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## Bulletin 89 - Trees and Shrubs of the Campus

Ernest L. Stover  
*Eastern Illinois University*

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The  
Teachers College  
Bulletin

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Number 89

July 1, 1925

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Eastern Illinois State Teachers College

—AT—

CHARLESTON

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TREES AND SHRUBS OF THE  
CAMPUS

—BY—

ERNEST L. STOVER, Ph. D.

DEPARTMENT OF BOTANY  
Eastern Illinois State Teachers College

# The Teachers College Bulletin

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CHARLESTON, ILLINOIS

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## TREES AND SHRUBS OF THE CAMPUS

—BY—

ERNEST L. STOVER, Ph. D.

DEPARTMENT OF BOTANY

Eastern Illinois State Teachers College

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EASTERN ILLINOIS STATE TEACHERS COLLEGE

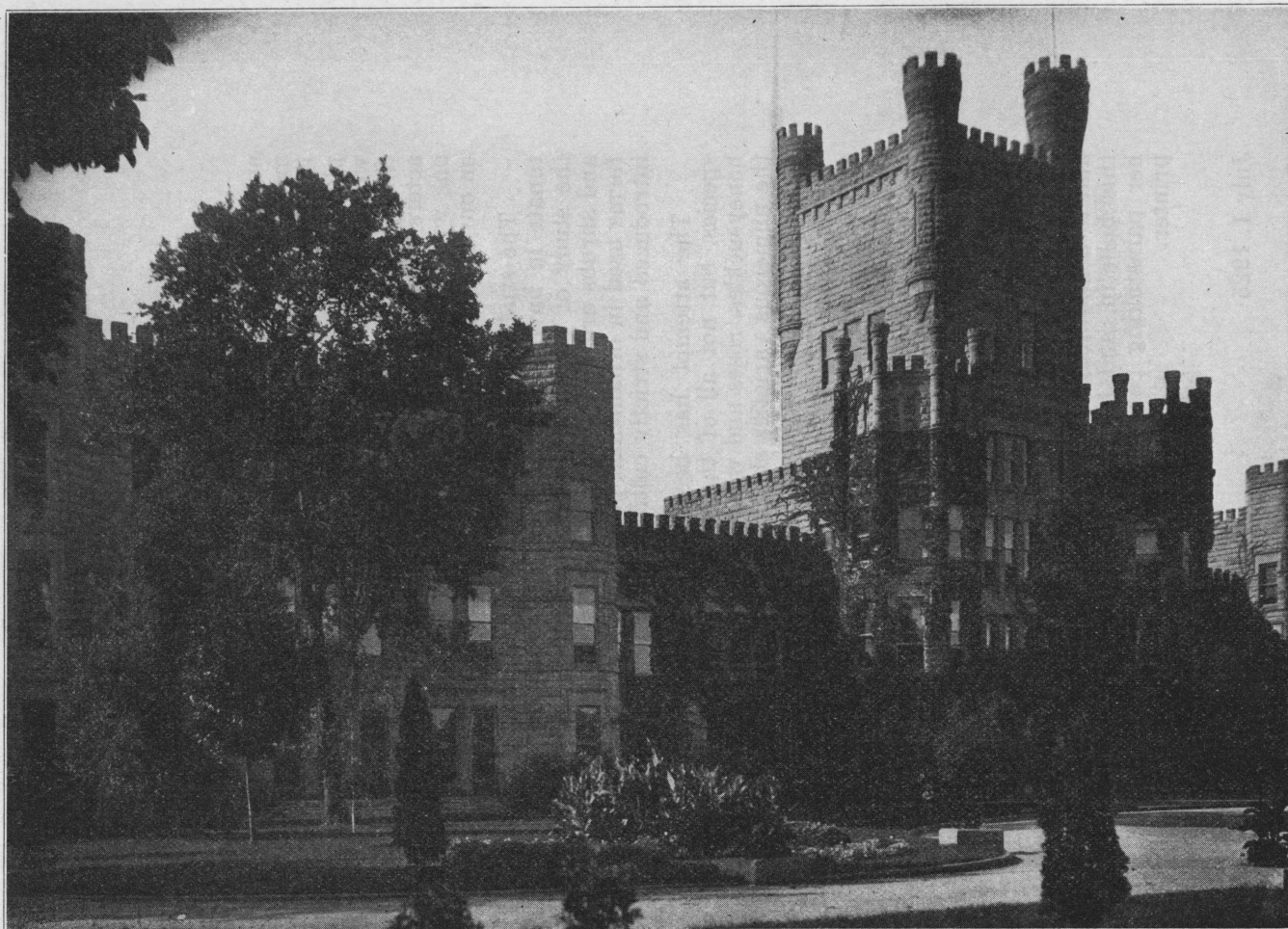
CHARLESTON

1925

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"I think that I shall never see  
A poem lovely as a tree."—Joyce Kilmer.

## INTRODUCTION

The object of this bulletin is to list the remarkable number of woody plants on our campus and to provide a means for their identification by our students and any one interested in them. There are about two hundred woody plants, about half of them trees and the rest shrubs and woody vines. The writer has prepared a key for the identification of each group based upon the leaf and stem characters using as few technical terms as possible, so that any one with a little study can identify these groups of plants on our campus and anywhere else that they occur.

The students in the botany department are very fortunate in having such a complete outdoor laboratory for the study of trees and shrubs. Most of the native trees and shrubs are on the campus, and many of the cultivated forms used in ornamental planting, as well as a variety of introduced and strictly cultivated species and varieties.

The attempt has been made to include all of the species, but not all of the varieties, for instance, of the honeysuckles, roses and willows. Any one wishing to know the numerous varieties should consult some standard work as Bailey's *Encyclopedia of Horticulture*.

The college is indebted to the noted landscape architect, Mr. Walter Burley Griffin, for the original plans for this campus, and to Mr. Walter H. Nehrling for his skill and care in keeping the campus one of the beauty spots of this region. We are also indebted to two of the former botanists of this school, Dr. Otis W. Caldwell and Dr. E. N. Transeau, for the additions which they made to the flora of this campus.

The writer wishes to thank Mr. Walter H. Nehrling and to acknowledge his aid in preparing the check list for this bulletin, and to thank Miss Blanche C. Thomas for her painstaking care in correcting this material for the printer.

E. L. STOVER

July 1, 1925

## HOW TO USE THE KEYS

In using the keys one must decide first whether the plant to be identified is a tree, shrub, or vine, and then turn to the proper key. In this there are co-ordinate sets of characters given identical numbers, and one must choose the character accurately describing the plant in hand. The number in parentheses at the end of that line chosen tells where to read next; and here again one chooses the correct character of the set listed there. Success in using the key depends entirely upon the accuracy with which one selects at each step in the key the correct description fitting the plant being identified. One should always consider all the groups of characters preceded by the same number, for in some cases there are three or four sets of characters to consider and decide between. This is made necessary by the difficulty of making a key based entirely upon leaf and stem characters.

After tracing through the key for a given plant the name found is the name of the genus; for example, it is an oak, or a maple, but the key does not tell what kind of oak or maple. When the genus has been determined by the key, the number given after the generic name will tell on what page to find the descriptions of the species occurring on the campus.

Students who wish to make a more extensive study of the trees and shrubs should learn to use the following books:

- Bailey, *Encyclopedia of Horticulture*
- Bailey, *Manual of Cultivated Plants*
- Gray, *Field, Forest, and Garden Botany*
- Gray, *New Manual of Botany*, 7th Edition
- Hough, *Handbook of the Trees of the Northern United States and Canada*
- Sargent, *Manual of the Trees of North America*

## LIST OF TREES OF THE CAMPUS

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Arborvitae (Flat-leaved Cedar).....	19
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Bald Cypress.....	18
Basswood (Linden, Linn).....	20
Beech: American and Copper.....	24
Birch: Cutleaf, Weeping, White, and Yellow.....	26
Bladdernut.....	10
Blue Beech or Muscle Wood.....	26
Buckeye.....	22
Catalpa: Hardy and Bungei.....	28
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Chestnut.....	24
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Haw.....	21
Hawthorn or White Thorn.....	21
Hemlock.....	18
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Juniper or Red Cedar.....	19
Kentucky Coffee Tree.....	22
Larch.....	18
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Magnolia.....	19
Maiden-hair Tree or Ginkgo.....	18
Maple: Black, Box-elder or Ash-leaf, Japanese, Cutleaf, Nor- way, Red, Silver, Sugar, Sycamore.....	22, 23
Mountain Ash.....	20
Mulberry: Red, Weeping, and White.....	24
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Peach.....	21
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Pine: Austrian, Scotch, and White.....	18, 19
Plum.....	21
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Redbud.....	21
Sassafras.....	20
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Spruce: Canadian and Colorado-blue.....	18
Sweet Gum or Liquidambar.....	23
Sycamore: American and Oriental.....	23
Tulip Tree.....	19
Walnut: Black and Butternut or White Walnut.....	26
Willow (several varieties).....	27
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## LIST OF SHRUBS AND VINES OF THE CAMPUS

(Those marked \* are vines)

