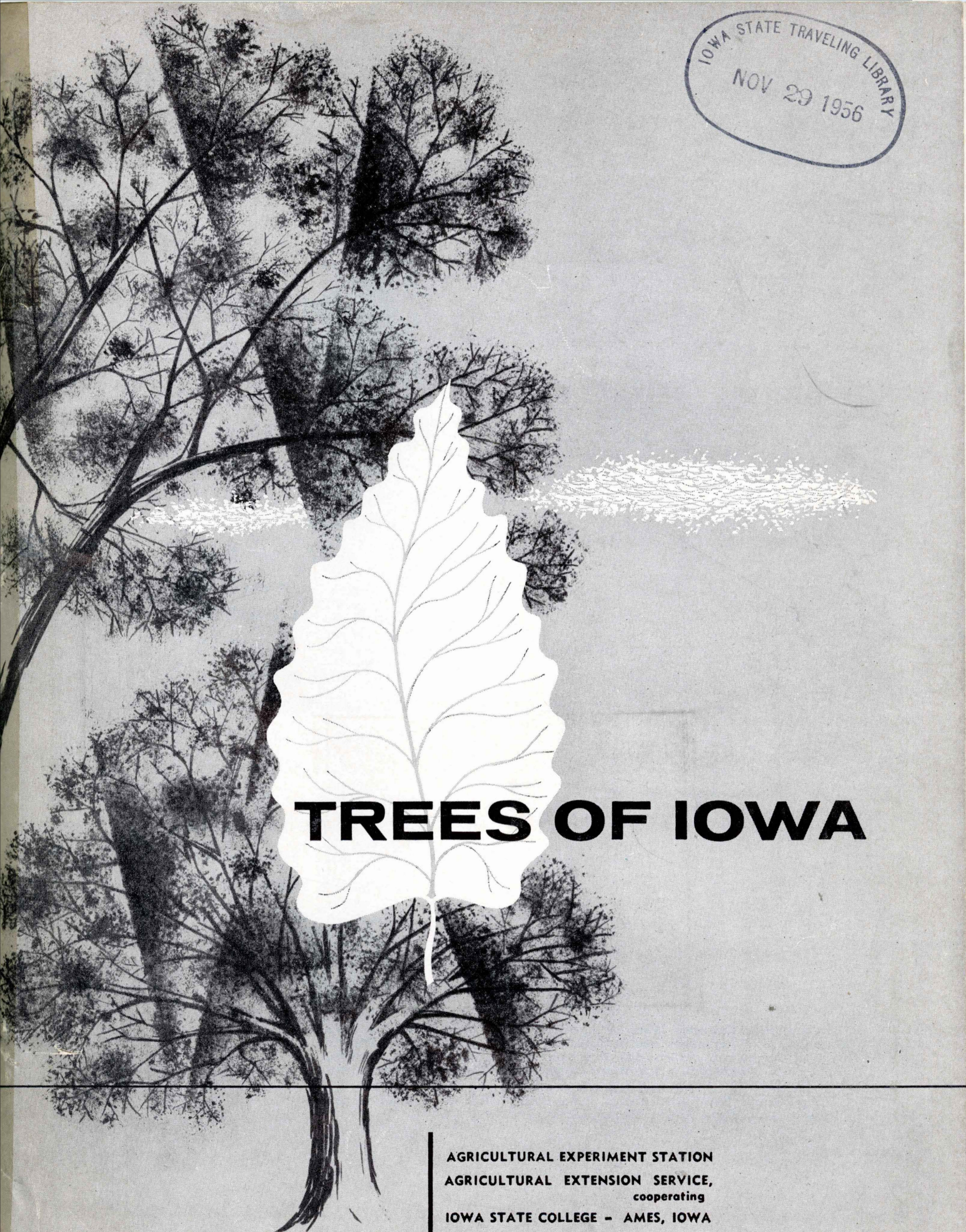
Iowa State College of Agriculture and Mechanic Arts, Ames, Trees of Iowa



TREES OF IOWA

AGRICULTURAL EXPERIMENT STATION
AGRICULTURAL EXTENSION SERVICE,
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Agricultural Experiment Station, Iowa State College of Agriculture and Mechanic Arts, Floyd Andre, director, Ames, Iowa.

