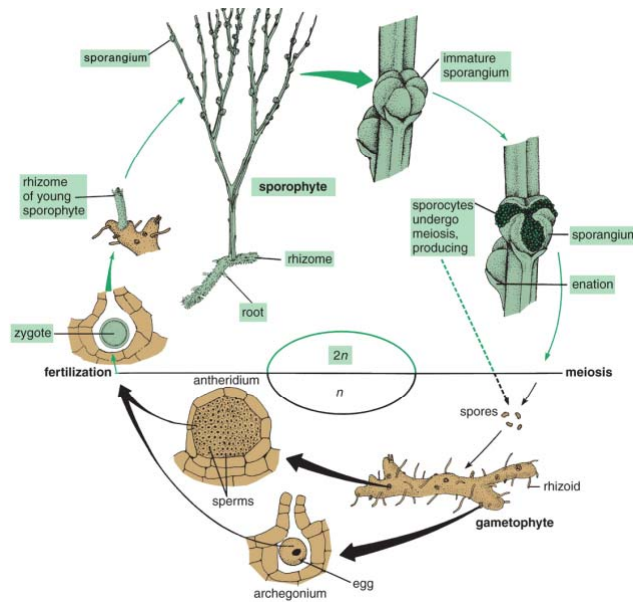


Free-Sporing Plants (Bryophytes & Pteridophytes)

What does Free-Sporing mean?



Free-Sporing plants have these shared characteristics:

- no pollen.
- no seeds.
- the spores themselves are the dispersal units.
- gametophytes are free-living and do not develop within sporophytic tissue.
- External water needed for fertilization.

I. Bryophytes (e.g., liverworts, mosses)

What distinguishes bryophytes from other free-sporing plants?

- Non-vascular;
- Cuticle wanting;
- Gametophyte dominant, visible component of life-cycle;
- Sporophytes smaller & dependent on gametophytes, unbranched;
- No true leaves or roots.

Where do you find them?

- Moist areas such that they can be bathed in water / high humidity.
- Excellent colonizers of bare (but moist) rock (low profile + rhizoids facilitate this).

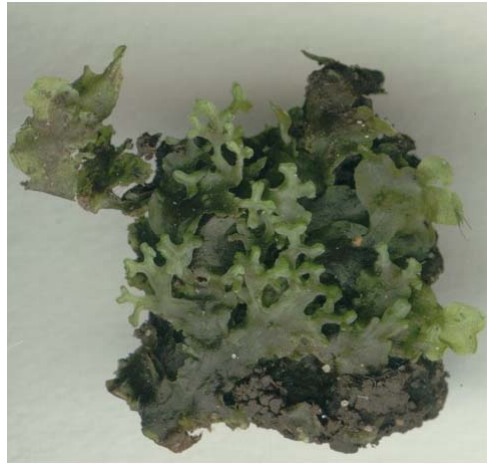
A. Liverworts

1. Two forms: both have lobed "leaves" or thallus.

"Leafy"



