



TREE IDENTIFICATION



ILLINOIS ARBORISTS' CERTIFICATION STUDY GUIDE

Chapter 2

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TAXONOMY OR PLANT CLASSIFICATION

- Based on similar biological characteristics
 - Kingdom
 - Division or Phylum (vascular and nonvascular plants)
 - Angiosperms and gymnosperms
 - Class (monocots and dicots)
 - Orders, Families, Genus, Species (Table 2.1)



ANGIOSPERMS

(Flowering Plants)

- Seeds covered by an ovary
- **Deciduous trees**
- **Broadleaved evergreens**
- Classes of angiosperms
 - **Dicots** – two cotyledons or seed leaves
 - **Monocots** – one cotyledon or seed leaf

GYMNOSPERMS

(Cone-bearing Plants)

- “Naked” seeds
- Conifers or cone-bearing plants





COMMON NAMES

- Can be confusing and are localized
- ***Carpinus caroliniana*** may be called American hornbeam, blue beech, ironwood, musclewood
- **Tulip poplar** may be *Magnolia x soulangiana*, *Spathodea campanulata*, and *Liriodendron tulipifera*

SCIENTIFIC NAMES

- Two parts to the name
 - *Pinus nigra*
 - *Quercus alba*
 - *Acer rubra*



PLANT NOMENCLATURE

- **Variety:**
 - Subdivision of a species that has a difference and **breeds true to that difference**



PLANT NOMENCLATURE

- **Cultivar:**

- A cultivated variety
- Names are written with single quotes
- *U.* 'Morton'-Accolade™





PLANT MORPHOLOGY

- Woody plant identification is based on plant morphology
- **Morphology** – the size, shape and appearance of plant parts



PLANT MORPHOLOGY

- ***Important to identify trees using a number of features including:***

- Leaves
- Fruit
- Bark
- Texture

Buds

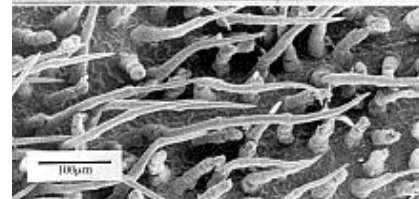
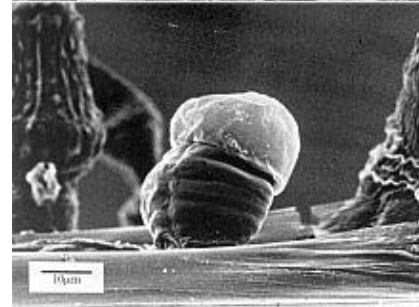
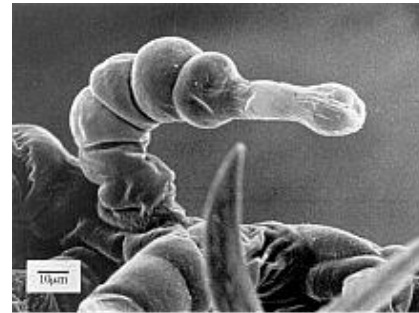
Flowers

Growth form

PRINCIPLES OF IDENTIFICATION

- **Leaf structures**

- Leaf margin
- Leaf base
- **Trichomes**





LEAF MARGINS, TIPS AND BASES

- **Leaf margins**

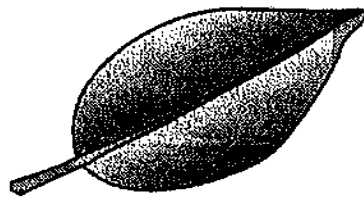
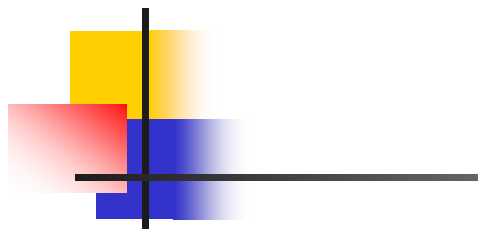
- Entire
- Dentate
- Serrate
- Lobed

