

A Handbook of the
Native Trees of Iowa

Bode

Iowa
582.16
B63

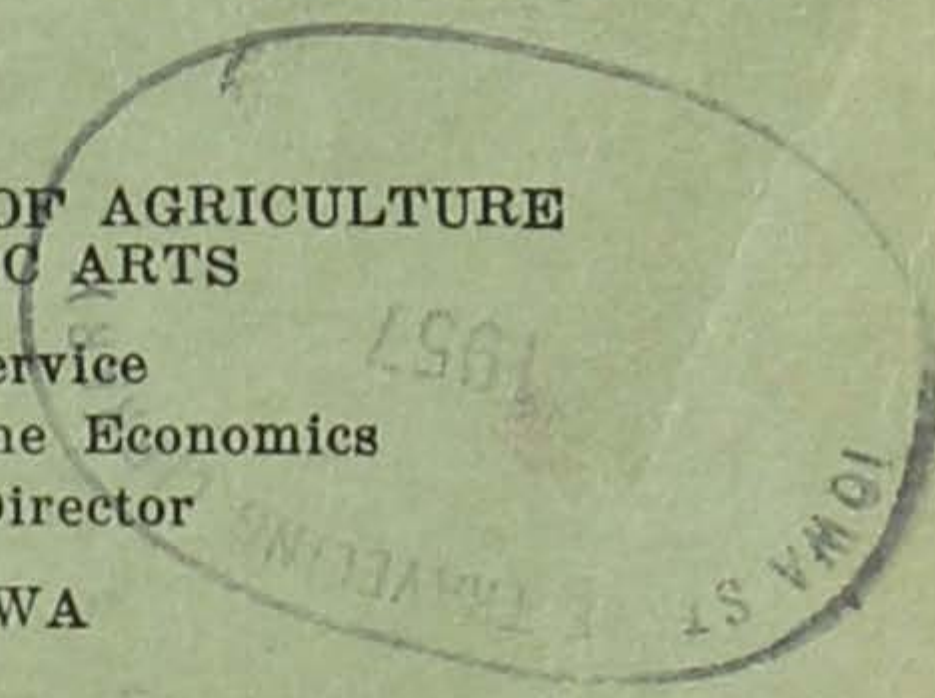
PLEASE RETURN TO
IOWA LIBRARY COMMISSION
A HANDBOOK OF THE NATIVE
TREES OF IOWA

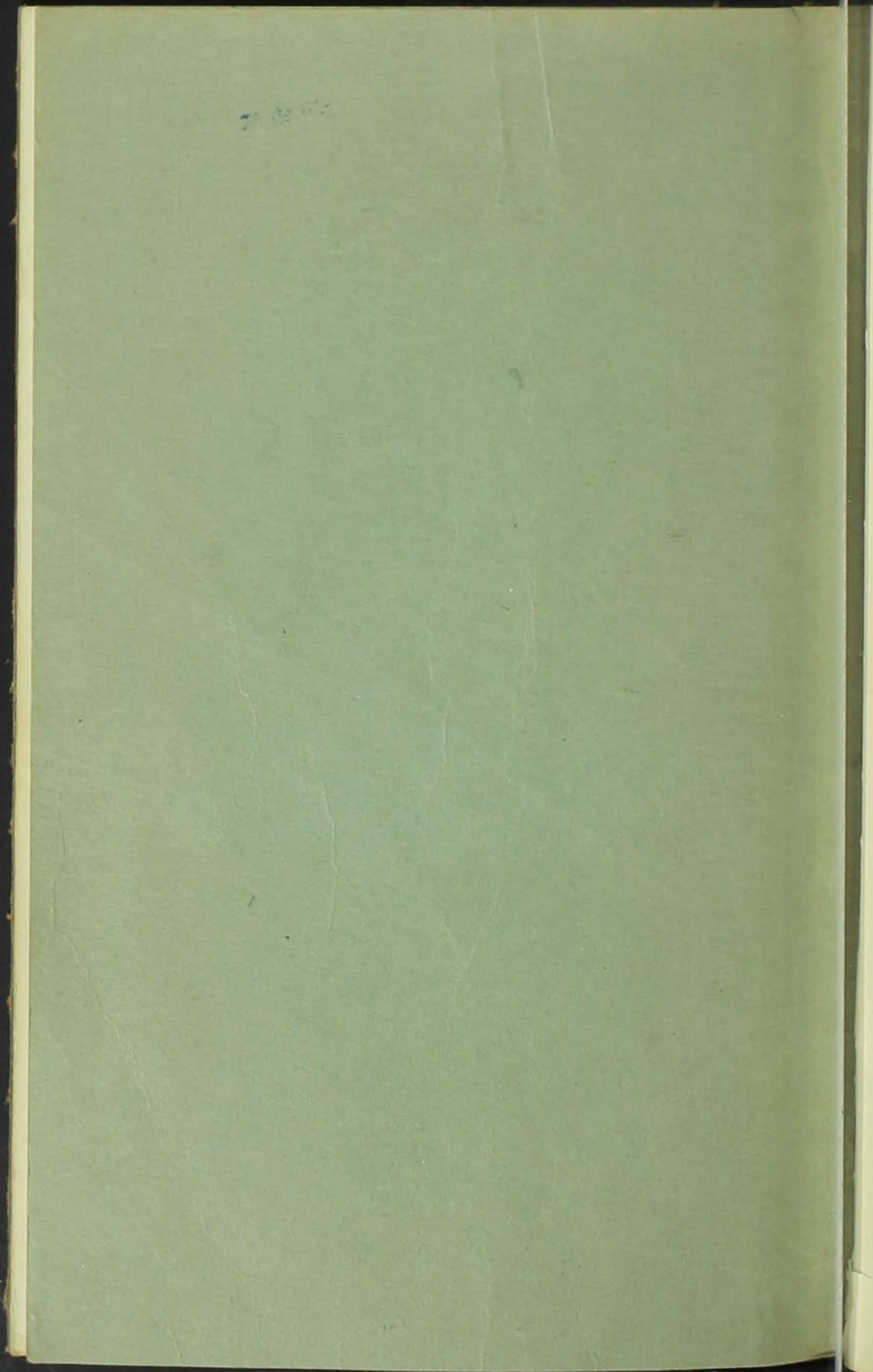


IOWA STATE COLLEGE OF AGRICULTURE
AND MECHANIC ARTS

Extension Service
Agriculture and Home Economics
R. K. Bliss, Director

AMES, IOWA





MAR 30 '59

**A Handbook
of the
Native Trees of Iowa**

By I. T. BODE,
EXTENSION FORESTER, IOWA STATE COLLEGE AND
G. B. MACDONALD,
PROFESSOR OF FORESTRY, IOWA STATE COLLEGE

IOWA STATE COLLEGE OF AGRICULTURE
AND MECHANIC ARTS

Extension Service
Agriculture and Home Economics
R. K. Bliss, Director

AMES, IOWA

IOWA STATE TRAVELING LIBRARY
DES MOINES, IOWA

Iowa
582.16

B63

Foreword

The authors wish to express appreciation to Dr. L. H. Pammel, Head of the Botany Department, Iowa State College, for his assistance in checking the range of the species in Iowa and other important matters.

The purpose of this bulletin is to furnish a short, non-technical description of the principal native tree species of Iowa to serve as a general guide to schools, boy scouts, camp fire girls, 4-H clubs and other organizations for tree identification.

An effort has been made to keep the descriptions non-technical, since it was felt that in this way the publication would find its widest usefulness.

The common names listed first are those which seemed to be in most common use in Iowa, but in some cases the less important names are also listed. The technical names are given in each case in order to know definitely the particular tree which is being described. The Check List of the United States Forest Service has served as a guide for the scientific names. In cases where the scientific name has been changed the old names are also listed.

No attempt has been made to give the detailed general range of the different species, it being intended only to show, in general, the distribution of the tree.

Index of Common Names

Ash, Black	92	Buttonball	58
Ash, Blue	91	Buttonwood	58
Ash, Green	95	Cedar, Red	11
Ash, Mountain	60	Cherry, Bird	69
Ash, Prickly	76	Cherry, Choke	70
Ash, Red	94	Cherry, Pin	69
Ash, Wafer	77	Cherry, Rum	71
Ash, White	93	Cherry, Wild Black	71
Aspen	20	Cherry, Wild Red	69
Aspen, Large-Toothed	21	Coffee-Bean Tree	73
Aspen, Quaking	20	Cottonwood	23
Aspen, Trembling	20	Crab Apple	59
Balm of Gilead	22	Dogwood, Alternate-Leaved	88
Bass Tree	87	Dogwood, Blue	88
Basswood	87	Dogwood, Pagoda	88
Birch, Black	35	Dogwood, Roughleaf	89
Birch, Canoe	36	Elm, American	50
Birch, Paper	36	Elm, Cork	51
Birch, Red	35	Elm, Red	52
Birch, River	35	Elm, Rock	51
Birch, White	36	Elm, Slippery	52
Birch, Yellow	34	Elm, White	50
Black, Locust	75	Green Osier	88
Bladdernut	80	Hackberry	53
Blue Beach	32	Haw, Pear	66
Box Elder	85	Haw, Red	64
Buckeye	86	Haw, Scarlet	67
Burning Bush	79	Hawthorn	65
Butternut	12	Hawthorn, Dotted	62

Hawthorn, Round-leaf.....	67	Oak, Red.....	37
Hercules Club.....	76	Oak, Rock.....	49
Hickory, Bitternut.....	15	Oak, Shingle.....	42
Hickory, Kingnut.....	17	Oak, Swamp Spanish.....	38
Hickory, Missouri.....	17	Oak, Swamp White.....	47
Hickory, Mockernut.....	18	Oak, White.....	43
Hickory, Pecan.....	14	Oak, Yellow.....	40
Hickory, Pignut.....	19	Ohio Buckeye.....	86
Hickory, Shagbark.....	16	Pawpaw.....	55
Hickory, Shellbark.....	17	Pecan.....	14
Honey Locust.....	74	Persimmon.....	90
Hornbeam.....	32	Pigeonberry.....	88
Hornbeam, Hop.....	33	Pine, White.....	9
Hop Tree.....	77	Plane-Tree.....	58
Horse Chestnut.....	86	Plum, Wild.....	68
Ironwood.....	33	Poplar.....	21
Judas Tree.....	72	Poplar, Balsam.....	22
June-Berry.....	61	Poplar, Carolina.....	23
Juniper.....	10	Poplar, Silver-Leaved.....	24
Juniper, Dwarf.....	10	Poplar, White.....	24
Kentucky Coffee Tree.....	73	Popple.....	20 and 21
Linden.....	87	Prairie Crab.....	59
Linn.....	87	Prickly Ash.....	76
Locust, Black.....	75	Red Bud.....	72
Locust, Honey.....	74	Sassafras.....	56
Locust, Yellow.....	75	Serviceberry.....	61
Maple, Ash-Leaved.....	85	Shadblow.....	61
Maple, Black.....	83	Shadbush.....	61
Maple, Hard.....	82 and 83	Sugar Berry.....	53
Maple, Mountain.....	81	Sumach.....	78
Maple, Rock.....	82	Sycamore.....	58
Maple, Silver.....	84	Thorn-Apple.....	64
Maple, Soft.....	84	Thorn, Cock-Spur.....	63
Maple, Sugar.....	82	Thorn, Dotted.....	62
May Cherry.....	61	Thorn-Tree.....	74
Mountain Ash.....	60	Thorny Locust.....	74
Mulberry, Red.....	54	Wafer-Ash.....	77
Oak, Black.....	39	Wahoo.....	79
Oak, Black Jack.....	41	Walnut, Black.....	13
Oak, Bur.....	45	Walnut, White.....	12
Oak, Chestnut.....	48	Wild Crab.....	59
Oak, Chinquapin.....	49	Willow, Almondleaf.....	26
Oak, Hill's.....	39	Willow, Beaked.....	31
Oak, Jack.....	39 and 41	Willow, Black.....	25
Oak, Laurel.....	42	Willow, Glaucus.....	30
Oak, Mossy-cup.....	45	Willow, Missouri.....	29
Oak, Northern Pin.....	39	Willow, Peachleaf.....	26
Oak, Overcup.....	46	Willow, Pussy.....	30
Oak, Pin.....	38	Willow, Sand Bar.....	28
Oak, Post.....	44	Willow, Shining.....	27
Oak, Quercitron.....	40	Witch Hazel.....	57

Native Species Not Described

1. Balsam fir, *Abies balsamea* (L.) Miller. Found naturally in one place in Allamakee County. Not important.
2. White willow, *Salix alba* L. Not native but escaped from cultivation.
3. White mulberry, *Morus alba* L. Native to China. Found in native timber as a tree escaped from cultivation.

263160

4. Dwarf chinquapin oak, *Quercus prinoides* Willd. Usually a shrub. Leaves and fruit similar to Chinquapin oak.
5. Shumard red oak, *Quercus shumardii* Buck. (Formerly *Q. texana*.) Similar to red oak. Not common in Iowa.
6. Elderberry, *Sambucus canadensis* L. Only a shrub in Iowa.
7. Nannyberry, *Viburnum lentago* L., a shrub in Iowa. With a blue-black fruit.
8. Buckthorn, *Rhamnus caroliniana* Walt. A shrub in Iowa. Fruit black, $\frac{1}{3}$ in. in diameter.
9. Poison sumach, *Rhus vernix* L. A shrub in Iowa. Poisonous. Leaf margins smooth. Fruit ivory-white.
10. Dwarf or smooth sumach, *Rhus copallina* L. Seldom tree size. Leaf stems winged between leaflets.

IMPORTANT TREE SPECIES PLANTED IN IOWA BUT WHICH ARE NOT NATIVE TO THE STATE

Evergreens.

- Norway pine, *Pinus resinosa*.
 Western yellow pine, *Pinus ponderosa*.
 Jack pine, *Pinus divaricata*.
 European larch, *Larix europea*.
 White spruce, *Picea glauca*, *Picea canadensis*.
 Blue spruce, *Picea pungens*.
 Douglas fir, *Pseudotsuga taxifolia*.
 White cedar, *Thuja occidentalis*.

Broadleaf Trees.

- European white birch, *Betula alba*.
 Osage orange, *Toxylon pomiferum*.
 Hardy catalpa, *Catalpa speciosa*.

IMPORTANT REMINDERS IN USING THIS BOOK

As a general thing the bud descriptions refer to the terminal winter buds where these are present.

The brief descriptions in regard to the soil locations on which the trees are found refer, in general, to Iowa conditions.

In order to make the important distinguishing characteristics stand out more clearly these have been printed in italics, and especial attention should be paid to them.

In order to determine the approximate sizes of leaves and fruits, as illustrated in the drawings, care should be exercised

in noting the scale of the drawing in each case. For example, $\frac{1}{3}$ under the drawing means that the leaf or fruit is $\frac{1}{3}$ its natural size and $\frac{1}{2}$ means that it is one-half its natural size, etc.

Forests and Forestry

With an original timber resource almost unbounded, a rapid and constant decrease in available timber has resulted over the country because of lumbering operations, forest fires, insects and other destructive agencies. The original stand of 850,000,000 acres of timber in this country has now been reduced to about 430,000,000 acres. Not only the best timber has been removed but also the timber closest to the centers of population. This figure is more alarming when considered along with the statement that we are now using our timber four to six times as fast as new timber is being grown.

Continued destruction of our forest resources is a serious problem and every farmer, housewife, hunter, fisherman, tourist, boy scout, campfire girl and nature lover should be interested in the protection and perpetuation of the remaining forest areas. Iowa alone has an area of 2 to 2½ million acres of land best suited to the growing of wood crops. An appreciation of the value of the forest is one of the best means of conserving our woodlands.

Iowa's annual wood bill is about \$50,000,000, a figure that should impress one with the importance of wood as a factor in the prosperity and commercial activities of the state. Forests support one-tenth of the American people. Fifteen million or more people use the national forests alone for recreation each year. Iowa has 38 state parks with a total area of 6900 acres. (The total number of visitors to six of the largest of these and to the lake areas of Iowa was easily 3,750,000 in one year. They spent about three hours each on the areas. At 25c, the price of an average movie, this recreation is worth over \$2,800,000 every year in Iowa.)

What Can I Do for Forestry?

All good citizens should be informed on the uses and proper conservation of the forests. Forestry programs conducted by schools, and other organizations will rapidly bring about a better understanding with reference to this important resource.

I. THINGS TO CREATE INTEREST IN FORESTRY.

Programs with schools, community clubs, civic clubs, boy scouts, campfire girls, 4-H Clubs, lone scouts and other junior

organizations. (Recitations, plays, pageants, talks by mayor or other officials, songs, etc.) Place exhibits in business house windows, schools and any place of gatherings, including: Things made of wood; use of forests for recreation and camping; erosion and protective forestation; windbreaks, roadside and other tree planting; animals of the woods; birds of the woods; and wild flowers of the woods.

Forest and Wild Life films shown in movie houses.

Use of publicity material in newspapers and other publications.

II. THINGS TO START ACTIVITY.

Contests—Essay contest on conservation, nut tree contest, most popular or largest tree contest, tree identification contest.

Start Tree Plantings—living Christmas trees, woodlots, Christmas tree plantations, plantations on permanent camp sites, memorial trees and groves, shelterbelts, highway trees, town or community forests.

Collect tree seeds for planting.

III. PROGRAMS TO CONTINUE INTEREST.

Start a program of 6 to 12 studies on forests and wild life conservation.

Start a tree census.

Start a "hall of fame" for trees.

Start a program of caring for any tree plantations made.

Start a program of forest management for a woodlot.

Start a development of bird and wild life sanctuary.

Start a tree survey of the town and plan for better parkway planting.

Cooperation Available from Iowa State College

1. Special assistance in plans for individual programs.
2. Field assistance in supervision of plantings, programs, and forest management work.
3. Cooperation with junior clubs, boy scouts and campfire girls organizations, 4-H clubs, etc.
4. Illustrated lectures on conservation and wild life subjects.
5. Suggestions for exhibits, programs of work in forestry, contests, etc.

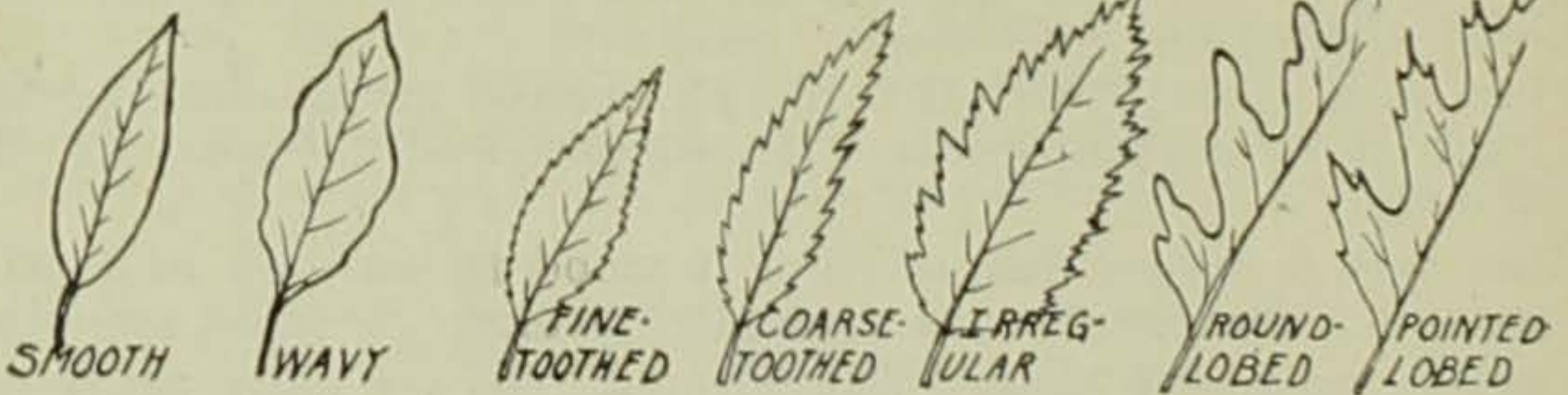
Note: Requests for assistance should be addressed to I. T. Bode, Extension Forester, Iowa State College, Ames, Iowa.

Some Suggestions for Planting Street or Shade Trees

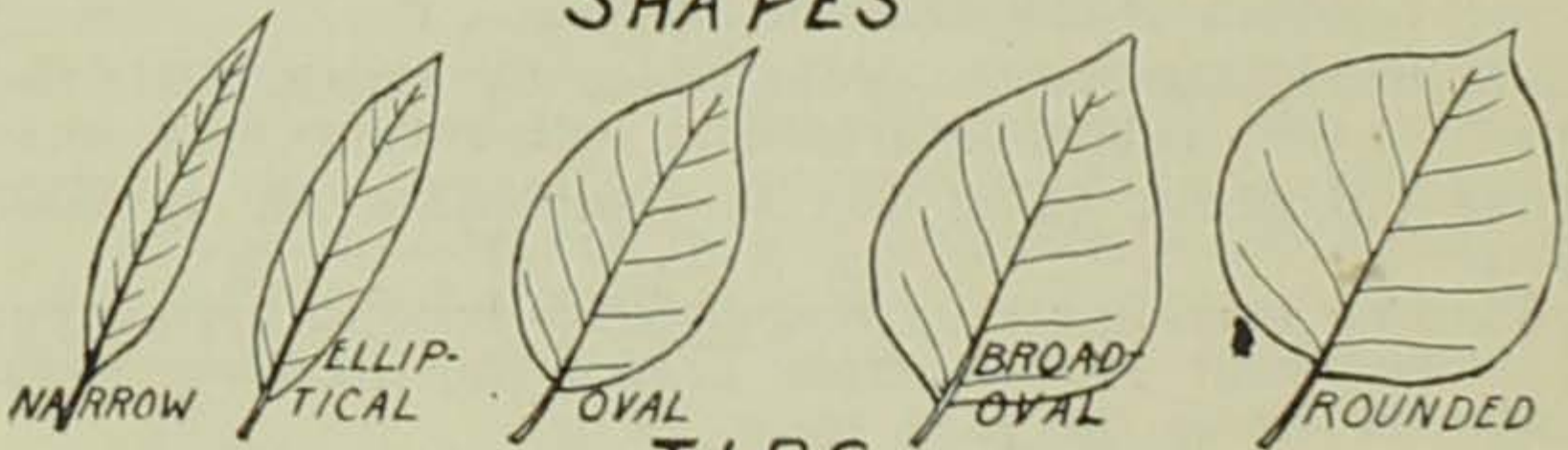
1. Dig a hole large and deep enough to take roots in their natural position.
2. A mound of earth in the bottom of hole sometimes helps in holding roots spread.
3. Use good loamy top-soil to fill in around all the fine roots. Pack it in around roots with fingers and then tramp in firmly.
4. Set tree 2 inches deeper than it stood in nursery and preserve all the fine fibrous roots. Cut broken roots off smooth.
5. Leave area of 6 square feet around tree for cultivating or give it a mulch of old straw or leaves.
6. Put a heavy stake in the ground near the tree and tie the tree to it with rubber-covered wire or loose soft rope.
7. Prune out about $\frac{1}{3}$ of top to compensate for reduced roots.
 - a. Plan on leaving strong branches for base of permanent crown about 10 feet from ground for parking trees. Can be lower for yard trees.
 - b. Prune to eliminate bad crotches.
 - c. Keep well-developed, natural form of head with a strong leader and branches set at wide angles.
 - d. Prune out the head by thinning; not by stubbing back the ends of all the branches.

Explanatory Diagrams of Leaf Descriptions Used in Text

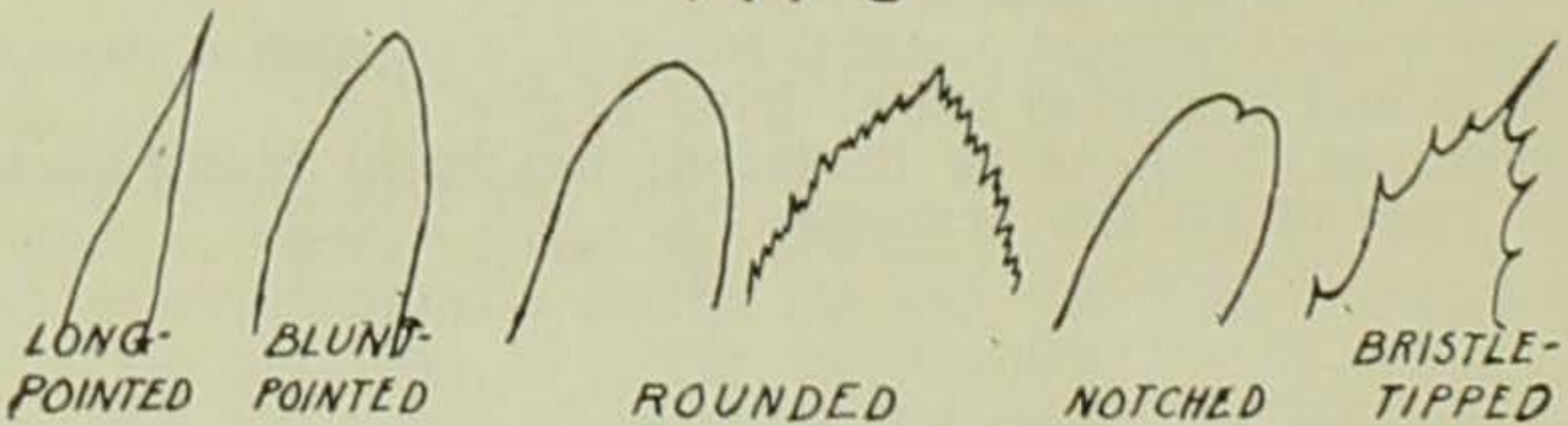
MARGINS



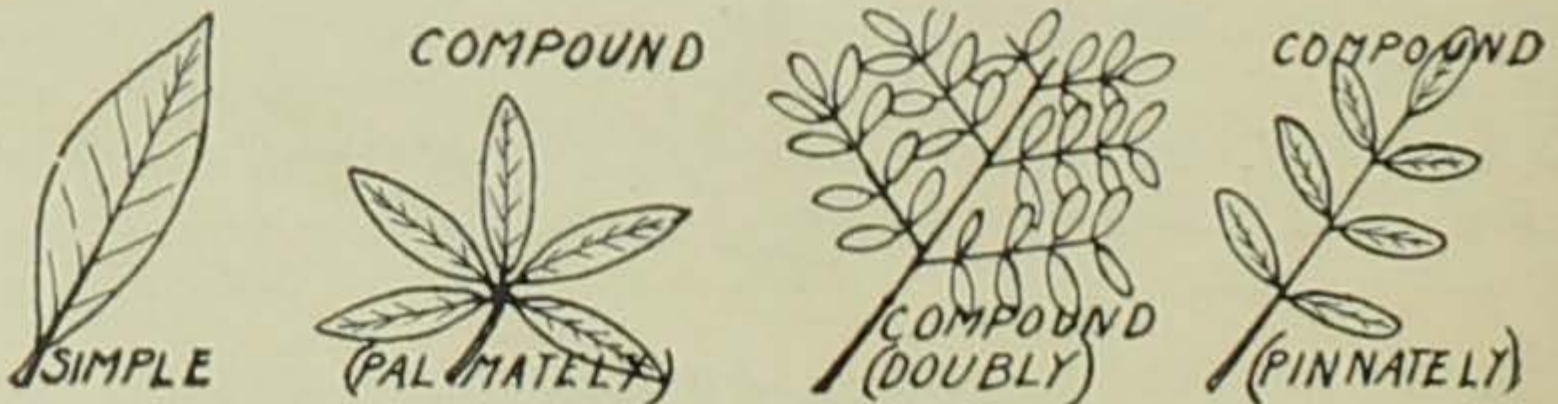
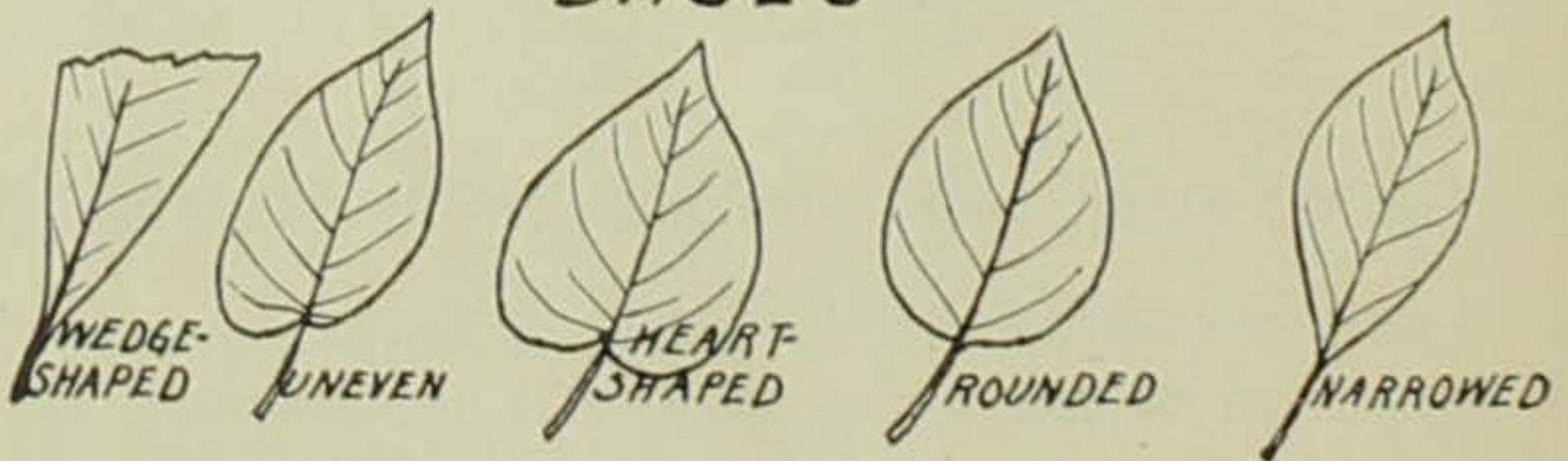
SHAPES



TIPS



BASES



White Pine

Pinus strobus L.

The Tree: A large, straight-stemmed timber tree. Grows to good size in Iowa, being the largest native evergreen. In the open develops a full conical crown.

Distribution: Found over Southeastern Canada, northeastern United States and thru the Lake States. In Iowa, native in restricted localities but not in any quantity, in the northeastern part and as far west as Hardin County. Usually found in localities with limestone outcroppings and best adapted to soils with good sub-drainage.

