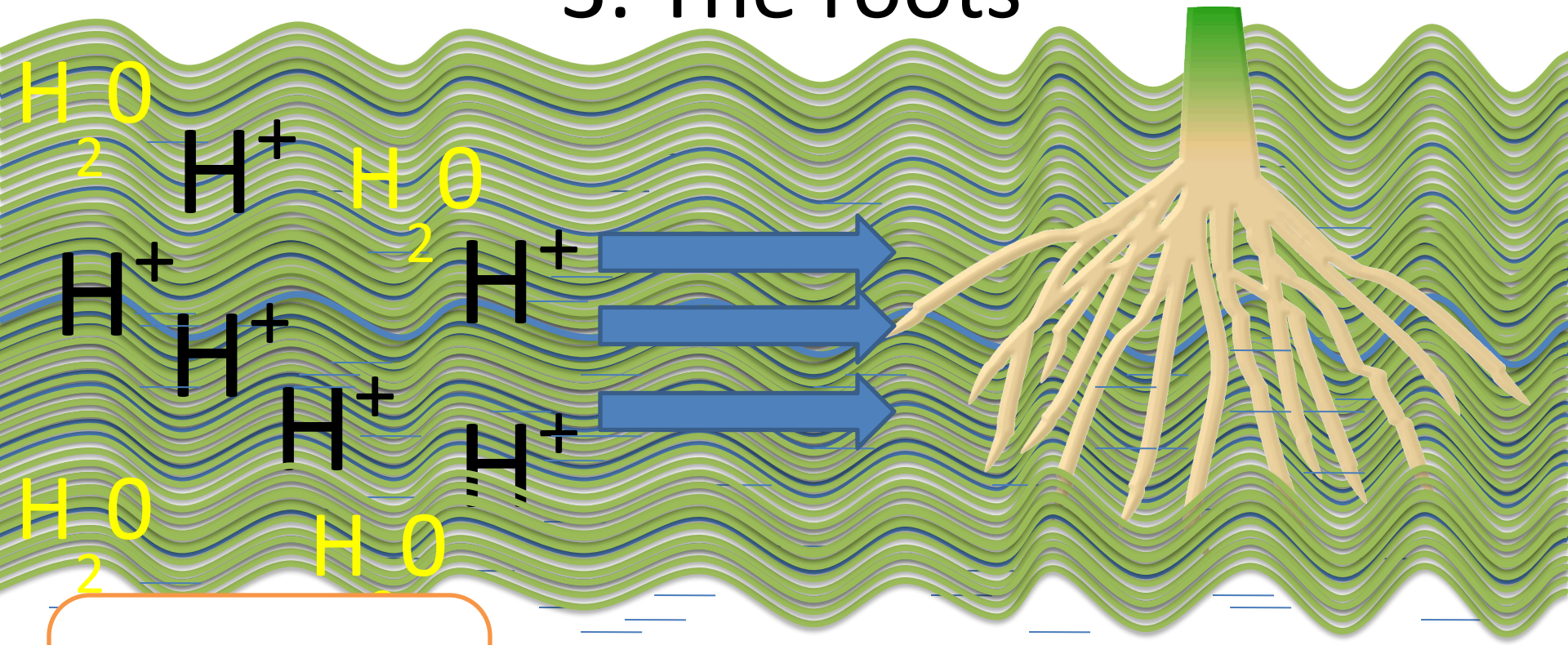


- It contributes to decrease influence of solar rays.

3. Water excess

- Finally, the soil of olygotrophic swamps is very MOISTENED, so athmosphere OXYGEN can not penetrate through it.

3. The roots



Moisture

- According to this, roots do not get enough oxygen for respiration.

