Trees

Some basics of how they function and how to identify.

Prepared by

Marshall Patmos

for the KSC CALL program Tree Course ---March-April 2019

Planting and caring for trees are a way to touch the next generation

Trees-what good are they?

Aesthetics

Forest Products-

Pulp-lumber-firewood-fiber-maple syrup, etc

Air Conditioning/Filtering

CO_2>O_2, Carbon sequestration, Cooling

Soil Retention-Water Filtration

Wildlife Habitat/Food

Protection-wind,sun,visual

Other

Tree Needs

Sunlight

Water

Air—CO_2

Nutrients

Soil

Major physiological functions

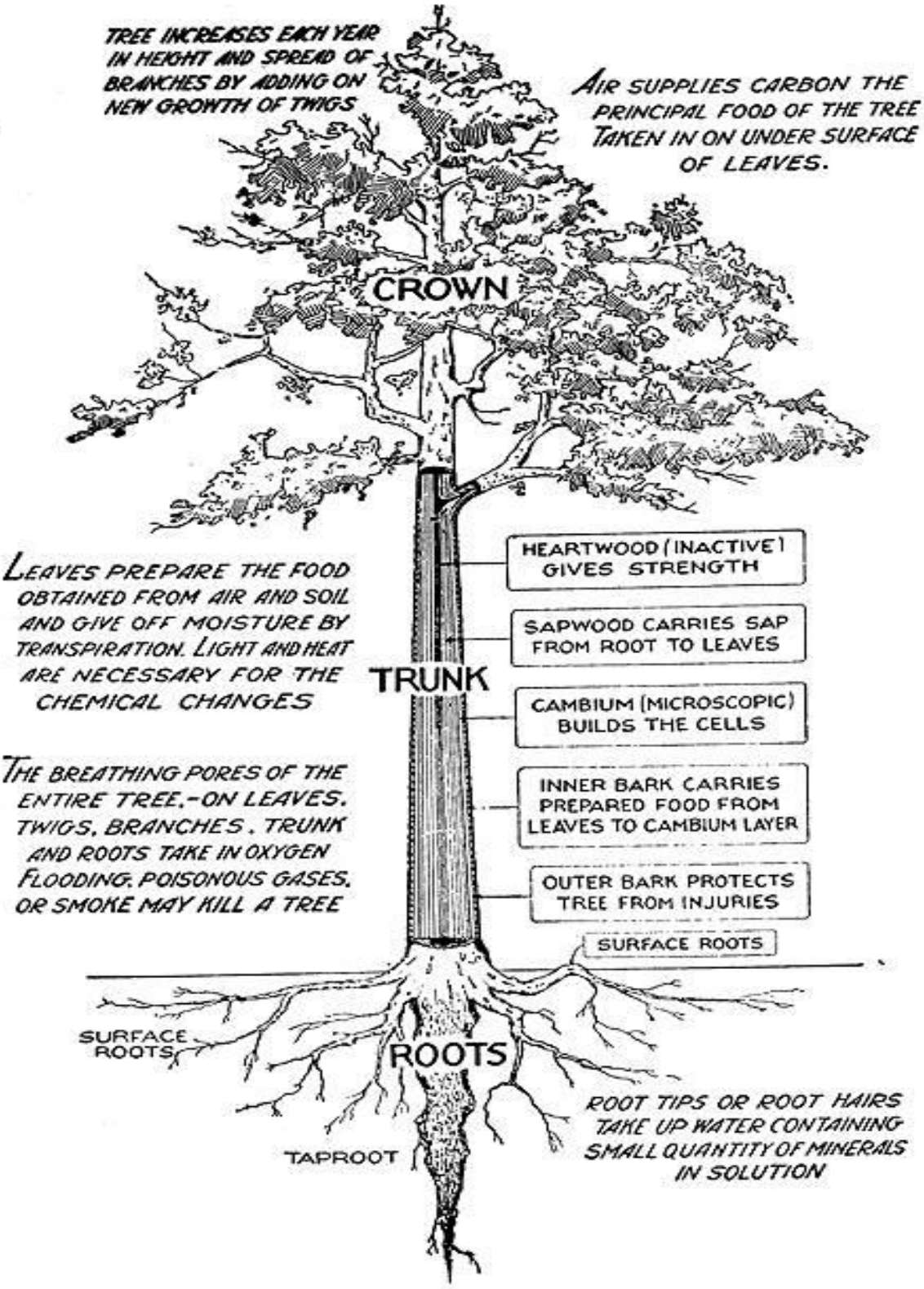
Photosynthesis –process plants use to manufacture their own food **Sunlight + carbon dioxide + water is used to produce sugars and oxygen**