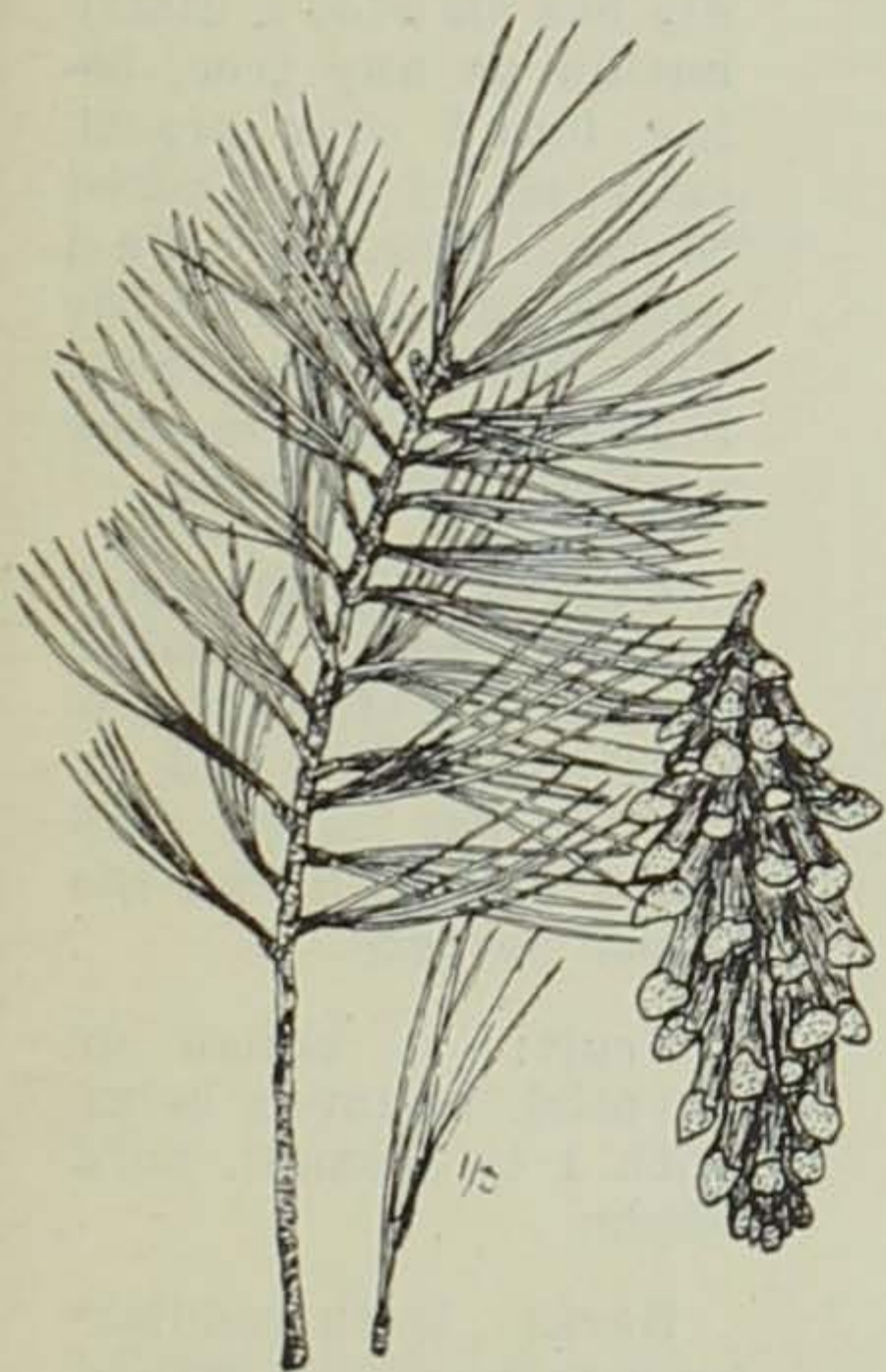
Leaves: Needle-like, 3 to 5 in. long, slender, flexible and always 5 in a bundle. Foliage dark bluish-green.

Fruit: A slender, gradually tapering cone 4 to 6 in. long, with ends of scales prominently light tan to whitish. Winged seeds borne beneath the cone scales.

Bark: On smaller branches and twigs, smooth and reddish-green in color. On older trunks, breaks into broad ridges and is dark gray to black.

Wood: Soft, smooth, easily worked, light, not strong and from a cream to very light brown in color. It is one of the most valuable woods. Good grades are very scarce and go mostly into pattern or shop lumber.

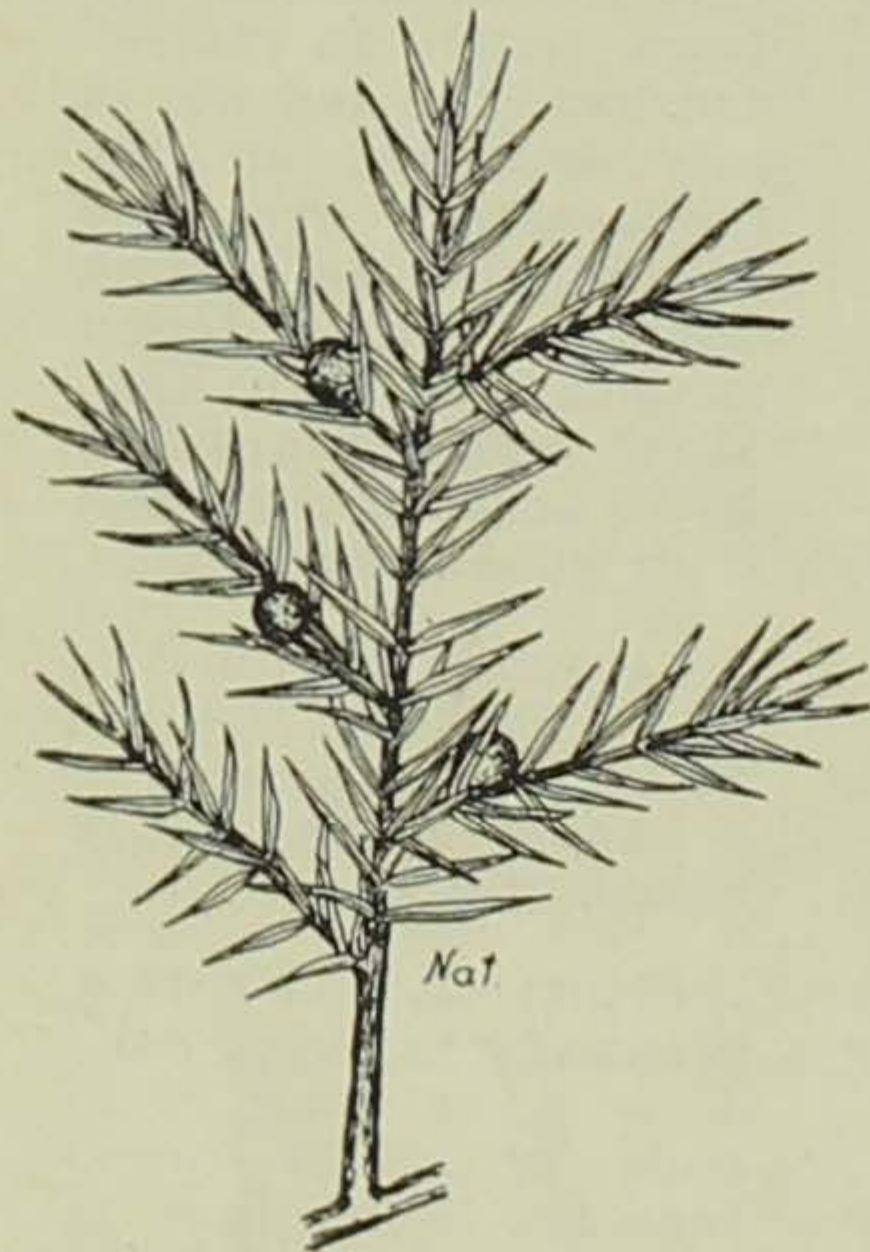
Remarks: One of the best trees for windbreak and woodlot planting in all but the northwestern and western parts of Iowa.



Dwarf Juniper (Juniper)

Juniperus communis L.

The Tree: While this species only occasionally reaches tree form, and never in Iowa, it is given here because it is found in many places and is often mistaken for red cedar (*J. virginiana*). It is a low-growing, spreading, evergreen shrub.



Distribution: Probably has as wide a distribution as any tree, being found over practically all of the United States, Canada and Alaska, and even in the Old World. In Iowa, found largely in the northeastern section.

Leaves: *Short, awl-shaped, spiny needles similar to the sharp-pointed type on red cedar except more flattened and white on the upper surface.*

Fruit: A bluish or purplish resinous berry with 1 to 3 small, hard seeds.

Bark: Dark reddish-brown; becomes rather papery-scaled.

Wood: Hard, close-grained and very durable. Not important in Iowa because of the shrubby character of the species.

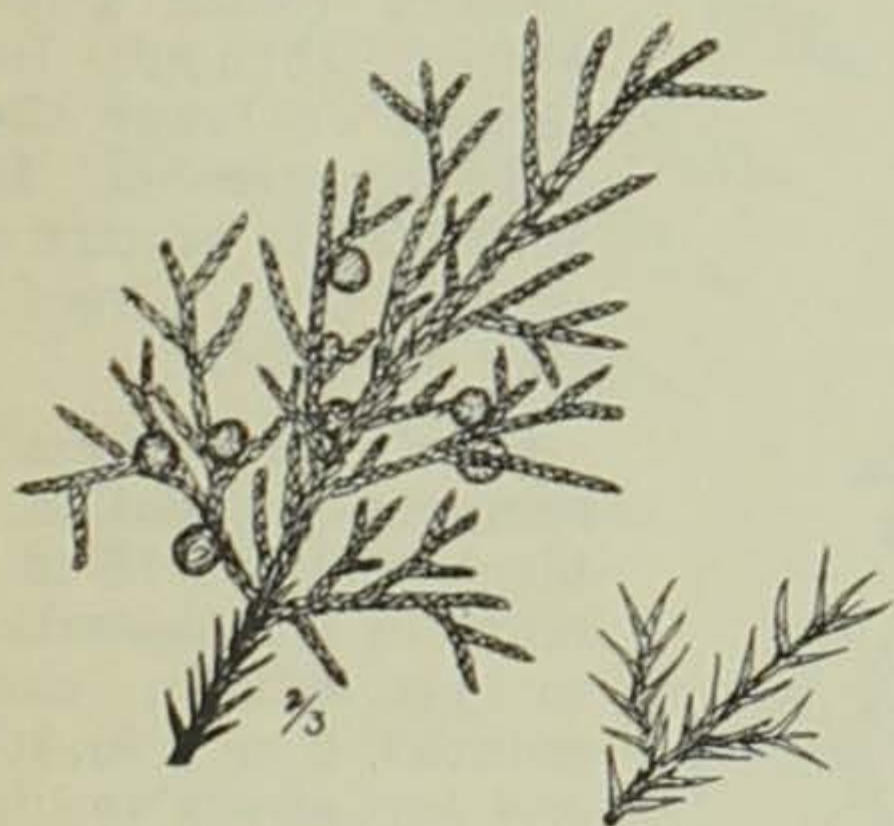
Remarks: Many varieties of this species are propagated and used in ornamental planting.

Red Cedar

Juniperus virginiana L.

The Tree: A small hardy tree of moderate rate of growth. Forms a dense, conical crown with branches to the ground.

Distribution: Found in eastern half of the United States as far west as central Dakotas and Texas. Originally found in most parts of Iowa; not particular as to soil, growing on some of the driest and rockiest hillsides. Most common in southeastern Iowa.



Leaves: Has two types of leaves, either scale-like, forming smooth branches, or, on fast growing shoots, awl-shaped, sharp-pointed and $\frac{1}{2}$ in. long, not flattened or whitish above.

Fruit: Is berry-like, about $\frac{1}{4}$ in. in diameter, bluish to bluish-white in color. The flesh is sweetish and resinous, usually enclosing 1 or 2 hard seeds.

Bark and Trunk: A more or less irregular fluted trunk, usually with a rapid taper. The bark is stringy, peeling off in narrow strips or shreds, and is of a reddish-brown to gray-brown in color.

Wood: Light, has a very pronounced odor, with purplish-red heartwood and cream-colored sapwood. Very durable and highly prized for fence posts, cedar chests and cabinet wood.

Remarks: A valuable tree for Iowa, due to hardiness and durability of wood. Its use for planting, however, is much restricted because it harbors one stage of cedar-apple rust which is very injurious to apple trees grown in the vicinity.

Butternut (White Walnut)

Juglans cinerea L.

The Tree: A smaller, more branched and lower-headed tree than black walnut. It sometimes gets to be straight and tall. Seldom considered a timber tree.



Distribution: Northeastern United States to Georgia and Alabama along the Appalachian Mountains, westward to eastern Nebraska and eastern South Dakota. Found thruout Iowa, largely on lower slopes or along streams. Most abundant in eastern and central Iowa. Does not like poor soils.

Leaves: Pinnately compound, similar to black walnut, 15 in. or more in length, with 11 to 17 leaflets, sharp-pointed, 2 or 3 in. long, and leaf stems and leaflets velvety.

Buds and Twigs: Twigs stout and blunt with prominent leaf scars, and pith sectioned as in black walnut. Buds and branching are alternate.

tioned as in black walnut. Buds and branching are alternate.

Fruit: A large nut, elliptical or lemon-shaped, enclosed in a yellow-green, very velvety husk. The shell is very rough and sharply ridged.

Bark: On young branches, smooth and light gray. On trunk and older branches, breaks into shallow, flat, light-gray ridges or bands which form a diamond-shaped pattern. On large, old trunks it becomes darker and ridged. The under bark is chocolate-brown in color.

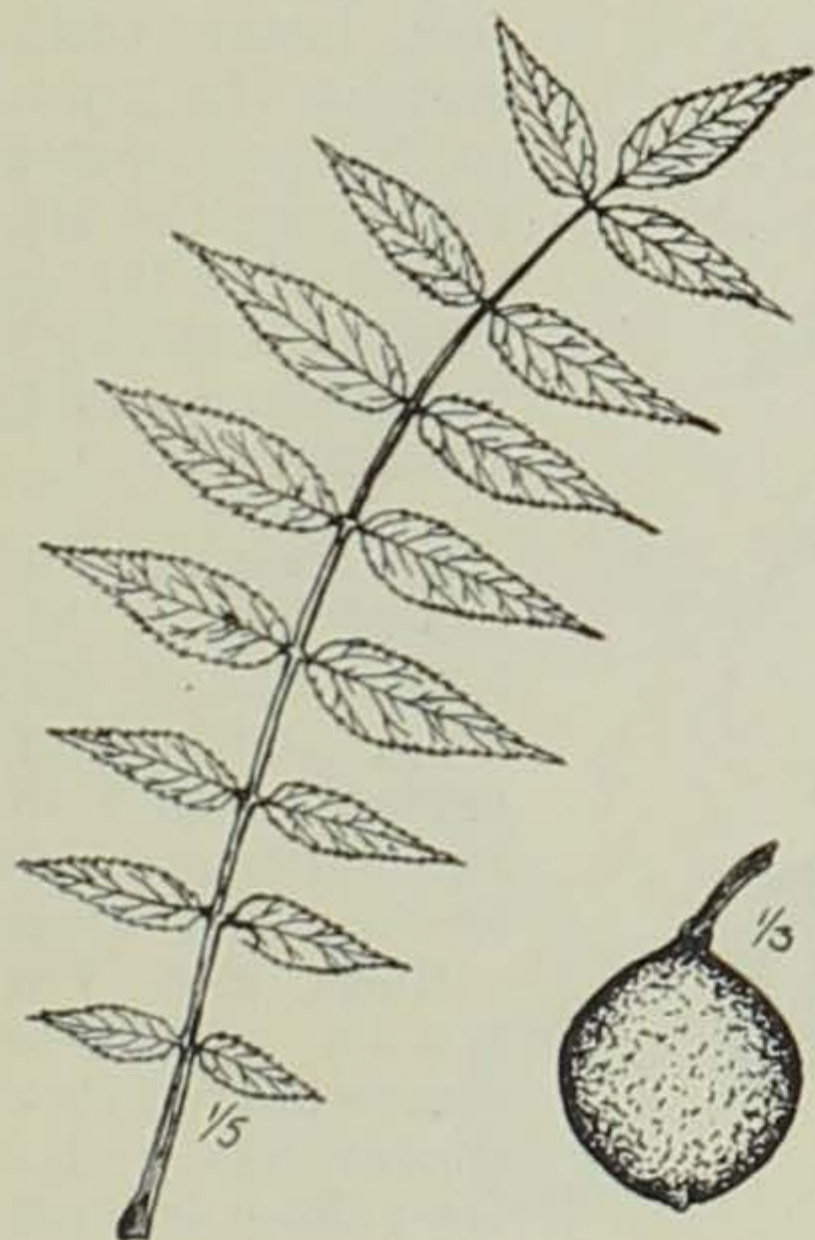
Wood: Soft, not strong, coarse-grained. It is cream to light brown in color and not much in demand as a cabinet wood. Not durable.

Remarks: Not a desirable tree for planting, except for nut crops, because comparatively short-lived, not of good timber-type and usually defective.

Black Walnut

Juglans nigra L.

The Tree: A large, straight-stemmed timber tree, with round open crown. In the open a branchy, short-trunked, wide-spreading, beautiful tree.



Distribution: Found throughout northeastern United States and as far west as central Nebraska. In Iowa, found scattered thru woodlands in most parts. Prefers alluvial bottomlands and well-drained soils with abundant moisture.

Leaves: Large, pinnately compound, from 12 to 20 in. long with 13 to 23 leaflets. Leaf stems covered with fine hairs, but smoother than butternut. Leaflets $2\frac{1}{2}$ to 3 in. long and smooth as compared with butternut.

Buds and Twigs: Twigs are brownish, stout, blunt with prominent leaf scars. Branch-

ing is alternate. The pith is divided into thin plates or segments.

Fruit: A large rounded nut with a heavy, hard, finely-ridged shell and covered with a solid non-splitting husk, $\frac{1}{4}$ to $\frac{1}{2}$ in. thick.

Bark: Blackish, irregularly ridged, with chocolate brown under color when broken off.

Wood: One of the most valuable woods grown in Iowa. Heartwood is rich chocolate-brown and sapwood creamy-white. The wood is durable and much prized for furniture, cabinet work, gunstocks and finish lumber.

Remarks: Stands of native black walnut are becoming scarce. The tree is being planted extensively for wood and fruit crops. Especially adapted to soils of fair to good quality.

Pecan

Hicoria pecan (Marsh.) Britt., *Carya pecan* Eng. and Graeb.

The Tree: The largest of the hickories native to Iowa. It forms a rather narrow open crown.

Distribution: Native mostly in the states of the central Mississippi and lower Ohio river valleys. In Iowa, found in the southeastern part and along the Mississippi River as far north as Clinton. Usually on rich bottomland soil close to streams.

Leaves: Pinnately compound, 12 to 20 in. long, with 9 to 17 oblong, toothed, pointed leaflets, 3 to 7 in. long, and narrower than most of the other hickories.

Buds and Twigs: Buds sharp-pointed, somewhat shriveled in appearance and brownish-yellow in color.



Fruit: A light chocolate-brown nut, usually in clusters of 3 to 11, 1 to 2 in. long, oblong, smooth-shelled, with black markings and enclosed in thin husk.

Bark: Thin, tight and hard. On small branches smooth. On old branches and trunk it roughens into hard scales or plates.

Wood: Heavy, hard, strong and tough but not durable. Used some in the manufacture of handles and implements.

Remarks: Horticultural varieties have been cultivated widely in the south for the production of nuts. The tree is not considered hardy in the northern part of Iowa. Native Iowa varieties are now being propagated.

Bitternut Hickory

Hicoria cordiformis (Wang.) Britt., *H. minima* (Marsh.) Britt., *Carya cordiformis* K. Koch, *C. amara* Nutt.

The Tree: A tall slender-crowned tree. It gets to be a large timber tree.

Distribution: Widely distributed over eastern United States and west to eastern Nebraska, Oklahoma and Texas. Generally distributed in Iowa, except sparingly in the northwestern part, on a wide variety of soils.

Leaves: Pinnately compound, 6 to 10 in. long, with 5 to 11 leaflets, which are *more slender than those of other hickories*, except pecan.

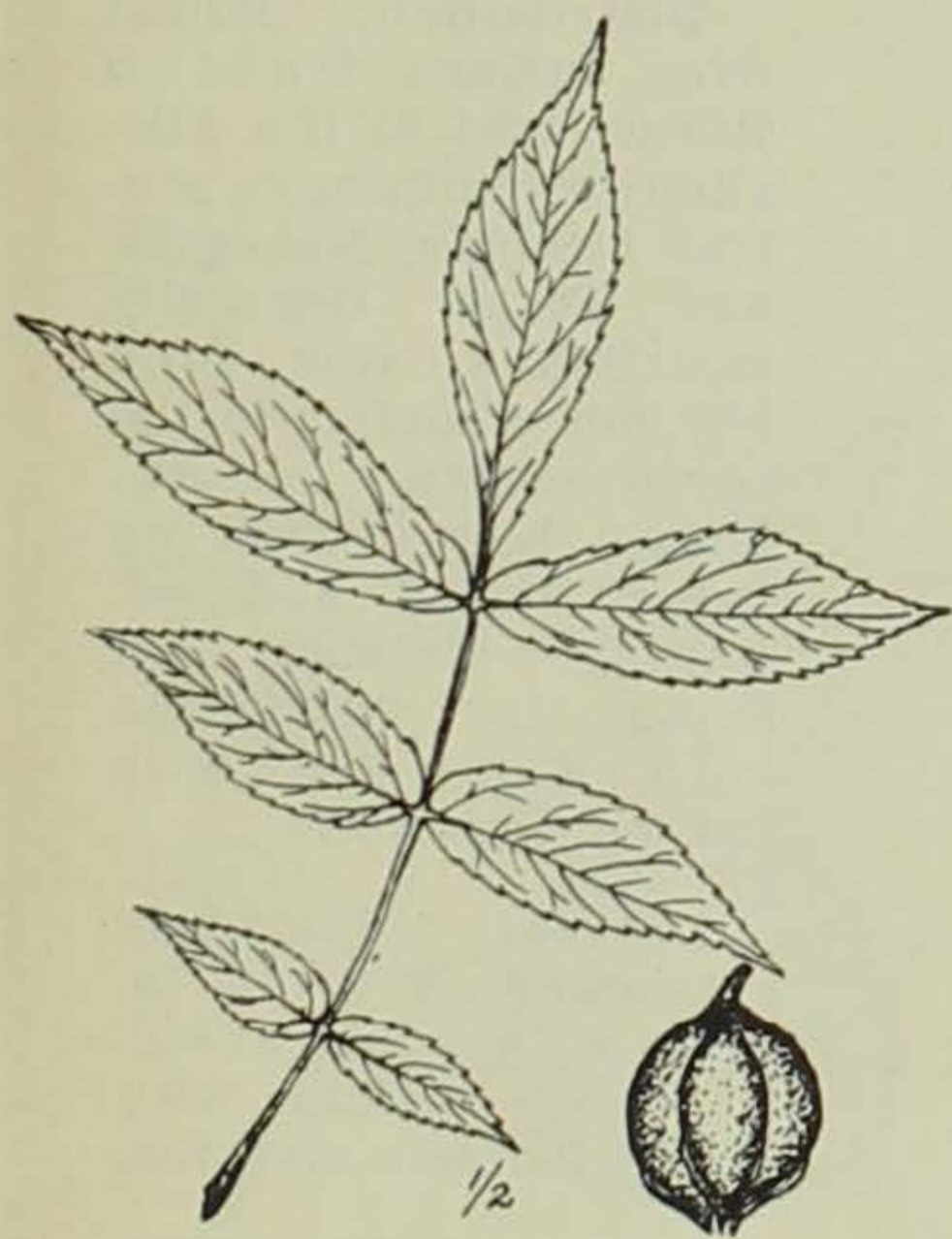
Buds and Twigs: Buds are smaller than other hickories, *long, slender, pointed, shriveled in appearance and light yellow in color.*

Fruit: A medium-sized nut with thin, light-green husk often yellow-coated, and with thin, brittle, creamy-colored shell and a *reddish-coated kernel very bitter in taste.*

Bark: On young branches, finely and only slightly ridged, gray in color, often tinged with yellow. On larger branches and trunk, coarser-ridged with *very fine plate-like scales*, but smooth as compared to shagbark hickory.

Wood: Heavy, hard, strong, tough, close-grained, not durable. Inferior to wood of other hickories, except pecan, but very desirable for fuel, handles, wheel spokes, etc.

Remarks: Not suited for planting in Iowa, because of its slow growth and the fact that hickories with edible fruits are also the better wood producers.



Shagbark Hickory

Hicoria ovata (Mill.) Britt., *Carya alba* Nutt., *C. ovata* K. Koch.

The Tree: One of the important timber trees of the country. Gets to be a large tree with narrow open crown but is slow in rate of growth.

Distribution: Found over eastern United States west of the Allegheny mountains to central Dakotas, Nebraska and Texas. Generally distributed over Iowa but not common in the northwestern part. Makes best growth on lower slopes and adjoining streams but found in association with white and burr oak on drier soils.

Leaves: Pinnately compound, 8 to 16 in. long, with 5 to 7 broadly oval leaflets with finely toothed margins.

Buds and Twigs: Terminal buds large, $\frac{1}{2}$ to $\frac{3}{4}$ in. long, scaly and bluntly pointed.

Fruit: A 4-angled nut, $\frac{3}{4}$ to 1 in. in diameter,

creamy-brown in color and covered with a thick splitting husk. The meat is sweet and edible.

Bark: Very shaggy in appearance, peeling up into long, narrow, hard, tough, loose scales.

Wood: Hard, heavy, tough, strong, not durable. One of our valuable woods and used extensively for fuel, handles, implements and cooperage.

Remarks: Some of the better varieties of the Shagbark are now being cultivated for the production of nut crops.



Shellbark Hickory (Kingnut) (Missouri Hickory)

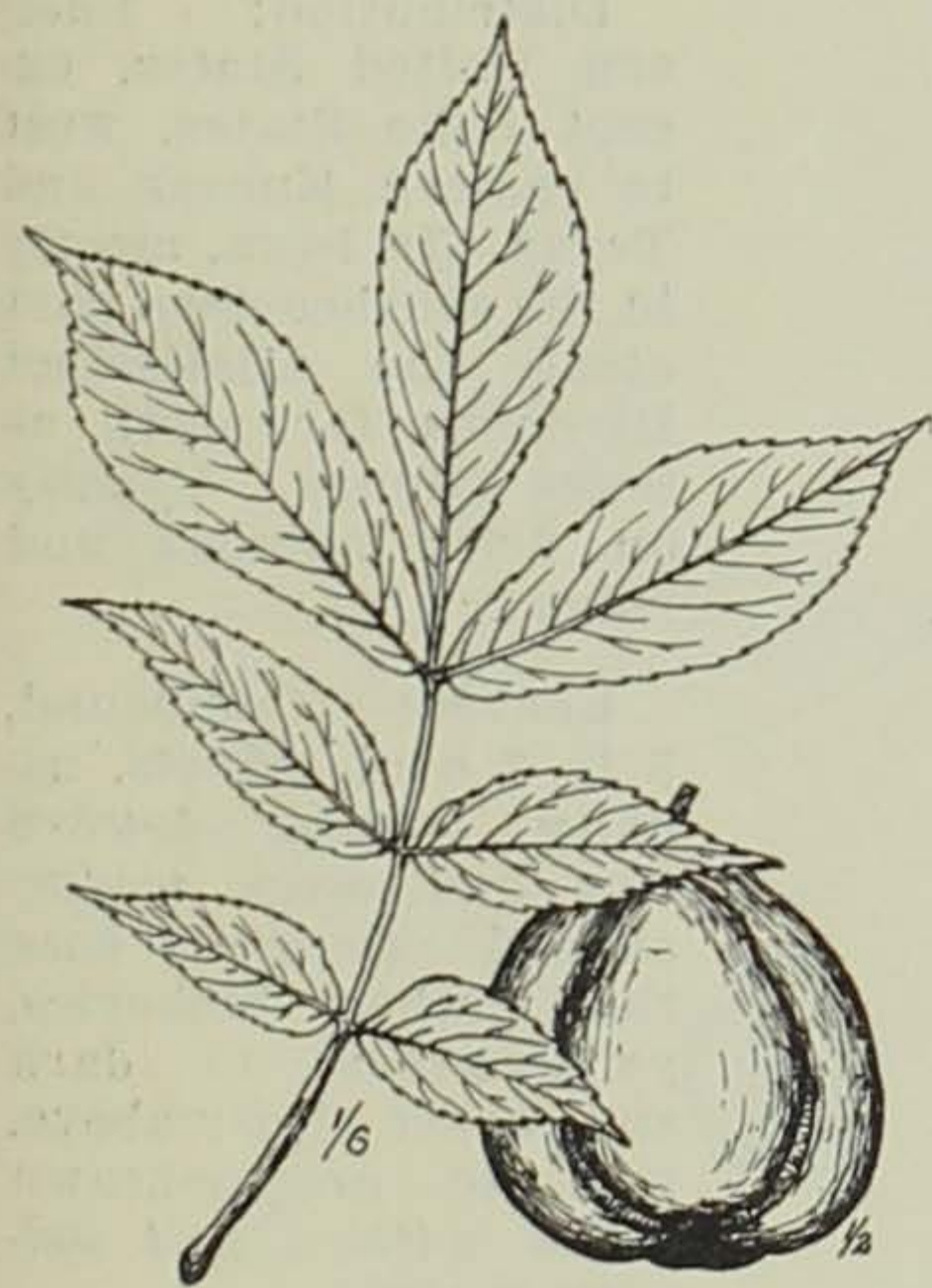
Hicoria laciniosa (Michx. f.) Sarg., *Carya laciniosa* Schn.

The Tree: A large, straight-stemmed, narrow-crowned tree with a long clear length in the timber. Is probably the largest native hickory except the pecan.

Distribution: Eastern-central United States, south to Tennessee, westward to Nebraska, Kansas and Oklahoma. In Iowa, limited to the southeastern part, usually on deep rich soils along river bottomlands even where there is considerable overflow.