TREES OF IOWA

By RICHARD B. CAMPBELL

TREES AND MAN

Trees, of all nature's creations, are probably our closest friends. They enter every aspect of our lives and contribute to most of our necessities and luxuries.

Economically, they are indispensable. Without them our whole way of life would be greatly changed. That is why an acquaintanceship with the trees of our state goes beyond a pleasant experience to an obligation. To be able to recognize them by name and to know something of the many uses to which they are put is a worthy achievement.

Man's dependence on wood is as old as man himself. Since man first learned that a tree branch picked up from the forest floor made it easier to obtain a better dinner, win arguments with a neighbor or protect himself against attack in the deep forests, he has used wood throughout his life. When he discovered that a stone tied to the end of this stick made a more effective weapon, he took a long stride toward the solution of such problems as food, shelter, clothing and defense.

Wood, in the form of charcoal, enabled man to smelt ores and gain mastery over the metals which gave their names to the Bronze Age and the Iron Age.

It afforded man his first means of transportation. From the logs he used as rollers on which he transported stones to build his temples, man learned the principle of the wheel. Wooden rafts, boats and ships enabled him to span bodies of water.

Without an abundance of wood, with which this country was gifted when the first settlers arrived, America's settlement probably would have been delayed for centuries. With logs from the abundant supply of trees, the settlers built their first homes and forts for protection, and fashioned nearly all of their home furnishings and the tools with which they made a living from the land. From wood they built their canoes, river boats and prairie schooners with which they pushed ever westward in the settlement of the country.

Wood is still one of our most versatile natural resources and gives us more benefits than almost any other. If trees should vanish, so would tables, chairs, floors, beds, newspapers, books, boxes, electric and telephone lines, railroads, and thousands of other necessities, along with millions of homes. Rain would muddy the waters and fill our great reservoirs with silt and debris, ruin our hydro-electric plants and irrigation systems and bring floods the like of which we have never seen. Many forms of wildlife, including birds, animals and fish would disappear.

TREES AND IOWA

The first settlers to arrive in Iowa found the trees in the state mostly in the eastern part and extending into the state along the main streams and water courses. On the bottomlands they found such trees as elm, ash, soft maple, cottonwood, walnut and hackberry. On the ridges and slopes they found the oaks and hickories, with hard maple and basswood on the more protected slopes.

These trees played an important part in the development of the state. They furnished protection, fuel and material for homes for the early settlers. They furnished material for boats and barges which were the principal means of transportation at that time. As roads were cut through the timber from settlement to settlement, the trees furnished material for making wagons and buggies. The first railroads

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FOREWORD

The purpose of this publication is to furnish general knowledge concerning the native trees of Iowa and information which will enable those without technical training to identify trees found in the state.

The publication is intended primarily for use by school children, Boy Scouts, Campfire Girls, 4-H club members and others interested in becoming more familiar with the many trees we have. It is written in the hope that it will create an interest in trees and that it will enable both child and adult to appreciate more fully the beauty and value which our trees possess. Appreciation of the beauty and value of trees begins with the ability to identify them.

An effort has been made to keep the information nontechnical and to make the identification of our trees as simple as possible. It is felt that in this way the publication will find its widest usefulness.

In most instances only trees have been included. Bushes and shrubs have not been considered.

ACKNOWLEDGMENT

Acknowledgment is made to the United States Forest Service, United States Department of Agriculture, for the use of drawings and pictures; and to G. B. McDonald and I. T. Bode and their publication "A Handbook of the Native Trees of Iowa."