- **Leaf tips**

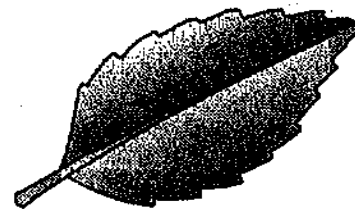
- Acuminate
- Obtuse
- Acute
- Truncate

- **Leaf bases**

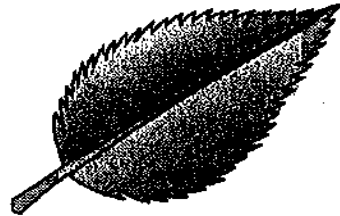
- Rounded
- Cordate
- Acute



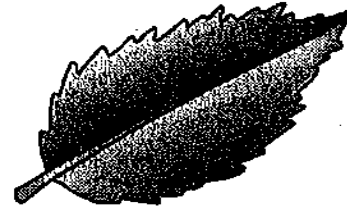
entire



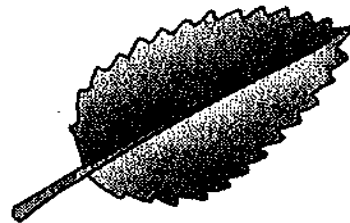
serrate



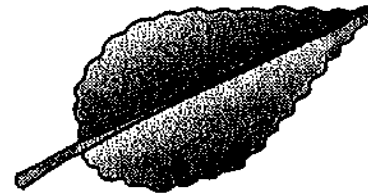
serrulate



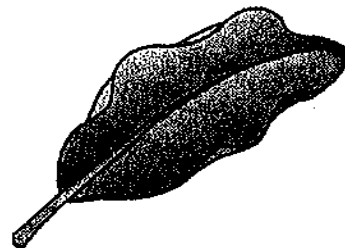
double serrate



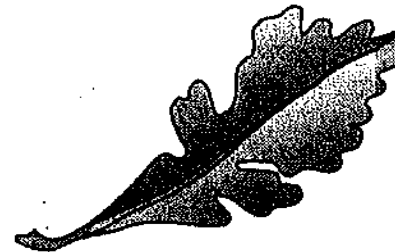
dentate



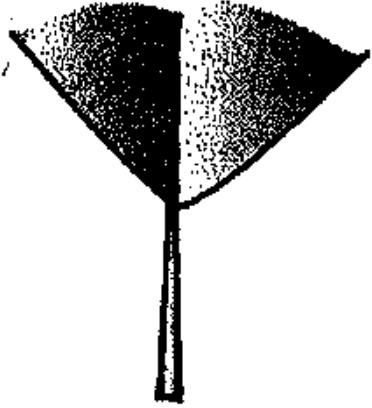
crenate



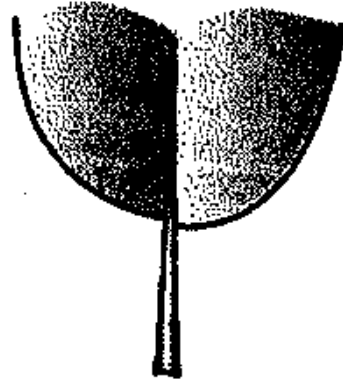
undulate



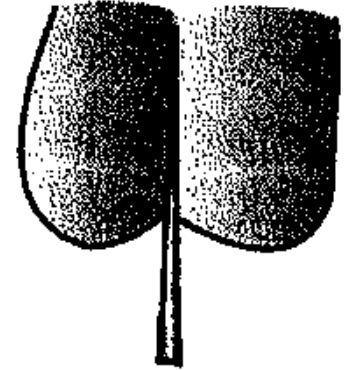
lobed



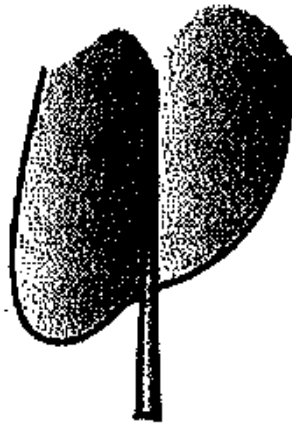
acute



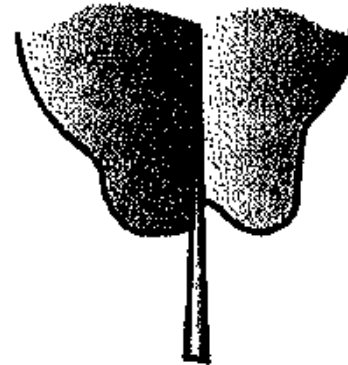
rounded



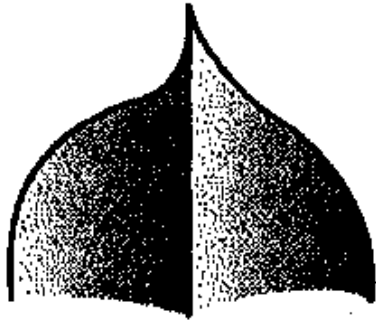
cordate



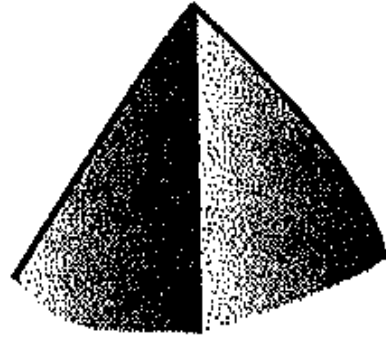
oblique



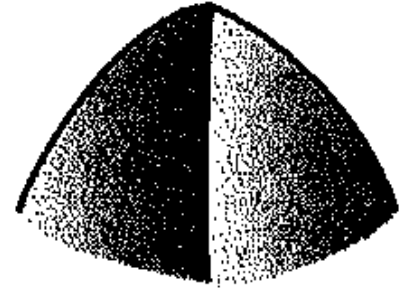
auriculate



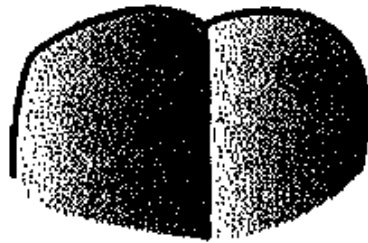
acuminate



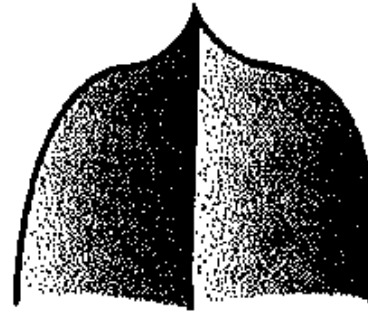
acute



obtuse



truncate



cuspidate

LEAF TYPES

- **Simple** (white oak)
- **Compound** (ash)
- **Pinnately compound** (locust)