Leaves: Pinnately compound, 15 to 22 in. long, with 5 to 9 large, broad leaflets. The leaf stems often hang on the tree over winter.

Buds and Twigs: Buds are very large, up to 1 in. long and $\frac{2}{3}$ in. thick.



Fruit: A very large nut, resembling shagbark, except larger. Husk is thick and woody. The nut with husk often 2 to 3 in. long. Shell is very thick and bony.

Bark: On trunk light gray to dark gray similar to shagbark, very rough, breaking into horny plates often several feet long.

Wood: Very similar to bitternut and shagbark hickories and used for the same purposes.

Remarks: This tree is not recommended for timber planting in Iowa because of its limited range. Its possibilities as a nut producing tree are good where adapted.

Mockernut Hickory

Hicoria alba (L.) Britt., *Carya tomentosa* Nutt.

The Tree: In the timber has a narrow crown and long clear trunk. In the open, a medium-sized tree with narrow rounded crown and upright or pendulous branches.

Distribution: Eastern United States, except Lake States, west to eastern Kansas and Texas. In Iowa, mostly in the southeastern part along the Mississippi River as far north as Scott County. Usually on drier uplands and ridges.



Leaves: Compound, 5 to 7 oval leaflets, usually broader toward tips and more wedge-shaped toward base than other hickories, yellow-green to dark and rather glossy above, pale to orange-brown below with a soft velvety surface.

Buds and Twigs: End buds large, $\frac{1}{2}$ to $\frac{3}{4}$ in., and reddish to

dark brown. Twigs stout, light to dark gray with prominent spots.

Fruit: An oblong, rather pointed or rounded, reddish nut enclosed in a medium-thick husk which splits about $\frac{1}{2}$ way from the tip. The meat is usually sweet.

Bark: On older stems and trunks becomes light to dark gray, breaking into broad, shallow, somewhat plate-like ridges but not shaggy.

Wood: Very heavy, hard, tough, strong, close-grained, not durable. Stands bending perhaps better than any of the hickories. Used largely for implements, handles, vehicles, hoops, eveners, etc.

Pignut Hickory

Hicoria glabra (Mill.) Sweet, *Carya porcina* Nutt.

The Tree: A medium-sized, narrow-crowned tree, occasionally reaching a height of 80 to 100 ft.

Distribution: Eastern United States except Lake States, west to eastern Nebraska and Texas. Rare in Iowa. Most common in the southeastern part usually on uplands.

Leaves: Pinnately compound, 8 to 12 in. long with 5 to 7 or 9 leaflets which are $3\frac{1}{2}$ to 5 in. long, shiny and with finely toothed margins.

Buds and Twigs: Terminal bud large and oval in shape, but smaller than shagbark hickory.

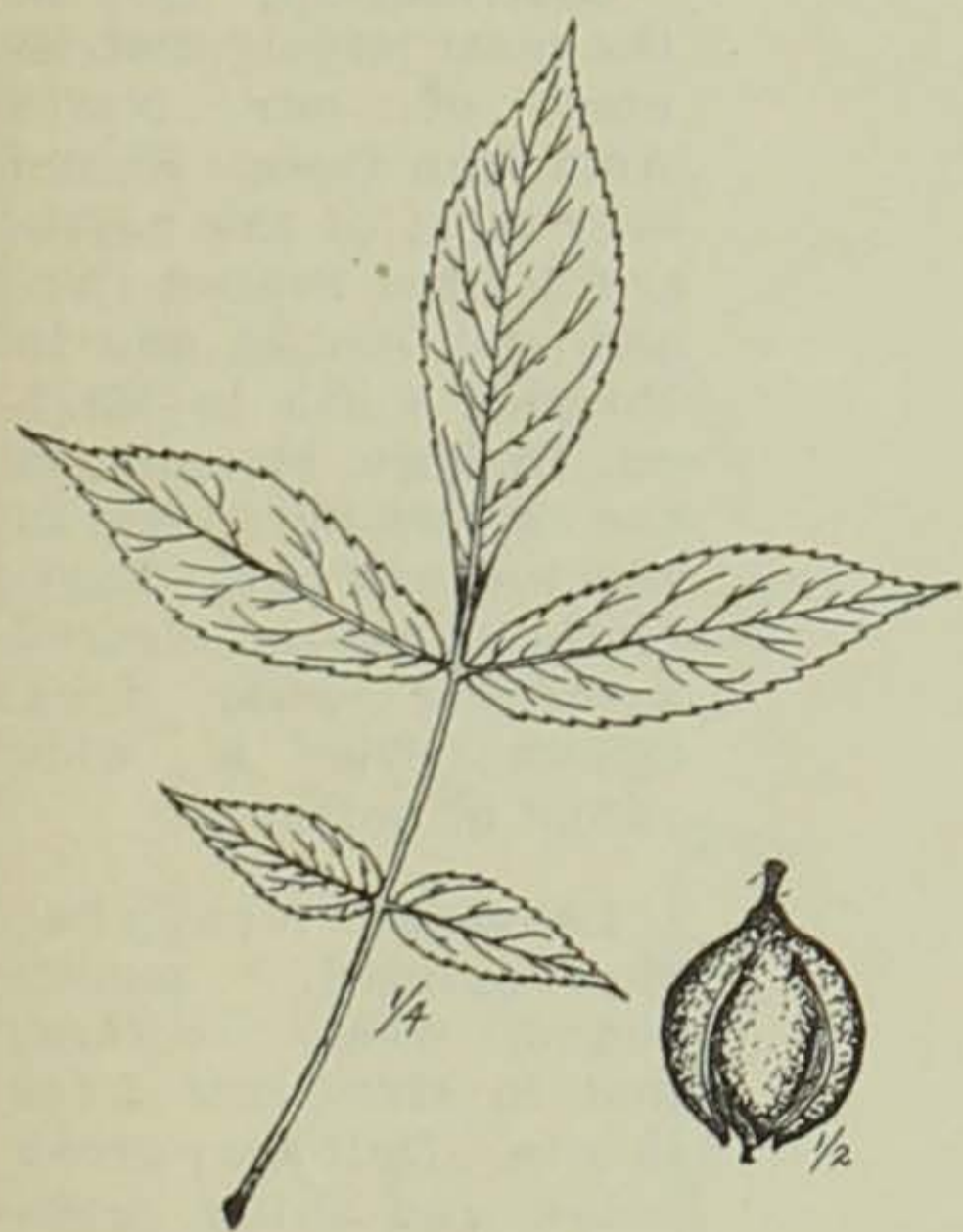
Fruit: A creamy-brown nut with *smooth shell* and *without prominent ridges*. The *husk*

is thin, clinging tightly to the nut for a time after ripening. Nuts mostly bitter but frequently edible.

Bark: Gray, tight and closely ridged, sometimes becoming flaky but not shaggy.

Wood: Hard, tough, heavy, strong, not durable. Valuable for fuel and used especially for tool handles and implements requiring great strength.

Remarks: Not propagated for nut crops but should receive more attention as a timber tree.



Aspen (Quaking or Trembling Aspen, Popple)

Populus tremuloides Michx.

The Tree: A small tree, not often over 60 to 70 ft. in height or 18 to 20 in. in diameter, with nearly always a narrow crown and a long straight stem clear of lower branches.



Distribution: One of the most widely distributed of our North American trees. Found over most of the northern United States, Canada and Alaska and in Rockies south to Mexico. In Iowa, common in the eastern part, rare in the western part. Especially dense in cleared areas or after fires. Grows over a wide range of soils.

Leaves: Simple, short-pointed, nearly round, *finely toothed*, and in size from $1\frac{1}{2}$ to 3 in. Dull gray-green below and shiny green above. *Flat leaf stem*.

Buds and Twigs:

The buds are *quite prominent* and *some-what resinous*.

Fruit: A catkin of small capsules containing brown, fine, tufted seeds. Staminate and pistillate catkins on separate trees.

Bark: On small trunks and branches, smooth and gray-green to a very light gray or almost white, often marked with dark circular markings. On old trunks, dark gray and deeply furrowed.

Wood: Light, not strong and not durable. Where it grows in quantities, used for pulpwood for book and magazine paper stock, and for lumber for light boxes, pails and containers.

Remarks: Not a tree for timber or ornamental planting.

Large-Toothed Aspen (Poplar or Popple)

Populus grandidentata Michx.

The Tree: Gets to be a larger tree than quaking aspen, altho seldom of large timber size. It is tall, straight-stemmed, and with a long clear length. Like the aspen, it is a rapid grower but short-lived.

Distribution: Southeastern Canada and northeastern United States, west to Minnesota and south to the Ohio River Valley. In Iowa, found mostly in the central and northeastern sections and likes best the moist sandy or gravelly soils.

Leaves: Similar to aspen but *larger* and especially distinguished by the *large coarse teeth*.

Buds and Twigs: Buds somewhat smaller than aspen and *downy* rather than resinous.

Fruit: A catkin like the aspen but capsules are smaller ($\frac{1}{8}$ in.) and darker brown in color.



Bark: Bark on smaller trees is much like aspen but *not as light gray*. In larger trees it is *more yellowish or brown* and breaks into dark-gray to brownish-black shallow ridges near the base.

Wood: Soft, not strong and not durable. It is used for purposes similar to the aspen.

Remarks: In Iowa, makes a better commercial tree than the aspen because of its larger size but is not important as a timber tree or for shade-tree planting.

Balsam Poplar (Balm of Gilead)

Populus balsamifera candicans (Aiton) Gray.

The Tree: In Iowa only a medium-sized, short-lived tree, with a fairly broad open crown. Found in the timber with a straight clear trunk.



Distribution: Northern United States, most of Canada and Alaska. This is probably an escaped variety of a cultivated tree. In Iowa, mostly in the northeastern part, on moister soils of slopes or bottomlands.

Leaves: Large, heart-shaped, but often more pointed than other Iowa poplars, finely toothed, *sticky and velvety when young*, dark green and *smooth above*; when older, paler and *rusty below*. Leaves with distinct balsam odor.

Buds and Twigs: Buds are large, pointed, reddish-brown and sticky. Twigs are reddish to olive-green or

gray, rough, with prominent leaf-scars and lenticels. *Buds and twigs with pronounced balsam odor.*

Fruit: A catkin similar to other poplars.

Bark: On younger stems light yellowish-brown, and fairly smooth. On older stems dark gray and firmly ridged.

Wood: Light, soft, not strong and not durable.

Remarks: This tree is sometimes planted for ornamental purposes. It is not an important tree in Iowa.

Cottonwood (Carolina Poplar)

Populus deltoides Marsh.

The Tree: The largest of the poplar family. Grows to be a magnificent tree with wide-spreading crown in the open and a large straight trunk in the timber. It is short-lived.

Distribution: Southern Canada and eastern United States, west to the Rocky Mountains. Found all over Iowa. Likes low, moist, rich soils along streams but grows on almost any soil.

Leaves: Similar to aspen but larger, *more triangular and broader*. More coarsely toothed than aspen but not as coarse as large-toothed aspen.

Buds and Twigs: Buds $\frac{1}{2}$ in. long, brown, pointed, shiny and resinous.

Fruit: A loose catkin with capsules containing light brown cottony seeds.



Bark: Light grayish-green on young stems, breaking up into heavy ridges and becoming ashy-gray to dark gray on older trees.

Wood: Light, not strong and not durable; warps rather badly but used for a wide variety of purposes. Much of it has been sawed locally in Iowa for construction lumber. Used extensively now for box and crating material.

Remarks: This tree is rapid in growth and has been widely planted for shade but is a menace because of breakage. It has a value, however, for quick windbreaks and rapid timber production.

White Poplar (Silver Leafed Poplar)

Populus alba L.

The Tree: Altho this tree is not native to the United States, it has been planted widely and in many places has become naturalized and for this reason is described here. Grows very rapidly and has a large wide-spreading top.



Distribution: Central and southern Europe. As a planted or naturalized tree, throughout eastern United States. In Iowa, individual specimens common and found in native timber as an escaped species.

Leaves: Somewhat maple-like but only slightly lobed. Upper surface a very deep shiny green; under surface, especially on young leaves, beautiful silvery white due to presence of a heavy mat of fine hairs.

Buds and Twigs: Buds oval, rather bluntly pointed. Twigs greenish-white.

Fruit: A string of small oval capsules about $\frac{3}{16}$ in. long, occurring on rather stout stems; quite similar to other poplars.

Bark: *The branches and upper part of trunk have a characteristic greenish-gray color. On large trunks the bark becomes deeply furrowed and almost black in color.*

Wood: The wood is light, weak, soft and non-durable. It can be successfully used for paper pulp, boxes, boards, excelsior and other products requiring a white wood.

Remarks: A conspicuous tree due to the silvery under surface of leaves and the bright greenish-gray bark. Sometimes considered undesirable on lawns because the roots send up many sprouts, often a considerable distance from the tree.

Black Willow

Salix nigra Marsh.

The Tree: One of the largest native willows. Forms an irregular, open head, frequently with a cluster of main trunks.

Distribution: Southeastern Canada, eastern United States, west to western Nebraska and Kansas, south to southern Arizona and Mexico. Found all over Iowa, usually bordering streams and swamps but surviving on fairly dry soils.

Leaves: *Very narrow, taper-pointed, with long, sharp, curved tips and finely-toothed margins.* Above shiny, light green. Below pale, dull and often velvety along the midribs. *Prominent leaf-like stipules at base of leaf stem.*

Buds and Twigs: Buds reddish-brown. Twigs reddish or orange-brown, slender and brittle.

Fruit: A catkin of small, light reddish-brown capsules, $\frac{1}{8}$ in. long, with tufted seeds.

Bark: On young branches, yellowish to reddish-brown. On larger stems and trunks, almost black, broadly-ridged, shaggy or scaly.

Wood: Soft, light, brittle, checks badly, low in fuel value, not durable.

Remarks: A valuable tree for quick windbreaks, especially on soil too wet for evergreens; valuable in checking erosion because of its dense mass of fibrous roots.



Peachleaf Willow (Almondleaf Willow)

Salix amygdaloides Anders.

The Tree: A small tree with narrow, rounded, rather open crown.

Distribution: Southern Canada, central United States from the Appalachians to northern Texas and eastern Oregon. Found thruout Iowa, bordering lakes and streams.

Leaves: Shorter than black willow, and much broader, lance-shaped, sharply pointed, *bright shiny green above, gray-green below.*

Buds and Twigs: Buds dark brown. Twigs smooth, shiny, orange to reddish-brown.

Fruit: A Catkin, of *light reddish-yellow* capsules, $\frac{1}{4}$ in. long, with brown tufted seeds.

Bark: Grayish-brown, and ridged but not as rough or scaly as black willow.

Wood: Light, soft, weak, brittle, fine-grained, not durable.

Remarks: Not considered desirable for planting in Iowa, except for variety in ornamental planting.



Shining Willow

Salix lucida Muehl.

The Tree: A smaller tree than peachleaf willow, often little more than a shrub.

Distribution: Most of Canada, northeastern quarter of United States. Rare but occasionally found along banks of streams, lakes and swamps, mostly in northeastern Iowa but extends as far west as Kossuth County.

Leaves: As long as black willow but even wider than peachleaf willow; sharp-pointed tip and rounded base. *Dark green* and *very shiny* above, paler below, with *broad yellow mid-ribs*. *Small*, leaf-like stipules.

Buds and Twigs: Buds orange-brown and shiny, $\frac{1}{4}$ in. long. Twigs orange to reddish-brown and shiny.

Bark: Smooth, and brown on young trunks, becoming dark brown and coarsely ridged on old trees.

Fruit: In catkins, with light brown capsules, seeds with tufted hairs, $\frac{1}{3}$ in. long.

Wood: Of little or no importance commercially. Light, soft, weak and not durable.

Remarks: Sometimes used for ornamental planting because of its attractive shiny foliage.



Sand Bar Willow

Salix longifolia Muehl., *S. fluviatilis* Sarg.

The Tree: A small tree, often shrub-like and forming dense thickets.

Distribution: Found over southern Canada and nearly all of the United States. In Iowa, commonly bordering streams and lakes and coming in densely on newly formed sand bars. Common over the state.

Leaves: *Very narrow and pointed at both ends, more slender than black willow. Smooth, yellow-green above, pale beneath, not glossy.*

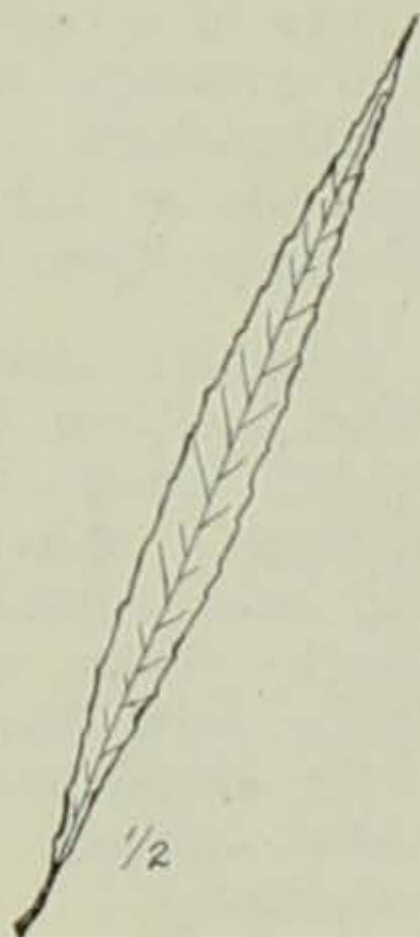
Buds and Twigs: Twigs slender, gray to dark orange and smooth. Buds brown, $\frac{1}{8}$ in. long, sharp-pointed.

Fruit: In catkins, with light brown capsules, $\frac{1}{4}$ in. long.

Bark: On young stems, smooth, light gray-brown. On trunks, dark gray to brown and smooth or very shallow-fissured.

Wood: Brittle, soft, light, not durable. Used some for fuel, charcoal, protecting the banks of streams from erosion.

Remarks: This is the pioneer on newly formed soils along streams. It has a dense fibrous root system, valuable for holding newly formed land.



Missouri Willow

Salix missouriensis Bebb.

The Tree: A small to medium-sized tree with oval open crown.



Distribution: Along the Missouri River from St. Louis to northwestern Iowa, where it is common. Found on moist bottomland situations.

Leaves: *Broadly lance-shaped*, larger than the other willows, broader near tip, rounded and tapered toward base. *Thin, dark green and smooth above, gray-green beneath. Small leaf-like stipules.*

Buds and Twigs: Buds reddish-brown, wooly, $\frac{1}{2}$ to $\frac{3}{4}$ in. long. Twigs reddish-brown, not shiny.

Fruit: In catkins, with light brown, narrow and long-pointed capsules.

Bark: Thin, smooth, grayish, tinged with red. Much smoother than black willow.

Wood: Light, weak and of little commercial importance.

Pussy Willow (Glaucus Willow)

Salix discolor Muehl.

The Tree: A small tree or large shrub, with an open irregular or rounded crown.

Distribution: Southeastern Canada and northeastern United States. In Iowa, found along streams and lakes, especially in the eastern part and to some extent westward.

Leaves: Rather broad, and more blunt-pointed at tip than the other willows, gradually narrowing towards base. *Thick, heavy, dark green above, silvery white underneath.*

Buds and Twigs: Buds $\frac{3}{8}$ in. long, reddish-brown to purple and shiny. *Twigs hairy when young, later becoming smooth, reddish-purple or greenish.*

Fruit: In catkins, with narrow, conical, long-pointed, hairy capsules.

Bark: On young stems, *purplish or reddish.* On trunks, light gray-brown to reddish, smooth or shallow-fissured and somewhat scaly.

Wood: Light, fine-grained, soft, not durable, of no commercial importance.

Remarks: The large, velvety, opening flower buds in the spring make this species highly prized for decorative purposes. It is often planted as an ornamental. This is the common "pussy willow" with the large velvety buds which are so prominent in early spring.



Beaked Willow

Salix bebbiana Sarg., *S. rostrata* Rich.

The Tree: A small tree or mostly a shrub form, with broad round head, seldom over 20 ft. high.

Distribution: Most of Canada and Alaska, northern United States, west to Idaho and thru the Rockies south to Arizona. In Iowa, mostly in the northern part and either in peat bogs or along swamps. Rare in central Iowa.



Leaves: Much broader and sturdier than the other willows and often not toothed toward the base. Rather thick, *hairy*, dull green above and *bluish or silvery white* beneath.

Buds and Twigs: Twigs purplish to orange-brown or red-brown, roughened by prominent leaf-scars.

Fruit: A catkin with *very long-beaked and hairy* capsules.

Bark: Thin, greenish, often with red tinge, and with shallow fissures and scaly surface.

Remarks: A small unimportant tree commercially.

Blue Beech (Hornbeam)

Carpinus caroliniana Walt.

The Tree: A small tree or shrub with a slender open crown. The branches are usually crooked and droop. The trunk is more or less angular and usually crooked.

Distribution: Found rather widely distributed over the eastern half of the United States. In Iowa, found on moist slopes along streams or the deep, rich, moist woodland soils. Common in eastern and central Iowa.

Leaves: Similar to elm in shape but *more slender*, smaller and thinner, with *depressed veins on upper surface*. Above dull blue-green, below pale green with hairy tufts at base of veins.

Fruit: Staminate and pistillate flowers in separate catkins on the same tree. The seed is *surrounded by a small leaf-like triangular wing*.



Bark: Bark is *smooth, bluish-gray in color and blotched or mottled with lighter markings*.

Wood: Heavy, tough, strong. Heartwood light brown, with wide, light-colored sapwood. The wood is used for fuel, handles and small articles.

Remarks: The tree is not important commercially because of its small size. Its color of stem gives it some ornamental value.

Ironwood (Hop Hornbeam)

Ostrya virginiana (Mill.) Koch.

The Tree: A small slender-trunked tree, sometimes getting to be 30 ft. high and 10 to 15 in. in diameter. The foliage is not dense.



Distribution: Widely distributed over eastern United States as far west as the Dakotas (Black Hills), eastern Kansas and Texas. Found all over Iowa, mostly on dry slopes and ridges. Frequently found growing in the shade of other hardwood trees.

Leaves: Simple, broader than those of blue beech, and similar to elm, except *more finely toothed, tissue-paper-like* in texture and pale green in color.

Buds and Twigs: Buds small, brown, pointed. *Twigs much more slender than elm* and shiny-brown.

Fruit: The flowers occur in catkins, and the fruit is a *cluster of leafy, pod-like structures* which enclose flat, ribbed, pointed nutlets, $\frac{1}{4}$ to $\frac{1}{3}$ in. long.

Bark: On trunks of both old and young trees, *finely ridged*, and covered with fine, thin scales. *Ridges never heavy as in elm.*

Wood: Very tough, hard, strong, difficult to cut and durable. Use is limited to fence posts, handles, mallets and smaller articles.

Remarks: Young trees resemble elm closely and care should be used in identifying these. This species comes in densely on cleared or burned areas and becomes a weed-tree.

Yellow Birch

Betula lutea Michx.

The Tree: Gets to be a large-sized timber tree but in Iowa is usually a smaller tree. In the open, develops a broad, deep, spreading crown.

Distribution: Southeastern Canada, New England and Lake States west to Iowa. In Iowa, found only occasionally in the northeastern part as far west as Hardin County, on moist uplands.

Leaves: Simple, oval in shape, with a rounded base and finely double-toothed margin. Dark dull-green on the upper surface and lighter on under surface with fine hairs along veins.

Buds and Twigs: Buds are bright chestnut-brown. Twigs are slender, shiny brown, aromatic and marked with long grayish spots or lenticels.

Fruit: Cone-like, erect, containing small, flat, brown winged seeds.

Bark: On smaller branches, smooth, silver-gray or brownish-gray. On younger trunks, ragged and frayed into thin, papery, curled scales, silvery gray to yellowish in color. On old trunks it divides into shallow, broad, reddish-brown plates.

Wood: Hard, heavy, strong and close-grained. A valuable commercial tree, being used for flooring, wooden ware, furniture, sash and doors and finish. It makes a high quality fuel-wood.

Remarks: This is the largest of the birches and one of the largest timber trees in much of the northern hardwood forest outside of Iowa.



River Birch (Red Birch, Black Birch)

Betula nigra L.

The Tree: Gets to be a fair-sized tree but not as large as the yellow birch.

Distribution: Eastern United States west to Minnesota, Kansas, and Texas. In Iowa in the eastern, central and southern parts on rich bottomlands or especially along streams, lakes and swamps.



Leaves: Similar to yellow birch, except smaller and *distinctly wedge-shaped at the base*. Dark green and shiny above, margin doubly-toothed.

Buds and Twigs: Similar to yellow birch but twigs *darker reddish-brown*, with characteristic aromatic birch odor and taste.

Fruit: Type of fruit similar to yellow birch.

Bark: On young trunks and branches, *orange to reddish or cinnamon-brown* and peeling up in *thin, ragged or frayed papery layers*. On old trunks, thick, furrowed and dark or reddish-brown in color.

Wood: Fairly hard, strong and close-grained. Used for fuel, furniture and smaller articles.

Remarks: Because of its pleasing color of bark this tree is used in large ornamental plantings, especially in low places.

Paper Birch (Canoe, White Birch)

Betula papyrifera Marsh.

The Tree: Does not get to be as large or as old as either the yellow or river birch in Iowa. In the woods it loses its lower branches rapidly and carries a clear straight trunk and thin rounded crown.



Distribution: Most of Canada, Alaska and northern United States westward to Washington. In Iowa, mostly in the northeastern part, extending as far south as Clinton County and as far west as Hardin County. Rare in central section. Usually occurs on rich wooded slopes and borders of streams and swamps among other trees.

Leaves: Irregularly double-toothed, slightly larger than river birch and *rounded at the base*, becoming rather *thick* in texture and *dull medium-dark green above*.

Buds and Twigs: Twigs are slender,

orange-brown to dull red in color and with the characteristic aromatic birch odor and taste.

Bark and Trunk: Bark is papery like the other birches but with *heavier layers*, peeling off *in larger sheets* and *chalky-white in color*. At base of old trunks it becomes blackish and furrowed.

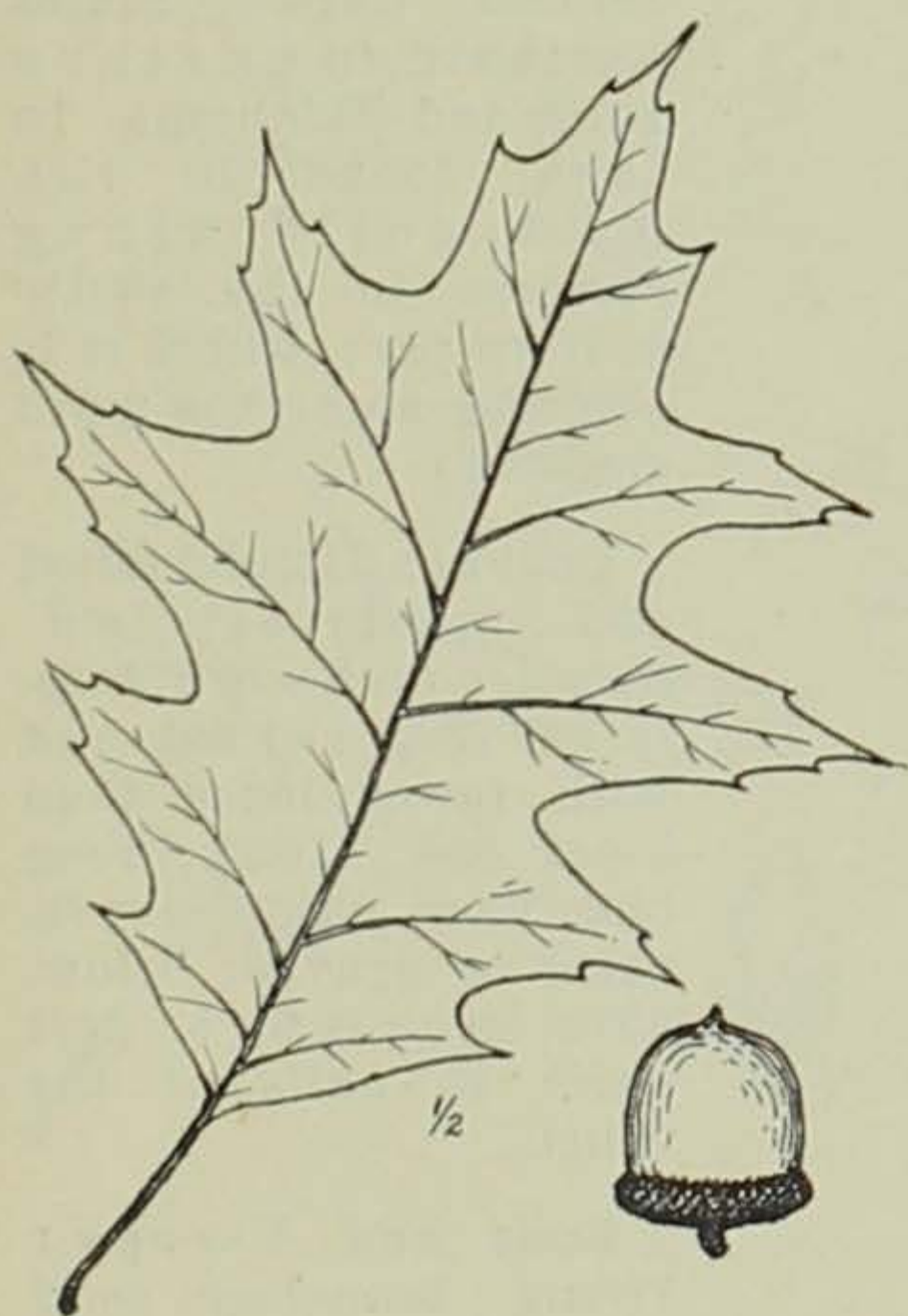
Wood: Hard, strong, close-grained and tough. Used for spools, shoe lasts, pegs, furniture, toothpicks and other small articles.

Remarks: The bark of this tree is that which has become famous in the birch-bark canoes, utensils and articles made and used by the northern Indians.

Red Oak

Quercus borealis Michx. f., *Q. rubra* L.

The Tree: One of the largest and most important timber trees in Iowa, with a medium-spreading, rounded head when grown in the open. One of the faster growing oaks.