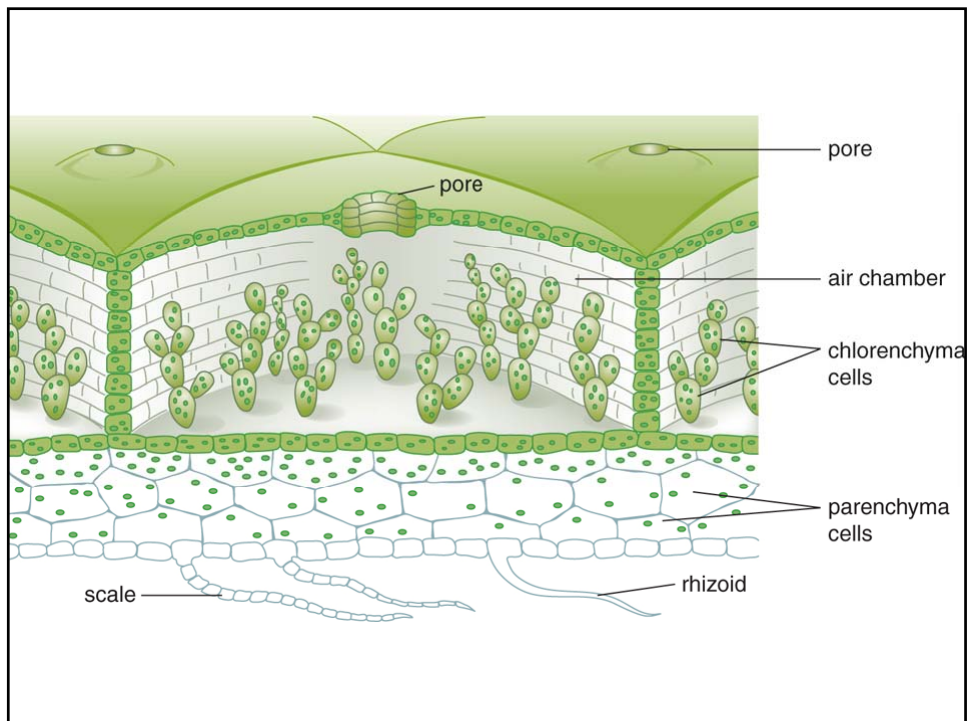
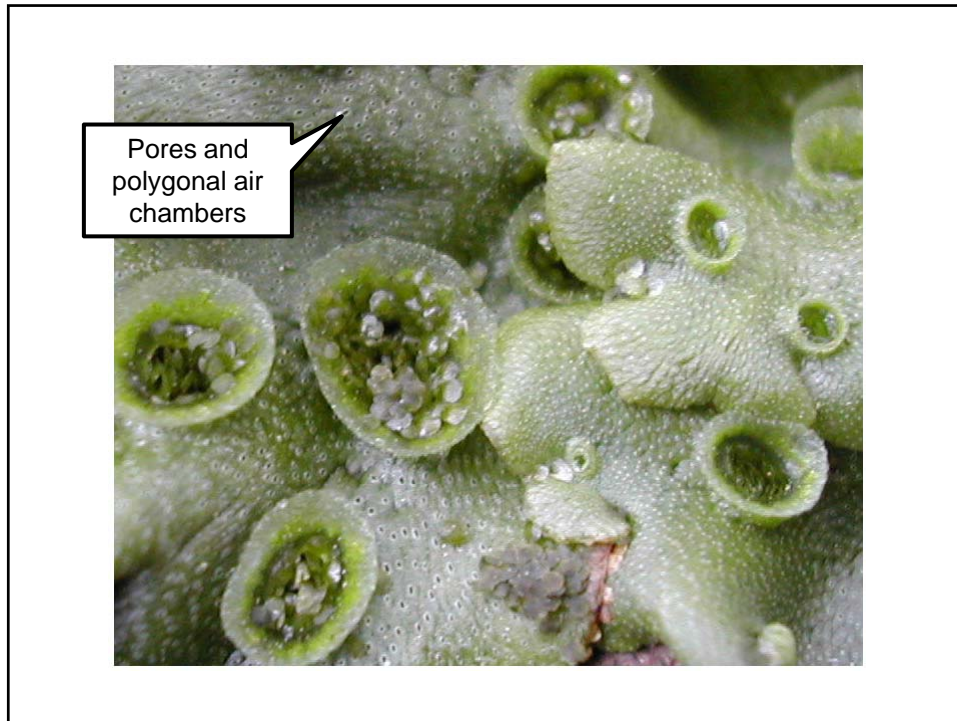
"Thalloid"