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Abelia.....	39
Allspice Bush.....	30
Aralia: Hercules' Club and Angelica Bush.....	35
Barberry: Japanese and Purple-leaved.....	30
*Bittersweet.....	34
Blackberry.....	32
Buckthorn (2 species).....	34
Bush Honeysuckle (3 species and several varieties).....	38
Buttonball Bush.....	37
Chaste Tree.....	14
Chokeberry.....	15
Coral Berry.....	39
Currant (2 species).....	31
Deutzia (3 species).....	31
Dogwood or Red Osier.....	36
Elder (3 species).....	37
*English Ivy.....	13
False Indigo.....	33
French Mulberry or Callicarpa.....	37
Golden Bell or Forsythia (2 species).....	35
Gooseberry.....	31
*Grape (2 or 3 species).....	34
Hazelnut.....	30
Hibiscus (2 species).....	35
Hydrangea (2 species).....	31
*Ivy: Boston, Poison, Five-leaved or Virginia Creeper.....	35
Japanese Quince.....	32
Kerria or Rhodotyphus.....	33
Lilac: Common, Japanese, and Persian.....	36
Mock Orange and Dwarf Mock Orange.....	31
*Moonseed Vine.....	30
New Jersey Tea.....	34
Oleaster.....	31
Pearl Bush.....	33
Prickly Ash.....	33
Privet: California, Regal, and varieties (4 species).....	36
Rose (several species and varieties).....	32

	PAGE NO.
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Silver Bell.....	35
*Smilax or Green Brier (2 species).....	30
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Spice Bush or Fever Bush.....	30
Spiraea (6 species).....	32
Sumac: Aromatic, Cut-leaved, Staghorn, *Poison Ivy, Smooth.....	33, 34
Sweet Pepperbush or White Alder.....	35
Tamarix (Tamarisk).....	30
*Trumpet Vine.....	36
Viburnum: Japanese, Lantana or Wayfaring Tree, Maple- leaved, High-bush Cranberry, Sheepberry, and Snowball..	37, 38
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Weigela and Variegated Weigela.....	38
Witch-hazel.....	32
Wolfberry.....	39

KEY TO THE TREES OF THE CAMPUS

	PAGE NO.
A. Leaves needle-like or scale-like, usually evergreen (1)	
B. Leaves broad (not needle-like or scale-like) deciduous (6)	
1. Stem and leaves (scales) very much flattened. ....	
..... ARBORVITAE	19
1. Stem and leaves not flattened, leaves as scales or needles (2)	
2. Leaves (needles) on dwarf branches in bundles, 2 to many in a bundle (3)	
2. Leaves (needles) not in bundles on dwarf branches (4)	
3. Two to five needles in a bundle, evergreen. ....	PINE 18
3. Numerous needles in a cluster, deciduous. ....	LARCH 18
4. Leaves sharp-pointed scales (about 1/4 in long.)	JUNIPER 19
4. Leaves sharp-pointed needles, 4-angled. ....	SPRUCE 18
4. Leaves in two ranks on stem (5)	
5. Leaves round tipped needles, with two parallel white lines on under side, evergreen. ....	HEMLOCK 18
5. Leaves sharp-pointed needles, yellowish green, not rigid, deciduous. ....	BALD CYPRESS 18
-6-	
6. Leaves in whorls of three, large and heart shaped. ....	
..... CATALPA	28
6. Leaves opposite (7)	
6. Leaves alternate (12)	
7. Leaves simple (8)	
7. Leaves compound (10)	
8. Leaves pinnately veined (9)	
8. Leaves palmately veined, margin lobed. ....	MAPLE 22
9. Twigs smooth. ....	DOGWOOD 28
9. Twigs pubescent or woolly. ....	FRINGE-TREE *
10. Leaves pinnately compound (11)	
10. Leaves palmately compound (five-parted), leaves large. ....	BUCKEYE and HORSE-CHESTNUT 22
11. Leaves with 3-5 leaflets, twigs green. ....	BOX-ELDER 22
11. Leaves with 5-13 leaflets. ....	ASH 27
-12-	
12. Leaves compound (13)	
12. Leaves simple (18)	
13. Leaves with 3 leaflets, entire margins. .	BLADDERNUT *
13. Leaves with 5 or more leaflets (14)	
14. Leaflets entire (15)	
14. Leaflets serrate (saw-toothed) or dentate (toothed) (17)	
15. Trees with thorns on small branches or on trunk of tree. ....	LOCUST 21
15. Trees without thorns (16)	

\* No description given.

16. Bark of tree rough and fluted, fruit a large bean..... KENTUCKY COFFEE TREE 22
16. Bark of tree rather smooth, not fluted, base of leaves entirely covering buds..... YELLOW WOOD 22
17. Leaves of 5 to 13 leaflets, large trees..... HICKORY 26
17. Leaves with 11 to 17 leaflets, obtuse or short-pointed..... MOUNTAIN ASH 20
17. Leaves with 11 to 23 leaflets, long pointed, pith of twigs brown, partitioned..... WALNUT 26
17. Leaves very large of 11 to 41 leaflets, green glands on under side of teeth of leaflets..... AILANTHUS \*

-18-

18. Leaves fan-shaped, veins numerous and many of them forked or split into two veins..... GINKGO 18
18. Leaves palmately veined, i.e., with five main veins (19)
18. Leaves pinnately veined (20)
19. Leaf margins, entire, heart shaped..... REDBUD 21
19. Leaf margins serrate, heart shaped..... BASSWOOD 20
19. Leaf margins lobed, star shaped, branches often corky ridged..... SWEET GUM 23

-20-

20. Lobed and non-lobed leaves on same tree (21)
20. Leaves all lobed (22)
20. Leaves not lobed but may be dentate (toothed) (26)
21. Margins of lobes entire, leaves aromatic, twigs green..... SASSAFRAS 20
21. Margins of lobes irregular, leaves with milky juice, twigs yellow or brown..... MULBERRY 24
22. Lobes of leaves serrate or dentate (toothed) (24)
22. Lobes of leaves entire (23)
23. Leaves with 3 prominent veins, usually 4 lobes..... TULIP TREE 19
23. Leaves with one main vein, with more than 4 lobes that may be rounded or bristle tipped..... OAK 25
24. Leaves large with three main veins..... SYCAMORE 23
24. Leaves rather small with one main vein (25)
25. Trees with thorns..... HAWTHORN 21
25. Trees without thorns, bark of trees chalky white or yellow to orange..... BIRCH 26

-26-

26. Margins of leaves entire (27)
26. Margins of leaves serrate or toothed (31)
27. Trees with thorns..... OSAGE ORANGE 24
27. Trees without thorns (28)
28. Buds clustered at tips of branches..... OAK 25

\* No description given.

	PAGE NO.
28. Terminal bud absent, leaves often hairy beneath, pith may be chambered.....	PERSIMMON 27
28. Terminal bud present (29)	
29. Terminal bud naked, brown silky haired.....	PAPAW 20
29. Terminal bud covered with scales (30)	
30. Leaves pointed with complete stipular rings (lines encir- cling stem at base of petiole).....	MAGNOLIA 19
30. Leaves rounded at tip, with milky sap..	SMOKE TREE 34

## -31-

31. Buds clustered at tips of branches.....	OAK 25
31. Terminal bud absent (32)	
31. Terminal bud present (36)	
32. Leaves doubly serrate (33)	
32. Leaves serrate or toothed (35)	
33. Leaves unequal at base, surface rough.....	ELM 23
33. Leaves rounded or heart shaped at base (34)	
34. Bark rough.....	IRONWOOD 26
34. Bark smooth.....	BLUE BEECH 26
35. Leaves toothed.....	CHESTNUT 24
35. Leaves serrate.....	PLUM 21

## -36-

36. Leaf blades more than twice as long as broad (37)	
36. Leaf blades twice or less than twice as long as broad (42)	
37. Leaves coarsely serrate, long pointed, with 3 main veins. .....	HACKBERRY 24
37. Leaves finely serrate (38)	
38. Leaves very narrow, lanceolate to linear with deciduous stipules.....	WILLOW 27
38. Leaves ovate to oblong (39)	
39. Leaves with gland at base of petiole and blade (40)	
39. Leaves without glands (41)	
40. Twigs some shade of brown.....	CHERRY 21
40. Twigs reddish or greenish.....	PEACH 21
41. Leaves woolly beneath.....	APPLE 21

## -42-

42. Buds stalked.....	ALDER 26
42. Buds not stalked (43)	
43. Teeth of leaves round-pointed.....	POPLAR 27
43. Teeth of leaves sharp-pointed, variable (44)	
44. Bark of trees papery white or yellow to orange.	BIRCH 26
44. Bark of trees not as above (45)	
45. Trees usually with thorns.....	HAWTHORN 21
45. Trees without thorns.....	CRABAPPLE 21

KEY TO VINES OF THE CAMPUS

	PAGE NO.
1. Leaves opposite, pinnately compound, climbing by roots. .....	TRUMPET VINE 36
1. Leaves alternate (2)	
2. Leaves mostly 5-parted climbing by disk-bearing tendrils. .....	VIRGINIA CREEPER 35
2. Leaves mostly 3-parted, climbing by rootlets.....	
.....	POISON IVY 34
2. Leaves simple (3)	
3. Leaves pinnately veined (4)	
3. Leaves palmately veined (5)	
4. Vines with spines or prickles, climbing by tendrils, leaves entire.....	SMILAX (GREEN BRIER) 30
4. Vines smooth, twining, leaves finely serrate.....	
.....	BITTERSWEET 34
5. Vines without climbing tendrils or roots, margins of leaves angled.....	MOONSEED VINE 30
5. Vines climbing by roots or tendrils (6)	
6. Vines climbing by rootlets, leaves glossy evergreen, commonly 3-lobed.....	ENGLISH IVY *
6. Vines climbing by tendrils with disks which attach vine to support, leaves glossy surfaced, 3-lobed.....	
.....	BOSTON IVY 35
6. Vines climbing by tendrils without disks, leaves 3-5 lobed, rather dull green.....	GRAPE 34

\* No description given.