$6CO_2 + 6H_2O > C_6H_{12}O_6 + 6O_2$

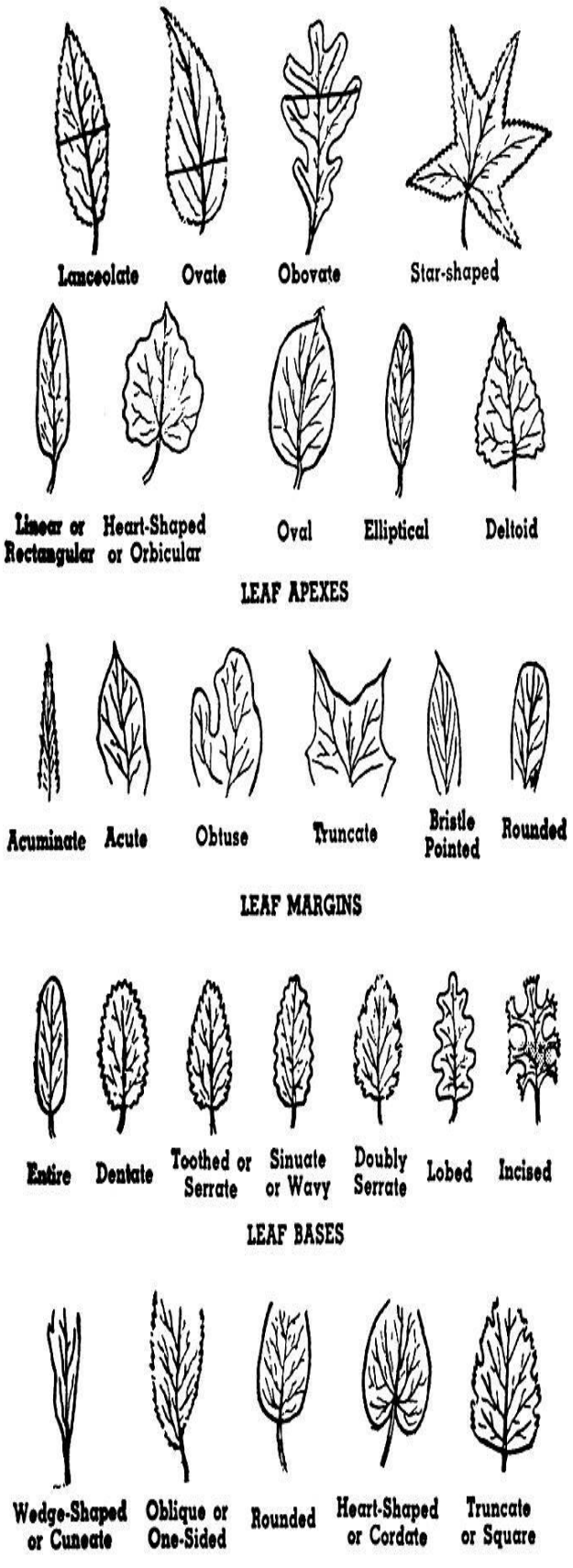
Respiration

Transpiration

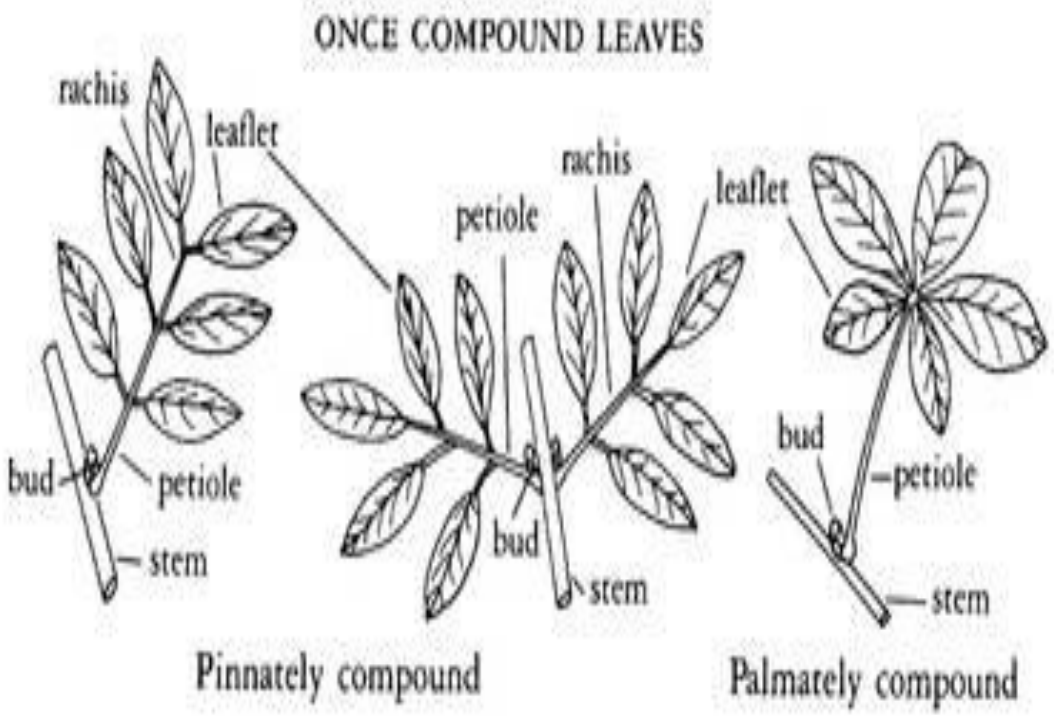
Parts of a Tree



Leaf Shapes


Lanceolate
Ovate
Obovate
Star-shaped
Linear or Rectangular
Heart-Shaped or Orbicular
Oval
Elliptical
Deltoid
LEAF APEXES
Acuminate
Acute
Obtuse
Truncate
Bristle Pointed
Rounded
LEAF MARGINS
Entire
Dentate
Toothed or Serrate
Sinuate or Wavy
Doubly Serrate
Lobed
Incised
LEAF BASES
Wedge-Shaped or Cuneate
Oblique or One-Sided
Rounded
Heart-Shaped or Cordate
Truncate or Square