LEAF TYPES

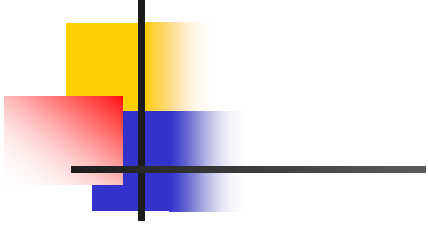
- **Bi-pinnately compound**
(Kentucky coffee tree)
- **Palmate** (buckeye)



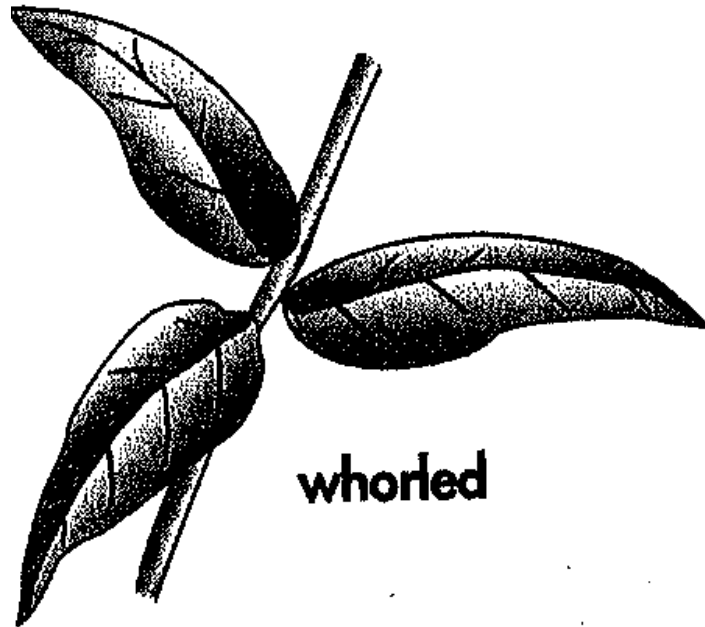
LEAF ARRANGEMENTS

- **Alternate**
(oak, elm)
- **Opposite**
(maple, ash, dogwood, buckeye)
-MAD Buck/Horse
- **Whorled** (catalpa)

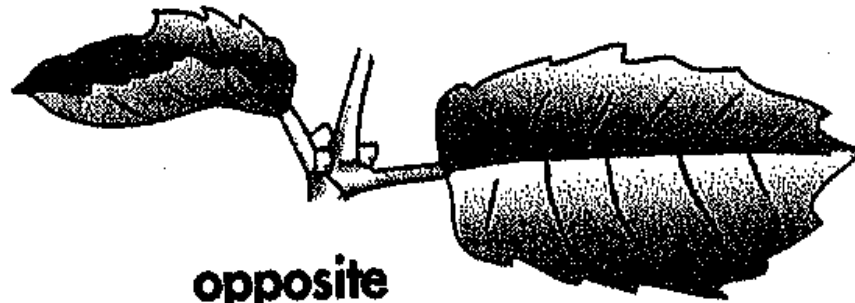




alternate



whorled



opposite

LEAF ARRANGEMENT FOR CONIFERS

- Needles in **clusters** of 2,3,5 (pines)
- Needles produced **singly** (firs and spruces)



LEAF ARRANGEMENT FOR CONIFERS

- **Awl-like** or **scale-like** (junipers, cedars, and arborvitae)





BUDS

- Narrowly conical Ovoid
- Conical Stalked
- Scaled Rounded
- Valvate



narrowly
conical

BEECH



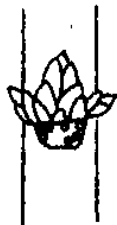
ovoid

CHESTNUT



conical

CHESTNUT OAK



accessory

SCRUB OAK



superposed

WALNUT



one-scaled

WILLOW



stalked

STRIPED MAPLE



outermost
scale centered
directly over
leaf scar

ASPEN



scales in
two ranks

ELM



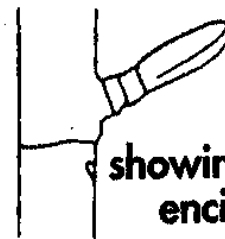
striate
scales

HOPHORNBEAM



rounded

WHITE ASH



valvate
showing stipule scar
encircling twig

TULIPTREE



IDENTIFICATION KEYS

- Step by step method for identifying plants
- Consist of yes or no questions
- Must understand the terms used