15. Margins of leaves toothed with teeth acute (17)	
16. Leaves obovate or oval, wavy toothed, straight veined, with deciduous stipules.....	WITCH-HAZEL 32
16. Leaves 3-lobed and deeply cut, palmately veined.....	CURRANT 31
16. Leaves 3-lobed, palmately veined, stipule scars small and round.....	HIBISCUS 35
17. Leaves few-toothed and on older parts almost entire, whitish below, fruit 4-parted.....	PEARL BUSH 33
17. Leaves coarsely serrate, lanceolate and thin, shrubs with long green stems.....	KERRIA 33
17. Leaves doubly serrate, rounded heart-shaped, downy at first, twigs often bristly hairy.....	HAZELNUT 30
17. Leaves finely serrate (18)	
18. Leaves oval with large ear-like stipules at base of leaf. ....	JAPANESE QUINCE 32
18. Leaves with small scale-like stipules, glandular on the upper side of the midrib.....	CHOKEBERRY *
18. Leaves without stipules (19)	
19. Leaves ovate or oblong ovate, finely serrate, downy be- neath, 3-veined.....	NEW JERSEY TEA 34
19. Leaves wedge-obovate, sharply serrate, straight-veined dull green.....	WHITE ALDER 35
19. Leaves of some varieties with linear to lanceolate leaves, some with small ovate and sharply serrate leaves, smooth above, often minutely downy beneath....	SPIRAEA 32
19. Leaves oblong, snowy white flowers, drooping bell-shaped, fruit 4-winged.....	SILVER BELL 35

-20-

20. Margins of leaves entire (21)	
20. Margins of leaves serrate or toothed (26)	
21. Leaves with short petioles ( $\frac{1}{2}$ in. or less long or sessile) (22)	
21. Leaves petioled (petioles $\frac{1}{2}$ in. or more long) (23)	
22. Leaves soft downy beneath, 1-3 in. long, oval or oblong, twigs 4-lined.....	ALLSPICE BUSH 30
22. Leaves somewhat downy beneath mainly on veins, lanceo- late.....	PRIVET 36
22. Leaves somewhat downy beneath, short obovate soft to feel, berries mostly in pairs. BUSH HONEYSUCKLE	38
23. Terminal bud absent (24)	
23. Terminal bud present (25)	
24. Leaves heart shaped without stipules.....	LILAC 36
24. Leaves lance-oblong, with short stipules, leaves opposite or in 3's.....	BUTTONBALL BUSH 37
25. Leaves ovate, downy beneath, rather thick, bark light brown and in shreds.....	CORAL BERRY 39
25. Leaves ovate, somewhat downy beneath, bark red and smooth.....	DOGWOOD 36

\* No description given.

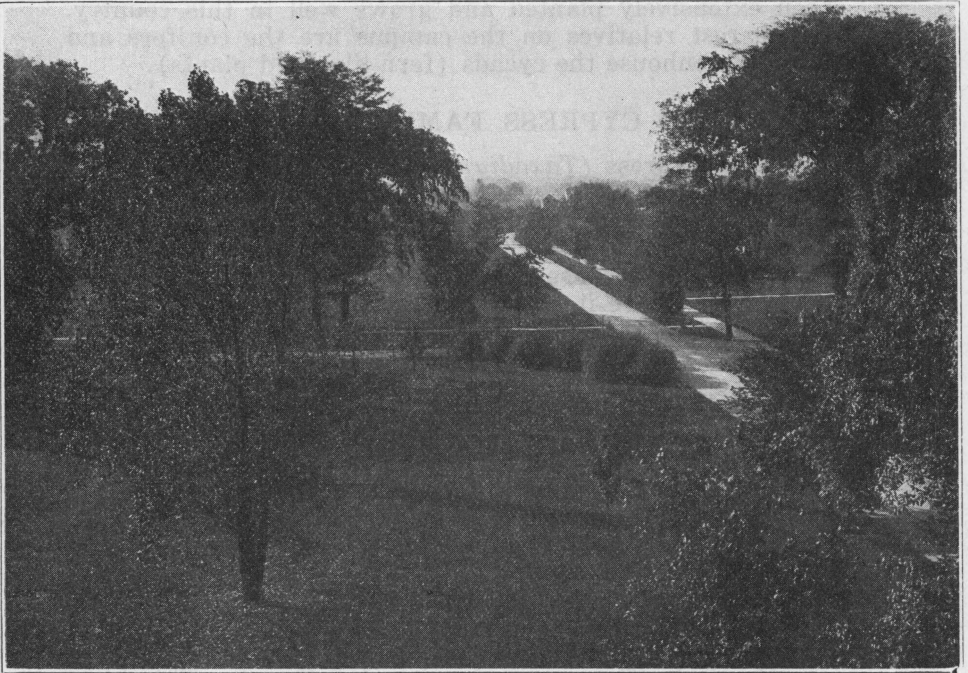


26. Leaves short petioled ( $\frac{1}{2}$  in. long or shorter) (27)
26. Leaves long petioled ( $\frac{1}{2}$  in. long or longer) (28)
27. Leaves thin, ovate, coarsely and sharply doubly serrate, somewhat hairy beneath, twigs becoming reddish..... RHODOTYPHUS 33
27. Leaves ovate-oblong, lower surface of leaves scurfy downy..... CALLICARPA 37
27. Leaves ovate-lanceolate, smooth surface, two lines of hairs on twigs..... WEIGELA 38
27. Leaves lanceolate to linear, lower surface with clusters of star-shaped hairs..... DEUTZIA 31
28. Leaves deeply toothed or lobed, fruit contains a single flat or flattish seed..... VIBURNUM 37
28. Leaves not deeply toothed or lobed (29)
29. Leaf blade twice as long as broad or less (30)
29. Leaf blade more than twice as long as broad (31)
30. Leaves ovate to lanceolate, teeth of margin far apart, fruit 4-parted..... MOCK ORANGE 31
30. Leaves ovate somewhat heart shaped, serrate and pointed, leaf scars low crescent shaped, half round or triangular with 3 or 5-7 bundle scars..... HYDRANGEA 31
30. Leaves ovate to oblong, large, fruit containing a single flat or flattish seed..... VIBURNUM 37
31. Leaves ovate to lanceolate, branches 4-sided, winged or angled, buds never in clusters..... WAHOO 34
31. Leaves lance-oblong or lanceolate, twigs green or yellowish brown, stems with numerous clusters of buds..... FORSYTHIA 35

## TREES

## GINKGO FAMILY (Ginkgoaceae)

Maiden-hair tree (*Ginkgo biloba*, L.). This tree is at present found in the mountains of western China. In earlier geologic times it flourished and had a much wider distribution over the world. Fossils and actual remains of its leaves have been found in the underlying strata of the Columbia Plateau of the western United States. It has



The South Driveway from the Main Building

lock important forest tree. Its bark has been an important source of tannins for the tanning of leather. It is a useful tree in ornamental plantings.

Larch (*Larix laricina*, (DuRoi) Koch). This tree is a native of Europe and planted in this country for ornament. This kind of tree in eastern North America is called the tamarack, an important tree of the bogs of the North-eastern United States. It is one of the two deciduous conifers of the campus.

Australian Pine (*Pinus radiata*, Mill.). This pine is a native of Europe and is planted in a great many places in

## TREES

### GINKGO FAMILY (*Ginkgoaceae*)

**Maiden-hair Tree** (*Ginkgo biloba*, L.) This tree is at present found in the mountains of western China. In earlier geologic times it flourished and had a much wider distribution over the world. Fossils and actual remnants of its leaves have been found in the underlying strata of the Columbia Plateau of the western United States. It has been extensively planted and grows well in this country. Its nearest relatives on the campus are the conifers and in the greenhouse the cycads (fern-like seed plants).

### BALD CYPRESS FAMILY (*Taxodiaceae*)

**Bald Cypress** (*Taxodium distichum*, L. (Rich.)). This tree is a native of the southern United States and is found mostly in the swamp forests. It is one of the two deciduous conifers on the campus. It is a good lumber tree. The wood is noted because it does not rot for a long time even when used where it is constantly wet.

### PINE FAMILY (*Pinaceae*)

This family has seven representatives on the campus.

**Canadian Spruce** (*Picea canadensis*, (Mill.) B. S. P.) This spruce is a native of the St. Lawrence River Valley and the Great Lakes area. It is an important lumber tree having light, soft, straight-grained wood. The young trees are extensively used for Christmas trees.

**Colorado Blue Spruce** (*Picea pungens*, Englm.) This spruce is a native of the Rocky Mountains. It is extensively planted now as an ornamental tree, especially those specimens with the blue-tipped branches.