Distribution: South-eastern Canada, north-eastern two-thirds of the United States and west to central Minnesota, eastern Nebraska and Kansas. Found over most of Iowa on a wide range of soils, except on drier clay uplands and wet bottomlands.

Leaves: Simple, lobed, thin, firm, dull green above, yellow-green below, varying considerably but typically with lobes broader than others of red oak group. All of this group have lobes pointed or bristle-tipped.

Buds and Twigs: Buds lighter-colored and larger than black oak ($\frac{1}{4}$ in.). Twigs and

young branches small, slender, greenish-brown to dark brown.

Fruit: A large, broad, rounded acorn with a very shallow, disc-like or saucer-shaped cup or cap.

Bark: On younger branches, smooth and gray to greenish. On the trunk it breaks into long, narrow, shallow ridges, flat and smooth on top. Under-bark light red.

Wood: Heavy, hard, strong and coarse-grained. Used generally in construction, for cooperage, finish lumber, flooring, furniture, railroad ties and many other purposes.

Remarks: The tree is adapted to a much wider planting than has been practiced in the state, both for shade and timber. Another species very similar to the common red oak has been found in Fayette County, Iowa, but is not important. This is *Quercus shumardii* Buck (formerly *Q. texana* Sarg.).

Pin Oak (Swamp Spanish Oak)

Quercus palustris Muench.

The Tree: Gets to be a large beautiful tree with strong central stem and horizontal lateral branches, forming a pyramidal oblong crown.

Distribution: East-central United States westward to eastern Iowa and Oklahoma. In Iowa, found in rich moist soils along streams in the southeastern part, where it is common along the main streams.

Leaves: Simple, lobed and bristle-tipped. *Smaller and more deeply cut* than red oak and with fewer lobes than black oak. Dark green and very shiny above, paler or grayish below, with *large tufts of pale hairs* in axils of the veins.

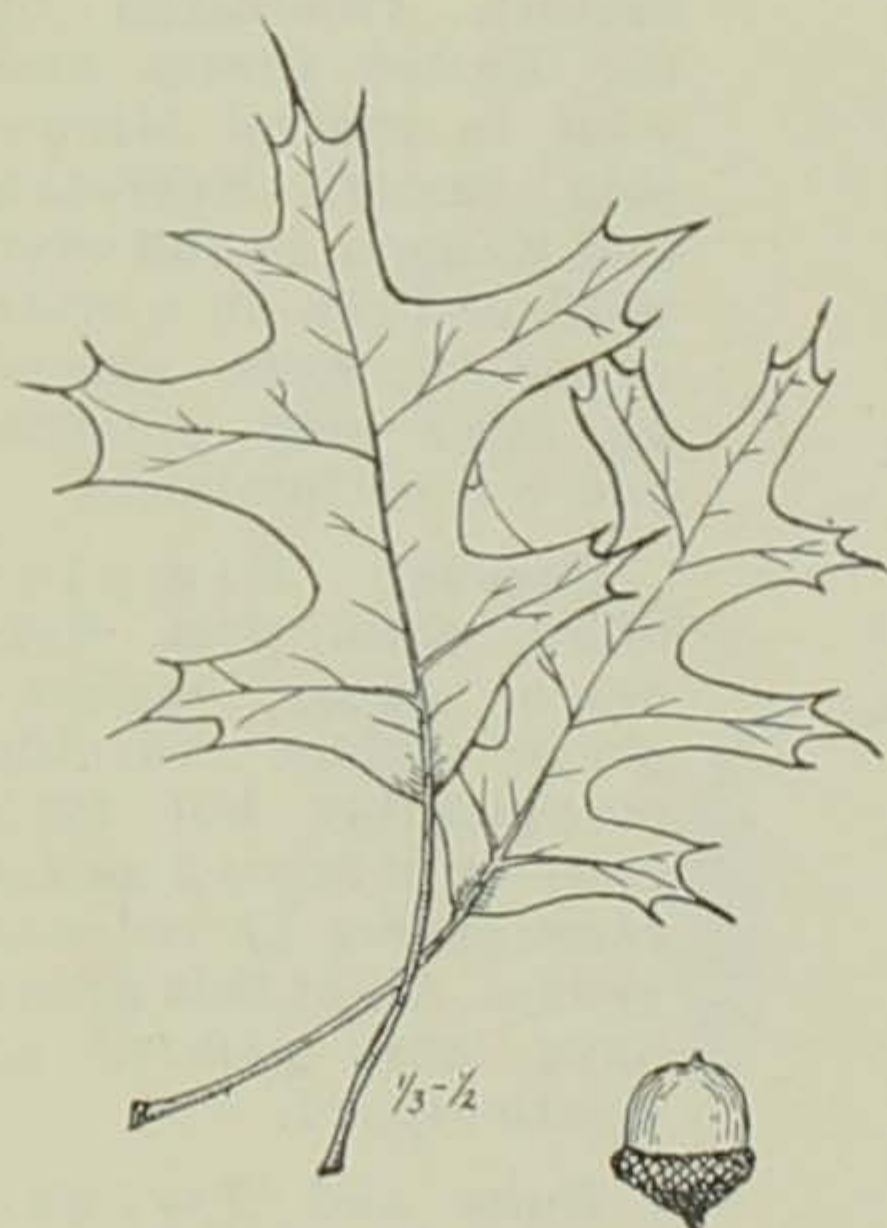
Buds and Twigs: Young branches send out short, stiff, spur-like, lateral twigs.

Fruit: Smaller than scarlet oak and much smaller than red oak, *almost spherical* and with a *rather shallow cup*.

Bark: On branches and young trunks, smooth, rather shiny, greenish or reddish-brown. On older trunks, gray-brown, not deeply ridged and somewhat scaly.

Wood: Heavy, hard, strong, coarse-grained. Not commercially important in Iowa because of its limited distribution but used for purposes similar to red oak.

Remarks: Because of its desirable shape, general adaptability, rapid growth for an oak and strong type of branching, this tree is well adapted to ornamental, shade and street planting.



Black Oak (Hill's Oak, Northern Pin Oak, Jack Oak)

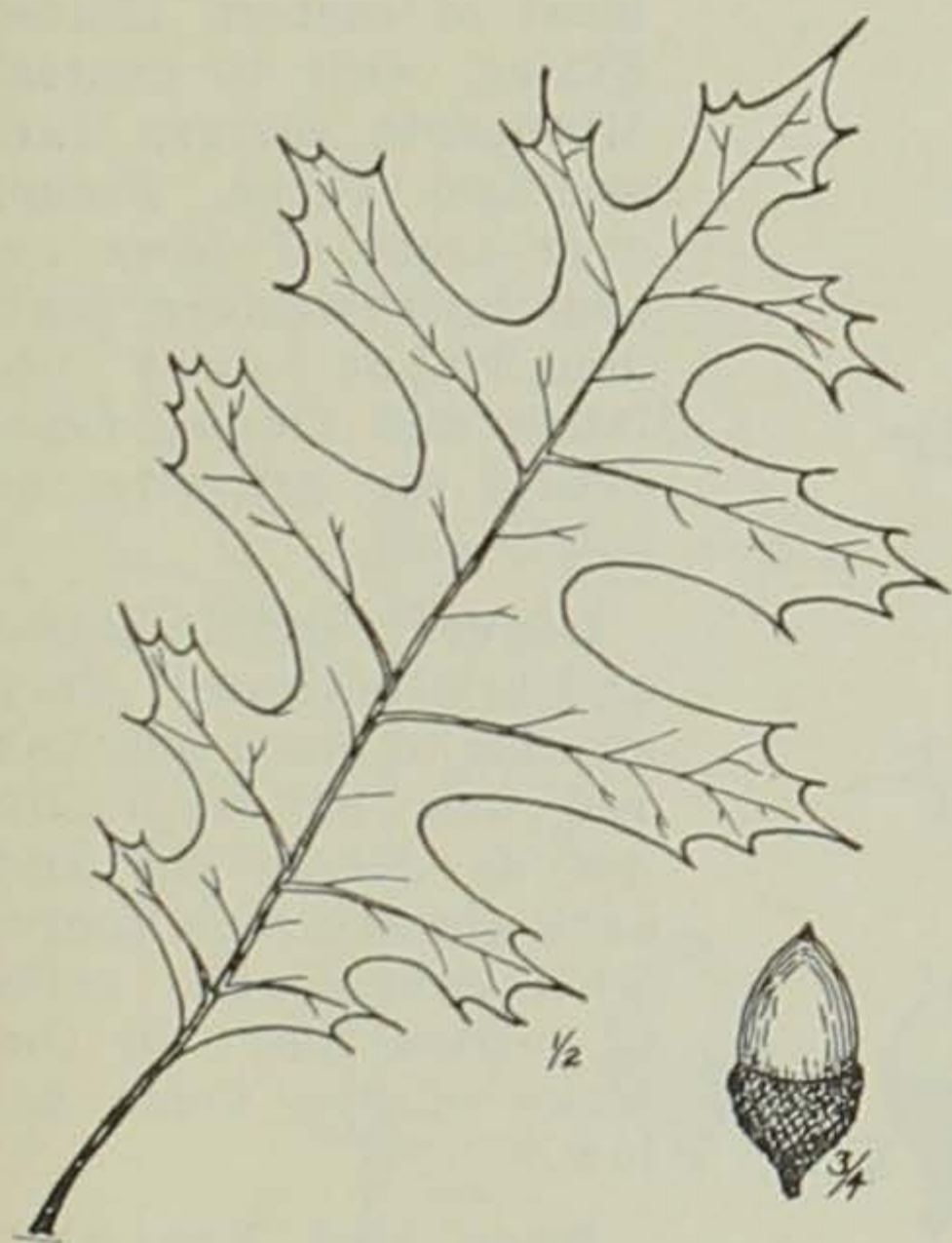
Quercus ellipsoidalis E. J. Hill.

The Tree: Very similar to red oak but does not get as large and is heavier-branched.

Distribution: Restricted. Southern Michigan, Wisconsin and Minnesota, northern Illinois, central and especially northeastern Iowa. Found on moist sandy soils and sandy or clayey uplands.

Leaves: Lobed and bristle-tipped. Lobes typically narrower than red oak, much more deeply cut and more leathery in texture. Dark shiny-green above.

Buds and Twigs: Buds smaller than red oak and darker brown. Twigs bright reddish-brown to dark gray-brown.



Fruit: An acorn, much smaller than red oak, smooth and narrow-elliptical, with turban-shaped cup covering $1/3$ to $1/2$ of the acorn. Edge of cup not deeply fringed.

Bark: On branches, not greenish as in red oak but more gray to brown. On the trunk, the bark is shallow and furrowed similar to pin oak; under bark a pale yellow.

Wood: Hard and strong but not adapted to the variety of uses that red oak is because of lower quality. Used mostly for rough construction, fuel, posts and railroad ties.

Remarks: The distinction between this oak, yellow oak and red oak is very close. The acorn is the best means of identification.

Yellow Oak (Black Oak, Quercitron Oak)

Quercus velutina La M.

The Tree: Very much like red and black oak, gets to be larger than black oak but not as densely branched.

Distribution: Over most of eastern United States, west to central Minnesota, eastern Kansas and Texas. Found over most of Iowa except northwestern part, usually on drier uplands and ridges, especially on gravelly or sandy soil.

Leaves: Simple, lobed and bristle-tipped. Very similar to black oak and red oak but typically *not as deeply cut* and dark glossy-green above, with *conspicuous tufts of brown hairs* in the forks of the veins below.

Buds and Twigs: Buds *distinctly angular*. Twigs stout, and *dull reddish-brown to dark brown* in color.

Fruit: Very similar to black oak but usually more rounded than *elliptical*. Cup *turban-shaped* but *edge rather deeply fringed*. Acorn often hairy or velvety.

Bark: On young branches, smooth and *dark brown*. On older branches and trunk, almost black and breaking into broad, deep, rounded ridges which *tend to become plate-like*. *Under bark is deep orange-yellow color*.

Wood: Hard, heavy, strong and coarse-grained. Not as valuable as red oak but frequently used for the same purposes.

Remarks: The bark of this tree is high in tannic acid and is used to furnish extracts for tanning, yellow dye and medicine.

Note: Scarlet oak, *Quercus coccinia* Muen., is sometimes listed as native to Iowa but this species is not considered present.



Black Jack Oak (Jack Oak)

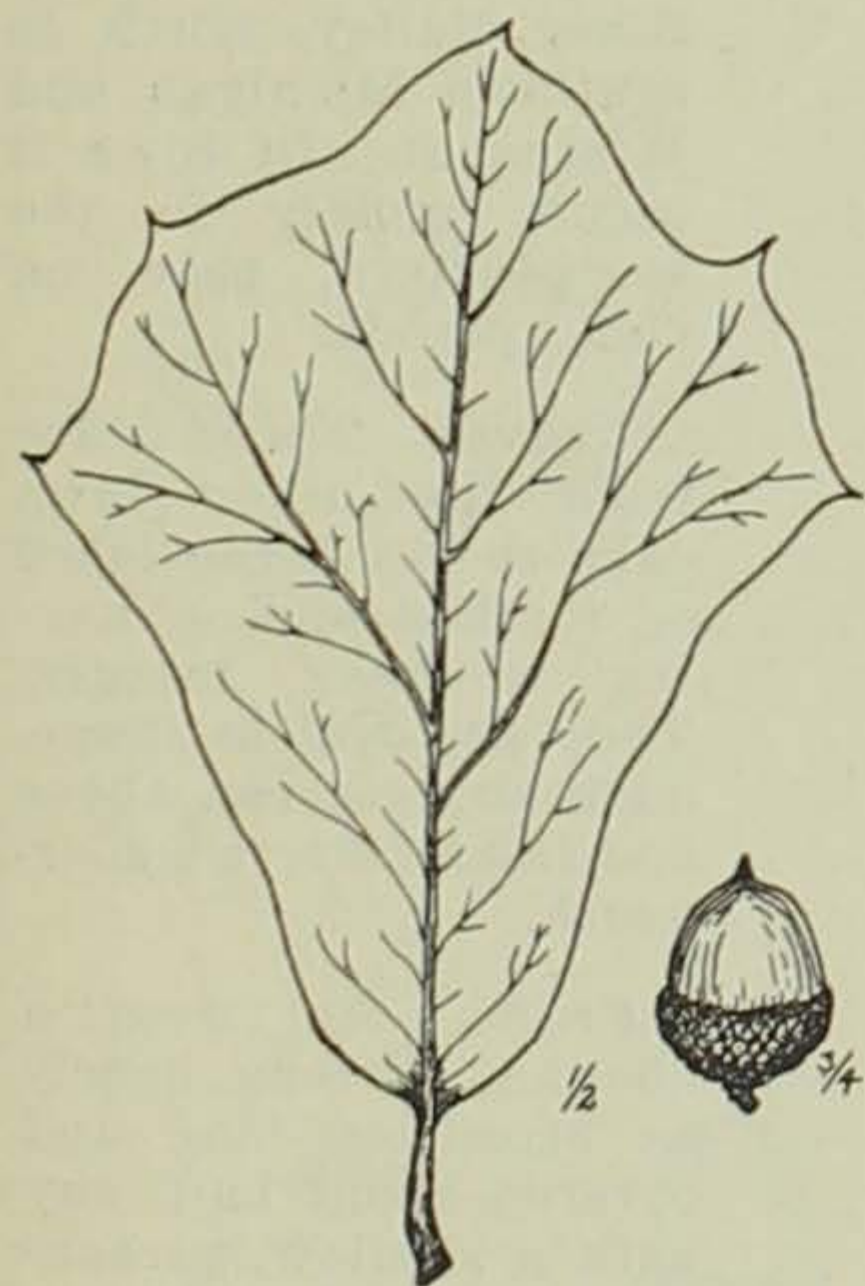
Quercus marilandica Muench.

The Tree: Only a small or medium-sized tree, usually with a compact, heavily-branched, shrubby-appearing head.

Distribution: Eastern United States, west to eastern Nebraska and Texas, north to southern Michigan. In Iowa, found mostly in the southeastern part on dry, usually sandy, poor soils.

Leaves: Simple, almost entire or very slightly lobed, with an *angular outline*, narrowed toward the base. Thick, firm, dark yellowish-green and glossy above, *orange to brown and hairy below*.

Fruit: A small acorn, $\frac{3}{4}$ in. long, light brown to tan in color, rounded, and with a medium heavy cup covering $\frac{1}{2}$ of acorn.



Bark: Bark on branches gray to brown. On trunks, dark brown to nearly black and *broken into square scaly plates*, divided by deep fissures.

Wood: Heavy, hard, strong, medium in durability. Used mostly for fuel and some for charcoal.

Remarks: In some places this species forms almost the only growth on sandy barren land. In Iowa, it is found only scattered.

Shingle Oak (Laurel Oak)

Quercus imbricaria Michx.

The Tree: Smaller than most of the oaks, with a rather broad-topped, rounded crown, and in the open has a wide spread.

Distribution: Most abundant thru the Ohio River Valley, north to southern Michigan and Wisconsin. In Iowa it occurs mostly in the southeastern part on rich uplands.

Leaves: These differ from the other Iowa oaks *in not being lobed or toothed* and in having a wavy margin. They are oval in shape, dark shiny green above and *thick-velvety underneath*.

Fruit: An acorn about $\frac{1}{2}$ in. long, nearly as broad as long and covered about half way with a shallow, turban-shaped cup.

Bark: On young trunks and branches, light brown and somewhat glossy. On older trunks, divided into broad flattened ridges with only shallow fissures, and dark brown in color.

Wood: Hard, heavy and coarse-grained. It has little commercial importance because of its small size. Its use is mostly for fuelwood.

Remarks: Sometimes used as an ornamental tree. Its name probably originated in the early use of the wood for shingles.



White Oak

Quercus alba L.

The Tree: One of Iowa's largest, longest-lived and most magnificent trees, growing to be 100 ft. high and 3 to 4 ft. in diameter. In the woods, tall and straight; in the open, a wide-spreading tree.

Distribution: Eastern United States, often forming pure stands. In Iowa, widely distributed, except in the northwestern part, on a wide variety of soils but usually on upland clay soil. Rare in the southwestern part of Iowa.

Leaves: Simple and lobes rounded, which is a distinguishing character of all of the white oak group. Lobes and thin. Color dark green above and pale to whitish below. *deeply cut, especially toward the tip.* Firm

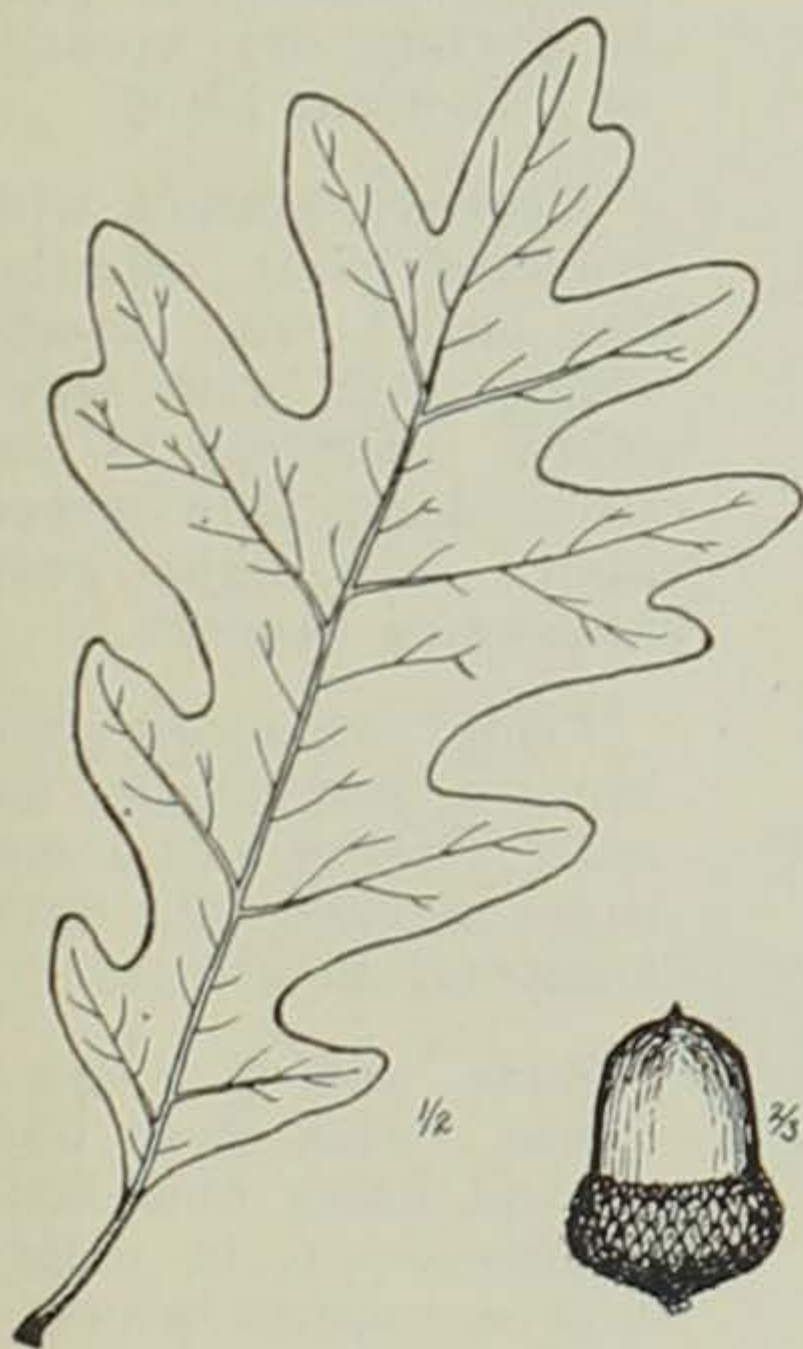
Fruit: An acorn about 1 in. long, *elliptical*, and $\frac{1}{3}$ covered by a rather finely scaled rounded cup.

Bark: *Ashy-gray to very light gray* even on

branches, *decidedly scaly.* On older trunks, somewhat ridged but remaining ashy-gray and scaly.

Wood: Strong, heavy, hard, tough, close-grained and durable. Probably the most valuable of all the oaks. Uses numerous, being adapted to almost any use where wood enters. Its prominent grain makes it a good finish and furniture lumber.

Remarks: Its great value for all purposes makes it a tree which should be favored in spite of its rather slow growth. It is a good sprouter, and second growth comes up readily from stumps of cut trees. Not adapted to shade tree planting because so frequently it does not thrive under yard conditions.



Post Oak

Quercus stellata Wang., *Q. minor* (Marsh.) Sarg.

The Tree: Medium to small in size, with a strong-branched, round, usually dense crown. Not a timber tree in Iowa.

Distribution: Southeastern United States. In Iowa, found only in the southeastern part. It prefers dry uplands or lime-stone hills.

Leaves: Simple, with rounded lobes. Similar to burr oak, *except smaller and with fewer lobes*. Leathery in texture, dark shiny-green above and light gray and *hairy beneath*.

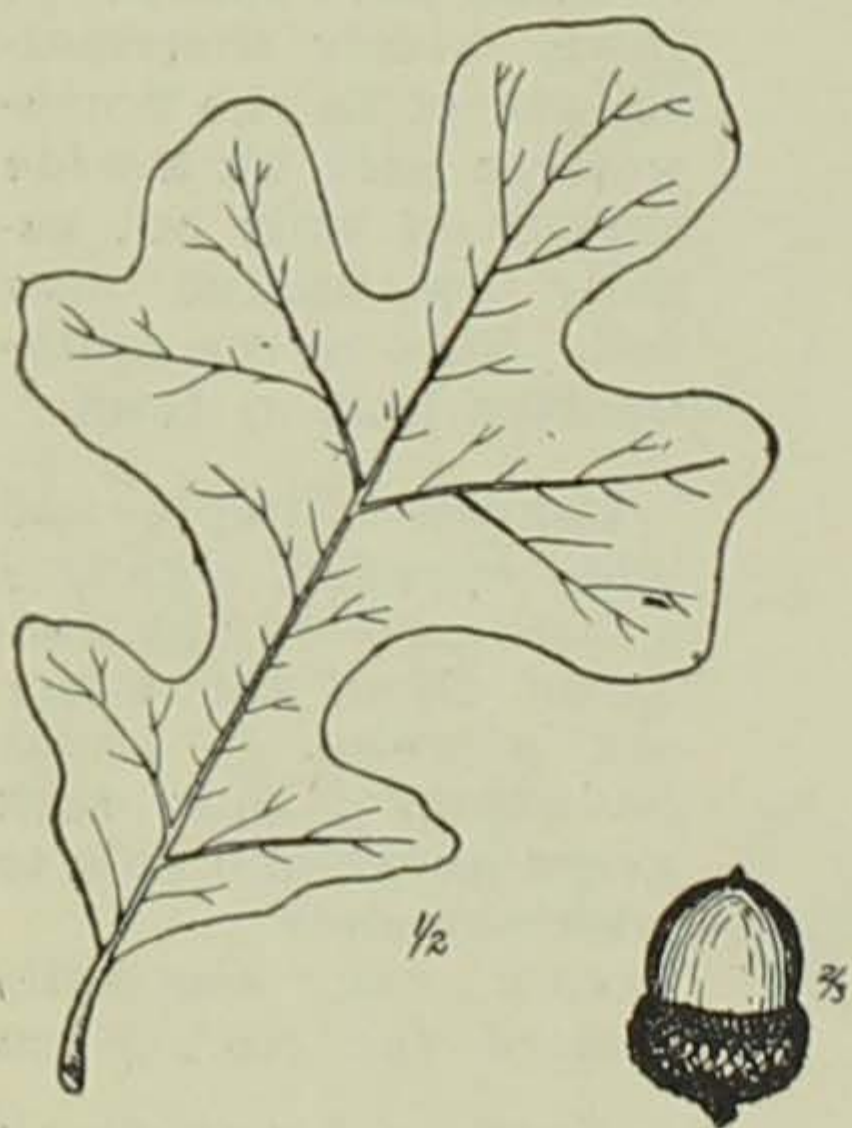
Fruit: An acorn similar to white oak but usually smaller and sometimes marked with dark longitudinal stripes.

Buds and Twigs: Young twigs stout and at first hairy and dark orange-brown in color, later a reddish-brown.

Bark: On older branches and trunk *darker than white oak and rougher*, becoming *deeper-ridged and not as scaly*.

Wood: Very heavy, hard, close-grained and durable. Used largely for fence posts, fuelwood, railroad ties and sometimes in furniture and vehicles.

Remarks: Not a commercially important tree and not adapted to shade or street tree planting.



Bur Oak (Mossy-cup Oak)

Quercus macrocarpa Michx.

The Tree: Gets to be of large size and old age. A heavy-branched, wide-spreading, sturdy tree in the open.

Distribution: Eastern United States, except the coast region, west to Wyoming, Oklahoma and Texas. In Iowa, as widely distributed as any native tree; often the only tree on hill-sides in the northwestern part of the state. Not particular as to soil and moisture requirements.

Leaves: Simple and lobed, sometimes almost entire. Larger than post oak. Lobes rounded and end lobe *large, full, and scarcely notched*. Dark shiny-green above and lighter green to gray below.

Buds and Twigs: Twigs *heavy, rough, corky-barked*.

Fruit: *Large acorn with large, burry or mossy-like cup covering half or more of the acorn.*

Bark: On small branches, brownish, roughened and corky. On older branches and trunk it breaks into distinct ridges with deep furrows. *Not shaggy or scaly, dark gray to brown or nearly black in color.*

Wood: Heavy, hard, strong, close-grained and very durable. Used for same purposes as white oak.

Remarks: This tree withstands adverse conditions well and, because of its sturdiness and long life, may well be used for permanent shade and yard planting. It is too wide-spreading for a street tree. This tree was selected as the most typical tree of Iowa for the Memorial Park at Golden Gate, California.



Overcup Oak (Swamp White Oak)

Quercus lyrata Walt.

The Tree: In the south, gets to be a large tree. In Iowa, a smaller tree, usually low-branching, with beautiful, round, symmetrical crown.

Distribution: Southeastern United States, west to Texas and north to southern Iowa. On river banks, swamps and low areas of wet soil. Very rare in Iowa. Reported in Iowa County.

Leaves: Simple, and lobed, with *wide, square or oblique notches*. Leaf *narrow and wedge-shaped toward base, dark green above, silvery and velvety below*.

Fruit: An acorn, $\frac{1}{2}$ to 1 in. long, with round rough cup *covering more than half or usually nearly all of the acorn*.

Bark: *Light gray, roughened, rather finely ridged and with a scaly or flaky surface*.

Wood: Heavy, hard, strong, tough, durable. Used for nearly the same purposes as white oak.

Remarks: Found only in a few places in Iowa and not important.



Swamp White Oak

Quercus bicolor Willd., *Q. platinoides* (La M.) Sudw.

The Tree: Gets to be a large timber tree in favorable locations. A narrower-crowned tree than bur oak and of thinner branching habit.

Distribution: Northeastern United States as far west as southern Michigan, Iowa and eastern Missouri. In Iowa, limited to eastern and southeastern parts, on deep, rich, moist bottomlands along streams and swamps.

Leaves: Lobes with round tips but *not deeply cut*, resembling large coarse teeth more than lobes. Dark shiny-green above and gray to white and downy below.

Fruit: Acorns usually in pairs and very similar to white oak, except *occurring on long stalks*.

Bark: On small stems and branches, smooth,

purplish-brown and later separating into large papery-scales. On larger branches and trunks it breaks into broad flat-ridges, with deep fissures between. It is a *gray-brown to reddish-brown* in color.

Wood: Heavy, hard, strong, close-grained, durable. Used in nearly all places where white oak is used and very similar in properties.

Remarks: For timber and other types of planting considered inferior to white, bur and red oaks.



Chestnut Oak

Quercus prinus L., *Q. michauxii* Nutt.

The Tree: A moderate to large-sized tree in the eastern part of the country. In Iowa, a small tree.

Distribution: From the New England states south to Georgia, west to Iowa, Missouri and Texas. In Iowa, found in limited numbers in the south, central and southwest parts. It is an upland species, usually inhabiting drier ridges, and is often found in association with other oaks and hickories.

Leaves: Leaves 4 to 8 in. long, oval, somewhat narrowed at the base, with usually more rounded tip than the Chinquapin oak. Smooth, dark green on upper surface, lighter and somewhat hairy on under surface. Margins with obscure, rounded teeth, or wavy.