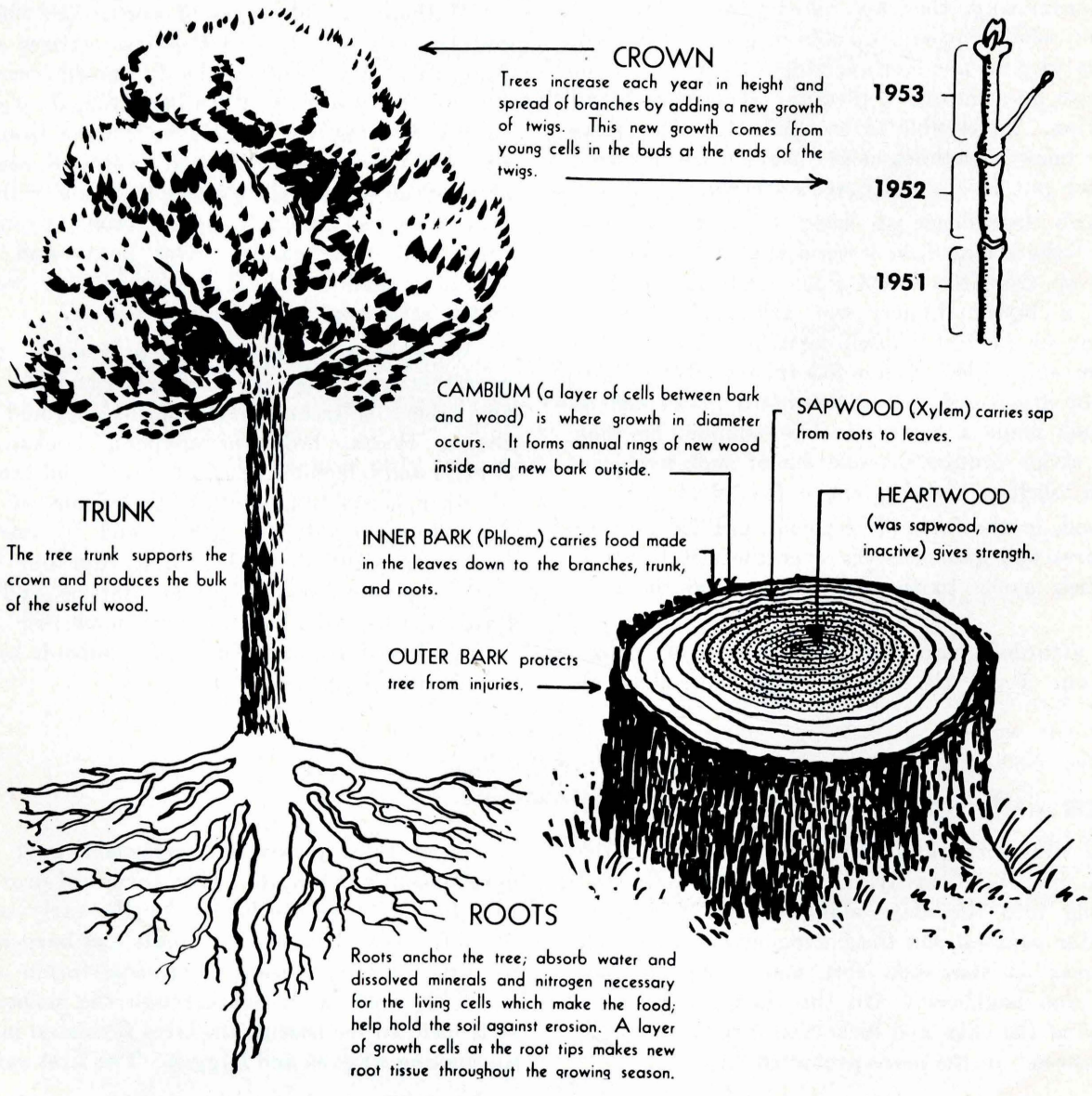
Grateful acknowledgment is also given to Dr. J. M. Aikman, professor of botany, Iowa State College, for his willing assistance in the nomenclature and distribution references of species in the state.

into the state obtained ties from this rich resource on which the rails were laid.

As the development of the state progressed and more and more pioneers arrived, our trees—the oaks, maples, elms, walnuts, hickories and others—were called upon to furnish increased quantities of lumber, fuel, ties and timbers. More homes and furniture to equip these homes were needed. Schools, factories, stores and other buildings were necessary.