**Hemlock** (*Tsuga canadensis*, (L.) Carr.). This hemlock is a native of northeastern North America and is an important forest tree. Its bark has been an important source of tannins for the tanning of leathers. It is a useful tree in ornamental plantings.

**Larch** (*Larix larix*, (L.) Karst.). This tree is a native of Europe and planted in this country for ornament. This kind of tree in eastern North America is called the tamarack, an important tree of the bogs of the Northeastern Conifer Forest. It is one of the two deciduous conifers of the campus.

**Austrian Pine** (*Pinus laricio*, Poir.). This pine is a native of Europe and is planted in a great many places in

this country for ornament. It has its needles in groups of two. The needles are long and stiff. The bark is black.

**Scotch Pine** (*Pinus sylvestris*, L.). This pine is a native of northern Europe much cultivated in this country. Its needles are short, borne in bundles of two, and are twisted. The inner bark, which is evident along the trunk, is yellowish or orange in color.

**White Pine** (*Pinus strobus*, L.). This pine is a native of northeastern North America and was before its destruction one of the most important trees of that forest and is also one of our valuable lumber trees. It is one of our most beautiful ornamental trees but it does not grow well in cities where there is a great deal of smoke in the air. Millions of these trees have been destroyed in recent years by a fungus causing a disease known as the White Pine Blister Rust. The needles of this pine are borne in bundles of five.

#### JUNIPER FAMILY (*Juniperaceae*)

**Arborvitae** (*Thuja occidentalis*, L.). This tree is often called White Cedar and is a native of eastern North America from the Appalachian Mountains northward and west to Minnesota, usually in wet soils and along the banks of streams. It becomes a fair-sized tree where it grows best and is quite valuable in ornamental plantings. The leaves and stems are very much flattened.

**Juniper** (*Juniperus virginiana*, L.). This tree is commonly called Red Cedar and is a native of eastern North America. The wood is valuable commercially being durable, light in weight, and fragrant. It is used for cedar chests and extensively used in the manufacture of lead pencils. The fruit is small, blue, and berry-like. There are two kinds of needles: appressed ones making square branches, and divergent, sharp-pointed scale leaves.

#### MAGNOLIA FAMILY (*Magnoliaceae*)

There are four representatives of this family on the campus, three of them are Flowering Magnolias used as ornamental trees; *M. soulangeana* with its petals tinged with purple; *M. obovata* with showy flowers pink-purple outside and white within; *M. lennei* with its flowers purple outside and pearl colored within.

**Tulip Tree** (*Liriodendron tulipifera*, L.). This tree is an important lumber tree of the deciduous or broad-leaf forest of the eastern United States known to the lumberman as "yellow poplar." It is a magnificent forest tree with large tulip-like flowers; it reaches a height of from eighty to one hundred feet with a diameter of eight to ten feet. The

wood is light, straight grained, easily worked and used for a great many purposes in cabinet work of all kinds. This is also a beautiful tree for landscape plantings because of its symmetry and flowers. The leaves are large with three main veins and the main or central lobe of the leaf is broadly truncate.

#### CUSTARD APPLE FAMILY (*Anonaceae*)

**Papaw** (*Asimina triloba*, Dunal). This is a small tree common throughout the Mississippi Valley often forming thickets of many acres in extent. It is our only representative of a rather large tropical family. The flowers are a deep wine red. The fruit is a rather large "custard apple" with large seeds and is edible. The tree is easily recognized in winter by the naked buds covered with dark brown silky hairs.

#### LAUREL FAMILY (*Lauraceae*)

**Sassafras** (*Sassafras sassafras*, (L.) Karst). A tree having leaves of many different shapes, with a prominent aromatic odor and branches which remain green for several years. The flowers are small and yellow or greenish. The largest grove of large trees in the United States is near Paris, Illinois.

#### LINDEN FAMILY (*Tiliaceae*)

The **American Linden** or **Basswood** (*Tilia americana*, L.) and the **European linden** (*T. europea*, L.) are two of our most beautiful trees. They are valuable in ornamental plantings although very seldom used. The wood is light in weight, soft, white, and easily worked. The flowers are sweet smelling and secrete nectar which attracts bees so that it is often called "bee tree."

#### ROSE FAMILY (*Rosaceae*)

This is a very large family of plants having a number of trees as well as shrubs and herbaceous plants in it. On our campus we have:

**Mountain Ash** (*Sorbus aucuparia*, (L.) Ehrh). This is a small tree used in ornamental planting because of its large clusters of small white flowers and its brilliant red fruit.

**Pear** (*Pyrus communis*, L.). Belongs to this family and from this most of the varieties of our commercial fruits have been developed.

**Flowering Crab** (*P. floribundus*, Lindl.). A bush or small tree perhaps an offshoot of the common crab with flesh-colored or rose-colored flowers.

**Double Flowering Crab** (*P. ioensis bechtel*). This is often called Bechtel Crab and has been developed from the western crabapple.

**Apple** (*P. malus*, L.).

**Hawthorns** (*Crataegus* spp.). There are a number of varieties of this group on the campus. These trees are the "haws" and many of them have thorns. The species are difficult to identify.

**Wild Black Cherry** (*Prunus serotina*, Ehrh.). The leaves of this cherry are shiny above with the teeth of the margin of the leaves incurved, the cherries becoming purplish black when ripe. The flowering clusters are much elongated.

**Choke Cherry** (*P. virginiana*, L.). The teeth on the margins of the leaves of this cherry are somewhat spreading, the flowers in short dense clusters, and the fruit red turning to a dark crimson.

**Dwarf or Sand Cherry** (*P. pumila*, L.). This is really a shrub with black cherries; cultivated for its flowers and fruit.

**Plum** (*P. domestica*, L.). This tree is probably of Asiatic origin from which have been developed many varieties.

**Peach** (*P. persica*, (L.) Stokes). This tree was also introduced from Asia, the many varieties being developed from this species.

#### PULSE FAMILY (*Leguminosae*)

This is a large family of plants to which belong the beans, peas, locusts, clovers, beggar's lice, and many others.

**Redbud** (*Cercis canadensis*, L.). A small shrub-like tree with heart-shaped leaves and rose-purple flowers blooming in early spring before its leaves grow out of the buds. It is a native of the deciduous forest and cultivated for its flowers.

**Honey Locust** (*Gleditsia triacanthos*, L.). This becomes a large tree and is distinguished from the black locust by the absence of thorns on the small branches but it has very large branched thorns on the large branches and main trunk of the tree; very small leaflets; leaves 2-3 times compound.

**Black or Clammy Locust** (*Robinia pseudo-acacia*, L.). This tree also becomes a large tree and is distinguished from the honey locust by having two thorns at the base of each leaf and no thorns on the main trunk and large branches; leaves only once compound.

**Rose Acacia or Pink Flowering Locust** (*Robinia hispida*, L.). A small tree cultivated for its rose-colored flowers.

**Kentucky Coffee-Tree** (*Gymnocladus dioica*, (L.) Koch.). A medium sized tree with very rough fluted bark and very large seed pods. This tree either has flowers producing only pollen or flowers producing only seeds but never both so that it is necessary to have two trees for seeds to be produced. Leaves 2-3 times compound; a single leaf may be two feet or more long; large leaflets.

**Yellow Wood** (*Cladrastis lutea*, Koch.). This tree becomes a medium sized tree with clear yellow wood changing to light brown on exposure and yielding a clear yellow dye. It is not a lumber tree, rather rare and local in its distribution, cultivated for ornament. Compound leaves; leaflets rather oval; petiole covers bud.

#### SOAPBERRY FAMILY (*Sapindaceae*)

**Buckeye** (*Aesculus glabra*, Willd.). This tree becomes quite large and has clusters of pale yellow flowers with four petals. It is a native of this country.

**Horse-Chestnut** (*Aesculus hippocastanum*, L.). This tree was introduced from Asia. It has large upright clusters of white flowers spotted with purple and yellow, each flower having 5 petals. This is a beautiful ornamental tree with very large compound leaves giving a dense shade.

#### MAPLE FAMILY (*Aceraceae*)

There are eight different species of maples on our campus. They may be identified by the shapes of their leaves. The trees with leaves deeply cut, with sinus between the lobes angled, the so-called "soft maples," are:

**Silver Maple** (*Acer saccharinum*, L.). Leaves white beneath, 5 deeply cut lobes.

**Red or Swamp Maple** (*Acer rubrum*, L.). A tree cultivated here with reddish twigs, leaves lighter beneath, 3-lobed with shallow-angled sinus between, flowers scarlet or sometimes yellowish.

**Japanese Maple** (*Acer palmatum*, Thunb.). Leaves seven to eleven parted, the segments narrow, many forms with variously cut and colored leaves, cultivated under many names.

The maple trees with large rather broad lobes with rounded sinus between them (except Sycamore Maple), the so-called "hard maples," are:

**Norway Maple** (*Acer platanoides*, L.). Leaves having a milky juice, 7 prominent veins, many colored-leaved varieties cultivated.

**Sycamore Maple** (*Acer pseudo-platanus*, L.). Ample five-lobed leaves, three of the lobes quite large, whitish on the under side, usually with long reddish petioles, sinus angled.