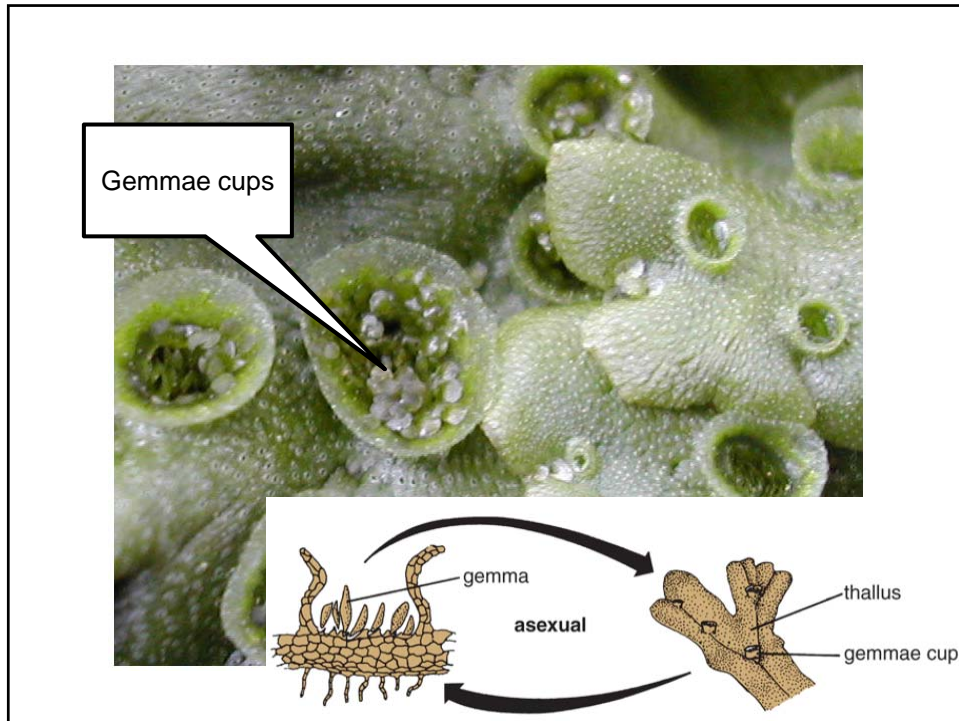


A. Liverworts

2. Details of thalloid gametophytes.
a. Vegetative Morphology & Anatomy







2. Details of thaloid gametophytes.
b. Reproductive Morphology & Anatomy

Archegonia on Archegoniophores

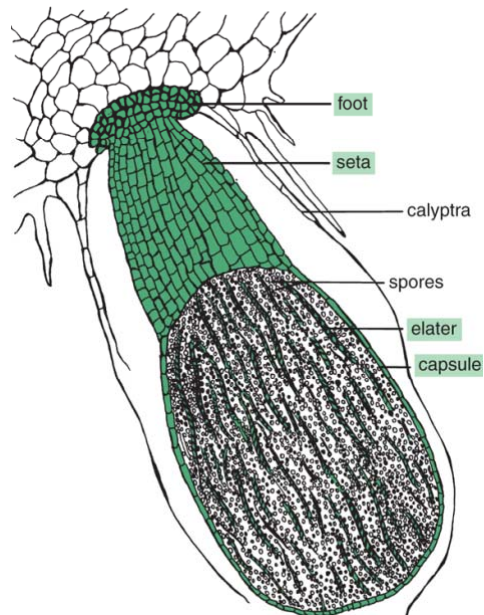


2. Details of thalloid gametophytes.
b. Reproductive Morphology & Anatomy

Antheridia on Antheridiophores