Buds and Twigs: Buds conical, sharp pointed, $\frac{1}{4}$ to $\frac{1}{2}$ in. long and brownish in color. Twigs at first greenish later becoming reddish-brown and smooth.

Fruit: An acorn $\frac{3}{4}$ to $1\frac{1}{2}$ in. long, oval, chestnut brown, inclosed for approximately $\frac{1}{2}$ its length in a thin, somewhat roughened, cup. Acorns occurring singly or in pairs on short, stout stems.

Bark: On old stems, thick, roughened into deep furrows with long, narrow, continuous, brownish ridges. Dark gray to brownish-black.

Wood: Heavy, hard, strong, coarse-grained. Used for purposes similar to many of the other oaks. The bark of this oak is particularly rich in tannin.

Remarks: Altho this tree is found in Iowa, it is not considered superior to a number of other oaks which grow here more abundantly naturally.

Chinquapin Oak (Pin Oak, Yellow Oak, Chestnut Oak, Rock Oak)

Quercus muehlenburgii Engelm., *Q. acuminata* (Michx.) Houba.

The Tree: In favorable locations gets to be a large timber tree with a straight trunk and narrow gracefully-rounded head.

Distribution: Eastern United States, west to southern Michigan, northern Iowa, southeastern Nebraska and southwestern Oklahoma. Prefers bottomlands along streams, or limestone ridges bordering streams. Not common in Iowa but found along the Mississippi River and in central and southwestern Iowa.

Leaves: Simple, coarsely and sharply toothed. Thick and firm, light yellow-green above and pale to silvery-white below. Teeth more bristle-tipped than chestnut oak.

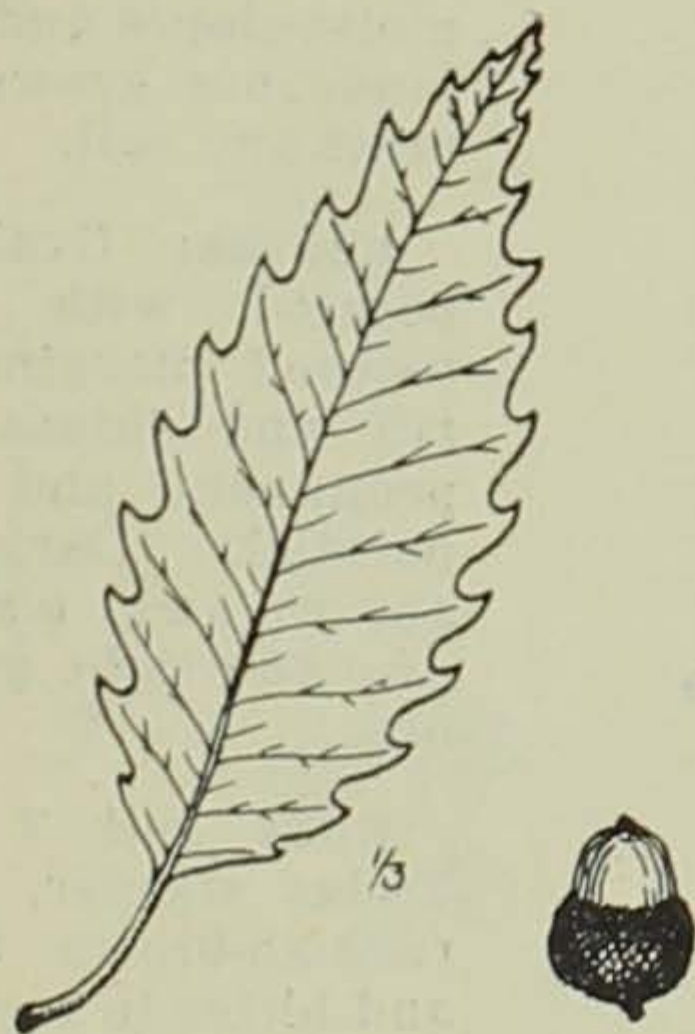
Fruit: An acorn, broadly oval, chestnut-brown in color and in-

closed for $\frac{1}{2}$ its length in the cup. *Smaller than chestnut oak and on a shorter stalk.*

Bark: On young stems and twigs, greenish tinged with red or purplish-red, turning orange-brown or gray-brown. On branches and trunk, thin and breaking into plate-like scales similar to white oak. Gray to silvery gray in color.

Wood: Very hard, strong, close-grained, and durable. It takes a high polish and is used for purposes similar to white oak. Not important as a timber tree in Iowa.

Remarks: The dwarf Chinquapin oak, *Quercus prinoides* Willd., is native to parts of Iowa but is not described here because it is a relatively unimportant shrub. Leaves and acorns similar to chinquapin oak.

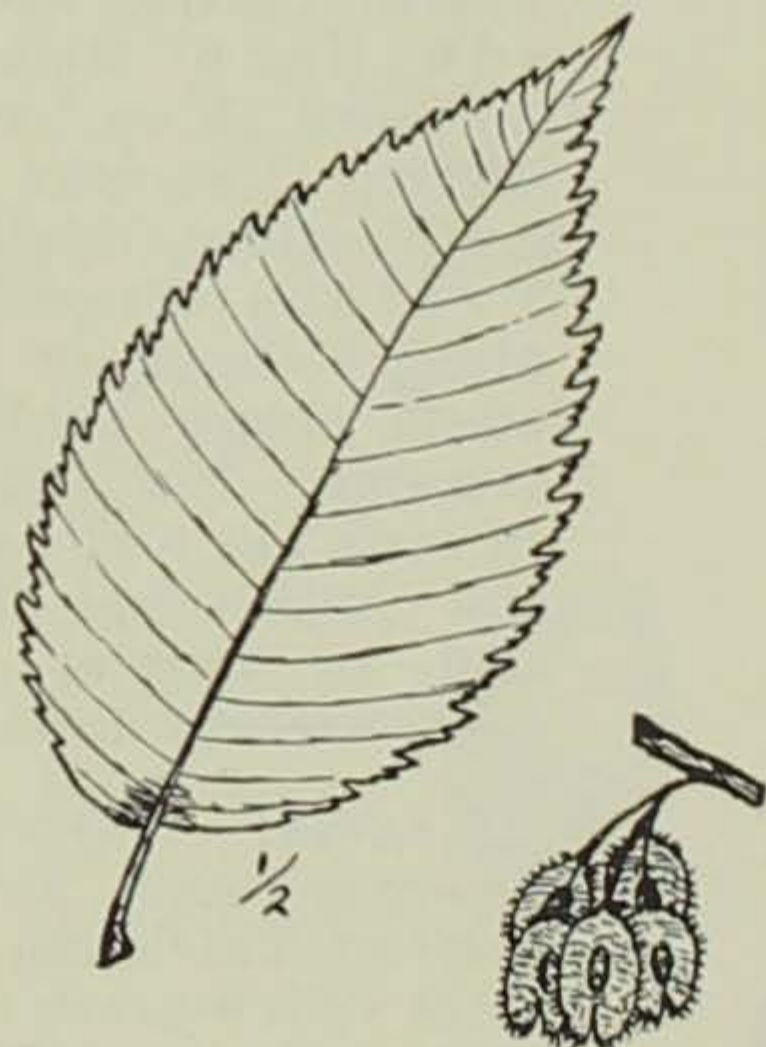


American Elm (White Elm)

Ulmus americana L.

The Tree: One of our largest timber and shade trees. Typically, with a spreading characteristically vase-shaped crown.

Distribution: Eastern United States, west to Dakota and Oklahoma. Found in all of Iowa, especially on moist slopes and bottom lands but grows on almost any soil.



Leaves: Oval, sharp-pointed with doubly-toothed margins. Midrib and lateral veins prominent and almost parallel. Dark green above and *usually smooth*; light green below.

Buds and Twigs: Twigs slender, smooth, reddish-brown to gray and bitter in taste. Winter buds *small, smooth, reddish-brown*.

Fruit: Ripens in early spring. A cluster of small seeds surrounded by disc-like membranous wings.

Bark: On mature trees, irregularly ridged and deeper furrowed than red elm. Light to dark gray. Distinguished from red elm bark by *alternate creamy and brown layers*.

Wood: Heavy, strong, exceedingly tough, not durable. Much prized where toughness is essential as in wheel hubs, tool handles, cooperage, etc.

Remarks: One of the most important trees in the country both for shade and street planting and for commercial purposes. One of the most common trees in Iowa.

Cork Elm (Rock Elm)

Ulmus racemosa Thom., *U. thomasi* Sarg.

The Tree: Forms a straight columnar trunk with small lateral branches and oblong crown in contrast to vase-shaped crown of white elm.

Distribution: More restricted than other elms. New York to Tennessee, west to eastern Nebraska. In Iowa, occasionally found in mixture on lowlands or dry uplands. In northeastern Iowa, fairly common; less common in northwestern part and found occasionally in south-central part.

Leaves: Similar to other elms but broader and *shiny dark green above*, light and *slightly hairy beneath*. *Leaf stems hairy*.

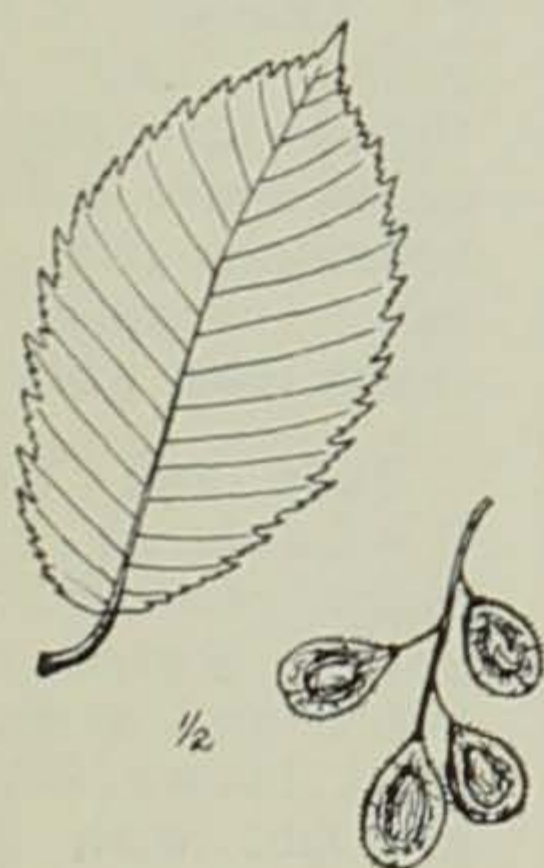
Buds and Twigs: Buds brown, broadly rounded, pointed and velvety. Twigs shiny dark brown or gray. Larger twigs with *corky, irregular, prominent ridges*.

Fruit: Similar to other elms but wing narrower, indistinctly veined and velvety.

Bark: On small branches, made up of corky ridges. On trunks, it breaks into narrow, longitudinal, interlacing ridges and is gray to gray-brown.

Wood: Higher in quality than other elms. Its hardness and extreme toughness make it valuable for heavy implements and wooden articles requiring great strength.

Remarks: One of our interesting trees but not abundant and not used for shade or street planting.



Red Elm (Slippery Elm)

Ulmus fulva Michx., *U. pubescens* Walt.

The Tree: A tree with more of a central trunk and not as distinctly vase-shaped as white elm, *with irregular open crown.*

Distribution: Practically the same as white elm. Found all over Iowa, preferring rich bottomland soils along the banks of streams.

Leaves: *Larger, coarser and rougher* than white elm. Dark green above, paler green beneath and usually more *rasping to the touch* than white elm.

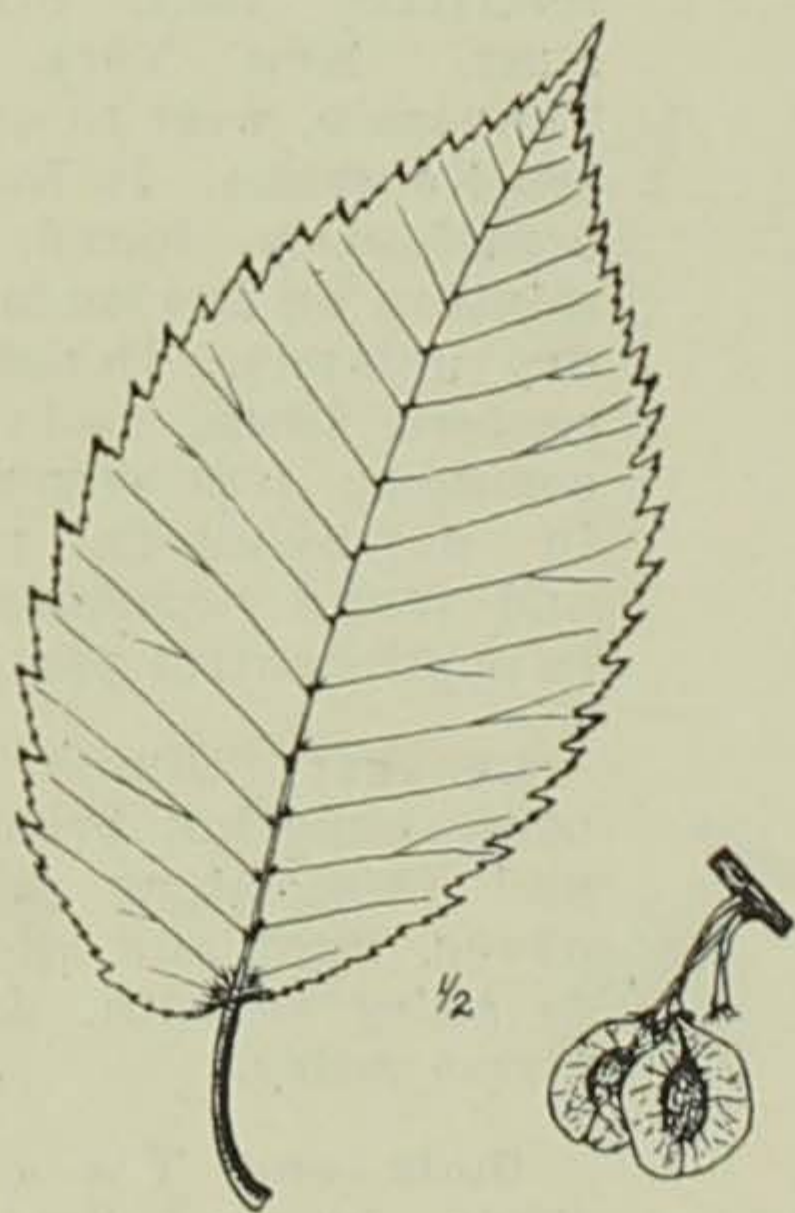
Buds and Twigs: Buds *large, rounded, fuzzy, reddish-brown or gray.* Twigs at first hairy and greenish to light brown, and later grayish, with a *slimy but not bitter taste* when chewed.

Fruit: Similar to white elm but *larger, more rounded, with a broader wing and with seed-part hairy.*

Bark: Dark gray, sometimes with reddish tinge, and with shallow-fissured ridges, often rough-scaly. *Inner bark, thick, fragrant, mucilaginous.*

Wood: Heavy, very tough, strong, more durable than white elm. Uses similar to white elm. Extensively used for agricultural implements.

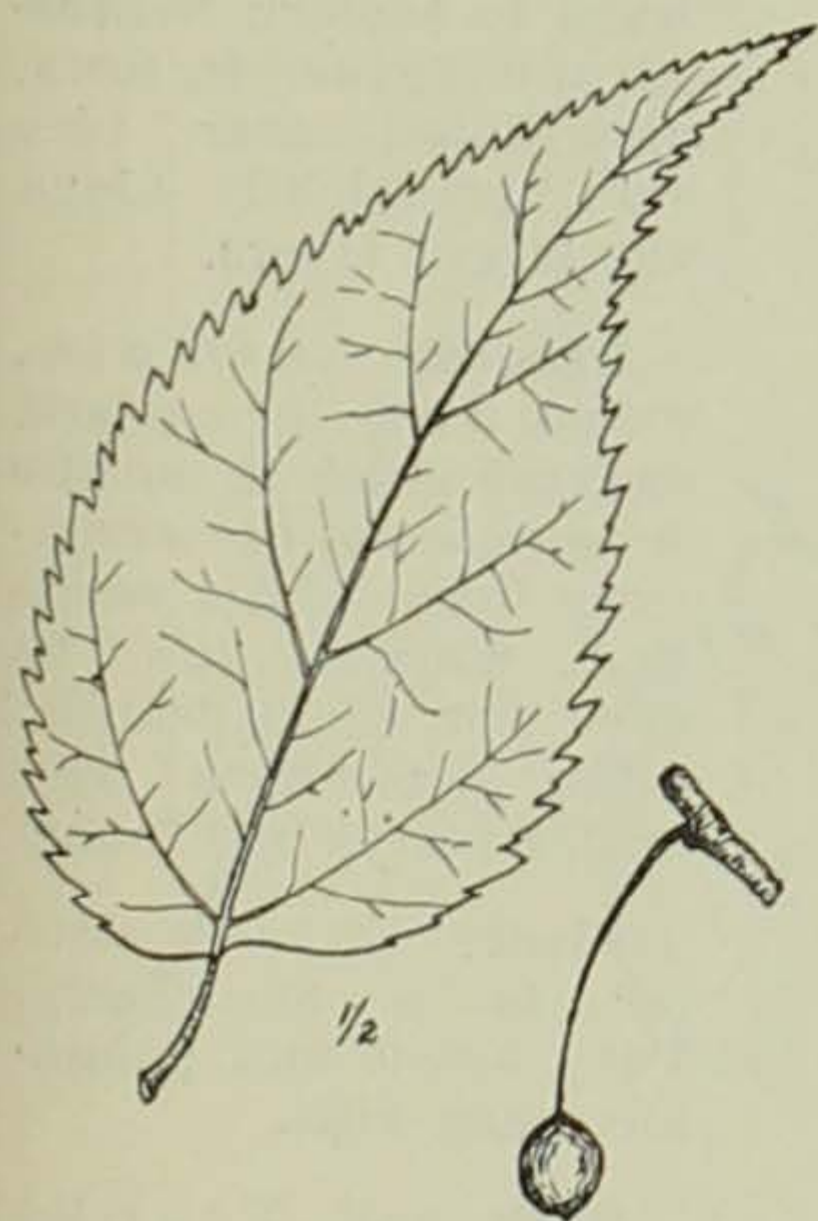
Remarks: Desirable as a forest tree but not as a shade or street tree. Its bark is used for medicine.



Hackberry (Sugar Berry)

Celtis occidentalis L.

The Tree: Gets to be a tall, large, beautiful tree with stronger central stem and more horizontal branching than elm, which tree it resembles. Often affected with "witches broom" fungus which forms little tufts of fine branches all over the tree.



Distribution: Most of United States, except extreme western and southwestern states. In Iowa, distributed over the state, reaching best development on rich alluvial lands and slopes but withstanding almost any soil and moisture condition.

Leaves: Often mistaken for elm but *more lance-shaped, or long taper-pointed, and of a soft thin texture and pale green color. Prominently veined.*

Buds and Twigs: Twigs are rougher and branching is much more angular than elm.

Fruit: *Small and cherry-like, deep-red or purplish in color, and containing a pit resembling a cherry pit. Fleshy part thin, edible and with a date-like flavor.*

Bark: On trunk of even small trees and on branches, very rough, gray to brownish-gray, with high *narrow ridges standing out perpendicularly* and *very wide furrows* or smooth patches between ridges.

Wood: Heavy, rather soft and not strong. The tree occurs only scattered and the wood does not have a wide use outside of fuelwood, and some for ties and furniture.

Remarks: The tree makes a good shade tree, especially on dry situations.

Red Mulberry

Morus rubra L.

The Tree: The only native mulberry in Iowa. Gets to be medium in height with wide-spreading branches and a broad rounded head.

Distribution: Eastern United States, except thru Wisconsin and Minnesota, and westward to eastern Nebraska and Texas. In Iowa, distributed over the state principally along the larger rivers.



Leaves: Simple, rounded, broad and varying much in outline from entire to irregularly lobed. This variation usually can be used for identification, altho sometimes only entire leaves are found.

Fruit: A berry similar to a blackberry. Very sweet and palatable when ripe.

Bark and Trunk: Main trunk usually short and thick. Bark thin and light or grayish-brown, not deeply ridged and resembling somewhat the bark of young ash and basswood.

Wood: Heavy, tough and very durable. Heartwood is light orange-yellow. Its durability makes the wood of this tree very useful for fence posts.

Remarks: This tree could well be planted for post purposes. It makes a fair shade tree. The fruit produces a bad stain on clothing but is very attractive to birds.

Pawpaw

Asimina triloba (L.) Dunal.

The Tree: Gets to be only a small tree or large shrub with small slender branches and usually an open crown.

Distribution: Eastern United States except the lake states, west to southwestern Iowa, eastern Nebraska, Kansas and Texas. In Iowa, found mostly along the deep rich bottomlands or rich moist slopes of streams in the southern part. Along the Missouri as far north as Mills County and on the Mississippi as far as Dubuque.

Leaves: Rather large, somewhat pear-shaped and light green in color with prominent mid-rib and veins.

Fruit: Shaped like a thick stubby banana, green at first, turning yellow and then dark brown when ripe, and

containing large, dark-brown, bean-shaped seeds. It is edible.

Bark and Trunk: Trunk is small with thin, dark, gray-brown, rather smooth bark marked with ash-colored blotches, sometimes breaking into very shallow fissures. Inner bark is tough.

Wood: Light, soft, weak and spongy. Heartwood light yellow in color. It has no commercial value.

Remarks: The tree has a rather handsome foliage and, because of this and its fruit, is often planted. The fruit in some localities is highly prized and brings a good price on the market. The tree has become very scarce in this state, because it usually forms an undergrowth and grazing has almost eliminated it.



Sassafras

Sassafras variifolium (Salis.) Kuntze, *officinale* N. and E.,
S. sassafras (L.) Karst.

The Tree: In Iowa seldom gets to be more than a small tree; mostly a large shrub. Trunk is more or less crooked and crown usually flat-topped and open.

Distribution: Eastern United States, west to eastern Iowa, Kansas and Oklahoma. In Iowa, found mostly on rich, sandy, well-drained soils of slopes along the Mississippi Valley in southeastern part.

Leaves: Large and varying in shape from almost entire to distinctly three-lobed, or fan-shaped. Light green and, when young, quite mucilaginous.

Buds and Twigs: Twigs smooth and yellowish-green to reddish in color.

Fruit: Oblong berries, dark blue to black when ripe, occurring in clusters, borne on an orange-red club-shaped stem.



Bark: On young stems, yellowish-green, turning reddish-brown on the trunk, reddish-brown to brown, comparatively smooth, except on older trunks and then very deeply and irregularly divided into narrow coarse ridges.

Wood: Light, soft, weak, brittle but very durable. Heartwood dull orange-brown with an aromatic odor. Of little importance in Iowa but used elsewhere for fence posts, rails, in light boats and some for cooperage.

Remarks: The bark of the roots furnishes the oil of sassafras which is used in flavoring.

Witch Hazel

Hamamelis virginiana L.

The Tree: In Iowa seldom gets to be more than a large shrub but elsewhere grows to a height of about 25 ft. It forms a broad open crown with slender flexible branches.

Distribution: Found over nearly all of eastern United States. In Iowa, mostly in the northeastern part along the rocky banks of streams, extending as far south as Dubuque.

Leaves: Large, broad-oval, not notched and only very coarsely toothed or more nearly wavy on the edges. They are very unequal at the base, membranaceous in texture and dark dull-green in color.

Fruit: A peculiar, dark, orange-brown, pod-like capsule, covered for about half its length by the large persistent calyx.

Bark: On younger branches and twigs, smooth and light orange-brown marked with small white dots. On older stems it becomes a light brown, mottled and scaly. Inner bark reddish-purple.

Wood: Heavy, hard and close-grained. Heartwood light reddish-brown.

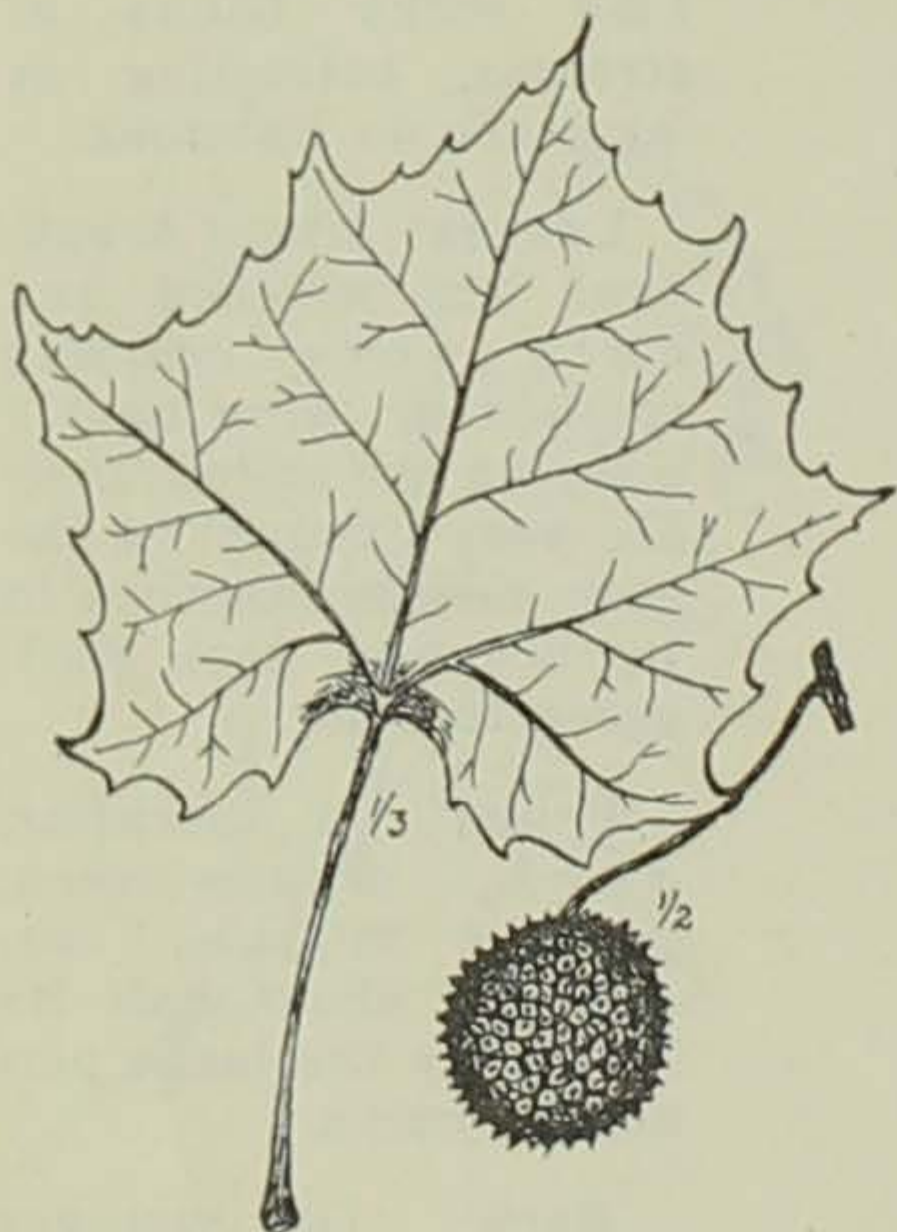
Remarks: The tree has little commercial value because of its small size and sparse distribution. Used considerably in medicines.



Sycamore (Buttonwood, Buttonball, Plane-Tree)

Platanus occidentalis L.

The Tree: One of the most massive and tallest of our timber trees, with a long clear trunk, strong central stem, spreading branches and an open head with coarse foliage.



Distribution: Eastern United States, west to southern Michigan, central Iowa, eastern Kansas and western Texas. In Iowa, found usually in the southern half scattered along streams and bottomlands.

Leaves: Shaped something like maple but larger, lighter green, with prominent midrib and veins and, on young stems, leafy growths at the base of leaf stem. Hollow leaf stem surrounding bud.

Buds and Twigs: Conical, reddish, smooth and shiny, $\frac{1}{4}$ in. long.

Fruit: A brown ball of wedge-shaped, closely-packed seeds, the heads forming the surface of the ball. These balls hang on the tree into the winter.

Bark: Very distinct. On younger stems, smooth grayish to greenish or brownish-gray. On larger branches and trunks it breaks into thin, shell-like plates or scales which sluff off and produce a grayish or yellowish to greenish patchy or mottled appearance. Bases of old trees become dark gray and ridged.

Wood: Medium hard, strong and tough. Used in tobacco boxes, butchers' blocks, furniture and for interior finish.

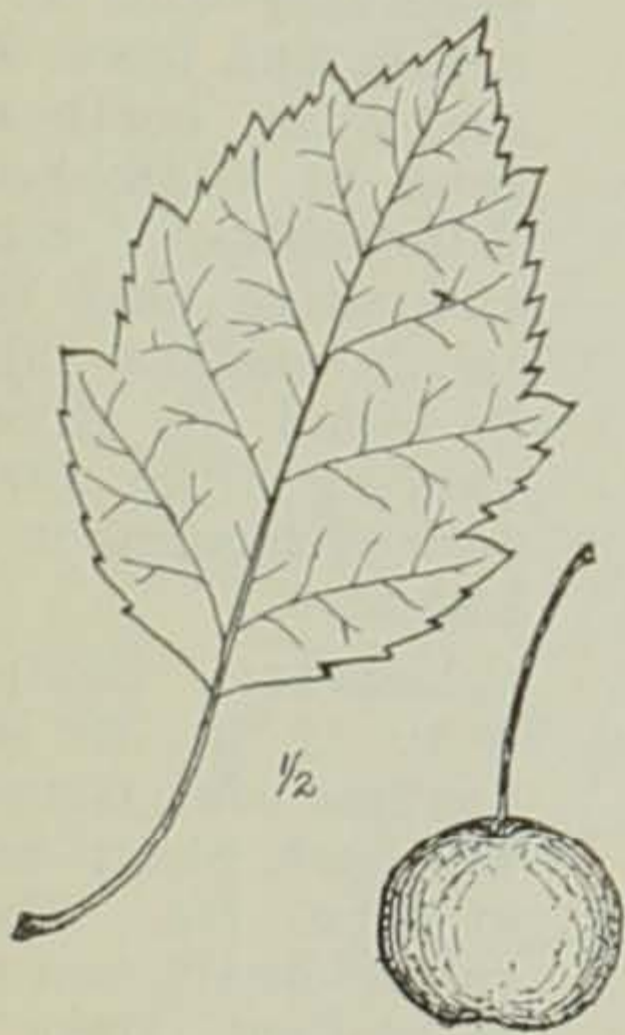
Remarks: The tree is used for shade and ornamental planting, although the oriental plane is considered better.