**Sugar Maple** (*Acer saccharum*, Marsh.). Leaves having three main lobes with the sinus between the lobes rounded, and long slender petioles.

**Black Maple** (*Acer nigrum*, Michx.). Leaves very similar to the sugar maple but having stipules or leaf-like processes on many of the leaves at the base of the petioles.

The **Box Elder** or **Ash-leaved Maple** (*Acer negundo*, L.) is the only maple having compound leaves with three to five leaflets. It is easily distinguished by the winged fruits as a maple and as the box elder by the three-parted leaves and green branches.

The maples are among our more important forest and lumber trees and very desirable for ornamental planting. If a dense shade is not desirable the "soft maples" should be used and if a dense shade is desired the "hard maples" should be used. The Norway maple is probably the best shade tree for it grows rapidly and has a well rounded top.

#### WITCH-HAZEL FAMILY (*Hamamelidaceae*)

**Sweet Gum** (*Liquidambar styraciflua*, L.). This is a beautiful tree with star-shaped leaves and silver gray branches often with prominent cork wings or ridges. The fruit is a spiny ball on a rather long stem. The autumn coloration of the leaves is the most beautiful of any of our trees.

#### PLANE TREE FAMILY (*Platanaceae*)

**Sycamore, Buttonball Tree or Plane Tree** (*Platanus occidentalis*, L.). A tree of the river bottoms reaching a very large size having close white bark separating into thin brittle plates which show green between them. The leaves become quite large and are covered with scurfy down. The fruit is a round ball hanging on a rather long stem. The wood is used for meat chopping blocks and is a beautiful wood for furniture and interior finish of houses.

**Oriental Plane Tree** (*Platanus orientalis*, L.). This tree is planted occasionally in this country. Its leaves are more segmented than the native species and the fruit is larger.

#### NETTLE FAMILY (*Urticaceae*)

**American or White Elm** (*Ulmus americana*, L.). A well-known large tree with doubly serrate leaves and with



one main vein. The surface of the leaves is smooth. This distinguishes it from the red or slippery elm whose leaves are very rough.

**Slippery or Red Elm** (*Ulmus fulva, Michx.*). This does not become as large a tree as the American elm. Its small twigs are hairy and the leaves are very rough.

**English Elm** (*Ulmus campestris, L.*). This elm is similar to the slippery elm but has smaller leaves of about half the size of the other elms on the campus. It is used as an ornamental tree and occurs in several forms, some of which have thick corky ridges on the branches.

**Scotch Elm** (*Ulmus montana, With.*) has also been introduced from Europe and is cultivated for ornament.

**Hackberry** (*Celtis occidentalis, L.*). This tree is easily recognized in the winter by the "witches' brooms," clusters of small branches caused by parasites. The leaves are quite similar to the elm leaves except there are three main veins instead of the one main vein in the elm leaf.

**Red Mulberry** (*Morus rubra, L.*). This mulberry has red fruit almost black when ripe and has larger leaves than the white mulberry.

**White Mulberry** (*Morus alba, L.*). This tree has white to purple fruit, and has smaller leaves than the red. It was introduced from China. The Russian mulberry is a form of it.

**Tea's Weeping Mulberry.** Used in ornamental plantings because of its drooping branches and dwarfed height.

**Osage Orange** (*Toxylon pomiferum, Sarg.*). This tree has been used widely as a hedge about fields and along roadsides. It is the common "hedge" whose fruit is the large "hedge apple." It is rapidly being destroyed in most localities. The wood is very valuable as fence posts.

#### BEECH FAMILY (*Fagaceae*)

**Beech** (*Fagus grandifolia, Ehrh.*). One of our finest ornamental forest trees with tight gray bark with taper-pointed, thin, distinctly toothed leaves and long pointed brown buds. The nuts are triangular in shape, the bur covered with hooked prickles.

**Copper Beech.** This tree is a variety of the European Beech (*Fagus sylvatica, L.*). It is cultivated for its beautiful form and copper-colored foliage.

**Chestnut** (*Castanea dentata, Borkh.*). This is an important forest tree in the eastern United States with rather long broadly toothed leaves with the large teeth sharp pointed. The fruit is a very prickly bur and the seeds or "nuts" are gathered in great quantities. The Chestnut forests are rapidly being destroyed by the "chestnut

blight," a fungus disease introduced from the Orient. The bark is dark; later scaly.

**Oaks.** There are on our campus nine different kinds of oak trees. The economic importance of these trees is so well known that nothing need be said in this bulletin about it. All can be identified by buds clustered at ends of branches.

### The Chestnut Oaks

**Chestnut Oak** (*Quercus Muhlenbergii*, Engelm.) has leaves rather similar to the chestnut leaves but the teeth are more rounded than pointed. The bark of the tree is dark.

**Swamp White Oak** (*Quercus bicolor*, Willd.) has rather large leaves with rounded teeth and is much broader at tip. The bark is very gray in color and flaky. This is the only oak with stalked acorns. The lower side of the leaf is covered with fine white hairs.

### The White Oaks

**White Oak** (*Quercus alba*, L.). The leaves of this oak are rather deeply cut with the lobes or segments rounded at the tips. These leaves are lobed to the tip of the leaf.

**Bur Oak** (*Quercus macrocarpa*, Michx.). The leaves of this tree become quite large and the lobes are rounded. It differs from the white oak in that the tip of the leaf is the broadest part of the leaf and the tip is not deeply lobed. The acorns are quite large and the cup of the acorn is quite shaggy. Because of this the name "mossy-cup" oak is often used for this tree.

### The Pin Oaks

This group of oaks is characterized by the lobes of the leaf being terminated by a spine or bristle.

**Black Oak** (*Quercus velutina*, Lam.). This oak has large broad leaves rather thick with rusty colored hairs in the angles of the veins on the under side of the leaf. Leaf becomes very leathery.

**Scarlet Oak** (*Quercus coccinea*, Muench.). The leaves are shiny on the upper surface and the leaf is deeply divided with wide rounded angles between the lobes. All parts of the leaf are more slender than either the black or the red oak leaf. The cup of the acorn is top-shaped.

**Red Oak** (*Quercus rubra*, L.). The leaves of this oak are somewhat larger than those of the scarlet oak, dark dull green above and pale yellow green and smooth below except for tufts of hairs in the angles of the veins. The cup of the acorn is saucer-shaped.

**Pin Oak** (*Quercus palustris*, Muench.). The leaves of this oak are quite similar to the red and scarlet oak but the acorns are small and roundish being barely  $\frac{1}{2}$  inch long. Leaves are not shiny.

**Shingle or Laurel Oak** (*Quercus imbricaria*, Michx.). The leaves of this tree are without lobes or divisions of any kind, quite firm and smooth on the upper side.

#### BIRCH FAMILY (*Betulaceae*)

**Blue Beech or Muscle Wood** (*Carpinus caroliniana*, Walt.). A small tree with leaves that are shaped somewhat like medium-sized elm leaves. The bark is tight and smooth with raised places standing out like the muscles of an arm.

**Ironwood or Hop Hornbeam** (*Ostrya virginiana*, K. Koch.). A small tree with doubly notched leaves and fruit resembling hops. The bark exfoliates in thick, narrow, closely appressed strips.

**American White Birch** (*Betula populifera*, Ait.). A small slender tree with chalky white bark, the leaves not deeply cut.

**European White Birch** (*Betula alba*, L.). This tree is similar to the one above except that the leaves are deeply cut and from this form the weeping varieties have been developed.

**Yellow Birch** (*Betula lutea*, Michx.). The leaves are rather similar to the American White Birch but the inner bark is yellow separating in thin layers.

**Hoary Alder** (*Alnus incana*, Muench.). This tree has toothed leaves and may be recognized by the small open woody cones which remain on the tree throughout the year.

#### WALNUT FAMILY (*Juglandaceae*)

**Black Walnut** (*Juglans nigra*, L.). This tree has large leaves of 11-17 leaflets (occasionally 23), the pith of the young stems is brown and partitioned. The fruit is round.

**White Walnut or Butternut** (*Juglans cinerea*, L.). The leaves of this tree are large with 7-17 leaflets very similar to the black walnut. The fruit, however, is oblong while the black walnut is round. The bark of the old butternut tree appears as though the outside surfaces of the ridges have been planed off.

The Hickories—The hickories are quite difficult to name in the woods but we have only three kinds on the campus.

**Bitternut** (*Hicoria cordiformis*, K. Koch.). The winter buds of this tree are yellow, the leaves have from 7-11 leaflets.

**Pignut** (*Hicoria glabra*, Spach.). The leaves of this hickory have 5-7 leaflets, the bark does not exfoliate in long strips.

**Shell-bark** (*Hicoria laciniosa*, Loud.). The leaves of this tree have 7-9 leaflets downy beneath. The nut is pointed at both ends.

#### WILLOW FAMILY (*Salicaceae*)

**Cottonwood** (*Populus deltoides*, Marsh.). The leaves are rather triangular in outline with a long point at the tip, the margin is coarsely scallop-toothed. The leaf stalk is long and flattened. This is the tree so much planted along streets where quick growth is desired. The staminate (male) tree is the one to plant because the pistillate (female) tree is the one producing seeds with long cottony hairs, from which the name is taken, that cover the ground for yards and are blown for long distances. This tree is grown in large plantations for the wood which is used for paper pulp.