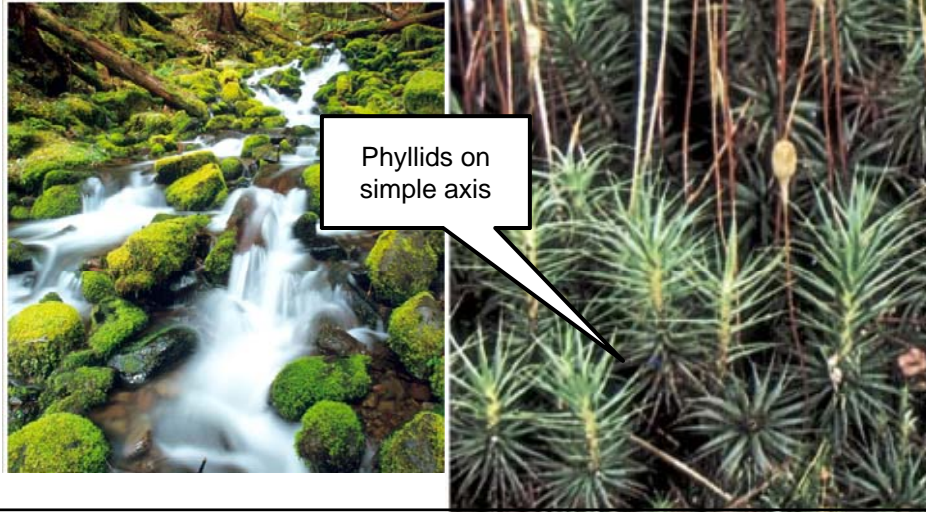


3. Details of thalloid sporophytes.



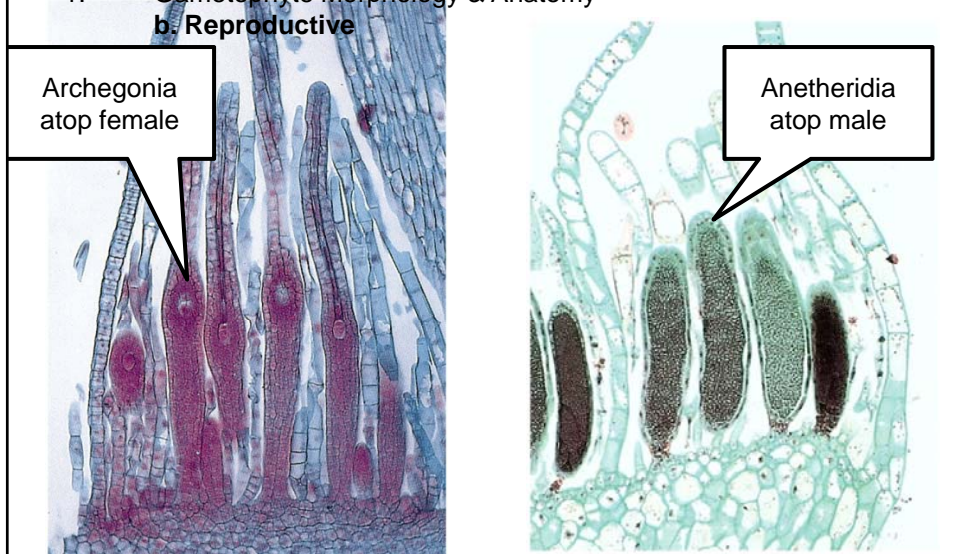
B. Mosses

1. Gametophyte Morphology & Anatomy
 - a. Vegetative



B. Mosses

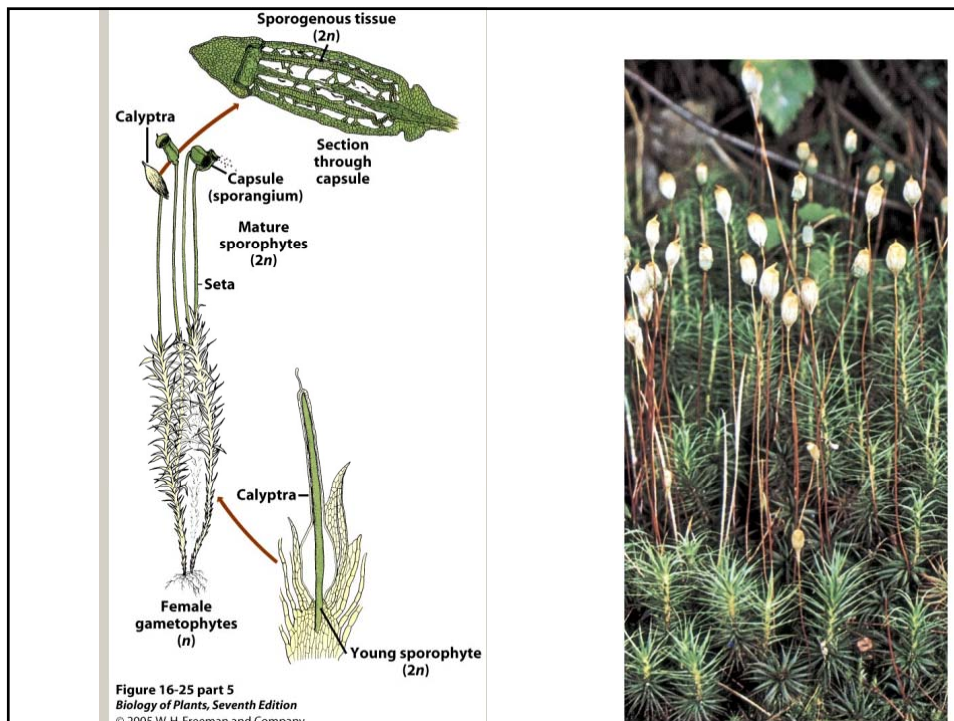
1. Gametophyte Morphology & Anatomy
 - b. Reproductive



B. Mosses

2. Sporophyte Morphology & Anatomy

Sporophytes atop female gametophytes.