Sawmills moved into the state to produce the necessary lumber and were the first industries to mark the towns along the Mississippi River as manufacturing centers. Our trees met the need for this material which was vital to the progress of the state. Much of the lumber used in the Old State Capitol Building, which still stands at Iowa City, came from the trees found in that locality.

The settlement of the state continued westward and soon reached the prairie country where trees were lacking. The early settlers were not content to live for any length of time on a homesite which was not protected by trees. They had come from the East, where trees were plentiful, and the light of the prairie was so strong that it "blinded their



eyes." To these early pioneers, trees had always meant water, food and shelter. Therefore, one of the first things which they did when settling on the prairie was to plant trees—trees to break the monotony of the prairie, to give their farmstead protection from the rigors of the cold winter winds, and from which they could obtain a future supply of fuelwood, fence posts and lumber. The remains of these old groves are still found around many farm homes, and how barren many of these homes would be today if it were not for the trees which those early settlers planted.

Yes, Iowa trees have played an important part in the development of the state. They are the oldest living things we have, and we should learn to recognize and appreciate them. Without trees the world would be a barren place in which to live.

Some 75 species of trees are native in Iowa. A large number of shrubs and bushes are native to the state, but in general, only the trees will be dealt with in this publication. Several other important tree species have been planted in Iowa but are not native. Some of the more common of these are included.

TREE PARTS AND WHAT THEY DO

Three main parts to a tree are the roots, the stem and the crown. Each of these has an important function to perform. The roots anchor the tree to the earth and hold it in place. They enable the tree to withstand the buffeting of storms without being blown over. They also extend themselves into the ground in a wide and deep network where they are able to take water and soluble mineral food materials from the soil.

The stem or trunk of the tree has two principal tasks to perform. It holds the crown of the tree erect where it can get air and sunlight which the tree needs to grow. It also transports water and food materials between the roots and the crown through a well-organized system of "pipe lines" in the outer wood. Botanists call these vascular bundles. They may be compared to the system of water pipes which carry water to the top of a building.

The crown of the tree is composed of branches which divide into smaller branches and twigs on which the leaves are found. These leaves are the manufacturing plant of the tree. In them carbon dioxide from the air is combined with water which the roots absorb from the ground to make starches and sugars. These feed the tree and enable it to grow. The sunlight is the power which runs this manufacturing plant. This food is then transported through another set of "pipes" just beneath the bark to the various parts of the tree where new growth takes place.

If any one of these three parts of the tree is damaged, the tree suffers. If many of the roots are broken or cut, enough moisture and food cannot be taken into the tree to maintain life. If the soil above the roots is packed so hard that water and air cannot easily enter the soil where the roots can absorb it, the tree cannot survive. If the trunk of the tree is damaged and enough of the "pipe lines" cut or destroyed by cutting into the tree or by woodboring insects, water and minerals cannot be transported to the crown to keep it alive. Nor can food be transported from the crown to the roots and lower portion of the tree to keep these alive. If the crown and leaves of the tree are destroyed by insects or disease, the manufacturing plant of the tree is destroyed and the tree will slowly die. Thus, if the tree is to continue to live and grow to offer protection, beautify the landscape, aid in erosion and flood control, furnish a home for some form of wildlife or provide future forest products such as lumber, fuel, railroad ties and others, it is necessary that these three parts be kept healthy.

THE GROUPING OF TREES

In this publication the trees of the state are put into a number of groups. One section on each group covers general information and points of interest about that group. Another section covers the identifying characteristics of the individual trees in the group. One method which botanists use for grouping plants is by families; that is, plants with certain characteristics are classed as belonging to one family. Insofar as is practical, this system of grouping has been used.