**Lombardy Poplar** (*Populus italica*, Du Roi.). This tree is easily recognized by the vertical growth of the branches which causes the tree to be spire-shaped.

**Large-toothed Aspen** (*Populus grandidentata*, Michx.). The leaves are roundish heart-shaped, with large irregular sinuate teeth. The bark is rather smooth and somewhat gray.

The Willows—There are five species of willows on the campus, some of which do not have a common name:

**Pussy Willow** (*Salix caprea*, L.), **Weeping Willow** (*S. babylonica*, Tourn.), (*S. britzensis*), (*S. laurelifolia*), (*S. regalis*).

#### EBONY FAMILY (*Ebenaceae*)

**Persimmon** (*Diospyros virginiana*, L.). The leaves of this tree are rather thick, ovate, entire leaves longer than broad. The wood is hard and black. This is the only representative of the ebony family in our climate.

#### OLIVE FAMILY (*Oleaceae*)

**Blue Ash** (*Fraxinus quadrangulata*, Michx.). The branches of this tree are 4-lined, often with narrow wings. The leaves have from 5-9 leaflets and they are serrate.

**Black Ash** (*Fraxinus nigra*, Marsh.). The leaves of this ash have from 7-11 leaflets that are sessile, i. e., the leaflets do not have stalks or petioles, and are serrate.

**American or White Ash** (*Fraxinus americana*, L.). The leaves of this tree are rather large with 7-9, or sometimes 5, leaflets with smooth margins or occasional teeth.

#### BIGNONIA FAMILY (*Bignoniaceae*)

**Catalpa** (*Catalpa speciosa*, Warder.). This tree has large heart-shaped leaves and long slender seed pods. The catalpa has been planted extensively in small plantings on farms for fence posts and is often used for small telephone poles.

**Dwarfed Catalpa** (*Catalpa bungei*). This is a dwarfed form with drooping branches produced by grafting buds upside down. This form is used entirely for ornamental planting and can only be obtained from nurseries.

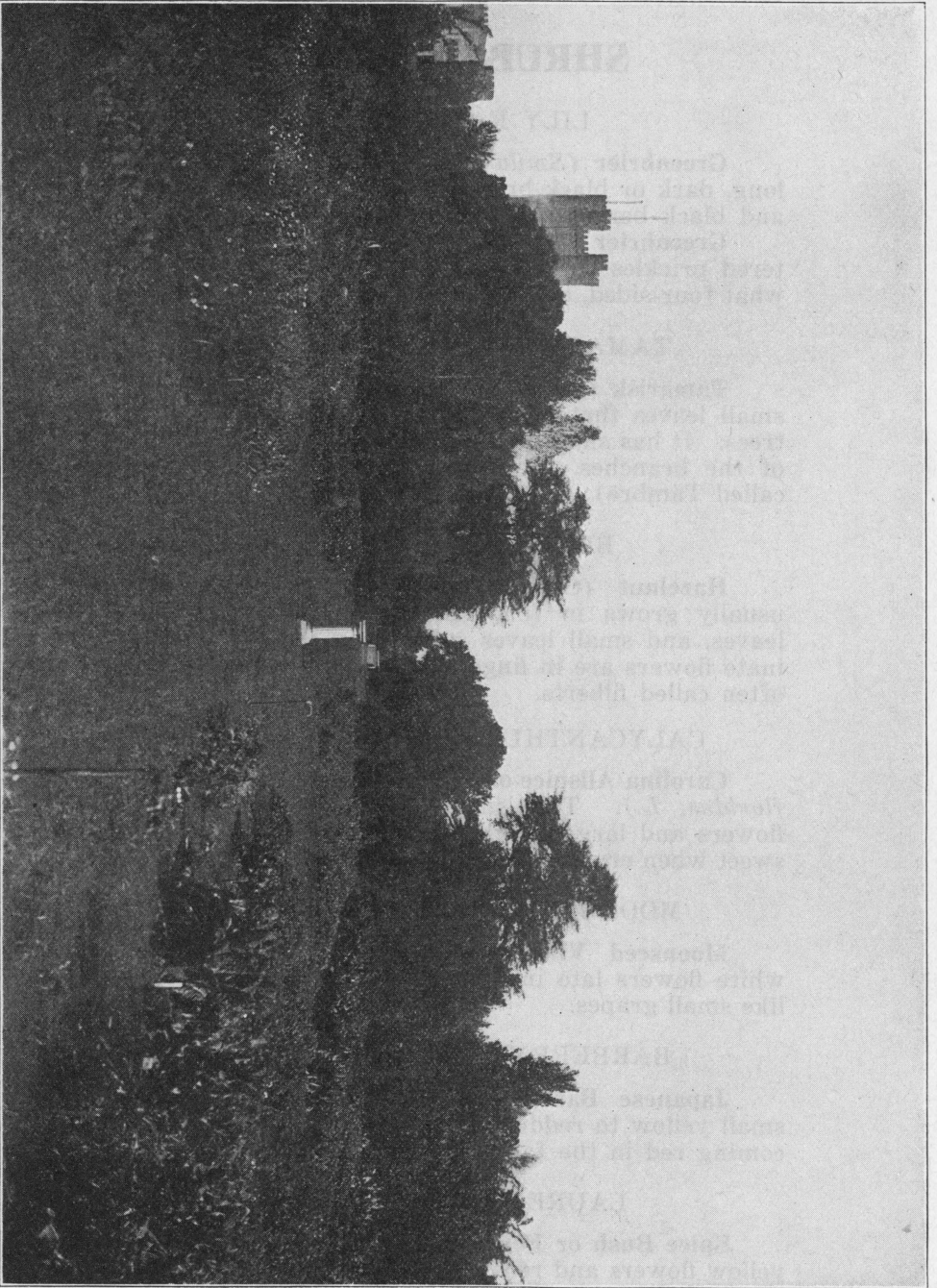
#### DOGWOOD FAMILY (*Cornaceae*)

**Flowering Dogwood** (*Cornus florida*, L.). This is a small tree with "alligator bark," i. e., bark exfoliating in small irregular squares, and clusters of flowers surrounded by large white leafy bracts; the whole cluster is often called a single flower. The fruit is bright red.

**Panicled Dogwood** (*Cornus paniculata*, L'Her.). The leaves of this dogwood are whitish beneath, the bark ash-colored, the flowers in loose clusters, and the fruit white.

**Rough-leaved Dogwood** (*Cornus asperifolia*, Michx.). The leaves of this form are rough, the flower clusters small, and the fruit of a blue color.

**Alternate-leaved Dogwood** (*Cornus alternifolia*, L.). The leaves of this tree are alternate, the flower clusters flat-topped, and the fruit is bright blue on red stalks.



The School Garden

## SHRUBS AND VINES

### LILY FAMILY (*Liliaceae*)

**Greenbrier** (*Smilax hispida*, Muhl.). A vine having long, dark or black bristly prickles, small greenish flowers and black berries.

**Greenbrier** (*S. rotundifolia*, L.). A vine having scattered prickles that do not become dark, branchlets somewhat four-sided, otherwise as above.

### TAMARISK FAMILY (*Tamariscineae*)

**Tamarisk** (*Tamarix hispida*, Willd.). This shrub has small leaves that cause the plant to resemble the cypress trees. It has small pink flowers in close spikes at the ends of the branches. It is named from the Tamaris (now called Tambre), a small river in Spain.

### BIRCH FAMILY (*Betulaceae*)

**Hazelnut** (*Corylus americana*, Walt.). This plant usually grows in thickets. It has hairy branches and leaves, and small leaves subtending the fruit. The staminate flowers are in finger-like catkins. The hazelnuts are often called filberts.

### CALYCANTHUS FAMILY (*Calycanthaceae*)

**Carolina Allspice** or **Sweet Scented Shrub** (*Calycanthus floridus*, L.). This shrub has dark red, sweet-scented flowers and large rough-surfaced dry fruits that are also sweet when crushed, and contain numerous seeds.

### MOONSEED FAMILY (*Menispermaceae*)

**Moonseed Vine** (*Menispermum canadense*, L.) has white flowers late in the season and black fruits, looking like small grapes.

### BARBERRY FAMILY (*Berberidaceae*)

**Japanese Barberry** (*Berberis thunbergii*, DC.) has small yellow to reddish flowers and red berries, leaves becoming red in the fall.

### LAUREL FAMILY (*Lauraceae*)

**Spice Bush** or **Fever Bush** (*Benzoin aestivale*, L.) has yellow flowers and red fruit similar to small cherries. The leaves and bark are spicy aromatic.

OLEASTER FAMILY (*Elaeagnaceae*)

**Oleaster** (*Elaeagnus longipes*, Gray). This shrub has its branchlets covered with reddish brown scales and its leaves are ovate and oblong, with stellate hairs on the upper surface giving it a dotted appearance, and the lower surface is silvery with scattered brown scales. The flowers are solitary or two together. The fruit is oblong becoming red when ripe and quite acid.

**Oleaster** (*Elaeagnus angustifolia*, L.). This is a tree-like shrub which is sometimes spiny with its branchlets silvery white and its leaves lanceolate or oblong, and otherwise similar to the above form. The fruit is yellow and covered with silvery scales.