II. Pteridophytes (e.g., ferns & allies)

What distinguishes pteridophytes from bryophytes?

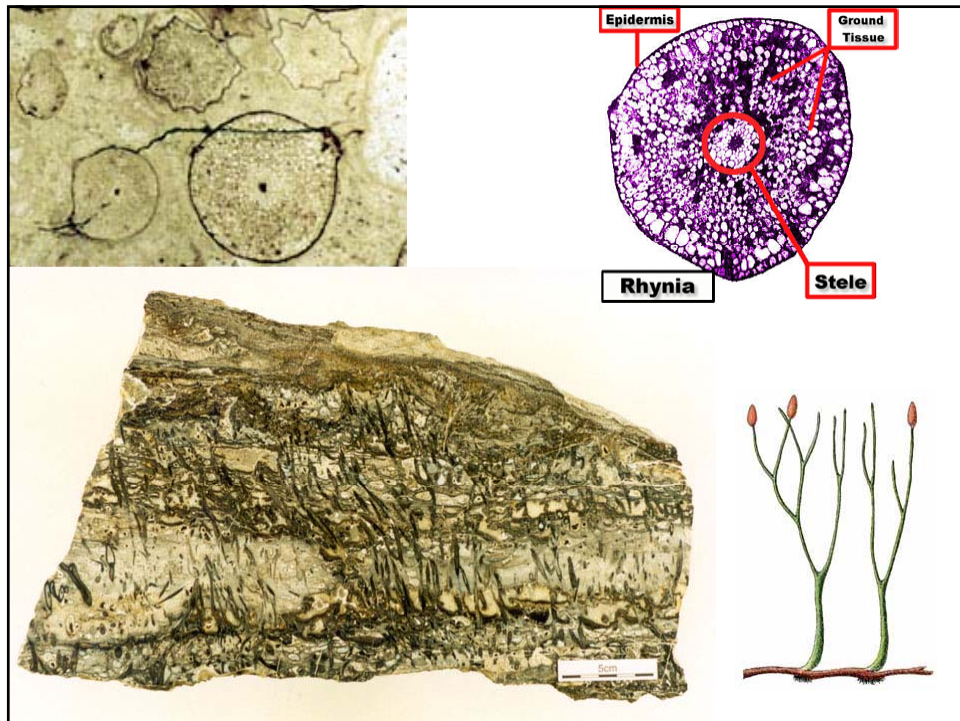
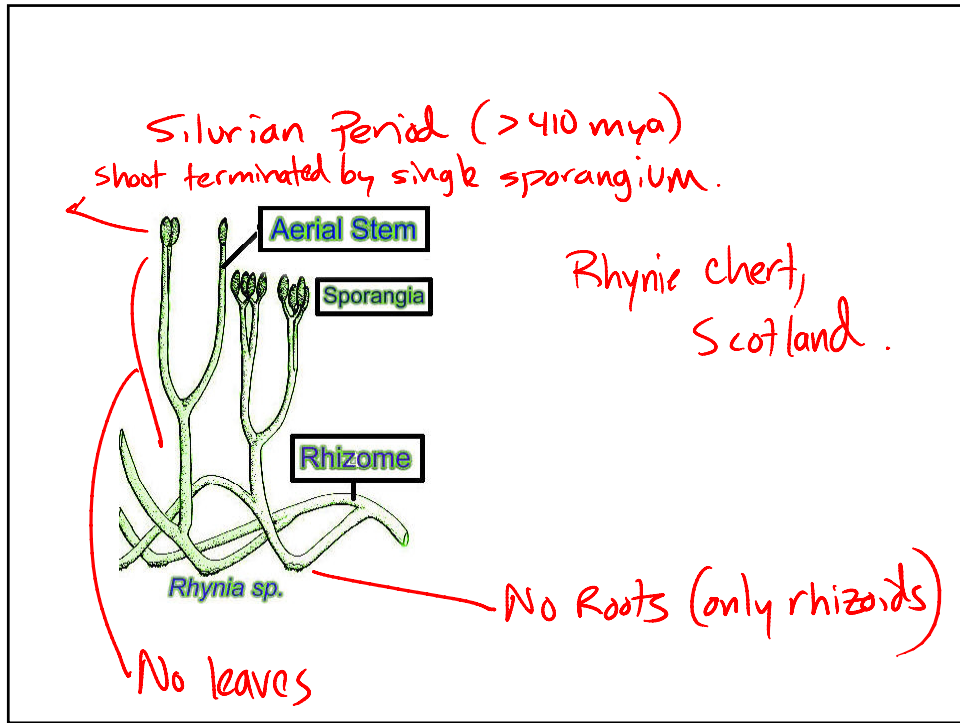
- Vascular;
- Cuticle well developed;
- Sporophytes dominant, visible component of life-cycle;
- Gametophytes smaller, but still free-living, not always green, simple in structure;
- Most with true leaves or roots.