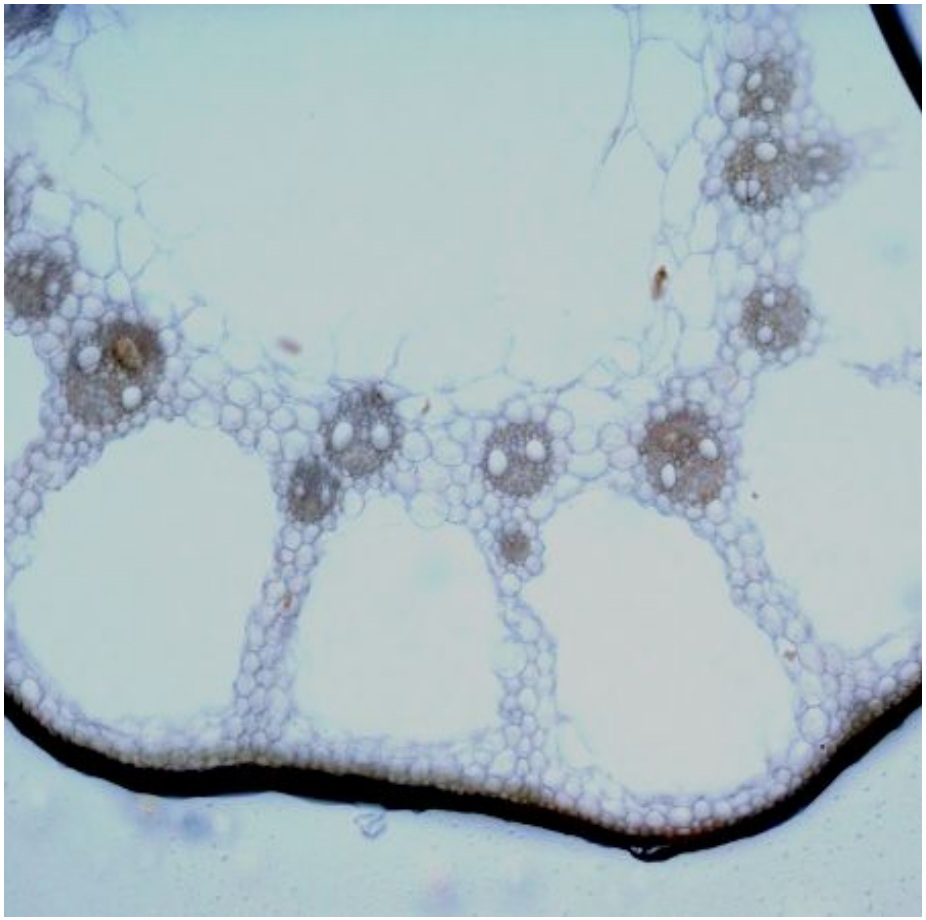
- And OXYLOPHYTES have some adaptations for breath:
- They possess special tissue termed AERENCHIMA. It contains cells and plenty of air cameras!

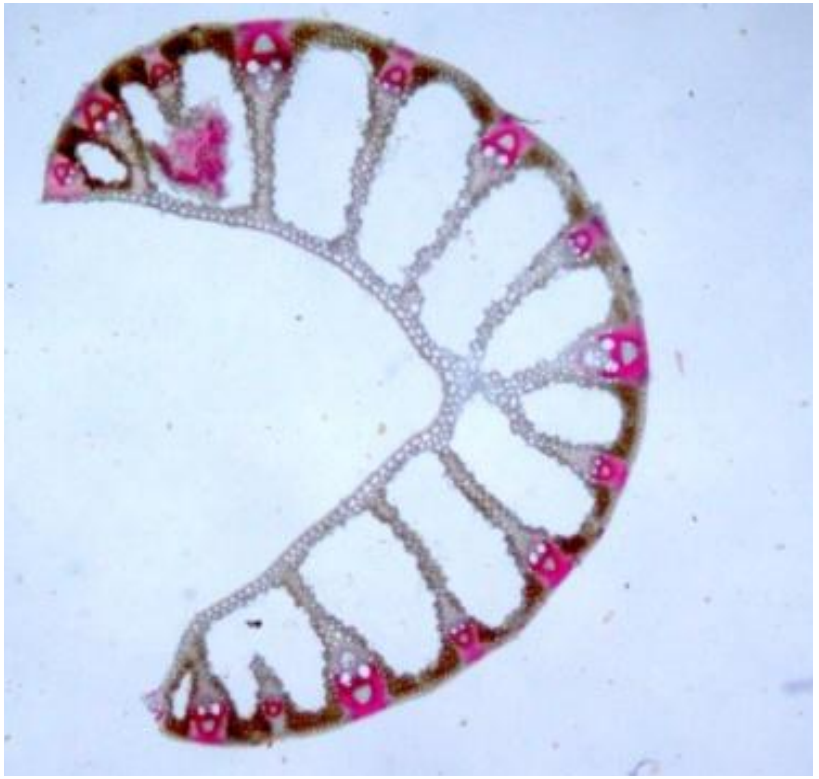
Вахта
трехлистная

Aerochima in *Menyanthes trifoliata* rhizome *(вахта трехлистная)*

Aerochima of *Eriophorum (пушица):*

stem





leave

- There are much more ecological factors, which influence on the OXYLOPHYTES; these factors caused evolutionary adaptations in plants.

- So the plants of olygotrofic swamps are adapted to high and low temperatures, lack of nutrients and oxygen.

- (that was a leafstalk of *Commarum palustre*)