Crab Apple (Wild Crab, Prairie Crab)

Malus ioensis Britt.

The Tree: A small, round-topped, open-headed tree with stout irregular branching.

Distribution: Thru Minnesota, Wisconsin, Illinois and western Kentucky, to eastern Nebraska, Kansas and Texas. In Iowa, found in pastures, open woodlands and along roadsides thruout the state. Abundant in the eastern, central and southern parts; less abundant in northwest.



Leaves: Simple, toothed or slightly lobed, broadly oval with slightly wedge-shaped base. Dark green and lustrous above, pale green and slightly hairy below. Leaf stems short and hairy.

Buds and Twigs: Twigs are irregular, short-branched, crooked and often spur-like.

Fruit: A small, round, greenish apple of poor eating quality, 1 to 1½ in. in diameter.

Bark: On stems and trunk, grayish to light brown or reddish-brown. On larger trunks, breaks into small narrow ridges or long narrow scales.

Wood: Hard, heavy, close-grained. Hardly a timber tree because of small size and short trunk.

Remarks: A beautiful tree in our native landscape. Since it does not interfere with pasture and is too low to interfere with wires along roadsides, it should be preserved. It can well be used more generally in ornamental planting. The fragrant crab (*Malus coronaria* (L.) Miller) is also found in Iowa but not so abundantly as the prairie crab.

Mountain Ash

Sorbus americana Marsh., *Pyrus americana* (Marsh.) de Cand.

The Tree: A small slender beautiful tree, seldom larger than 40 ft. in height.

Distribution: Eastern and southeastern Canada, Lake States, New England states and Appalachian Mountains, extending west to Minnesota and Iowa. Found only in northeastern Iowa in Allamakee and Winneshiek counties and there only rarely. In its eastern range it is found on situations varying from the borders of swamps to rocky hillsides.



Leaves: Compound, 8 to 12 in. in length. Leaflets oval, rounded at the base, sharp pointed at the tip. Margins rather finely and sharply toothed. Dark green on upper surface, paler green beneath, leaf stems green or somewhat reddish.

Buds and Twigs: Buds large, sharp pointed, with curved tip. Twigs blunt, at first hairy but later become smooth and brownish.

Fruit: Large clusters of brilliant coral-red berries, ripen in the fall and often remain on the tree during winter.

Bark: Quite smooth, grayish to gray-brown or yellowish-brown, becoming somewhat roughened on older trunks by the presence of small plate-like scales, with fragrant inner bark.

Wood: Soft, light, weak and practically of no value from the commercial standpoint.

Remarks: This species is one of our most beautiful woods trees, especially in the fall when the brilliant clusters of bright red fruit are very conspicuous. It has been planted widely for ornamental purposes both within and without its native range.

Serviceberry (Shadbush, June-Berry, Shadblow, May Cherry)

Amalanchier canadensis (L.) Medicus.

The Tree: A small tree or large shrub in Iowa, with slender, open-branched crown.



Distribution: Southeastern Canada, eastern United States to Minnesota, eastern Kansas and southern Arkansas. In Iowa, usually found on uplands near the break of limestone ledges and bluffs or clinging to steep rocky hillsides. Principally in the eastern, central and southern parts.

Leaves: Somewhat like a cherry-leaf in shape and outline, except broader and sturdier. Dark red-brown as they unfold; later, thick and firm, dark dull-green above and pale below.

Fruit: An open cluster of small berry-like fruits, ripening in early

summer. At first, bright red, becoming purplish-red when ripe.

Bark: On branches and trunk, *smooth*, gray and mottled.

Wood: Heavy, very strong, hard, close-grained. Sometimes used for tool handles and other implements.

Remarks: This is one of the most delicately and beautifully-flowered of any of our native trees or shrubs. The flowers are white and usually the first to be seen in the spring. The tree is only scattered and every means should be used to preserve it. It is a very desirable ornamental.

Dotted Thorn (Dotted Hawthorn)

Crataegus punctata Jacq.

The Tree: A low, spreading, rounded or flat-topped tree with stout branches.



Distribution: Northeastern United States. In Iowa, mostly in the eastern and southern parts scattered in open woodlands or pastures. A common species.

Leaves: *Elliptical* or fan shaped with *decidedly wedge-shaped* base and fine-toothed toward apex only. Thick, firm and gray-green above, with veins *sunken* on upper surface.

Buds and Twigs: Twigs stout, *velvety* when young, later light orange-brown and then ashy-gray. Spines slender, straight, *light orange-brown* or gray, 2 to 3 in. long.

Fruit: A dull red or yellow fleshy fruit, $\frac{1}{2}$ to 1 in. long, with 5 nutlets and *marked with many small white dots*. Clusters drooping and many fruited.

Bark: On branches and young stems, light orange-brown to ashy-gray. On older stems and trunk, gray to dark gray-brown and breaking into narrow, flat ridges.

Wood: All *Crataegus* have hard, heavy, tough wood; but, because of small size, the trees have little commercial value.

Remarks: All *Crataegus* are beautiful trees of our open woodlands and pastures. The bloom in spring and general character make them worthy of preserving. They do not interfere with pasture, grass or wires and are very hardy under adverse conditions. They are good ornamentals.

Cock-Spur Thorn

Crataegus crus-galli L.

The Tree: A small tree with broad, round-topped head and rigid branches.



Distribution: Northeastern United States, west to Iowa. In Iowa, found in the eastern, central and southern parts, usually on slopes in rich soil.

Leaves: More slender-elliptical than the other *Crataegus*, with wedge-shaped bases, dark green and rather shiny above, paler below.

Buds and Twigs: Twigs are gray to brown with long thorns 3 to 4 in. which are straight or slightly curved and brown or ashy gray. The spines continue onto the trunks and then are often branched, 6 to 8 in. long.

Fruit: A rounded fleshy fruit, $\frac{1}{2}$ in. long, dull red or greenish, often grayish coated, usually containing 2 seeds.

Bark: Similar to other *Crataegus*. (See Dotted Thorn.)

Wood: Similar to other *Crataegus*. (See Dotted Thorn.)

Remarks: Often used for hedges and ornamental plantings. Like all of our hawthorns it is a beautiful tree and should be preserved in the native landscape.

Red Haw (Hawthorn, Thorn Apple)

Crataegus mollis (T. & G.) Scheele.

The Tree: Gets to be larger than dotted thorn and usually with a broader, more rounded and open head.



Distribution: Northern Ohio to eastern Dakota, eastern Nebraska and Kansas. Common over most of Iowa, preferring low rich soil of bottomlands or slopes along streams but not limited to these locations.

Leaves: Larger, broader and more coarsely toothed than dotted thorn, rounded at the base and slightly lobed. Not as leathery as dotted thorn, lighter green in color, with less prominent veins.

Buds and Twigs: Twigs when young are covered with a heavy matting of long white hairs and become darker and smooth with age.

Spines straight, thick and bright chestnut-brown, 1 to 2 in. long.

Fruit: Fleshy fruits, few in the cluster, drooping, scarlet in color with only occasional large dark spots. Flesh thick, yellow and edible. Nutlets 4 or 5.

Bark: See dotted thorn.

Wood: See dotted thorn.

Remarks: See dotted thorn.

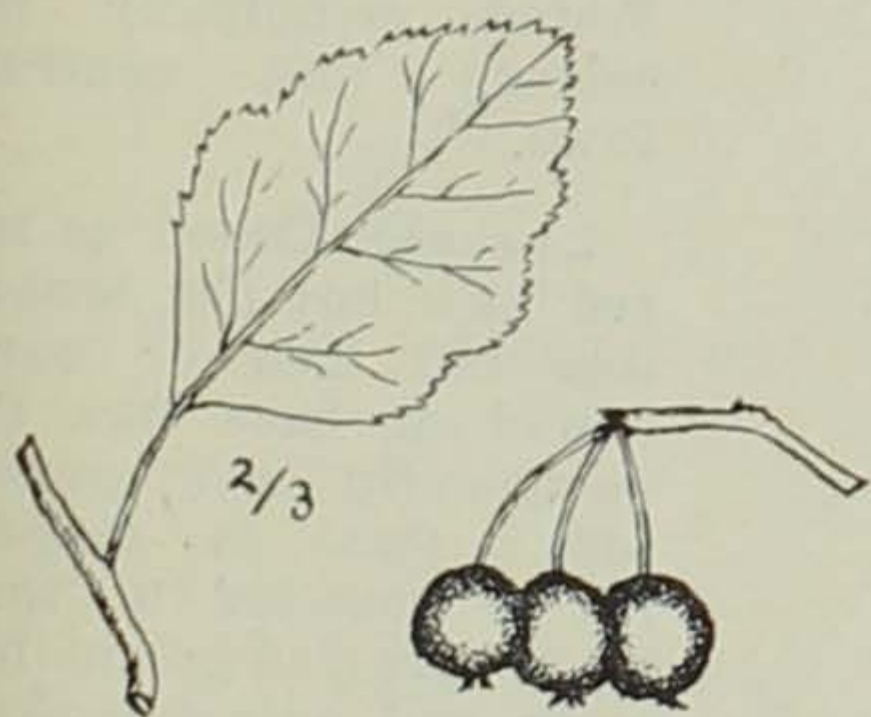
Hawthorn

Crataegus margaretta Ashe.

The Tree: A shorter tree than either dotted thorn or red-haw, with thin erect branching and a narrow open head.

Distribution: Ontario to central Michigan, central Iowa and parts of Missouri and central Tennessee. In Iowa, along banks of streams and open hillsides, found in the eastern part as far west as central Iowa.

Leaves: Smaller than both red-haw and dotted thorn. *Narrowed or tapered at the base like dotted thorn but broadened and slightly lobed in apex-half like red haw. Tips acute or round-pointed, and coarsely-toothed, base nearly smooth.*



Buds and Twigs: Twigs slender, at first *orange-green* and smooth, later bright

chestnut-brown and shiny. Older branches ashy or reddish-gray. Spines apt to be *slightly curved*, bright chestnut-brown and $3/4$ to $1\ 1/2$ in. long.

Fruit: In few-fruited, open, drooping clusters, *smaller than dotted thorn and red haw. Dull, dark red or rusty-orange* in color, with occasional dark dots. *Nutlets 2 or 3.*

Bark: See dotted thorn.

Wood: See dotted thorn.

Remarks: See dotted thorn.

Pear Haw (Hawthorn)

Crataegus tomentosa L.

The Tree: About the size of *C. margaretta* but with more horizontal branching and forming a wide, flat head.

Distribution: New York, thru central Michigan, southern Minnesota, Iowa, Missouri and eastern Kansas, and along the Appalachian Mountains. Found principally in eastern and central Iowa.



Leaves: Lobed as in red haw but not broad like red haw or narrowed at base like *C. margaretta* or *C. punctata*. Oval in shape, rarely rounded at the apex, grayish-green in color and velvety-hairy beneath.

Buds and Twigs: Twigs slender, covered with velvety hairs when young, turning dark orange and later ashy-

gray. Spines occasional, dark orange to ashy-gray, 1 to 1 1/2 in. long.

Fruit: In many-fruited, erect clusters, pear-shaped or elongated, dull orange-red. Hang on the tree thru the winter. Nutlets 2 or 3.

Bark: On older trunks of this tree, more furrowed than other *Crataegus* and from pale gray to dark brown.

Wood: See dotted thorn.

Remarks: See dotted thorn.

Scarlet Haw (Round-leaf Hawthorn)

Crataegus rotundifolia pubera Sarg., *C. coccinia* L.

The Tree: A small, spreading tree, seldom reaching a height of more than 20 ft. and a diameter of more than 10 in. Closely resembles the scarlet haw of the east now described as *C. coccinia*.

Distribution: From Newfoundland west thru Lake States to Minnesota and Iowa. In Iowa, found principally in the southern and eastern parts.

Leaves: Broadly oval or rounded, 1 to 4 in. long, somewhat tapered at base, sharply toothed, except at base. Leaves covered with fine hairs.

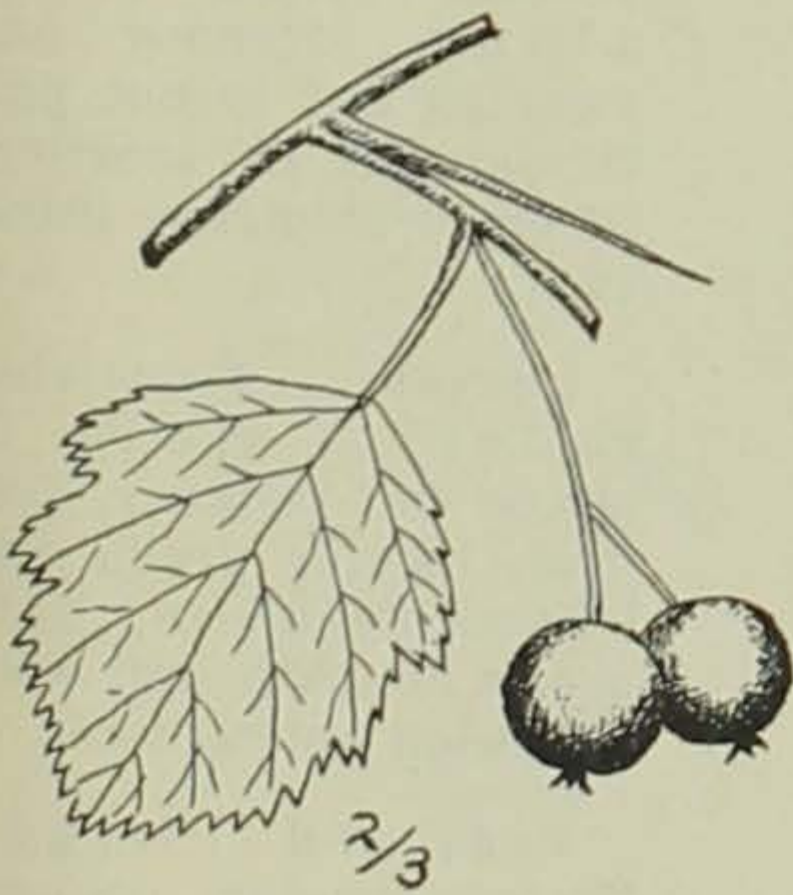
Buds and Twigs: Buds small, $\frac{1}{8}$ in. long, bluntly pointed. Twigs slender, stiff and armed with stiff, sharp-pointed spines $1\frac{1}{2}$ to 2 in. long.

Fruit: A round fruit. At first yellowish-green, later turning reddish-brown; about $\frac{1}{3}$ in. in diameter. *Fruit covered with fine hairs.*

Bark: Bark thin, gray to gray-brown and on larger trunks becoming shallow fissured and splitting into small scales.

Wood: Heavy, hard, strong and of high quality. Easily polished. Used in the manufacture of small articles such as canes, engraving blocks, rulers, etc.

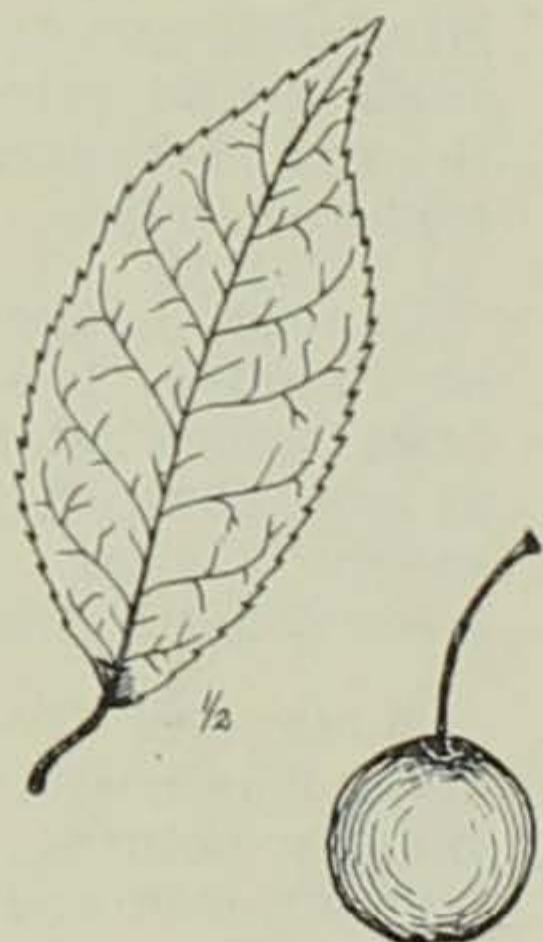
Remarks: This species has little value except for its beauty when in flower and fruit.



Wild Plum

Prunus americana Marsh.

The Tree: In Iowa, a small low-branching tree or large shrub, forming a dense, many-branched, rounded head.



Distribution: Eastern United States, as far west in the north as eastern Montana and Wyoming and thru the Rocky Mountains. Found thruout Iowa, prefers richer soils along streams and swamps but is not particular as to location. Often forms dense thickets.

Leaves: Somewhat similar to cherry in shape *but thinner, less firm*, lighter green and less shiny above; light green beneath and with wrinkled appearance.

Buds and Twigs: Twigs slender, orange-brown, turning *dark reddish-brown*, and marked with tiny-raised dots. Short side twigs often spiny.

Fruit: Fleshy, sweet, round to oval, about 1 in. in diameter, turning from green to red or yellowish-red.

Bark: On young stems, *orange-brown to dark red-brown, smooth and shiny*. On older stems, darker colored and breaking into *large, thin scales or plates*.

Wood: Heavy, hard, close-grained, strong. Heartwood a rich reddish-brown.

Remarks: This tree should be preserved in woodlands and along roadsides because of its beauty when flowering, its attraction for birds and its purplish-red coloring in winter. It could well be used on farmsteads for low windbreaks and generally in ornamental plantings.

Pin Cherry (Wild Red Cherry, Bird Cherry)

Prunus pennsylvanica L. fil.

The Tree: Only a small tree. In Iowa, hardly more than a tall shrub with slender branches and narrow, open head.

Distribution: Most of Canada and northeastern United States and along the Allegheny Mountains. Found over northeastern and central Iowa and less commonly in northwestern Iowa, usually on moist, fairly rich soil. Especially dense in clearings or burned-over areas.

Leaves: Rather narrow, sharp-pointed at the apex and slightly rounded at the base. Bright green and rather glossy above, paler green below.

Buds and Twigs: Twigs bright red, shiny and covered with pale raised spots, and with a bitter aromatic taste. Older twigs develop spur-like lateral branchlets.

Fruit: Small and cherry-like in clusters on long stems all originating at one point on the twig. Light red in color, translucent, $\frac{1}{4}$ in. in diameter.

Bark: On young stems, dull red marked with orange-colored spots and the under bark bright green. On older stems and trunks, dark red-brown and separated into broad papery scales.

Wood: Light, soft, close-grained. Because of its small size not a commercial tree.

Remarks: The fruit is edible and is often used domestically. This tree should be preserved because of its beauty in the spring and its attraction for bird life.



Choke Cherry

Prunus virginiana L.

The Tree: Gets to be larger than pin cherry, with frequently a crooked or inclined trunk and a narrow, open, slender-branched head.



Distribution: Most of Canada and the United States east of the Rocky Mountains. Found over most of Iowa, usually along slopes and along streams.

Leaves: Oval in shape, broader than pin cherry and broader at apex and narrower towards base. Thick and firm in texture; dark green and shiny above, pale and dull beneath.

Buds and Twigs: Twigs stout, bitter and aromatic, light brown to dark red-brown, marked with large oblong spots.

Fruit: Small, fleshy and cherry-like, borne on short stems in clusters similar to grapes. Nearly black when ripe; edible when ripe.

Bark: On young stems, smooth and gray. On older stems bark becomes dark gray, slightly roughened or scaly and mottled.

Wood: Heavy, hard, close-grained, not strong. Not a commercial tree because of its small size.

Remarks: A beautiful tree when in flower in the spring. Fruit used extensively for domestic purposes.

Wild Black Cherry (Rum Cherry)

Prunus serotina Ehrh.

The Tree: Gets to be a medium-large timber tree. In the open, develops a large, rounded, oblong crown.

Distribution: South-eastern Canada and the eastern half of the United States. Found thru Iowa scattered in woodlands, usually on rich moist soils. Less common in northwest Iowa.

Leaves: Larger than pin cherry but *narrow and pointed at both ends*. Dark green and very shiny above.

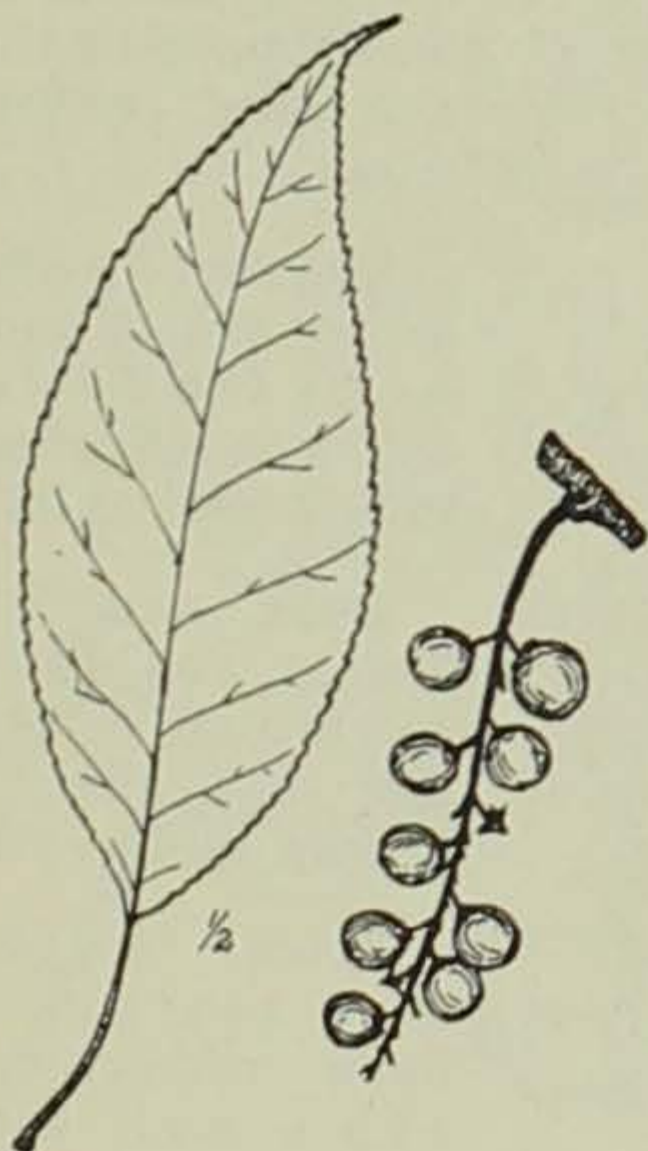
Buds and Twigs: Twigs *dark red-brown, sometimes grayish*, with distinctive taste of the cherries.

Fruit: In clusters similar to choke cherry but clusters usually larger. Dark purplish-red with purple flesh; edible when ripe.

Bark: On young stems, grayish-brown to red-brown with prominent white spots. On older trunks, *dark reddish-brown to almost black* and very rough, breaking *into upturned, stiff, thin scales*:

Wood: Hard, moderately light, strong, straight-grained, with a satiny surface and rich light brown color. This is a commercial tree, and the wood is prized for furniture, cabinet work and interior finish.

Remarks: The fruit is used for its juice. Hydrocyanic acid is extracted from the bark for medical purposes.



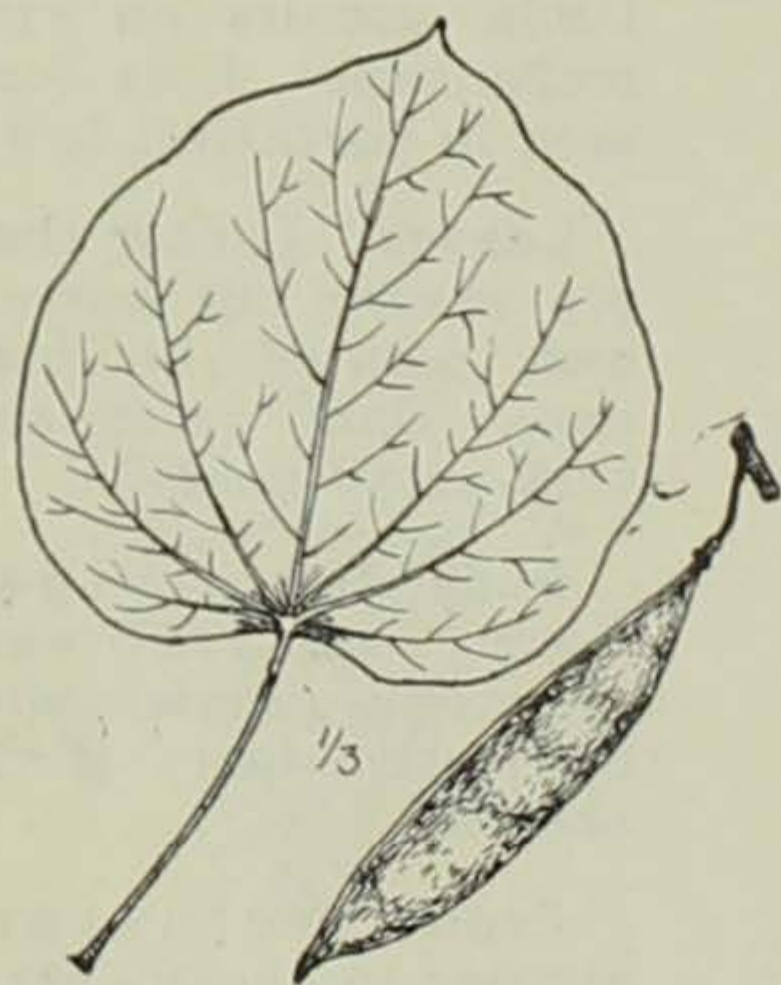
Red Bud (Judas Tree)

Cercis canadensis L.

The Tree: Only a small tree or large shrub in Iowa, with coarse foliage and spreading open head.

Distribution: Most of the eastern half of the United States. In Iowa, mostly scattered thru woodlands in the southern and eastern sections.

Leaves: Peculiarly large, broad and round-heart-shaped with smooth margins. Dark green, and thick.



Buds and Twigs: Twigs are dull red to red-brown, often grayish, not shiny. Buds plump and reddish.

Fruit: A pod similar to a pea pod, turning deep red-brown when ripe and containing very small, rounded, flattened, bean-like seeds.

Bark: On older stems and trunk, dark red-brown; roughened, breaking into rather fine narrow ridges.

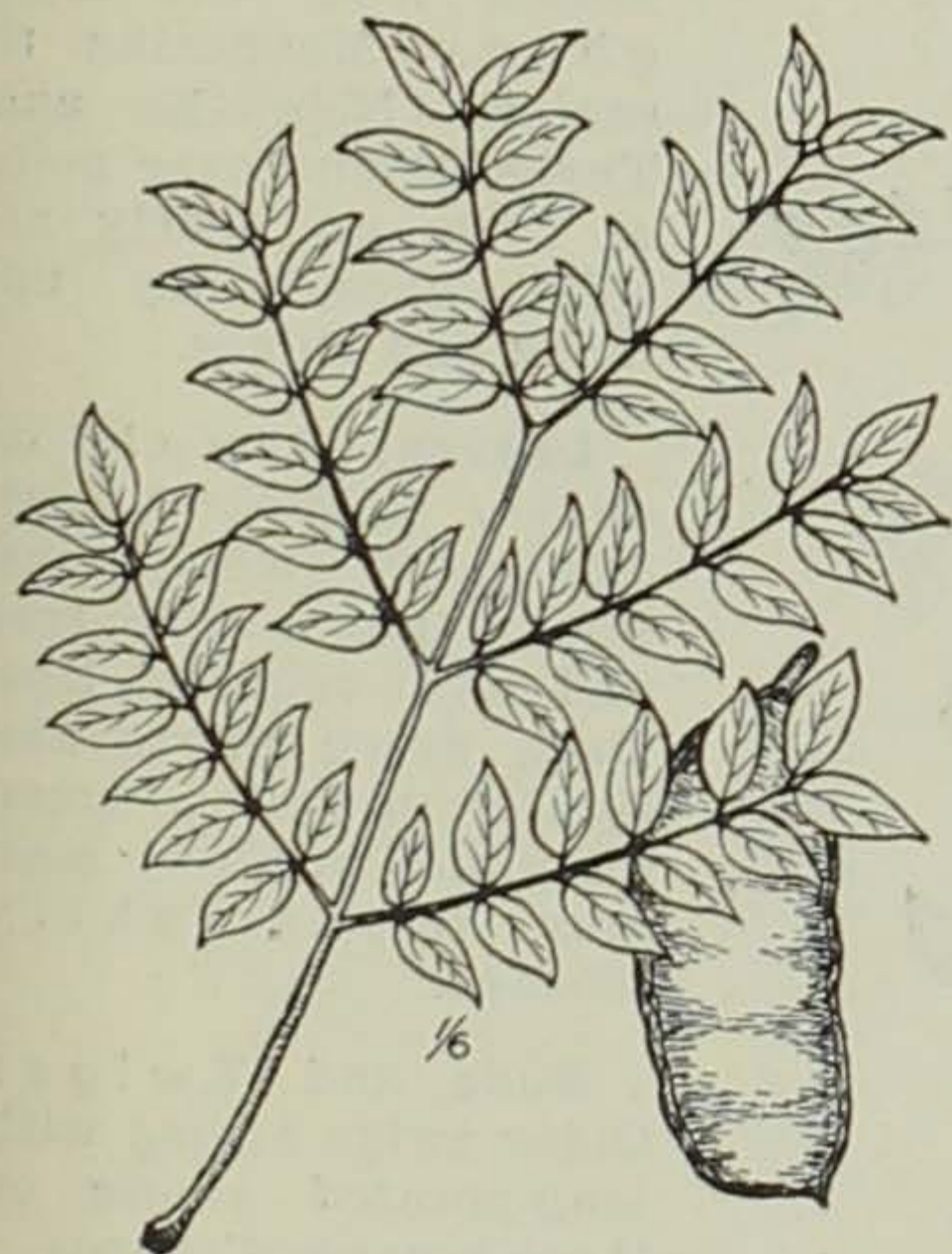
Wood: Heavy, hard, not strong and of little commercial value.