SAXIFRAGE FAMILY (*Saxifragaceae*)

**Hydrangea** (*Hydrangea arborescens*, L.) has ovate, slightly heart-shaped, serrate leaves, and has flat-topped flower clusters with a row of white sterile flowers around the margin.

**Cultivated Hydrangea** (*Hydrangea arborescens* var. *grandiflora*, Rehd.) differs from the wild form in that nearly all of the flowers are sterile and the individual flowers are larger than the wild form. The leaves are large, coarse-toothed, and a glossy green.

**Mock Orange** (*Philadelphus grandiflorus*, Willd.). The leaves of this shrub are rather large, sparingly toothed, and slightly hairy, and the flowers are large, scentless, white, with four petals. The fruit is a four-parted dry capsule attached to plant in all seasons.

**Dwarf Mock Orange** (*Philadelphus lemoinei*, Lemoine). This plant never gets over six feet high and is similar to the above with all parts smaller.

**Deutzia** (*Deutzia scabra*, Thunb.). This plant has white or slightly pink flowers in clusters. Each flower has five petals. The leaves when young are covered with fine white star-shaped hairs.

**Deutzia** (*Deutzia gracilis*, Thunb.) and (*D. lemoinei*, Lemoine) are smaller forms of this shrub having snow-white flowers.

**Gooseberry** (*Ribes cynosbati*, L.). This plant has blunt three-lobed leaves and the stem and berries are covered with prickles. The flower is greenish; the berry when ripe is a dull purple.

**Red Flowered Currant** (*Ribes sanguineum*, Pursh.). This plant has 3-5 lobed leaves, white downy on the lower surface. The flower is red; the fruit, blue-black.

**Golden Currant** (*Ribes aureum*, Pursh.) has yellow flowers and black berries. The leaves are rounded, three-lobed, and cut-toothed.



WITCH-HAZEL FAMILY (*Hamamelidaceae*)

**Witch-hazel** (*Hamamelis virginiana*, L.). This shrub has oval, wavy marginal leaves and blooms very late in the summer, the flowers having four crumpled yellow petals.

ROSE FAMILY (*Rosaceae*)

There are six forms of *Spiraea* on the campus:

(*Spiraea Van Houttei*, Zabel). Bridal wreath, with abundant clusters of small white flowers and wedge-shaped leaves.

(*Spiraea callosa*, L.) with narrow, sharply serrate leaves and the branches terminated by clusters of deep pink flowers.

(*Spiraea bumalda*, Burv.). A dwarf plant with broader ovate-lanceolate leaves, and flowers in large flat clusters colored a bright carmine. Some individuals have almost white flowers. This is known under the name of Anthony Waterer.

(*Spiraea prunifolia*, Sieb.) with double flowers of a clear white. The plant otherwise resembles the bridal wreath and is often called bridal wreath, as is the single flowered *S. Van Houttei*.

(*Spiraea belliardii*, Herincq.). A spiraea having long, narrow, doubly serrate leaves, gray tomentose under surface when young. The flowers are bright pink with prominent stems.

(*Spiraea salicifolia*, L.). A dense shrub with oval to lanceolate leaves and hairy clusters of light pink flowers in a panicle.

**Blackberry** (*Rubus nigrobaccus*, Bailey). This common shrub has 3-5 parted leaves, hooked prickles on the stems and oblong or thimble-shaped "black berries." From this form many varieties have been developed.

(*Rosa rugosa*, Thunb.). This is a hardy shrub densely covered with prickles and bristles of different sizes. The flowers are purple or white, large, and last for a long time. There are single, semi-double, and double varieties of this rose.

**Hugo Rose** (*Rosa hugonis*, Hemsl.). This is also a hardy shrub with stout straight flattened prickles and bristles on the red stems. The leaves are small with five to eleven leaflets. The flowers are single and a clear yellow.

There are on the campus in addition to the above a variety of cultivated roses too numerous to list in this bulletin.

**Japanese Quince** (*Cydonia japonica*, Hort.). This is a stiff thorny shrub, oblong-ovate leaves with large stipules

and scarlet red flowers. There are many varieties in cultivation.

(*Rhodotyphus kerrioides*, Sieb.). This shrub is from Japan. It has opposite leaves, ovate to oblong, and doubly serrate. The young stems become reddish later in the season. The flowers are white with four petals. The fruit consists of four black fleshy drupes in clusters that remain over winter. This plant is often called White Kerria.

**Kerria** (*Kerria japonica*, DC.). This plant is also from Japan. It has green stems with alternate leaves, ovate to lanceolate with serrate margins. The flowers are yellow, with five petals.

**Pearl Bush** (*Exochorda grandiflora*, Lindl.). A beautiful shrub from China cultivated for its large white flowers of five petals around a green center. The fruit is a rather curious five-angled capsule with one or two flattened seeds in each division.

#### LEGUME FAMILY (*Leguminosae*)

**False Indigo** (*Amorpha fruticosa*, L.). This is a tall shrub with leaves of eleven to twenty-one leaflets and dark purple flowers. The pods are hard and covered with small glands. The colors of the flowers vary and in some individuals may be white or pale blue.

**Siberian Pea** (*Caragana arborescens*, Lam.). A tall shrub of erect habit with yellow pea-like flowers and leaves with from four to six pairs of oval leaflets.

#### RUE FAMILY (*Rutaceae*)

**Prickly Ash or Toothache Tree** (*Xanthoxylum americanum*, Mill.). The stems and often leaves are prickly and have an aromatic odor. The leaves have from 5-9 leaflets. The flowers are yellowish-green, and the pods thick and fleshy.

#### CASHEW FAMILY (*Anacardiaceae*)

**Staghorn Sumac** (*Rhus typhina*, L.). A shrub or tree-like plant whose branches are densely hairy and leaves have eleven to thirty-one leaflets which are oblong lanceolate, serrate, and sharp pointed. *Rhus typhina* var. *laciniata* is on the campus and differs from the above in having deeply cut leaflets.

**Smooth Sumac** (*Rhus glabra*, L.). This plant is similar to *R. typhina* except that the stems are smooth.

**Fragrant Sumac** (*Rhus canadensis*, Marsh.). This shrub is named because of the aromatic leaves and bark. This is a small shrub having three-parted leaves, the leaflets ovate and cut-lobed. The flowers are a light yellow.

**Poison Ivy** (*Rhus toxicodendron*, L.). This is a shrub or vine climbing by rootlets secreting an oil that is poisonous to the touch of most people, causing watery blisters called "ivy poison." The leaves are always three-parted, never five-parted; they may be distinguished from box-elder, which they most closely resemble, by being alternate in arrangement. The fruit is white or cream-colored berries.

**Smoke Tree** (*Rhus cotinus*, L.). This is a large shrub or small tree whose leaves have an aromatic milky juice. The margin of the leaves is smooth and the apex prominently rounded. Most of the flowers fail to develop and their stems develop long plummy hairs which cause the fruiting cluster to resemble puffs of smoke. It is from this that it gets its name "Smoke Tree."

#### STAFF TREE FAMILY (*Celastraceae*)

**Bittersweet** (*Celastrus scandens*, L.). This is a twining shrub with oblong, finely serrate, pointed leaves and small greenish flowers. The fruit is colored orange and scarlet.

**Wahoo or Spindle Tree** (*Evonymus atropurpureus*, Jaeg.). This is a shrub or small tree with green stems and sharply serrate leaves. The flowers are dull red to purple and small. The fruit is four-lobed and red.

**European Spindle Tree** (*Evonymus europaeus*, L.). This form has flowers in groups of three with four greenish, oblong petals, and red fruit.

**Winged Wahoo** (*Evonymus alatus*). This shrub is similar to the above but has four prominent cork wings on the branches.

#### BUCKTHORN FAMILY (*Rhamnaceae*)

**Buckthorn** (*Rhamnus cathartica*, L.). A shrub with ovate, minutely serrate leaves and a three or four seeded black berry. The branchlets are rigid, often spine-like and usually have a small spine in the angle between the terminal branches. (*Rhamnus frangula*, L.) is a small tree similar to the above but without thorns.

**New Jersey Tea** (*Ceanothus americanus*, L.). A shrub with ovate leaves with three prominent veins and serrate margins. The flowers are small and white in terminal clusters. The receptacles of flowers remain on the plant through the winter as round, woody disks.

#### VINE FAMILY (*Vitaceae*)

**Grape** (*Vitis* spp.). There are several varieties of these vines on the campus climbing by coiled tendrils. The

leaves are simple but variously lobed. The fruit is a pulpy berry.

**Virginia Creeper** or **Five-leaved Ivy** (*Pseodera quinquefolia*, L.). This is a vine climbing by tendrils which end in small disks. The leaves are five-parted.

**Boston Ivy** (*Pseodera veitchi*, Hort.). A vine climbing by tendrils with disks and having large three-lobed leaves with a shiny surface.

#### MALLOW FAMILY (*Malvaceae*)

**Rose of Sharon** (*Hibiscus syriacus*, L.). This is an erect shrub with rather small leaves that have three prominent veins. The large showy flowers are open bell-shape, of rose to purple color, or they may vary from white, cream-color to bluish, and may be double. This is an Asiatic shrub cultivated under a number of names.