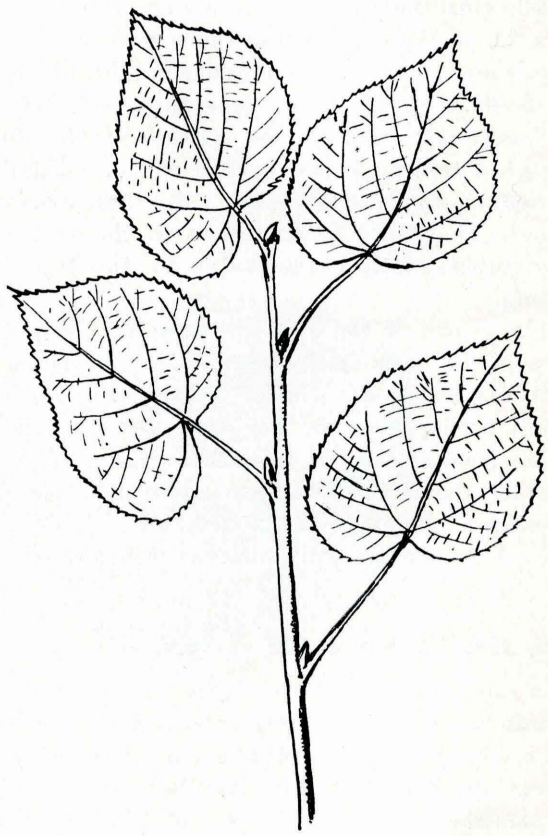
A SIMPLIFIED KEY FOR THE NATIVE TREES OF IOWA

A key is a device which can be used for the separation or identification of one object from other objects. We are interested in separating or identifying various Iowa trees from other Iowa trees, so of course we will want to use a tree key.

The key (pages 11-12) is intended as a guide to help the individual without experience learn to know the trees of Iowa. It has been kept as simple as possible. The key is based on the use of only the leaves and branches, since they are the simplest parts of the tree to use for identification. Most people are interested in tree identification during the summer months when trees are in full foliage. In some cases the trees have not been keyed out to the individual species. To do this would call for a much more complicated key. Instead, some of the trees are keyed only to their family or group in the family, and the user can then turn to the individual description in the publication for identification.

To assist in using the key, the sketches on pages 9 and 10 should be helpful. A key can be compared to road signs when a choice of two directions must be made at each intersection. In each case we begin with the first choice and attempt to follow it through the key by going from "road sign to road sign" until we reach our final "destination" or the tree we are attempting to identify.

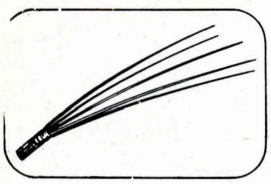
As an example, let's take the leaves pictured here and attempt to identify the tree from which they come. We can readily see that the leaves are from a broadleaf tree and not an evergreen, so we start under B of the key. Under B, "Broadleaf trees," our first two road signs are "Leaves compound," *or* "Leaves not compound, single." We can see that these leaves are not compound. (See sketches 5, 6 and 7 on page 9.) At the right of "Leaves not compound, single," is the number 9. Now we follow down the lefthand side of the key until we come to the number 9 where we again have a choice to make of two road signs, "Leaves opposite" or "Leaves alternate." We can see that these leaves are not opposite each other on the branch. They alternate along the sides of the branch. This brings us to number 11 on the righthand side of the key. Now going back to the lefthand side of the key, we follow down until we find number 11 where we again have to make a choice between two signs, "Leaves lobed" (see sketch 13 on page 9) or "Leaves not lobed." We can see that these leaves are not lobed, which leads us to number 16 on the right of the key. Now going back to the left side and following down until we find 16, we find we have a choice to make between "Branches with thorns or spurs" or "Branches without thorns or spurs, smooth." These branches do not have thorns or spurs. They are smooth. This leads us to number 19 on the right. Going on down the key to 19 on the left we have a choice to make between "Leaf stems distinctly flattened" or "Leaf stems not distinctly flattened." These leaf stems are not distinctly flattened, which leads us to number 20 on the right. Going back to number 20 on the left we find we have a choice to make between "Leaves narrow (½ to 1 inch) and long (2½ to 4 inches)" or "Leaves broader (1 inch or more) in comparison to length." Our leaves are broader (1 inch or more) in comparison to length, and this leads us to number 21 on the right. Under 21 on the left we have a choice to make between "Leaves broad oval to