- But external water still needed for fertilization.

Where do you find them?

- Moist areas such that they can be bathed in water / high humidity.
- Not as good as colonizers of bare (but moist) rock (low profile + rhizoids facilitate this).

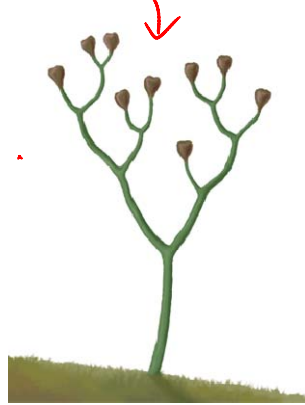
A. Rhyniophytes and Psilotophytes (e.g., Rhynia and Psilotum)



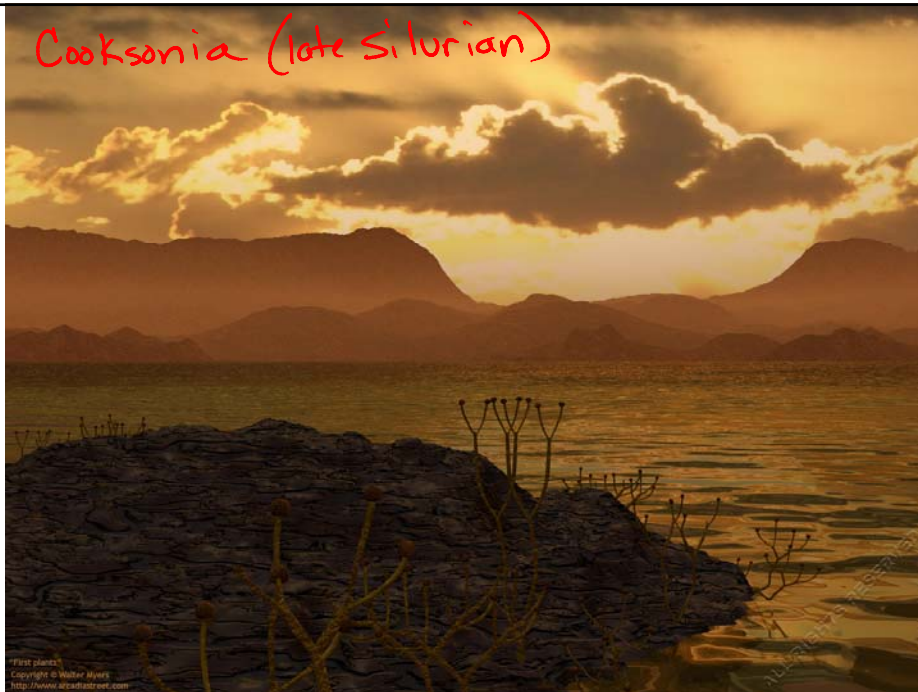
Rhynia

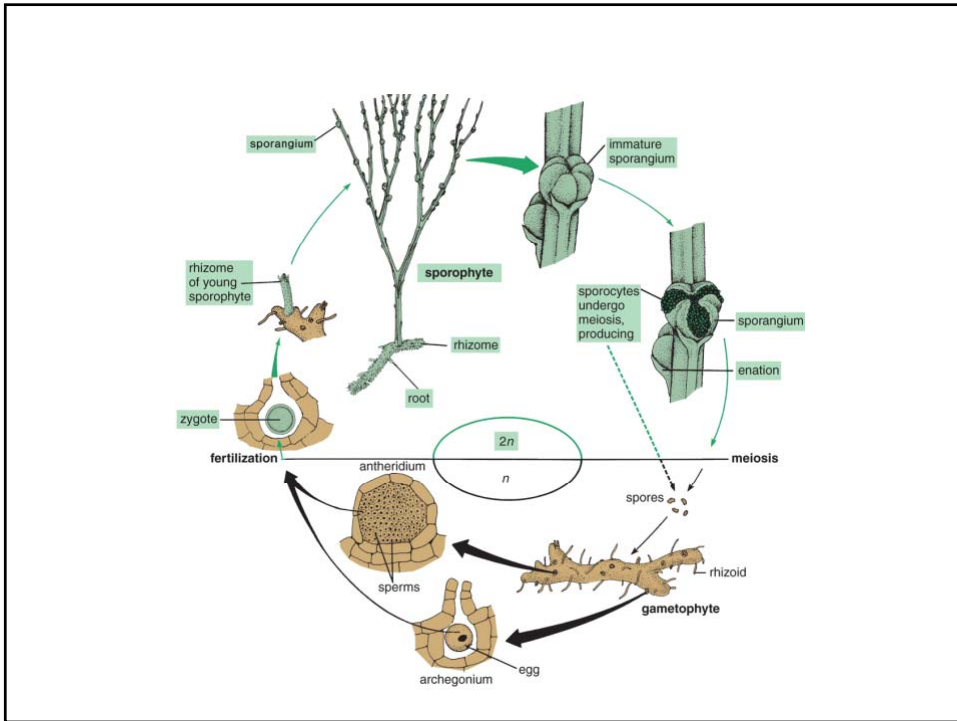


Cooksonia



Cooksonia (late Silurian)





B. Lycopods (e.g., club-mosses, spike-mosses)



Figure 17-16b
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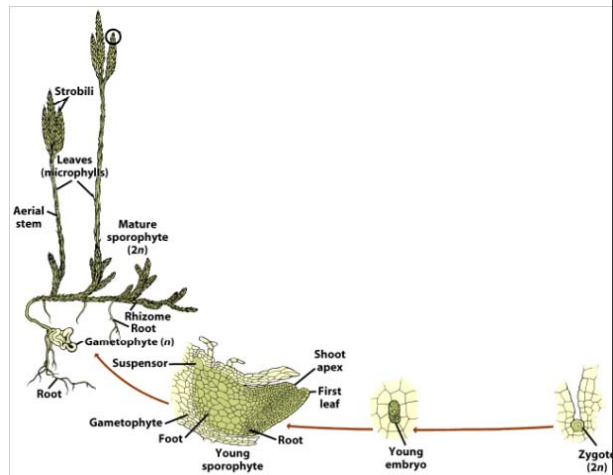
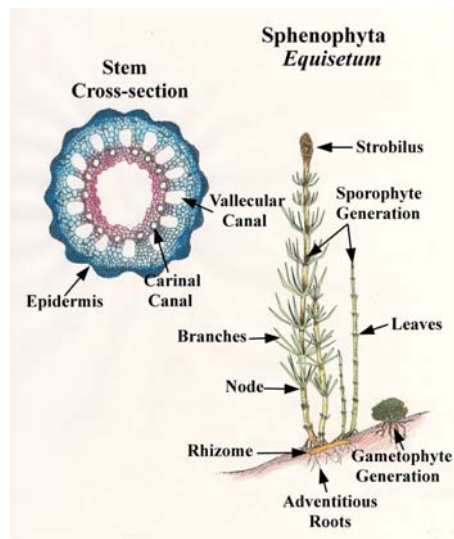
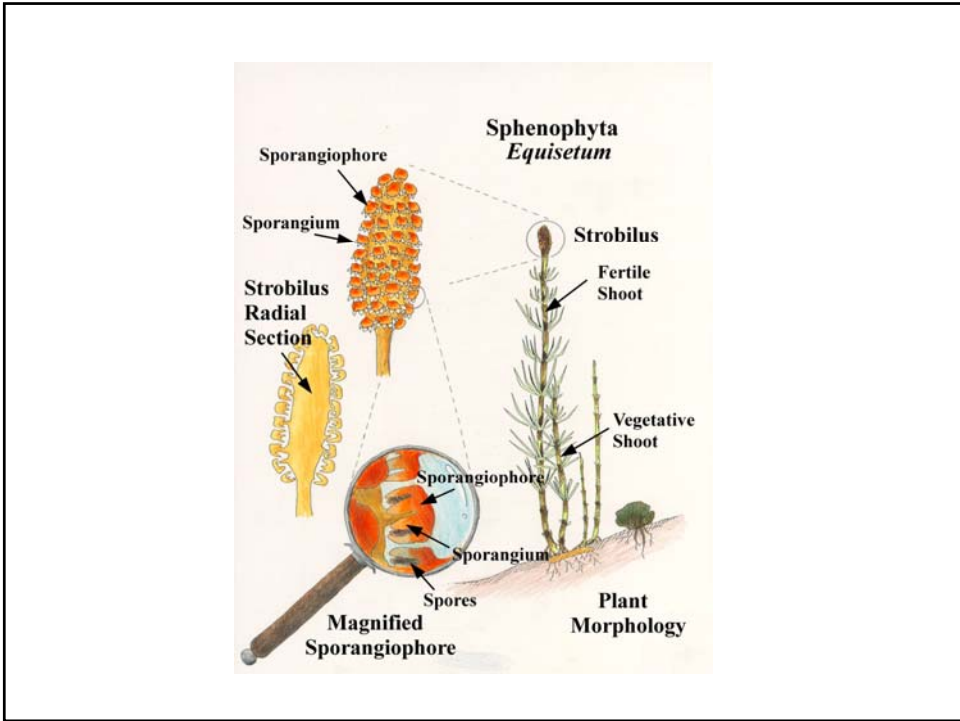