**Rose Mallow** (*Hibiscus Moscheutos*, L.). This mallow has leaves that are white, hairy on the under side, and bright pink or rose colored flowers.

#### GINSENG FAMILY (*Araliaceae*)

**Hercules' Club** (*Aralia spinosa*, L.). A shrub with thick club-like branches covered with spines. The flowers are produced in great terminal clusters, three to four feet long in midsummer.

**Angelica Bush** (*Acanthopanax* or *Aralia pentophylla*, Thunb.) is a spreading shrub with rather small palmately compound leaves and greenish-white flowers. There are sharp, rather weak thorns below the leaves.

#### HEATH FAMILY (*Ericaceae*)

**Sweet Pepperbush** or **White Alder** (*Clethra alnifolia*, L.). This shrub has obovate leaves with at least the tip half of the leaves serrate. The flowers are white or pink, blooming from July to September.

#### STORAX FAMILY (*Styracaceae*)

**Silver-Bell** or **Snow-drop Tree** (*Halesia carolina*, L.). A shrub or tree with ovate to ovate-lanceolate leaves two to six inches long, pointed and finely serrate, smooth on upper surface and hairy on under surface. The flowers are white and drooping and the dry fruit has four prominent wings.

#### OLIVE FAMILY (*Oleaceae*)

**Golden-Bell** (*Forsythia intermedia*, Zabel.). This shrub has yellow flowers with four petals blooming before

the leaves are out. The leaves have the tip half serrate or are three-parted, tapering at both ends. There are clusters of buds in the axils of many of the leaves.

(*Forsythia viridissima*, Lindl.). A shrub with olive green branchlets and simple leaves, serrate on the upper half. Flowers of a bright greenish-yellow.

**Lilac** (*Syringa vulgaris*, L.). A shrub with opposite, simple, ovate leaves with entire margins and white or lilac colored flowers that are fragrant.

**Persian Lilac** (*Syringa persica*, L.). A shrub with lanceolate, long pointed leaves and flower clusters two to three inches long. The flowers are lilac or white.

**Japanese Lilac** (*Syringa japonica*, Maxim.). A shrub with broadly ovate, pointed leaves, dark green, leathery and rounded at the base, and hairy on the under side. The flowers are creamy white.

**California Privet** (*Ligustrum ovalifolium*, Hassk.). This shrub used mostly for a hedge has oval leaves acute at the apex, dark, glossy green above, and yellowish-green underneath. The flowers are in clusters about three inches long and the fruit is a shiny black berry.

**Regal Privet** (*L. ibota* var. *regalianum*, Rehd.). This shrub has pubescent branches and leaves similar to the California privet, but larger and downy on lower surface particularly on the main vein. Flower clusters as long as eight inches.

**Japanese Privet** (*L. amurense*, Carr.). The branches of this shrub are downy when young, with oval to oblong leaves and obtuse at apex, smooth except on midrib on lower surface. The flower clusters are not more than two and one-half inches long.

**Common Privet** (*L. vulgare*, L.). This shrub has ovate to lanceolate leaves with either obtuse or acute tips, smooth on both surfaces. The flowers are in dense clusters about four inches long. The fruit, as in all the privets, is black.

#### DOGWOOD FAMILY (*Cornaceae*)

**Red Osier** (*Cornus sanguinea*, L.). A shrub with purple or blood-red branches and leaves downy on both sides. The hairs on the lower surfaces are somewhat woolly. The flowers are greenish-white in dense clusters and the fruit is black or green. This is an oriental shrub.

#### BIGNONIA FAMILY (*Bignoniaceae*)

**Trumpet Creeper** (*Tecoma radicans*, L.). This is a climbing woody vine with large scarlet, orange-red, or yellow flowers and leaves with nine to eleven leaflets. It is also called trumpet vine or trumpet honeysuckle.

VERVAIN FAMILY (*Verbenaceae*)

**French Mulberry** (*Callicarpa purpurea*, Juss.). This shrub gets to be about four feet high with elliptical or ovate leaves with margin crenate or serrate at apex and entire toward the base. The flowers are in clusters, pink, and about one-eighth inch long. The fruit is lilac-violet. This is also an oriental shrub.

MADDER FAMILY (*Rubiaceae*)

**Buttonball Bush** (*Cephalanthus occidentalis*, L.). This shrub is common in the edges of swamps in Eastern North America. It grows from three to fifteen feet high. It has ovate to lanceolate leaves three to six inches long, and triangular stipules at the base of the leaves. The flowers are in round heads on long stems, three or more at the ends of the branches.

HONEYSUCKLE FAMILY (*Caprifoliaceae*)

**American or Sweet Elder** (*Sambucus canadensis*, L.). This shrub grows to a height of twelve feet and has pale yellowish-gray branches with large white pith and leaves bright green with usually seven leaflets that are acute at tip and sharply toothed, the lowest pair frequently lobed. The flowers are white produced in large flat clusters. The berries are purplish-black.

**European Elder** (*S. nigra*, L.). The bark of this elder is deeply furrowed, the leaves dark green with three to seven, usually five, leaflets. The flowers are yellowish or dull white, borne in smaller clusters than the American form. The berries are a shiny black and three-celled, thus differing from the four-celled American form.

**Red-berried Elder** (*S. racemosa*, L.). The stems of this form are light brown and the pith is light brown. The leaves are a bright green with usually five leaflets which are oval or ovate and sharply and regularly toothed. The flowers are white and the berries are scarlet and three-seeded.

**High-bush Cranberry** (*Viburnum opulus*, L.). This tall shrub has maple-like leaves, three-lobed, coarsely and irregularly toothed, downy on the lower surface. The flat clusters of flowers have a border of white sterile flowers. The red fruit hangs on the branches over the winter.

**Snowball** (*V. opulus sterilis*, DC.). This viburnum differs from the above in that practically the whole flower cluster is of white sterile flowers that give it the name of Snowball Bush.

**Maple-leaved Viburnum** (*V. acerifolium*, L.). This is rather a small shrub seldom over five feet high. The leaves

are three to five lobed, and turn a dark purple in autumn. The flat clusters of flowers are white, two to three inches across, and the fruit is red changing to purple-black.

**Wayfaring Tree** (*V. lantana*, L.). This shrub is often tree-like, reaching a height of twenty feet. The flowers are ovate, two to four inches long, minutely toothed, downy above and somewhat woolly beneath. The flowers are white, and the fruit a bright red oval, changing to almost black.

**Sheepberry** (*V. lentago*, L.). This shrub also becomes tree-like. It has ovate, pointed leaves two to four inches long, finely and sharply serrate, and with very little down. The petioles are somewhat winged. The white flower clusters are sessile and many flowered. The fruit is oval and bluish-black.

**Japanese Snowball** (*V. plicatum*, Mig.). This is a bushy shrub becoming about ten feet high with its branches tomentose when young. The leaves are broadly ovate to oblong, acute at apex, dark green and nearly smooth above, and downy on lower surface, at least on the veins. The flowers are white and sterile, produced in small clusters about three inches in diameter. The fruit is red changing to a bluish-black.

**Weigela** (*Diervilla florida*, Sieb. and Zucc.). The branchlets of this shrub have two hairy stripes. The leaves are ovate, two to four inches long, long pointed, short petioled and serrate except at base, and downy on the veins on the lower side. The flowers are funnel-shaped, and deep rose outside and paler within.

There is also a variegated form on our campus with irregular yellow or white margined leaves and much paler flowers.

**Bush Honeysuckle** (*Lonicera ruprechtiana*, Regel.). This honeysuckle grows to a height of twelve feet. It has ovate to lanceolate leaves, dark green above and gray-downy underneath. The flowers are two-lipped and pure white changing to yellow. The fruit is red or sometimes yellow.

(*L. tartarica*, L.). This shrub has ovate to oblong leaves, downy on the lower surface. The flowers are pink, crimson or sometimes white, with a two-lipped corolla that is hairy on the inside. The berries are red but in rare cases may be yellow.

(*L. fragrantissima*, Lindl.). This honeysuckle reaches a height of about eight feet. The leaves are rather stiff and leathery, broadly oval with hairs on margins and midrib. The flowers are creamy-white, very fragrant, and several pairs are produced in same place.

There are several other varieties of honeysuckles on the campus. The above, however, are the most common.

**Indian Currant** (*Symphoricarpos orbicularis*, Moench.). This shrub is also called Coral Berry and is from three to seven feet high. The branches are densely leafy and downy. The leaves are broadly oval or ovate, short petioled and usually downy beneath. The flowers are produced in dense short clusters from the lower side of the twigs and are a dull white. The berries are a purplish-red.

**Snowberry or Waxberry** (*S. racemosus*, Michx.). The leaves of this shrub are rather similar to the Indian Currant but the flowers are slightly pink and borne in terminal clusters and the berries are snow-white.

**Wolfberry** (*S. occidentalis*, Hook.). This shrub is similar to the above shrub but with large white berries. Flowers are in dense terminal and axillary clusters.

**Abelia** (*Abelia chinensis*, R.Br.). This is a small shrub whose branches are minutely reddish-downy. The leaves are ovate with serrate margins, more or less hairy above and on the midrib beneath. The flowers are in dense terminal clusters, white with long stamens and rosy-tinted calyx lobes.