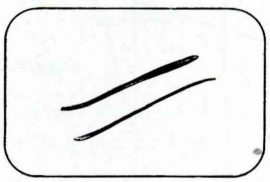
rounded" and "Leaves oval to broad oval." (See sketches 10, 11 and 12 on page 9.) Our leaves are broad oval to rounded, which leads us to 22 on the right. Going back to the left, we find under 22 that we have a choice to make between "Leaf margin smooth, base of leaf heart shaped" and "Leaf margin toothed, base of leaf uneven." (See sketches 25 and 26 on page 10 and 16 on page 10.) Our leaves have toothed margins and the base is uneven. We have now reached our destination because number 22, "Leaf margins toothed, base of leaf uneven" tells us that the leaves are from a basswood tree.

Further information on basswood is found on page 58.

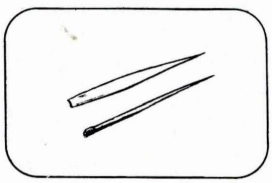
NEEDLE-LIKE OR EVERGREEN LEAVES



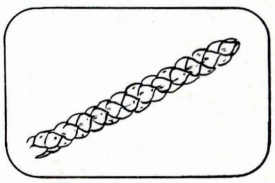
1. In Bundles



2. Single

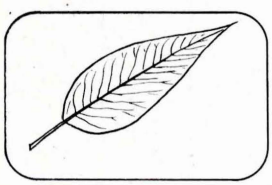


3. Awl Shaped

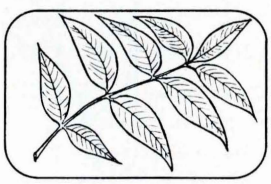


4. Scalelike

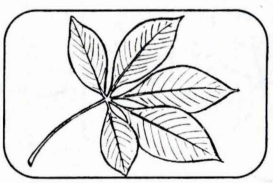
BROADLEAF LEAVES



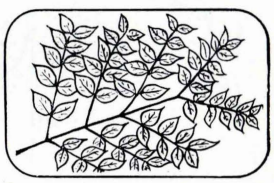
5. Single



6. Pinnately Compound



7. Palmately Compound

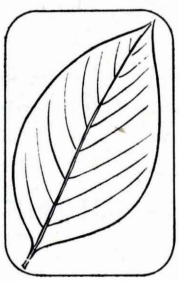


8. Double Compound

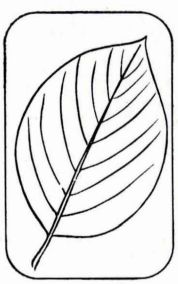
LEAF SHAPES

9. Narrow

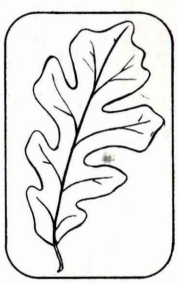
10. Oval



11. Broad Oval



12. Rounded

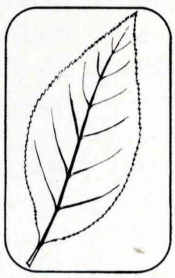


13. Lobed

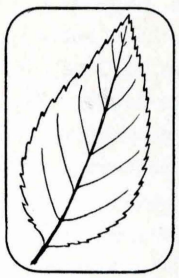
LEAF MARGINS

14. Smooth

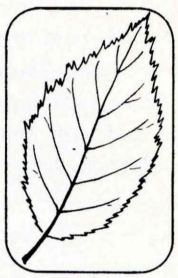
15. Wavy



16. Fine Toothed



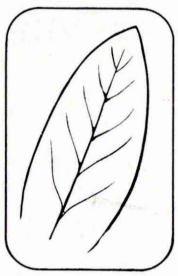
17. Coarse Toothed



18. Irregular Toothed

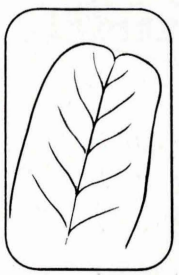
LEAF TIPS

19. Long Pointed

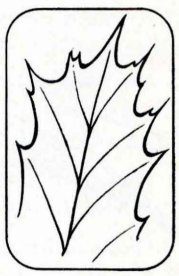


20. Blunt Pointed

21. Rounded

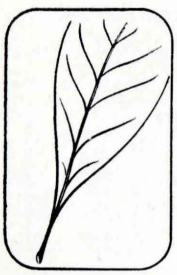


22. Notched

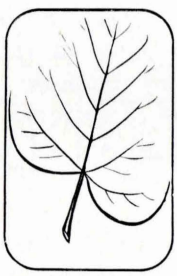


23. Bristle Tipped

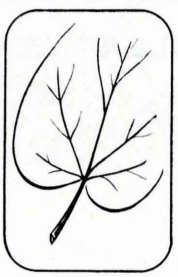
LEAF BASES



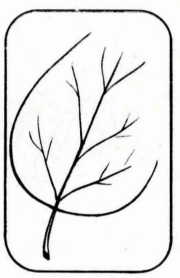
24. Wedge Shaped



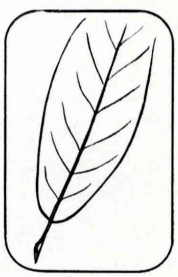
25. Uneven



26. Heart Shaped

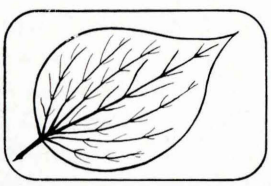


27. Rounded