Leaf Structure

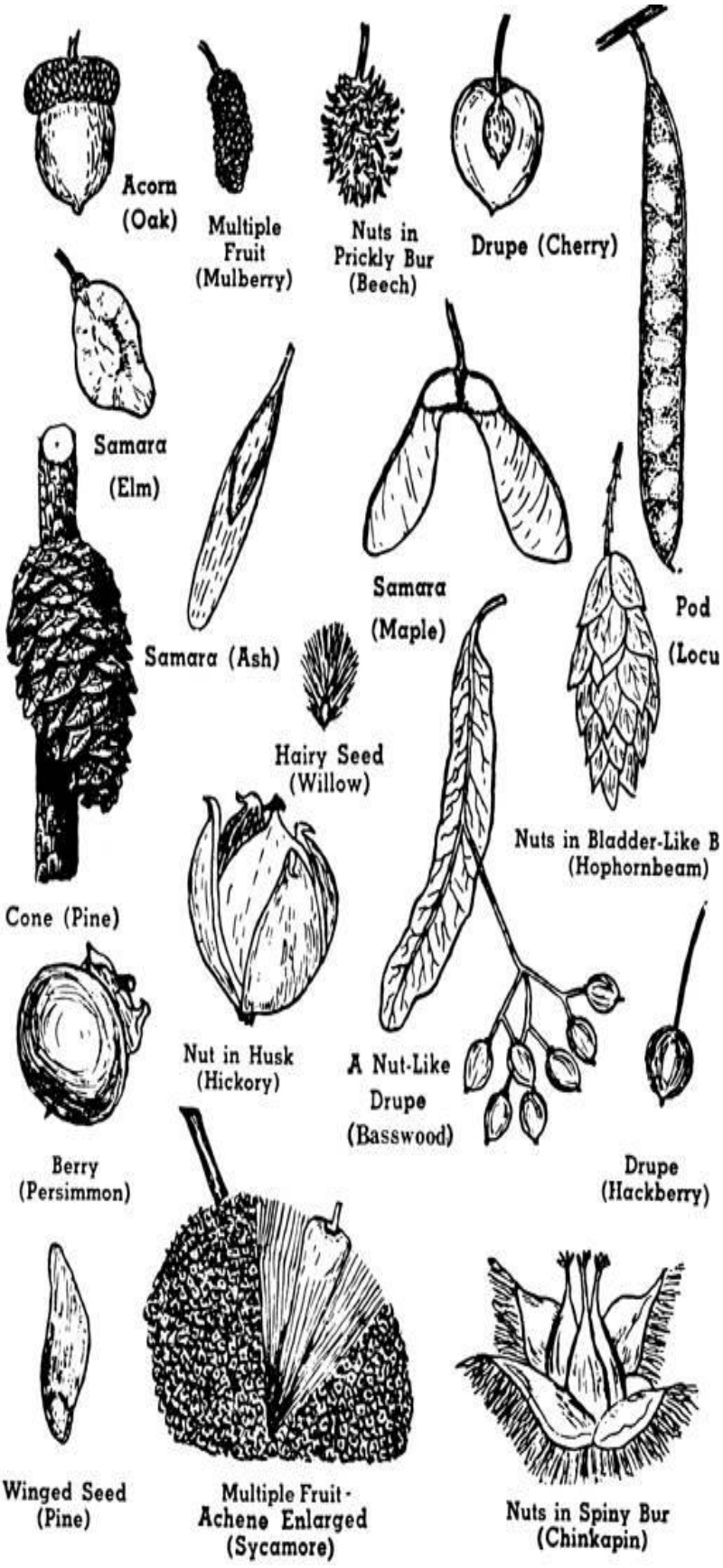


Seeds

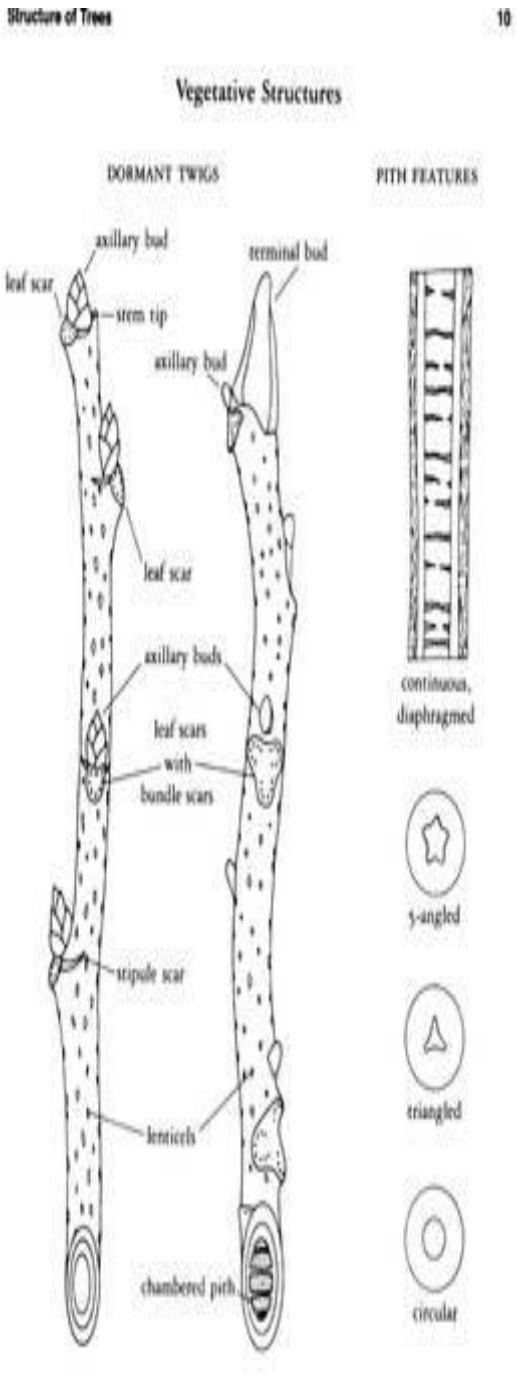
Flowers

Cones

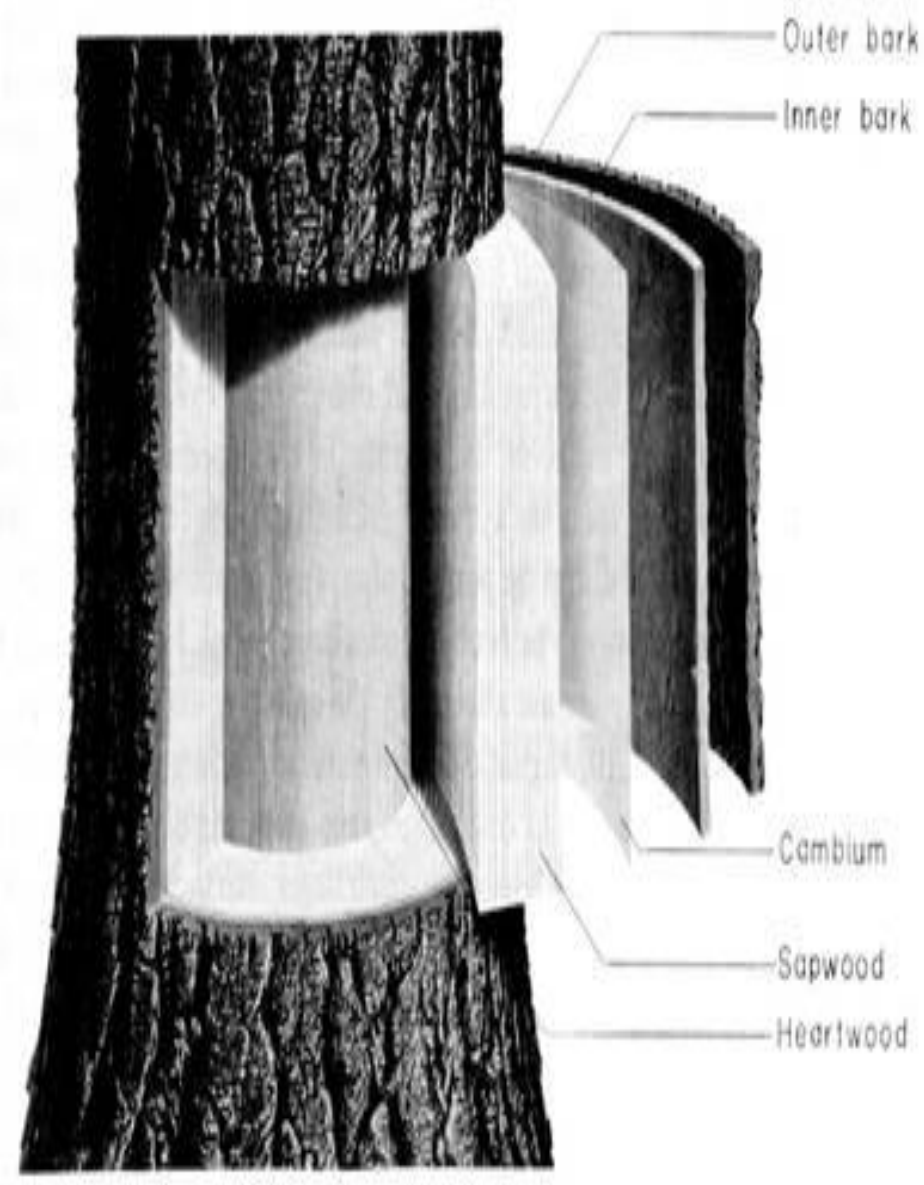
Fruit



Twigs and Buds

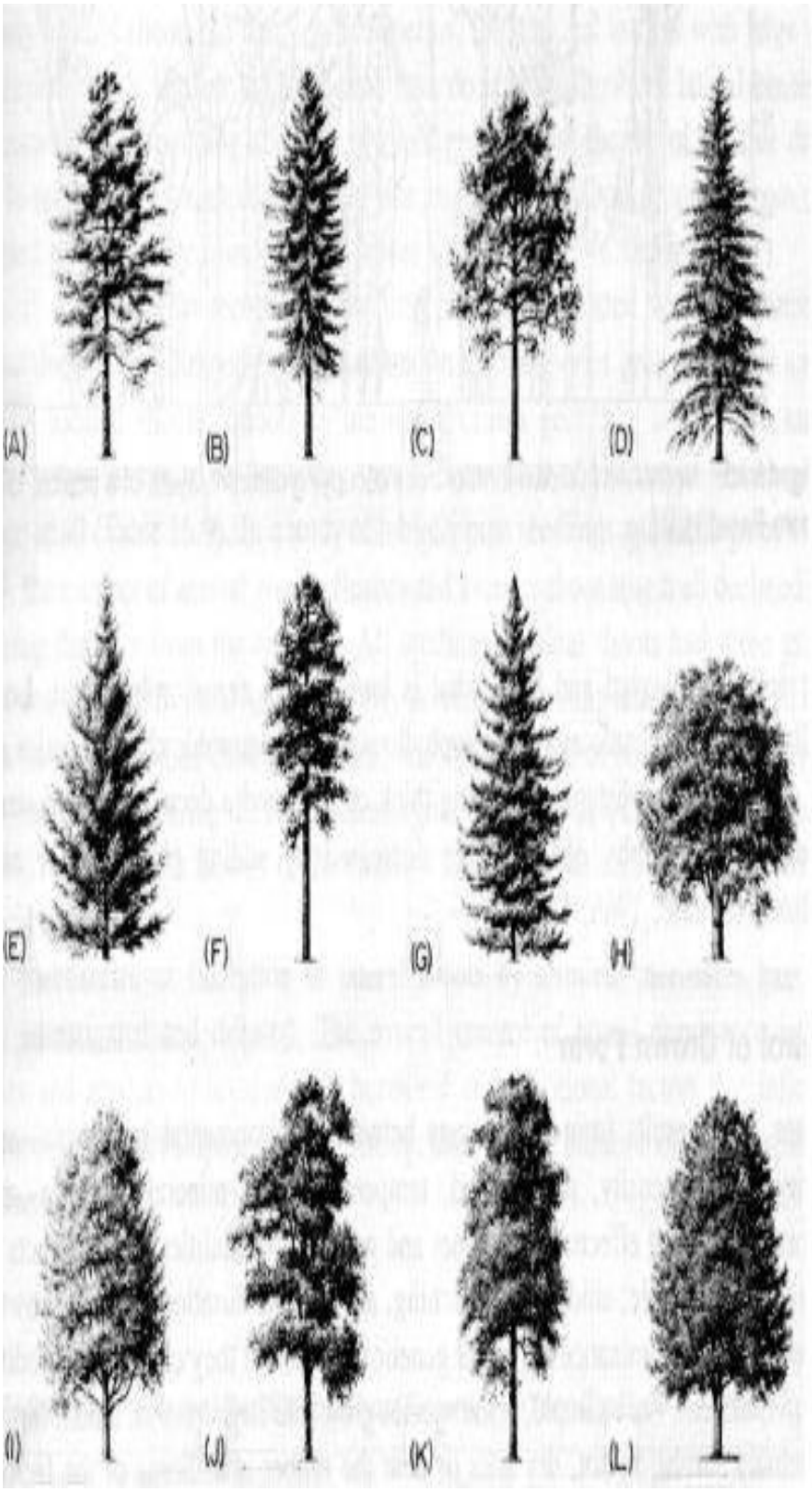


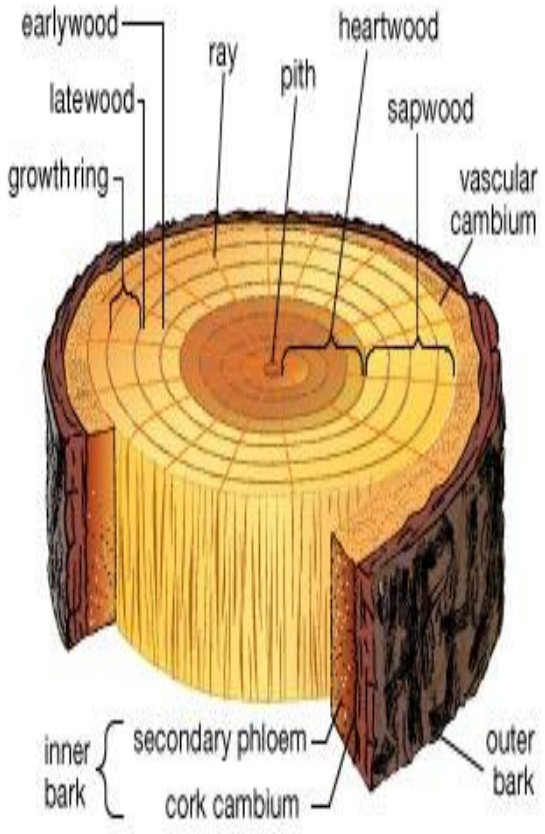
Bark



Tree

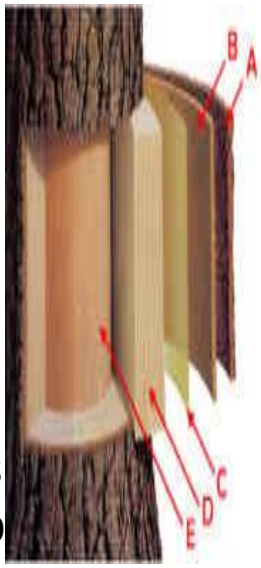
Shape





© 2006 Merriam-Webster, Inc.

The Inside Story



A. The **outer bark** is the tree's protection from the outside world. Continually renewed from within, it helps keep out moisture in the rain, and prevents the tree from losing moisture when the air is dry. It insulates against cold and heat and wards off insect enemies.

B. The **inner bark,** or "phloem", is pipeline through which food is passed to the rest of the tree. It lives for only a short time, then dies and turns to cork to become part of the protective outer bark.

C. The **cambium cell layer** is the growing part of the trunk. It annually produces new bark and new wood in response to hormones that pass down through the phloem with food from the leaves. These hormones, called "auxins", stimulate growth in cells. Auxins are produced by leaf buds at the ends of branches as soon as they start growing in spring.