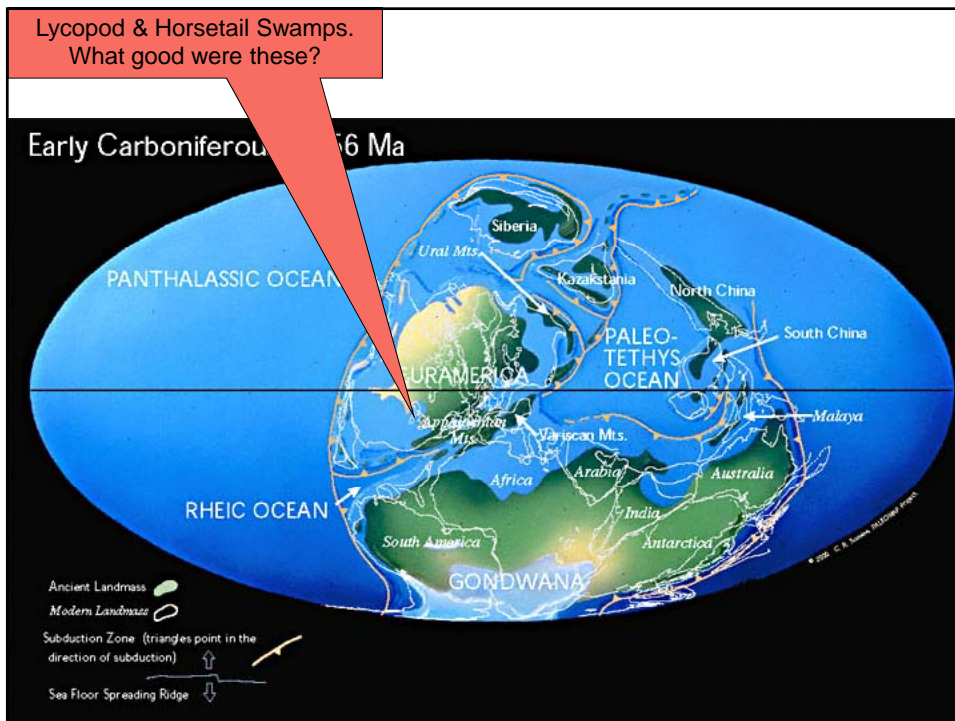
Figure 17-15 part 4
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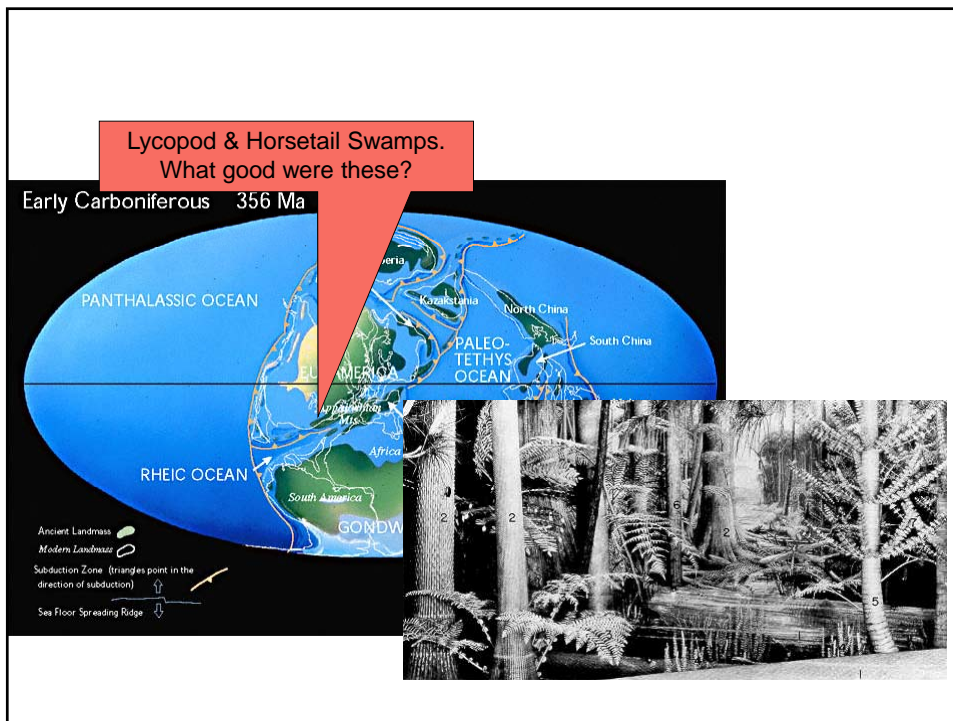
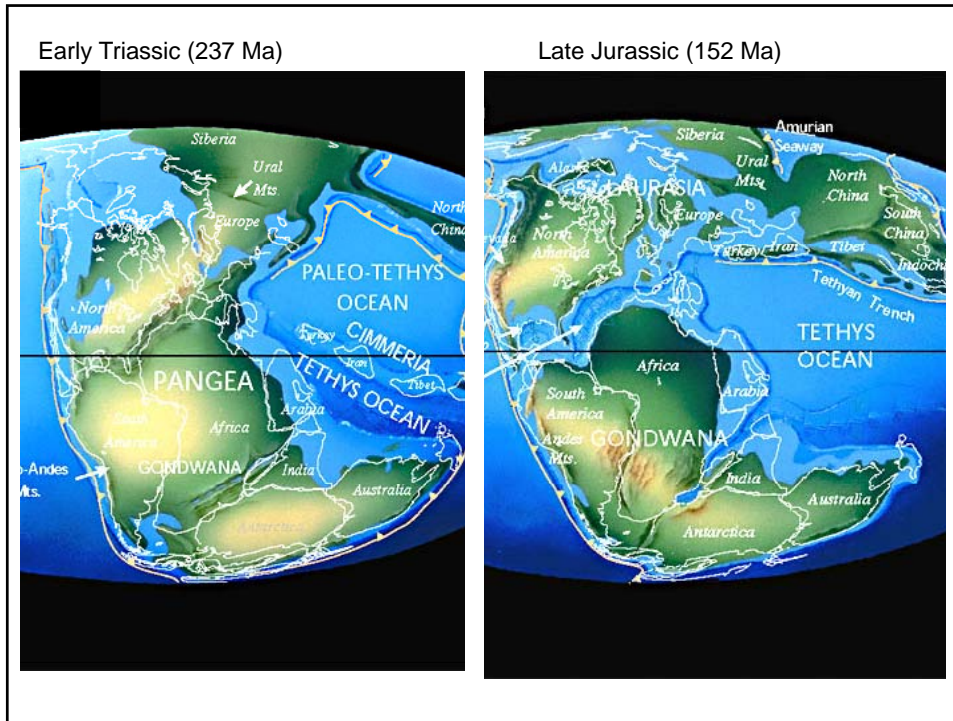
C. Horsetails & Scouring-Rushes