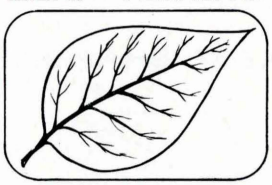


28. Narrowed

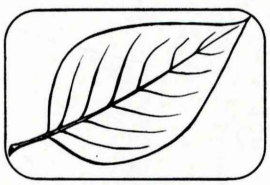
LEAF VEINING



29. Palmately Veined

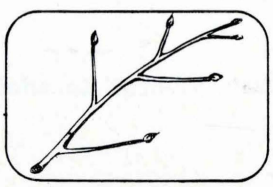


30. Pinnately Veined

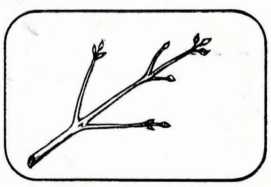


31. Pinnately Parallel

BRANCHING



32. Alternate



33. Opposite

A KEY TO IOWA TREES

A. Evergreens

1. Leaves needlelike 2
1. Leaves not needlelike 5

2. Leaves in bundles of 2 to 5 ..... *The pines*
2. Leaves not in bundles, single 3

3. Leaves angular or four-sided, stiff, sharp pointed ..... *The spruces*
3. Leaves not angular, flat, soft, not sharp pointed 4

4. An upright tree ..... *The firs*
4. A low-growing bush or shrub ..... *Yew*

5. Leaves distinctly scalelike, branchlets flattened ..... *Arbor Vitae*
5. Leaves awl-shaped or scalelike, branches not flattened 6

6. Leaves awl-shaped, a shrub ..... *Common juniper*
6. Leaves both awl-shaped and scalelike, a tree ..... *Red cedar*

B. Broadleaf trees

1. Leaves compound 2
1. Leaves not compound, single 9

2. Branching opposite 3
2. Branching alternate 4

3. Leaflets 3 to 5 in number, notched or lobed ..... *Box elder*
3. Leaflets 5 to 11 in number, not notched or lobed ..... *The ashes*

4. Leaves palmately compound ..... *The buckeye*
4. Leaves pinnately compound 5

5. Leaves twice pinnately compound, sometimes once 6
5. Leaves once pinnately compound 7

6. Leaves twice or once pinnately compound, leaflets small, branches thorny ..... *The locusts*
6. Leaves twice pinnately compound, leaflets larger, branches not thorny ..... *Kentucky coffeetree*

7. Leaflets large, broad, oval, 5 to 9 in number ..... *The hickories*
7. Leaflets smaller, oval, 13 to 23 in number 8

8. Leaf stems green, velvety and with walnut odor when crushed, leaflets 2½ to 3 inches long ..... *The walnuts*
8. Leaf stems green to reddish, no odor, leaflets 1 to 1¼ inches long ..... *Mountain ash*

9. Leaves opposite 10
9. Leaves alternate 11

10. Leaves lobed ..... *The maples*
10. Leaves not lobed* ..... *The dogwoods*

*(Except alternate-leaf which is the only dogwood with alternate leaves.)