Remarks: A valuable ornamental because of the rose-pink flowers in the spring which appear all along the branches before the leaves of trees unfold and produce a mass of color. They should be preserved in our native woods.

Kentucky Coffee Tree (Coffee-Bean Tree)

Gymnocladus dioicus (L.) Koch.

The Tree: Gets to be medium-large with *coarse, heavy, upright branching* and open head.



Distribution: Eastern-central United States west to eastern Kansas and Nebraska. In Iowa, found scattered in most of the state; prefers the richer bottomlands.

Leaves: *Doubly-compound*, with almost branchlike central stem, *large, 1 to 3 feet long*. Leaflets dark green above and a yellow green beneath, 1 to 2½ in. long, apex sharp-pointed, margins wavy or almost smooth.

Buds and Twigs: Twigs *conspicuously thick, stocky, blunt* and marked by *unusually large leaf scars*.

Fruit: A *large, broad, stubby, very hard or horny, dark-brown pod*, bearing large, brown, flinty, round, somewhat flattened beans.

Bark: On trunk and branches, rough, gray, breaking into *very characteristic flat ridges or plates with upturned edges*.

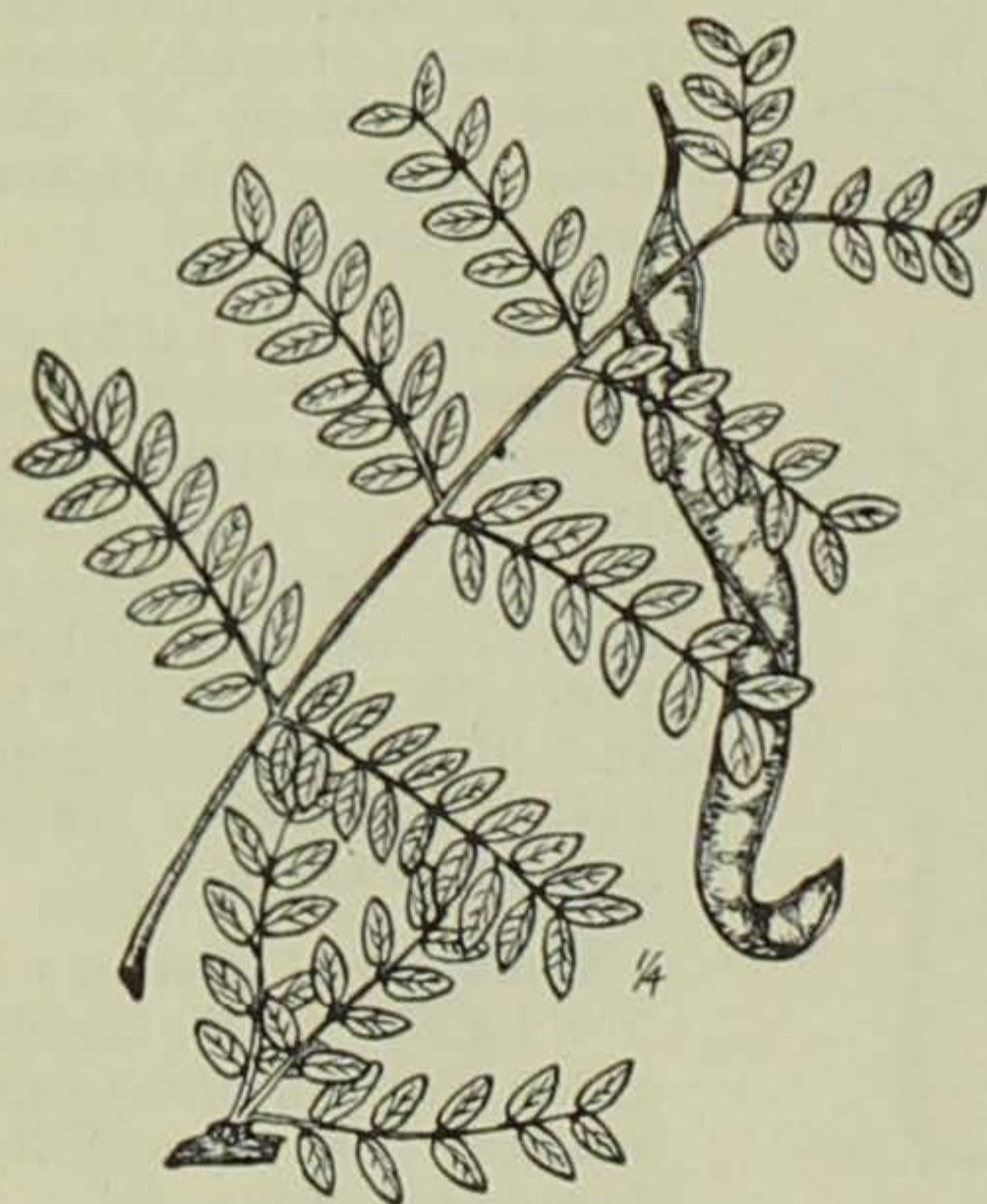
Wood: Heavy, strong, moderately hard, coarse-grained and durable. Used occasionally in cabinet work but mostly for posts, railroad ties and construction. The tree grows too scattered to have wide commercial importance.

Remarks: This tree is a drought resistant species and has a value for ornamental planting.

Honey Locust (Thorny Locust, Thorn Tree)

Gleditsia triacanthos L.

The Tree: Gets to be a large, spreading, round-topped tree with pleasing, graceful, lacy foliage.



Distribution: Eastern-central United States from the Allegheny Mountains to eastern Nebraska and Texas. Found over most of Iowa on nearly all soils, except dry uplands and ridges.

Leaves: *Singly or doubly compound, leaflets much smaller and finer than coffee-tree and with rounded tips. Dark green above and lighter or yellow green on under surface, margins very slightly toothed.*

Buds and Twigs: Older twigs armed with *long-pointed single or three-branched thorns.*

Fruit: *A large, long, dark brown, flexible, curled pod, with seeds rounded, flattened and bean-shaped.*

Bark and Trunk: On branches and smaller trunks, dark red-brown and fairly smooth. On larger trunks, it breaks into long, thin, flat, longitudinal ridges somewhat curled at the edges. *Trunk armed with many-branched, stiff, sharp-pointed thorns.* Occasionally a tree is almost free of thorns.

Wood: Hard, strong, coarse-grained and medium-durable. Used largely for posts, wheel hubs and some in construction.

Remarks: The tree is desirable as an ornamental and shade tree because of its pleasing foliage and flowers and its drought resistance. Varieties are being propagated without thorns.

Black Locust (Yellow Locust)

Robinia psuedacacia L.

The Tree: Gets to be a large beautiful tree with broad round head and fine, lacy foliage.

Distribution: Naturalized thruout the United States east of the Rocky Mountains. Found all over Iowa on almost any type of soil, except wet swampy land.

Leaves: Pinnately compound. *Leaves coarser than honey locust. Foliage light green in color.* Leaflets oval, 1 to 1½ in. long, rounded at both ends and with smooth margin.

Buds and Twigs: Twigs more crooked and angular than honey locust, with *single, unbranched, stiff spines, 1/4 to over 1 in. long.*

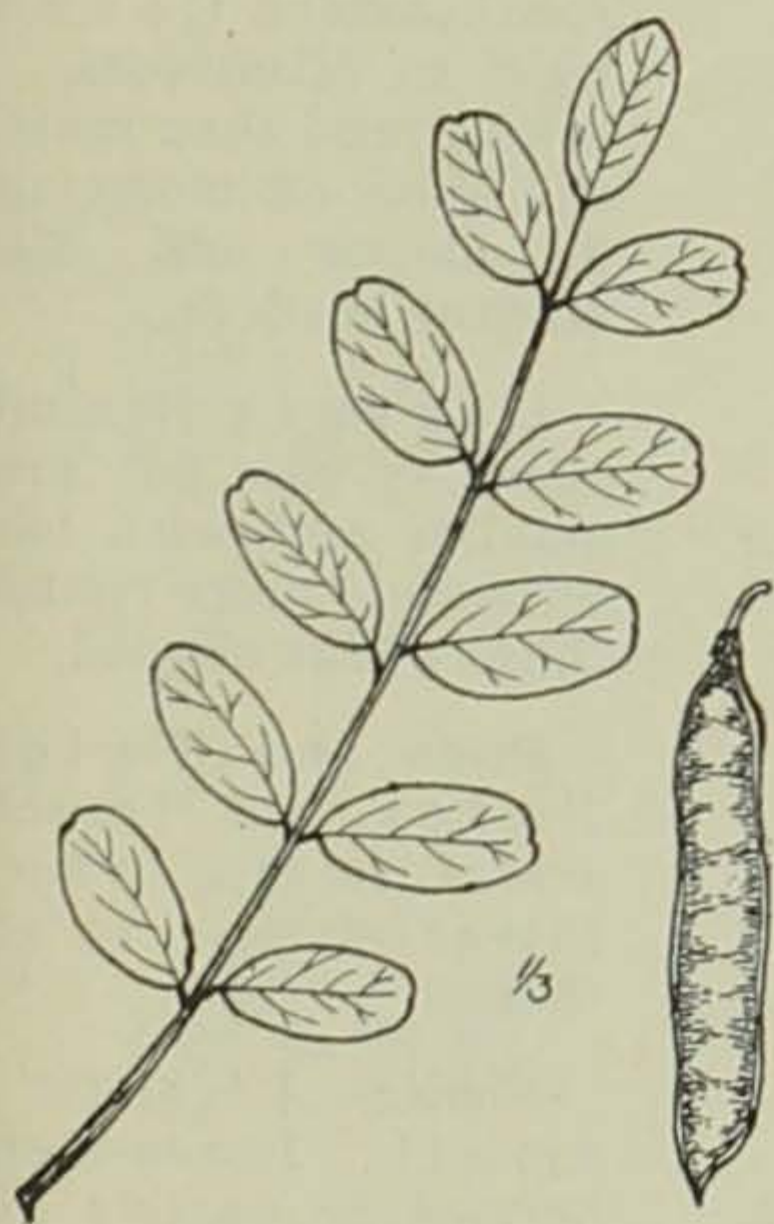
Fruit: A flexible pod, *but only 3 to 4 in. long,*

dark red-brown and containing small, dark, greenish to reddish-brown, bean-like seeds.

Bark: On small branches, *greenish to brown,* fairly smooth. On trunks, gray to gray-brown, and broken in a network of coarse, deep ridges.

Wood: Very heavy, hard, strong, close-grained and very durable. Used for posts, poles, tree-nails, insulator pins, fuel and occasionally for lumber.

Remarks: One of the best all-round trees for woodlots in Iowa, but attacks of boring insects make its use questionable. Excellent for rough, eroding land, growing rapidly in youth and spreading from the roots; produces a mass of vegetation even on poorest soils.



Prickly Ash (Hercules Club)

Xanthoxylum americanum Mill.

The Tree: Only a small tree, or, in Iowa, mostly shrub-like with open, rounded, branchy crown.

Distribution: Northeastern United States, southeastern Canada, west to Minnesota. In Iowa found thru most of the state on moist soils of slopes and along stream borders.

Leaves: Resemble those of ash but much smaller and with bases of leaflets more rounded than wedge-shaped.

Buds and Twigs: Twigs and branches armed with short thorns similar to rose thorns.

Fruit: A cluster of small, lemon-shaped berries or nutlets with a rough surface. When crushed or rubbed between the fingers give off a lemon odor.

Bark: Thin, gray, mostly smooth, with short thorns similar to the branches.

Wood: Light, soft, close-grained. Of little importance for any commercial or domestic use.

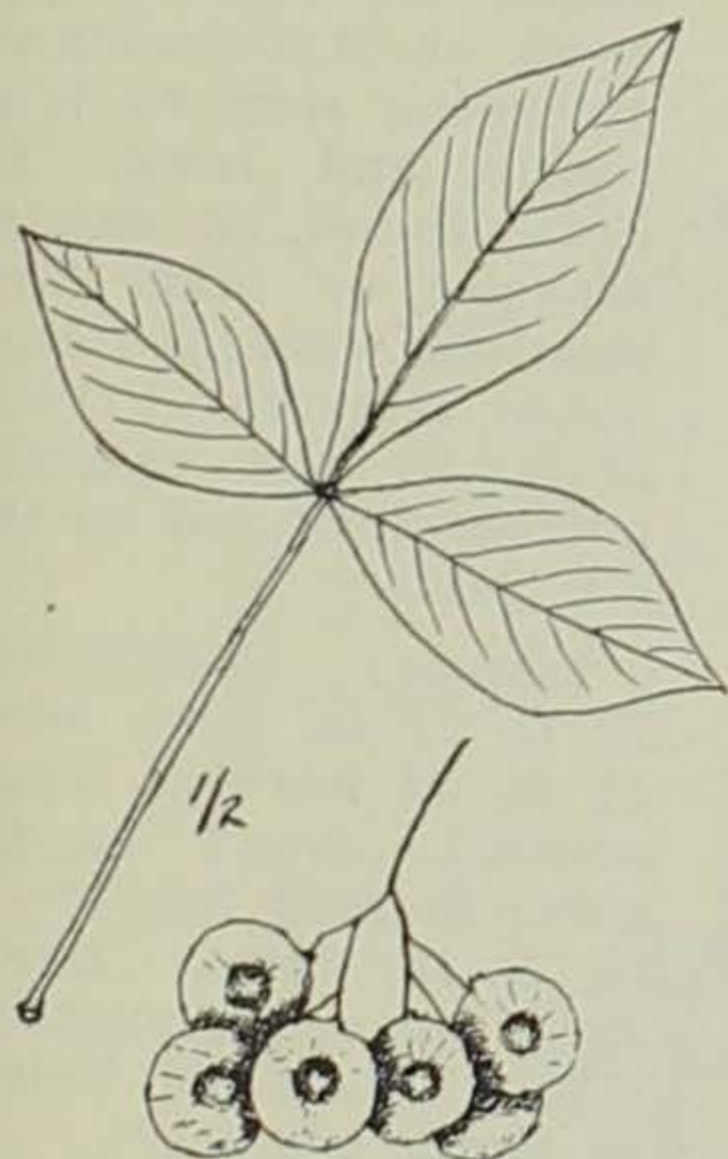
Remarks: In the south the bark of related species is supposed, by the negroes, to be a cure for toothache and rheumatism.



Hop Tree (Wafer-Ash)

Ptelea trifoliata L.

The Tree: A small, spreading tree, or, more often, a shrub.



Distribution: Found over practically all of eastern United States and as far west as Minnesota, Nebraska, Colorado and New Mexico. In Iowa, found in southeastern part and northward almost to Jackson County along Mississippi River.

Leaves: Compound, with typically three oval leaflets which are rather broadly-pointed at apex and wedge-shaped or narrowed toward base, especially the terminal leaflets. Leaflets dark shiny green on upper surface with small dots on under surface. Margins very finely toothed.

Buds and Twigs: Buds inconspicuous, twigs hairy at first but later becoming smooth and grayish-brown in color.

Fruit: Somewhat like elm seed but larger, with a membranous, circular wing, $\frac{1}{2}$ to 1 in. across, surrounding seed proper. In dense clusters, often remaining on branches until late in the winter.

Bark: On the branches and smaller trunks, grayish and smooth. On large stems it becomes somewhat broken or fissured, especially at the base of the tree.

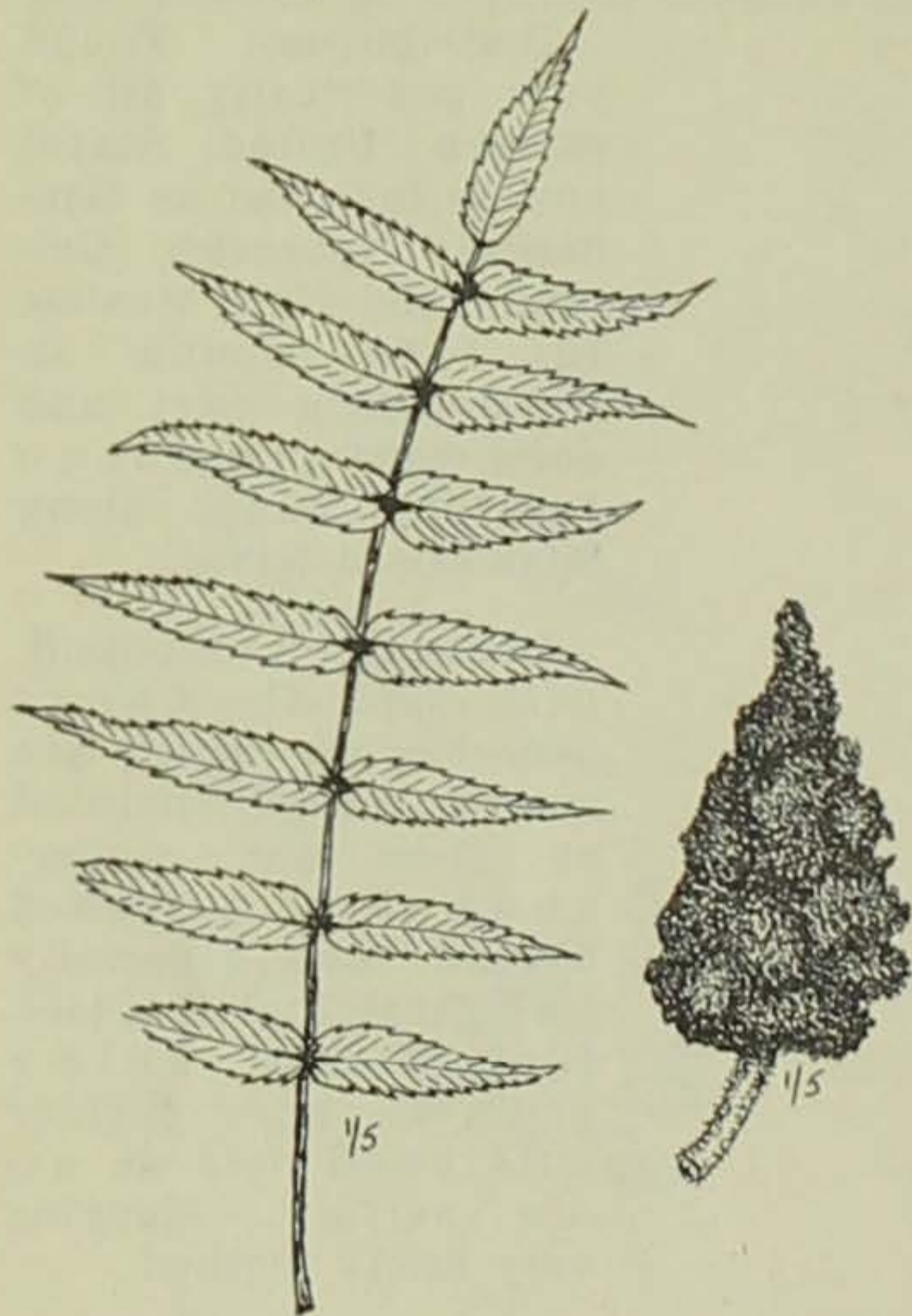
Wood: Very heavy. Fine grained, hard and strong. Not used commercially to any extent because of its small size.

Remarks: An extract is sometimes made from the bark.

Staghorn Sumach

Rhus hirta (L.) Sudw., *R. typhina* L.

The Tree: In Iowa, usually a large shrub but reaches tree size under good conditions.



Distribution: New England states and south to Mississippi west of Appalachians, extending west to Wisconsin and Iowa. In Iowa, found on sandy, gravelly or other dry locations where it forms dense thickets. Principally in the eastern, northeastern and northern parts.

Leaves: Compound, 12 to 24 in. long, with 11 to 31 narrow, long-pointed, round based, sharp-toothed leaflets 2 to 5 in. long. Dark green on upper surface and whitish and hairy on under surface.

Buds and Twigs: Buds small, conical and covered with hairs.

Twigs covered with heavy mat of velvety hairs. Exudes milky juice which turns black when cut. Pith very large, yellowish-brown.

Fruit: Erect red clusters, 5 to 8 in. long, made up of small round fruits covered with hairs and containing hard seeds.

Bark: On small stems, brown, rather smooth, except for small, raised, elongated dots. Large trunks become scaly.

Wood: Brittle, light, soft, yellowish streaked with green. Of little value in Iowa.

Remarks: Bark and leaves rich in tannin. A conspicuous shrub in the fall due to dark red clusters and highly colored red and green leaves. Used for decorative planting.

Note: The following sumacs commonly known as shrubs but sometimes listed as small trees are found in Iowa.

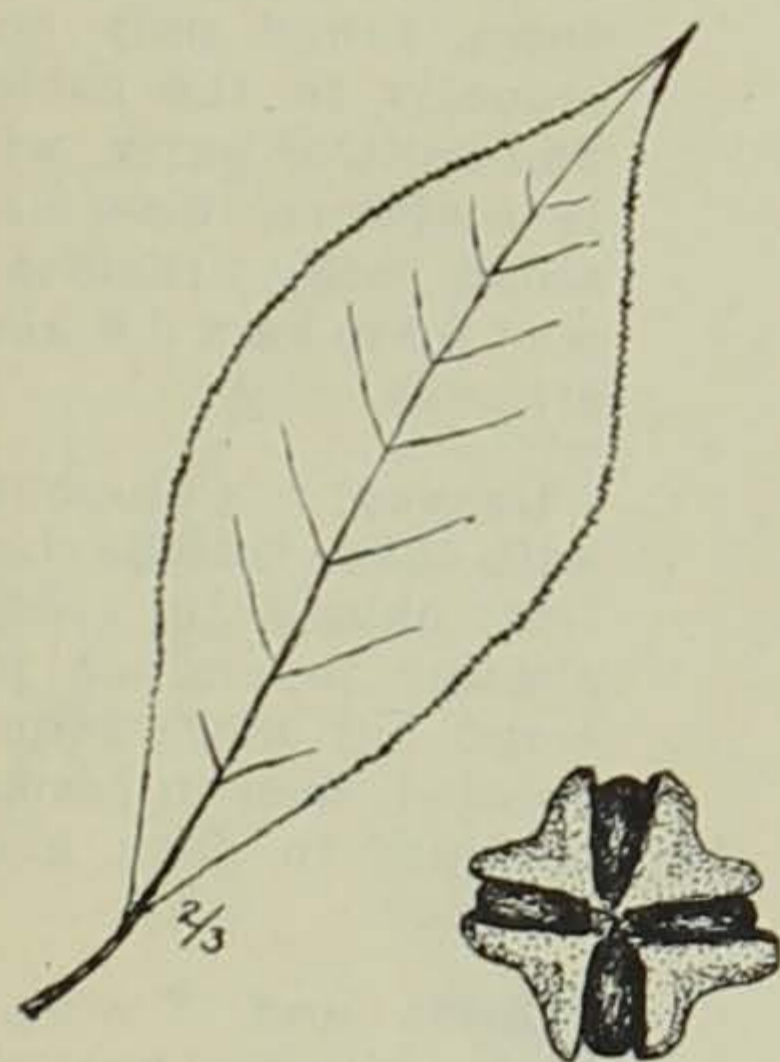
DWARF SUMAC: *Rhus Copallina* L. Leaves smaller, leaf-stems winged, fruit less hairy than Staghorn.

POISON SUMAC: *Rhus vernix* L. A shrub in Iowa. Leaflet margins smooth, fruit ivory white.

Wahoo (Burning Bush)

Euonymus atropurpureus Jacq.

The Tree: In Iowa, a shrub, but in other locations sometimes attains a height of 20 or 25 ft. When not crowded, develops a rather wide-spreading, flat crown.



Distribution: Found over most of the eastern part of the United States, except New England states, extends west to eastern Nebraska, Kansas and Texas. Found quite generally over Iowa in moist woodlands.

Leaves: Oval, sharp-pointed at apex and base, very finely notched, thin, dark green on upper surface, lighter green beneath and somewhat hairy.

Buds and Twigs: Twigs greenish to purplish-brown and angular. Buds opposite and sharp-pointed.

Fruit: The fruit is very characteristic, ripening about October. Usually open, drooping clusters of 4 lobed pods, each lobe splitting radially and exposing a brilliant scarlet fruit which makes the plant very conspicuous.

Bark: Smooth and mottled gray, on larger stems cracks or splits into very shallow ridges.

Wood: Heavy, hard and fairly strong but on account of its small size has practically no use from a commercial standpoint.

Remarks: This species, altho not abundant in Iowa, is one of the beautiful plants of our woodlands. The beautiful color of the fruit in the fall along with the tinted leaves make it very attractive and it should be carefully preserved. Often planted for decorative purposes.

Bladdernut

Staphylea trifolia L.

The Tree: Only a small tree or, in Iowa, mostly a large shrub, with an open irregular head.



Distribution: Eastern United States except the Atlantic coast states, west to Minnesota and Oklahoma. In Iowa, found only occasionally in the eastern and central parts, widely scattered, usually along rocky hillsides or bottomlands along streams.

Leaves: Compound, with three leaflets. Leaflets oblong in shape, similar to elm or iron wood but more bluntly pointed, firm in texture, medium to dark green in color.

Buds and Twigs: Twigs slender, branches striped with green.

Fruit: A nut born in a large, rounded, angular, 3-lobed, papery, sac-like pod about 1 in. in diameter. It is filled with air, except for the seed, from which the tree takes its name "bladder-nut."

Bark: Grayish to gray-brown and fairly smooth, often marked or mottled with large gray and dark blotches.

Wood: Because of its small size and sparse distribution, this species has very little commercial or domestic use.

Mountain Maple

Acer spicatum La M.

The Tree: This is the smallest of the tree maples, seldom reaching a height over 30 or 35 feet. Forms a broad, rounded, much divided crown. Usually under the shade of other trees.

Distribution: Southeastern Canada, the New England states, Appalachian region and Lake states extending west to northeastern Iowa, south as far as Dubuque. Does not thrive on any except rich, moist, loamy soils; apparently requires the protection of other trees.

Leaves: $2\frac{1}{2}$ to 4 in. long and nearly as broad, 3-lobed, with coarsely toothed margins and veins with sunken appearance. Upper surface, dark green and smooth; under surface, lighter green and covered with fine hairs.

Buds and Twigs:

Twigs sometimes slightly hairy at first, greenish in color, later becoming reddish-brown and smooth. Buds opposite the same as on other maples.

Fruit: Like other maples the fruit is made up of a pair of winged seeds about $\frac{3}{4}$ to 1 in. in length.

Bark: Usually smooth, gray and mottled. On old trees, slightly roughened and ridged.

Wood: On account of its small size the wood is used only for fuel.

Remarks: This species is quite common in the northeast but less common in the western part of its range. It is not an important commercial species.



Sugar Maple (Hard Maple, Rock Maple)

Acer saccharum Marsh.

The Tree: One of our finest and largest forest trees. Like black maple, in the open it produces a dense, round, compact crown.



Distribution: Southeastern Canada, eastern United States, west to eastern Dakota, Nebraska and Kansas. In Iowa, found scattered mostly in the southern and eastern parts, extending west to central Iowa. Found on moist soils of bottomlands or slopes.

Leaves: 3 to 5-lobed, not as deeply cut and less pointed than silver maple. Dark green above, pale green with silvery or gray cast below.

Buds and Twigs: Twigs smooth, gray to brown, opposite on stems.

Fruit: A pair of winged seeds with parallel or diverging wings about 1 in. long; ripen in autumn.

Bark: On branches, grayish and fairly smooth. On large branches and trunk, light to dark gray, narrowly ridged, with ridges sometimes turned up and becoming scale-like.

Wood: Heavy, hard, even-grained, easy to work, not durable. One of our most valuable woods, used extensively for flooring, furniture, woodenware, finish, etc. Birdseye grain is frequently found.

Remarks: Sugar maple is a good shade and street tree. It is the best species for production of maple sugar and syrup. It is slow in growth but strong and permanent.

Black Maple (Hard Maple)

Acer nigrum F. A. Michx.

The Tree: Very similar to sugar maple for which it is often mistaken. In the open, forms a beautiful, rounded, very dense, compact crown.

Distribution: Eastern United States, west to eastern Nebraska. Found over most of Iowa, usually on lowlands or moist slopes.

Leaves: With 3 to 5 lobes, sharp-pointed but *not so deeply divided* and less deeply cut than sugar maple. Above dull green, *below yellow-green with soft hairs, especially along the yellow veins, and with edges drooping.*

Buds and Twigs: Twigs stout, light to dark gray, smooth and opposite on the stems.

Fruit: Pairs of winged seeds similar to sugar maple; *ripens in autumn.* Smaller than soft maple.

Bark: On small branches, thin, smooth and grayish. On old trunks, divides into deep but narrow ridges, firm, hard, sometimes with edges curled, *dark gray to almost black.*

Wood: Almost identical with sugar maple; heavy, hard, strong, fine-grained, not durable. An important commercial wood for furniture, flooring, woodenware, finish, etc.

