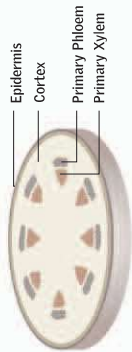


Wooden Heart

Every year a tree thickens its trunk through the production of growth rings, a process called secondary growth. Each new ring is different from the ring that grew the year before. This happens because the wood produced over the course of a year varies in its composition and in the time it takes to form a ring. Trees are the largest producers of wood, which can be processed as hand-cut wood, logs, or sawed lumber—the most common form in the industry. To calculate a tree's age scientists study its growth rings. ●

1 Initiation

The layer of meristematic cells formed between the xylem and the phloem develops inside the base tissue until it grows all the way around, forming a cylinder.

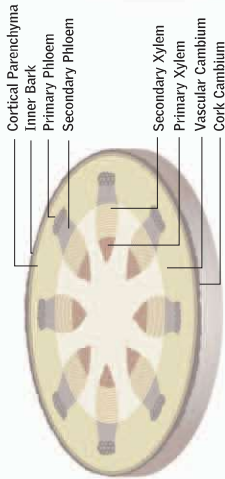


2 Lengthening

Secondary growth takes place in the secondary meristems: the vascular cambium and the cork cambium. The vascular cambium is found between the xylem and the phloem at the end of the plant's primary growth zone. It produces secondary xylem toward the inside of the trunk and secondary phloem toward the outside.

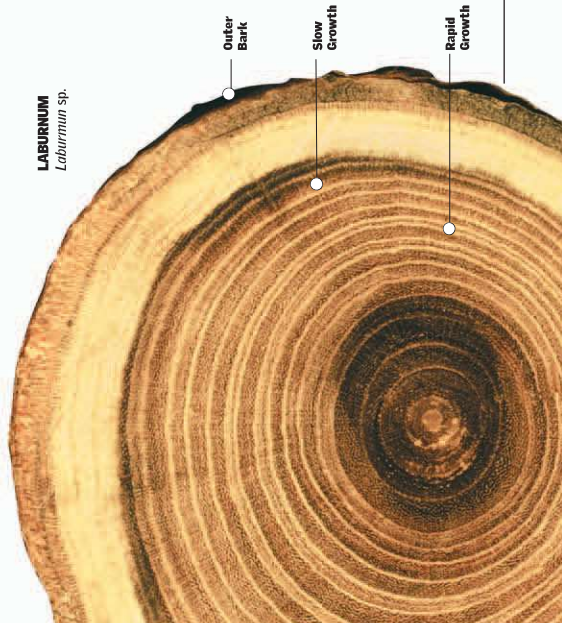
2 Lengthening

The primary xylem and phloem form when the vascular cambium divides.



A Tree's Age

Dendrochronology is the study of the age of trees. The number of growth rings formed since a tree's birth establishes its age.



LABURNUM
Laburnum sp.

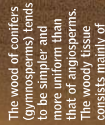
- Primary Xylem
- Secondary Xylem
- Primary Phloem
- Secondary Phloem
- Cortical Parenchyma
- Vascular Cambium
- Cork Cambium

TYPES OF WOOD

Wood comes from two main groups of trees:



Wood in angiosperms is the product of the secondary vascular cambium and the environmental conditions that exist during the wood's formation.



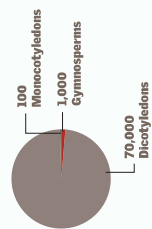
The wood of conifers (gymnosperms) tends to be more uniform than that of angiosperms. The woody tissue consists mainly of tracheids.

3 Termination

The veined cambium forms the primary and secondary vein tissues.

SPECIES

Most of the 70,000 known tree species are dicotyledons. However, the oldest trees (4900-year-old bristlecone pines [*Pinus longaeva*]) and the tallest trees (360 foot [110 m] sequoias [*Sequoia sempervirens*]) are gymnosperms. The earliest trees known to paleobotany appeared during the Devonian Period.



PHLOEM

The phloem transports the products of photosynthesis, mostly in the form of sucrose. This is its main function.

INNER BARK

is the youngest ring, because a new ring is created in each year's growth.

XYLEM

Its main function is to carry water and mineral salts from the roots to the leaves.

SAPWOOD

is the woody part of the trunk and consists of xylem tissue. It is pale in color and of variable thickness.

Hand-Hewn Wood

It is cut to specified dimensions, either manually or mechanically, in a sawmill. It is the type of wood most often used in construction.

Roll-Log Lops

Not processed before use, they are often used in rural construction and traditional construction. It involves a considerable loss of wood.

Sawed Lumber

It is cut to specified dimensions, either manually or mechanically, in a sawmill. It is the type of wood most often used in construction.