D. Ancient Coal Swamps







E. Ferns



Figure 17-26
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Figure 17-27a
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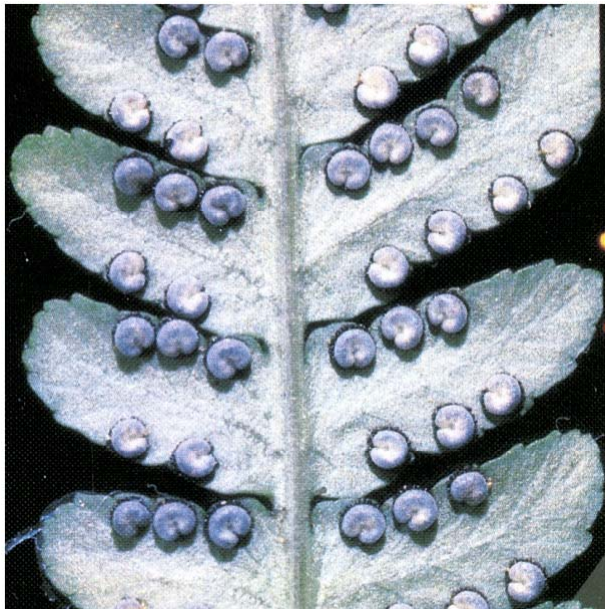


Figure 17-27c
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