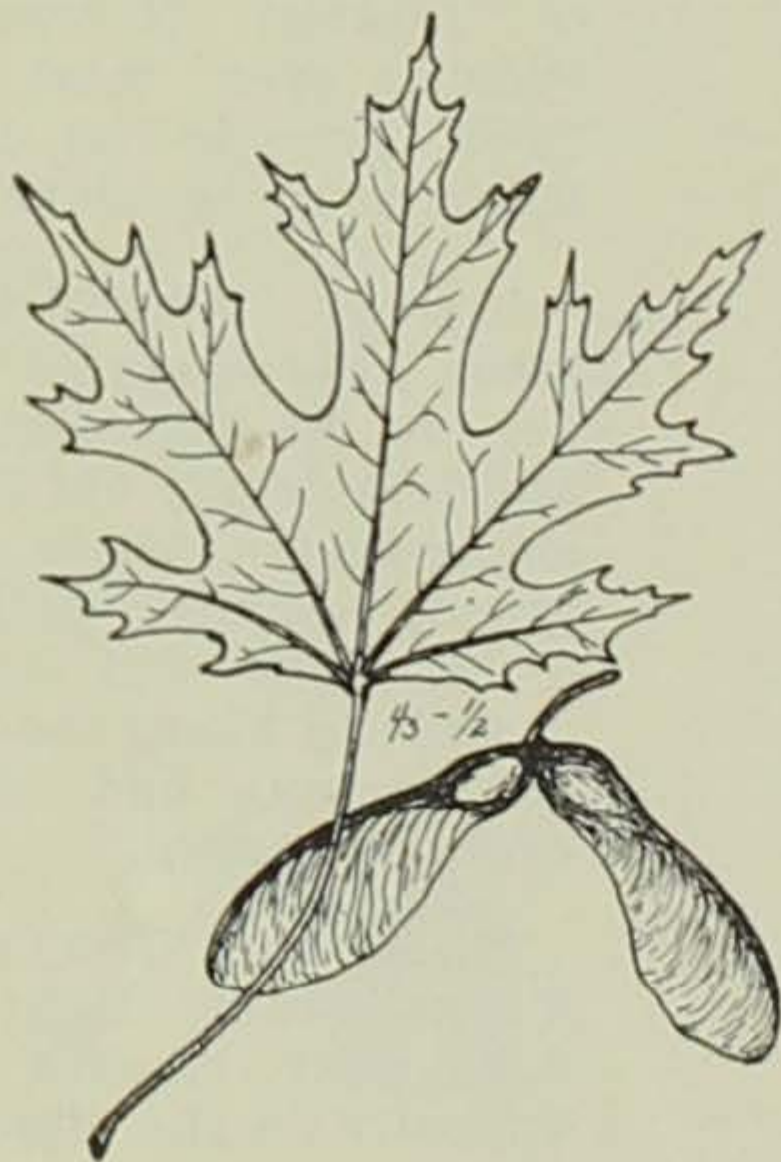
Remarks: Black maple is much more common in Iowa than true sugar maple. Many do not distinguish between these two. Used extensively for street and shade purposes. Its slow growth has limited its planting for lumber production.



Silver Maple (Soft Maple)

Acer saccharinum L.

The Tree: Grows to be a large, wide-spreading, rounded, many-branched tree, in the open. In the timber, long, straight and clear-stemmed.



Distribution: Eastern United States west to eastern Dakota, Nebraska and Kansas. Found over Iowa, usually on bottomlands adjoining streams.

Leaves: 3 to 7 in. long, 3 to 6 in. wide and 5-lobed. Lobes *sharp-pointed and deeply cut*. Above, light green; below, *pale to silvery-white*. Leaf stems long, slender, smooth and reddish. Leaves opposite.

Buds and Twigs: Twigs reddish-gray to reddish, smooth and somewhat shiny.

Fruit: Pairs of seeds similar to sugar maple except wings larger,

more spreading and larger seeds than other maples. A soft, meaty seed borne at one end of a membranous wing, ripening in late spring.

Bark: On branches, *smooth and grayish*, with a tinge of pink. On large branches and trunks, *light gray to dark gray*, rough, *scaly or shaggy*, due to many loose, longitudinal, scaly plates. Not deeply furrowed.

Wood: Moderately heavy, fairly strong, fine-grained, not durable. Less valuable than hard maple. Used extensively in Iowa for local construction; becoming important in box manufacture and for other commercial purposes.

Remarks: A quick-growing hardy tree for Iowa and good for temporary planting. Should not be used for yard or street planting because it is short lived.

Note: RED MAPLE, *Acer rubrum* L., a species similar to silver maple, is reported by some authorities for southeastern Iowa, but this species is not considered native to the state.

Box Elder (Ash-leaved Maple)

Acer negundo L.

The Tree: A fast-growing, short-stemmed, irregularly shaped, wide-spreading tree.

Distribution: Southern Canada and eastern United States west to Montana, Utah and Arizona. Found over all of Iowa. Prefers moist bottomlands, especially adjoining streams, but grows on almost any soil.

Leaves: Compound with 3 to 5 notched or lobed leaflets, dark green above, lighter green beneath.

Buds and Twigs: Twigs green to purplish, covered at first with bluish-white bloom, later becoming smooth and shiny. Branching is opposite.

Fruit: A winged seed very much like other maples, but occurring in

drooping clusters, maturing in the fall and remaining on the tree for several months.

Bark: Finely-ridged, much like green or white ash. In color, dark brown or almost black, with sometimes a greenish tinge. Not creamy-colored underneath and not scaly.

Wood: Light, soft, easily worked, hard to split, not durable, often streaked with pink. Not commonly a commercial tree.

Remarks: Has been widely planted because of rapid growth and hardiness. Should be considered only temporary, or only for very poor dry soils. It becomes a nuisance because of the box elder bug.

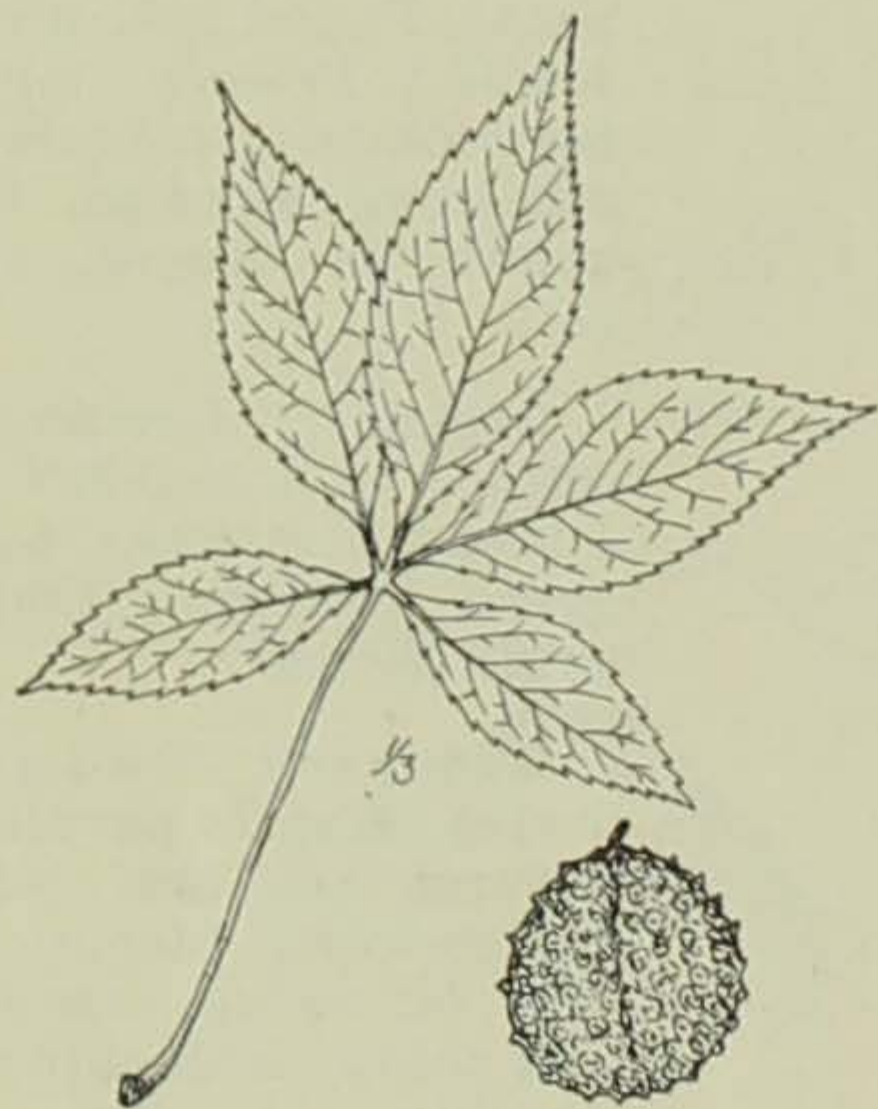


Buckeye (Ohio Buckeye, Horse Chestnut)

Aesculus glabra Willd.

The Tree: Medium to large with usually a short trunk, low branching and very compact, rounded or somewhat flattened head.

Distribution: Central part of eastern United States from Appalachian Mountains west to eastern Nebraska, Kansas and Oklahoma. In Iowa, found in scattered localities in the southeastern and central parts.



Leaves: *Palmately compound* like virginia creeper. *Leaflets much narrowed toward the base*, light green and smooth above, yellowish-green below and hairy along veins. When crushed, the leaves have a bad odor.

Buds and Twigs: Twigs upright, *very stout*, straight and coarse; when mature, reddish-brown to ashy-

gray. Buds large, sharp-pointed with ridged scales.

Fruit: *A large, rounded, fleshy, tan, husk, dividing into 2 or 3 parts, covered on the outer surface with prickles or warts and inclosing a round, chestnut-brown, shiny nut with a prominent spot or eye on one end.*

Bark: Ashy-gray to gray-brown, breaking into irregular, shallow plates covered with smaller, roughened scales.

Wood: Light, soft, not strong, coarse-grained, not durable. Used for wooden ware, artificial limbs, paper pulp and occasionally for lumber.

Remarks: There are a number of varieties of buckeye and some of them are used for ornamental purposes. The flowers are very prominent and beautiful.

Basswood (Linden, Linn, Bass Tree)

Tilia glabra Vent., *T. americana* L.

The Tree: Gets to be a large, wide-spreading, round-topped tree. In the woods, tall, with a full, dense head.

Distribution: Southeastern Canada and most of the eastern half of the United States. Found over Iowa, usually on moist rich soils of stream bottomlands or along moist slopes.

Leaves: Large, rounded or heart-shaped, with *toothed margins* and *with one side of base less rounded than the other*. Dull green above, and lighter green beneath. Vary in size from small to often 8 in. or more across.

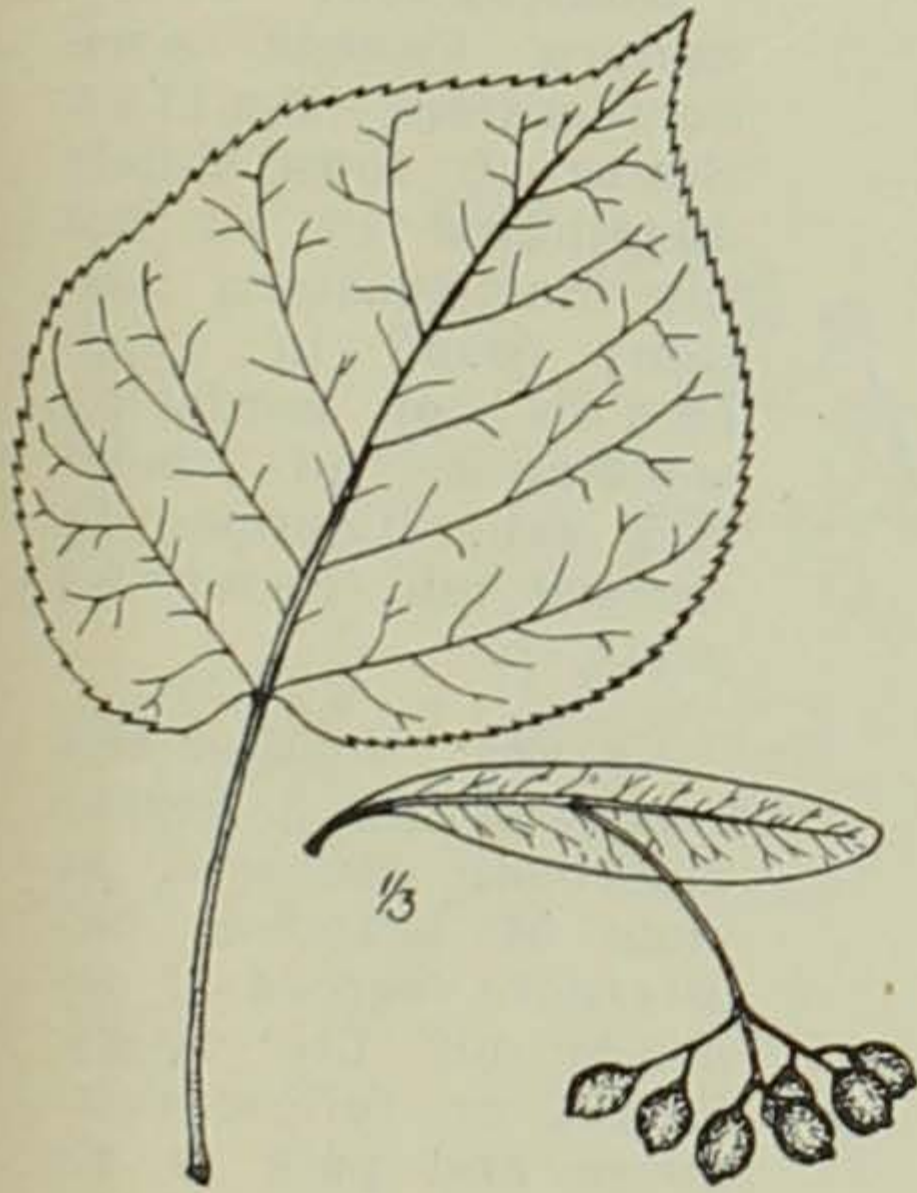
Buds and Twigs: Twigs smooth, light brown or gray. *Winter buds prominent, plump, bluntly pointed and dark red.*

Fruit: *No other tree has a fruit like the basswood.* A very open cluster of *hard nutlets borne on a stem which comes from the center of a narrow-elliptical, leaf-like wing.*

Bark: On branches and young trunks, light or silvery-gray, smooth or finely ridged. On older trunks, breaks into long, medium-narrow ridges and furrows, dark gray to almost black on surface. *Beneath surface, orange-yellow or orange-brown.* Inner bark very tough.

Wood: Light, soft, tough, long-fibered, nearly white, not durable. Highly prized for pulp, woodenware, excelsior, beekeepers' supplies, etc.

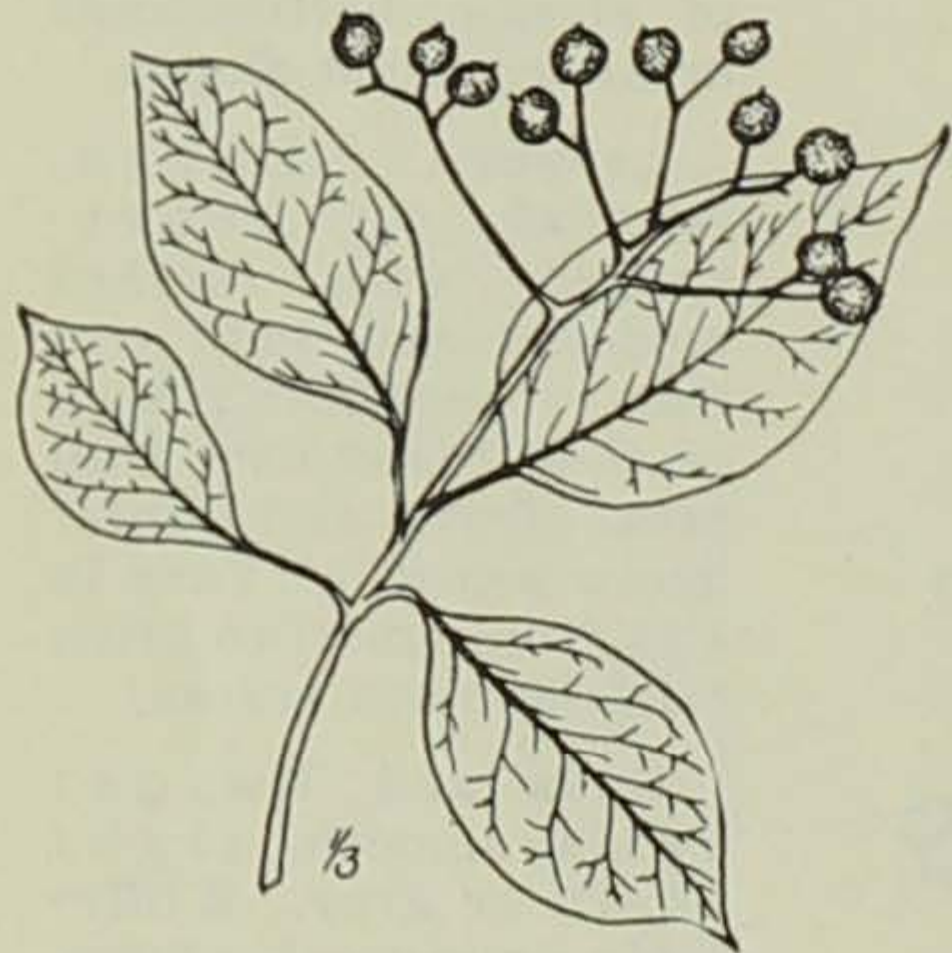
Remarks: The flowers are inconspicuous but furnish nectar for some of the finest honey; often planted for this purpose. Varieties of the European linden are considered good ornamentals.



Alternate-Leaved Dogwood (Blue Dogwood, Pigeonberry, Green Osier, Pagoda Dogwood)

Cornus alternifolia L.

The Tree: Usually a large shrub or only a small tree in Iowa, with flat-topped, open head and with branches in distinct whorls.



Distribution: Southeastern Canada and northeastern United States. In Iowa, widely distributed in all but the northwestern section; found in woodlands, or bordering woodlands, in moist rich soil. Common in eastern and central parts.

Leaves: Smaller and narrower than flowering dogwood, clustered at ends of branches but *alternate instead of opposite* on the twigs. Bright or yellow-green above and pale or almost white below. Margins smooth and sometimes wavy.

Buds and Twigs: Twigs reddish-green at first, later becoming dark green with gray or white stripes.

Fruit: *Flowers small and cream-colored, in dense flat clusters and not surrounded by a conspicuous whorl of bracts.* Fruit a loose, open cluster of *purplish or blue-black berries.*

Bark: On young stems, orange or yellow-green, turning darker and becoming red-brown or dark brown; finely fissured on older stems.

Wood: Heavy, hard and close-grained, but without as wide a use as the flowering dogwood.

Remarks: While not as ornamental as flowering dogwood, this tree is used considerably in ornamental planting. It should be preserved in our woodlands.

Roughleaf Dogwood

Cornus asperifolia Michx.

The Tree: Like the other dogwoods, this tree is a large shrub in Iowa, with an irregular open head. In the south may reach a height of 40 feet.



Distribution: Eastern United States west to Nebraska, Kansas and Texas. Over most of Iowa on a variety of soils; not so exacting in soil and moisture requirements as the other dogwoods.

Leaves: Dark green, roughened above, pale or gray below, *firm in texture and harsh or rasping to the touch*. Leaves usually narrower than other dogwoods, margins wavy and leaf-stem slender and covered with rough hairs.

Buds and Twigs: Twigs yellowish at first but becoming *reddish or brownish* and later gray. Buds small and opposite on branches.

Fruit: Flowers, cream-colored and much like alternate-leaved dogwood. Fruit, open clusters of round white berries $\frac{1}{4}$ in. in diameter.

Bark: On older stems, gray-brown or gray and very finely fissured or covered with fine scales.

Wood: Hard, heavy, strong, fine-grained. Used in turnery and small articles.

Remarks: Because of the bright red fruiting stems and the white berries this species is very attractive in the winter and should be protected.

Note: FLOWERING DOGWOOD, *Cornus florida*, L., a beautiful dogwood, is native to states east of Iowa but not to this state.

Other shrub species of dogwood found in the state are: Red-stemmed dogwood (*C. stolonifera* Michx.); Kinnikinnick (*C. amomum* Mill.); dogwood (*C. paniculata* L' Her.); dogwood (*C. circinata* L' Her.)

Persimmon

Diospyros virginiana L.

The Tree: Mostly a small, round-topped tree, with short trunk and somewhat crooked or zigzagged branching.

Distribution: Southeastern United States, as far north as southern Pennsylvania and southeastern Iowa. Prefers sandy, well-drained soils and open woods or pastures.

Leaves: Large, oval, pointed at the tip. Margins smooth. Dark green and glossy above and paler and often hairy below. The veins are prominent.

Buds and Twigs: Twigs have a conspicuously large pith cavity. Light brown or ashy-gray in color, with leaf scars raised and prominent.

Fruit: A round, fleshy, dark-orange fruit, 1 to 1½ in. in diameter. It contains several flat, hard, fairly large seeds. It is sweet and delicious when thoroly ripe but very astringent when green. Usually not edible before frost.

Bark: On the trunk, dark brown or nearly black and distinctive because it breaks into *thick, square blocks or plates* which are *scaly on the surface*. Under bark creamy-tan.

Wood: Very heavy, close-grained, very strong and hard. It is valuable for shuttles, heads of golf clubs, shoe lasts and other special wooden ware articles.

Remarks: The persimmon has been cultivated to a considerable extent because of its fruit.



Blue Ash

Fraxinus quadrangulata Michx.

The Tree: Found very sparingly in Iowa, where it is only of botanical importance. In the east, on good soils, it reaches 100 ft in height.

Distribution: Found only occasionally from Ohio to Iowa and from Michigan to Arkansas. Distribution in Iowa very rare. Reported near Keokuk.



Leaves: Compound, with 7 to 9 short-stemmed, ovate, sharp-pointed leaflets. Above smooth yellow-green to dark green, paler below, sometimes with tufts of fine hairs in the axils of the veins.

Buds and Twigs: Buds blunt, and dull rusty-brown. *Twigs* characteristically four-ridged or angular and ashy-gray.

Fruit: Similar to other ashes but stouter and with *wings extending along sides of seed proper*. Wing notched at the tip.

Bark and Trunk: Bark is characteristic. On older trunks, scaly, becoming *somewhat shaggy with age*, similar to shag-bark hickory.

Wood: Heavy, hard, and strong, being suitable for the same purposes as the other ashes. Of no commercial importance in Iowa, due to its scarcity.

Remarks: The tree is called "blue ash" because a blue dye is made by mashing the inner bark in water.

Black Ash

Fraxinus nigra Marsh., *F. sambucifolia* La M.

The Tree: In the open, develops a rounded or oval crown and attains a height of 70 to 90 ft.

Distribution: Southeastern Canada and northeastern United States, south to Kentucky, west to Missouri, Iowa and North Dakota. Thruout Iowa, found only close to banks of streams or bordering swamps. Less common in the west and northwestern parts.

Leaves: Compound, large, with 7 to 11 leaflets. *Leaflets not stalked*, dark green above, paler green below. *Midribs and veins prominent*.

Buds and Twigs: Twigs *large, stubby*, ashy-gray with *prominent spots*. Buds rounded, rusty-brown to blackish and prominent.



Fruit: Similar to other ashes but *broader*. *Wings extending along sides of seed proper* and with distinct notch at the tip. Seed 1 to 1½ in. long.

Bark: On older stems is less distinctly furrowed than green, white, or red ash. Surface rather scaly. Under bark creamy-tan.

Wood: Not as heavy as green or white ash, strong, coarse-grained. Used extensively for interior finish and furniture because of its showy grain, and for barrel hoops because it splits easily between the annual rings.

Remarks: Adapted to wet soils but otherwise not as desirable in Iowa as green or white ash.

White Ash

Fraxinus americana L.

The Tree: A medium-sized tree in Iowa. Tall and slender in the timber and, in the open, develops an oblong crown with drooping branches.



Distribution: Southeastern Canada and eastern United States west to eastern Dakota, Kansas and Oklahoma. Found mostly over eastern, central and southern parts of Iowa, scattered on moist slopes and rich bottomlands.

Leaves: Compound, 5 to 11 sharp-pointed broadly-oval leaflets. Leaflets dark green above, whitish underneath. Stem rather crooked and blade of terminal leaflet tapering down along petiole as in most ashes.

Buds and Twigs: Twigs grayish-brown. Buds opposite, rounded, dull rusty-brown.

Fruit: The seeds of all the ashes are characteristically paddle-shaped and hang on the trees into the winter. In white ash, 1 to 2 in. long, rather slender. Wing does not extend around seed proper.

Bark: On smaller branches, rather smooth, gray to grayish-brown. On older trunks, not deeply furrowed, with fine irregular ridges, not scaly. Under-bark creamy-tan.

Wood: Heavy, hard, strong and only medium in durability. Used extensively for fuel, in implements, eveners and for many purposes where strength is required.

Remarks: One of our valuable timber trees but not as abundant as the green ash in Iowa. Not as desirable for ornamental planting as green ash.

Red Ash

Fraxinus pennsylvanica Marsh.

The Tree: Similar to white and green ash. In the open, symmetrical with a compact, rounded to oval crown.

Distribution: Atlantic to Central States, west to southern Minnesota, South Dakota, Nebraska and Kansas. Found generally over Iowa, especially in the northern part, on moist loamy soils.



Leaves: Compound, with 7 to 9 short-stalked leaflets; upper surface bright green; *silky hairs on the under side, especially along the veins and on the leaf stem.*

Buds and Twigs: Twigs grayish to gray-brown, *usually velvety.* Buds broad, blunt and dull rusty-brown.

Fruit: 1 to 2 in. long, with a slender tapering seed proper and seed wing narrower than the black ash.

Bark: On old stems rather finely furrowed and very similar to green and white ashes. Under bark creamy-tan.

Wood: Heavy, hard, strong, moderately durable and somewhat less valuable than white ash.

Remarks: Red ash so closely resembles some of the others that it is somewhat difficult to distinguish. It is less hardy on dry soils and, here, green or white ash should be favored.

Green Ash

Fraxinus pennsylvanica lanceolata (Borkh.) Sarg.

The Tree: Very closely resembles red ash and white ash.

Distribution: The most widely distributed of the ashes. Southern Canada and eastern United States, west to Montana, Idaho, Utah and Arizona. Found in all of Iowa on a variety of soils but prefers moist bottomlands.

Leaves: 5 to 9 leaflets. *Upper and lower surface, smooth, bright green, not whitish underneath* like the white ash or velvety beneath like the red ash. Leaf stems not hairy or velvety.

Buds and Twigs: Buds opposite, broad, stubby, hairy, rusty-brown. Twigs greenish-gray or brown, smooth, with light spots.

Fruit: 1 to 2 inches long, narrow, tapering and similar to red ash.

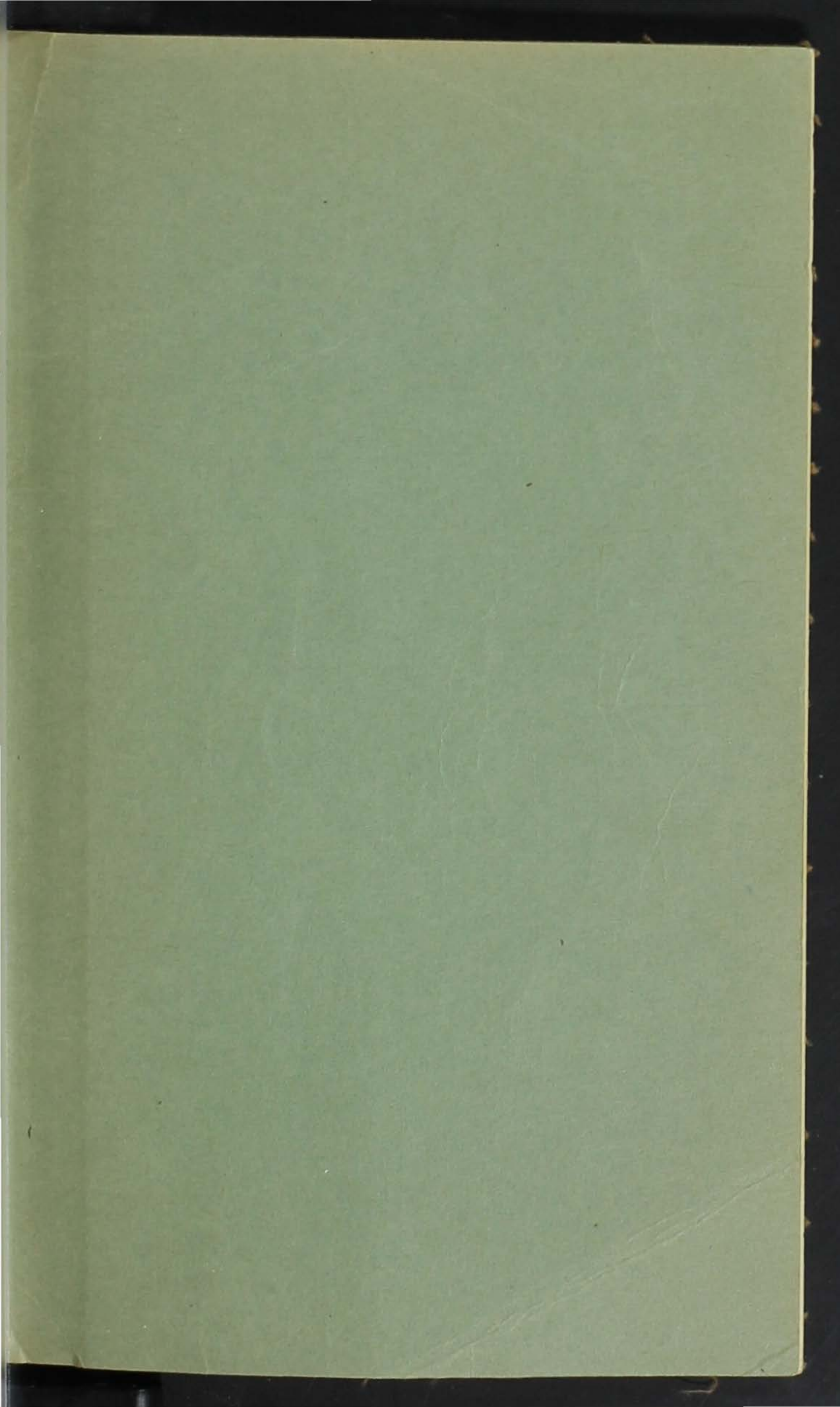
Bark: Finely furrowed, dark gray and very similar to white ash. Under-bark creamy-tan.

Wood: Heavy, hard, strong and moderately durable. Used for agricultural implements, tool handles, furniture and other uses requiring great strength.

Remarks: This tree is often considered only a variety of red ash. It is more drought-resistant, however, and its strength, fuel value and general utility make it a practical tree for farm planting. Also makes a good shade tree.



Cooperative Extension Work in Agriculture and Mechanic Arts and the
United States Department of Agriculture cooperating. Extension Service,
R. K. Bliss, Director, Ames, Iowa. Distributed in furtherance of the Acts
of Congress of May 8 and June 30, 1914.



NOV 26 '38

JUL 25 '44

FEB 11 '45

FEB -4 '46

MAR 23 '47

APR 23 '49

JUL 27 '50

JUL -3 '50

APR -6 '51

JAN 22 '53

OCT 26 '53

NOV 12 '56
JAN -9 '57

MAR -4 '57

FEB 12 '59

AUG 15 '46