D. **Sapwood** is the tree's pipeline for water moving up to the leaves. Sapwood is new wood. As newer rings of sapwood are laid down, inner cells lose their vitality and turn to heartwood.

E. **Heartwood** is the central, supporting pillar of the tree. Although dead, it will not decay or lose strength while the outer layers are intact. A composite of hollow, needlelike cellulose fibers bound together by a chemical glue called lignin, it is in many ways as strong as steel. A piece 12" long and 1" by 2" in cross section set vertically can support a weight of twenty tons

Sampling of Forestry/Tree Websites

- New Hampshire Division of Forests and Lands
- http://www.nhdfl.org/
- UNH Cooperative Extension, Forestry and Wildlife Program
- http://nhwoods.org
- http://extension.unh.edu/FWT/publications.htm
- Wood Magic at Virginia Tech—interactive info for youth and educators
- http://woodmagic.vt.edu/
  http://woodmagic.vt.edu/html/Activities/wpa1.htm
  http://woodmagic.vt.edu/html/kids.htm
  http://woodmagic.vt.edu/html/Activities/sitemap.htm
- Wide variety of tree leaf pictures
- https://www.google.com/search?q=tree+leaf+pictures&hl=en&client=firefox-a&hs=oOF&rls=org.mozilla:enUS:official&prmd=imvns&tbm=isch&tbo=u&source=univ&sa=X&ei=P1RkUOvcO8X10gGV94GYAg&ved=0CCAQsAQ&biw=1280&bih=653
- Wide variety of growth ring pictures
- https://www.google.com/search?q=tree+growth+rings&hl=en&client=firefox-a&sa=X&rls=org.mozilla:enUS:official&prmd=imvns&tbm=isch&tbo=u&source=univ&ei=9j1iUIjDConu9ATr94GQAg&ved=0CCMQsAQ&biw=1280&bih=653
- Tree bark pictures
- https://www.google.com/search?q=tree+bark+pictures&hl=en&client=firefox-a&hs=fUF&rls=org.mozilla:enUS:official&prmd=imvns&tbm=isch&tbo=u&source=univ&sa=X&ei=qlVkULD4DuPy0gGlv4GoDg&ved=0CCAQsAQ&biw=1280&bih=653
- Basic Tree Physiology paper
  http://joa.isa-arbor.com/request.asp?JournalID=1&ArticleID=1606&Type=2
- What tree is it—interactive tree ID activities- Ohio Public Library Information Network
- http://www.oplin.org/tree/index.html
- Wikipedia fall leaf color information
  http://en.wikipedia.org/wiki/Autumn_leaf_color
  National Geographic Fall color information
- http://news.nationalgeographic.com/news/2004/10/1005_041008_fallfoliage_2.html
- Fall Color info from “Science made Simple”
- http://www.sciencemadesimple.com/leaves.html
- Tree ID info from Arbor Day Foundation
- http://www.arborday.org/trees/wtit/
- http://www.arborday.org/trees/wtit/wtit.cfm
- Wide range of forestry/tree information from forestry about.com
- http://forestry.about.com/
- http://forestry.about.com/cs/treeid/a/tree_id_web.htm
- http://forestry.about.com/od/treephysiology/gr/tree_basic.htm
- http://forestry.about.com/od/treephysiology/Tree_Structure_and_Physiology.htm
  Free leaf ID guide app
  http://leafsnap.com/

Quotes

- Except during the nine months before he draws his first breath, no man manages his affairs as well as a tree does.
  George Bernard Shaw

- I looked up my family tree and found out I was the sap.
  Rodney Dangerfield

- Character is like a tree and reputation like a shadow. The shadow is what we think of it; the tree is the real thing. Abraham Lincoln

- Someone's sitting in the shade today because someone planted a tree a long time ago. Warren Buffett

- I looked up my family tree and found three dogs using it.
  Rodney Dangerfield

?