Phloem and principal water-conducting elements

Environment, Water

Exercise (Histology)

1. Give at least three distinguishing features of these groups of cells. Apical meristems have the following features: (1) a “ border” of cells; (2) they follow order or shape; and (3) some cells are darker (indicating that they undergo mitosis).
2. Identify the tissue. The tissue is a vascular cambium.
3. Is the epidermis uniseriate or multiseriate? In the cross section of a young root of Helianthus, the epidermis is uniseriate.
4. What do you call the outgrowths of the epidermis? These are called trichomes.
5. What is their function? They function mainly for support and protection of the leaf or stem which contains the epidermis.
6. Classify the types of epidermal outgrowths in the above plants: bristle, scale, simple hair, glandular, branching, stellate
7. Draw and identify the tracheary elements: reticulate, annular, pitted, scalariform, helical
8. Differentiate the sieve tubes from the companion cells. The sieve tubes in the phloem are composed of long, narrow cells which lack a nucleus, ribosomes, and some other cellular components; they transport sugars and other organic nutrients. Companion cells have nuclei and ribosomes that also serve the sieve-tube cells but do not themselves take part in conduction.
9. What are the principal water-conducting elements of the xylem? The two principal water-conducting elements of the xylem are the tracheids and the vessel elements.