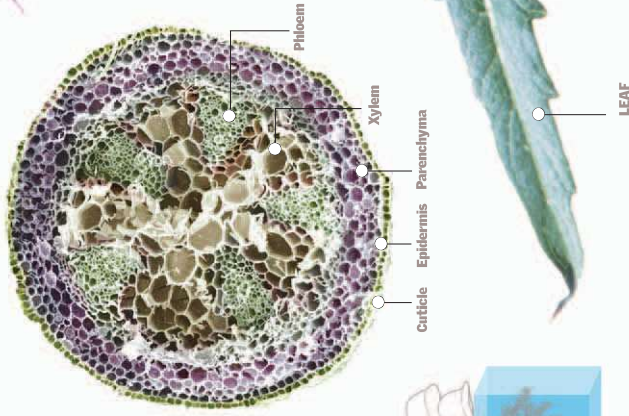
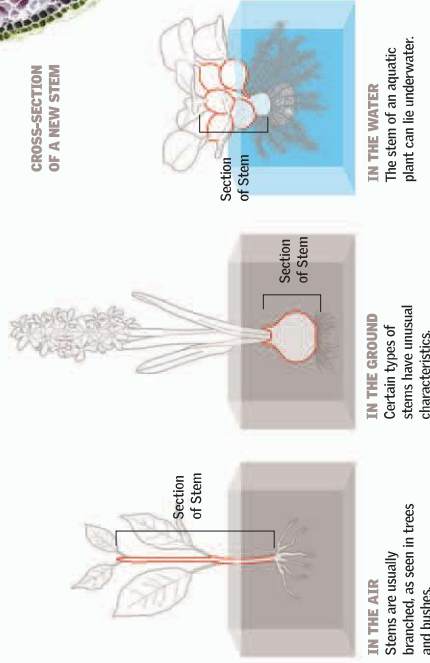


# Stems: More Than a Support

**S**tems, which occur in a variety of shapes and colors, support a plant's leaves and flowers. They keep it from breaking apart in the wind, and they determine its height. In addition, stems are also responsible for distributing the water and minerals absorbed by a plant's roots. Stems contain conducting vessels through which water and nutrients circulate. In trees and bushes, stems are woody for better support. ●



LEAF

## Circulation

Because the stem is the link between the roots, which absorb water and minerals, and the leaves, which produce food, the stem's veined tissues are connected to the roots and leaves. It functions as a transport system for interchanging substances. The stem and its branches hold the leaves up to receive light and support the plant's flowers and fruit. Some stems have cells with chlorophyll that carry out photosynthesis; others have specialized cells for storing starch and other nutrients.

### MOVEMENT THROUGH THE STEM

In plants, sugar and other organic molecules are transported through the phloem, which moves the sap. The molecules are transported through sieve tubes.

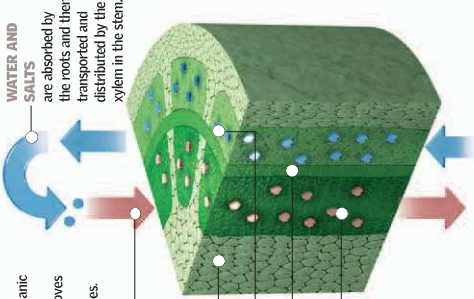
**GLUCOSE**  
Sugar reduces the osmotic pressure in the sieve tubes.

**CORE**

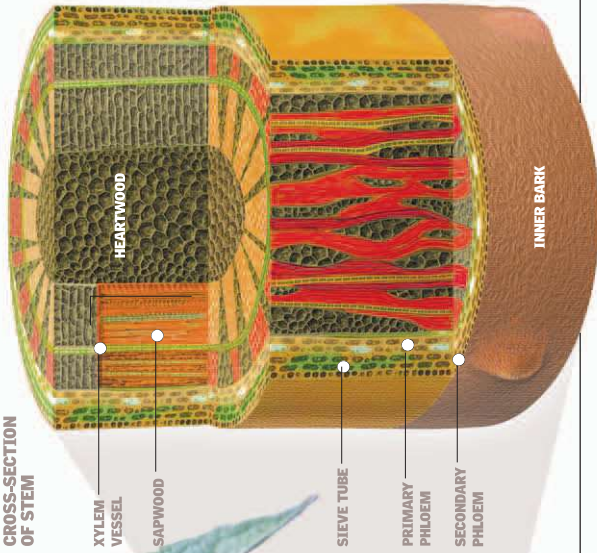
**XYLEM**

**CAMBIUM**

**PHLOEM**



### CROSS-SECTION OF STEM



**AXILLA**  
The joint between the main stem and a leaf stem

**NODE**  
A place where shoots grow from the stem

**INTERNODE**  
The part of the stem between two nodes

### TUBER

An underground stem composed mainly of parenchymatic cells filled with starch. The potato's small depressions are actually axillary eyes. In an onion, another example of a stem with an underground stem, starch accumulates not in tubers but in thick leaves that grow around the stem.

### AXILLARY EYES

are grouped in a spiral pattern along the potato.



**ARTICHOKE THISTLE**  
*Cynara cardunculus*