11. Leaves lobed 12
11. Leaves not lobed 16

12. Leaves palmately veined, veins very prominent ..... *Sycamore*
12. Leaves pinnately veined, veins less prominent 13

13. Leaves irregularly lobed to entire 14
13. Leaves regularly lobed 15

14. Leaves with rounded base ..... *Mulberry*
14. Leaves with narrowed base ..... *Sassafras*

†15. Lobes of leaves rounded, not bristle tipped ..... *The white oaks*
†15. Lobes of leaves pointed or bristle tipped ..... *The red oaks*

†(Not always distinctly lobed. Some species have only a wavy to entire margin.)

16. Branches with thorns or spurs 17
16. Branches without thorns or spurs, smooth 19

17. Distinct thorns 1 inch or more long ..... *The haws*
17. Thorns less distinct, shorter, more like spurs 18

18. Branches reddish to orange brown with distinct small, raised, white spots ..... *Wild plum*
18. Branches brownish gray to gray without distinct, small, raised, white spots ..... *Wild crab*

19. Leaf stems distinctly flattened ..... *The poplars*
19. Leaf stems not distinctly flattened 20

20. Leaves narrow (½ to 1 inch) and long (2½ to 4 inches) ..... *The willows*
20. Leaves broader (1 inch or more) in comparison to length 21

21. Leaves broad oval to rounded 22
21. Leaves oval to broad oval 23

22. Leaf margin smooth, base of leaf heart-shaped ..... *The red bud*
22. Leaf margin toothed, base of leaf uneven ..... *Basswood*

23. Leaf margin smooth, base of leaf distinctly wedge-shaped ..... *Pawpaw*
23. Leaf margin toothed, base of leaf not distinctly wedge-shaped 24

24. Leaf veins heavy, lateral veins distinctly parallel, leaf thick and coarse ..... *The elms*
24. Leaf veins less heavy, lateral veins not distinctly parallel, leaf thinner and more papery 25

25. Leaf margin irregular and coarsely to doubly toothed ..... *The birches*
25. Leaf margin regular and singly toothed 26

26. Leaves smooth and waxy, branches and twigs with distinct, raised white spots 27
26. Leaves thin and papery, branches and twigs without distinct, raised, white spots 28

27. Twigs with bitter, cherrylike taste ..... *The cherries*
27. Twigs without bitter, cherrylike taste ..... *Juneberry*

28. Veins depressed on upper surface ..... *Blue beech*
28. Veins not depressed on upper surface 29

29. Margin of leaf finely toothed, leaf short, taper pointed ..... *Ironwood*
29. Margin of leaf coarsely toothed, leaf long, taper pointed ..... *Hackberry*

Nomenclature used is after the Forest Service check list of trees of the United States.
ELBERT L. LITTLE, JR.: *Check List of Native and Naturalized Trees of the United States.* Agriculture Handbook No. 41, Forest Service, U.S. Department of Agriculture.

The Evergreens or Conifers

ONLY FIVE evergreens are native to Iowa. These are the eastern white pine, red cedar, balsam fir, common juniper and yew. Of these five species, the white pine and red cedar are by far the most common. The common juniper and yew are usually low-growing shrubs and very seldom reach tree size, but are included here because there are so few evergreens native to Iowa. All except the red cedar are confined to the northeastern section of the state where they are found growing scattered and in mixture with other trees.

The balsam fir is likewise a relatively unimportant species in the state, but it is found in the two northeastern counties and is treated here to enable it to be distinguished from the other evergreens found there. It is a medium-sized tree which grows on some of the limestone outcroppings in that section of the state. It is found abundantly in the Lake states where it is popular as a Christmas tree.

The white pine is a stately tree upon which the lumbering industry of the United States was founded. For more than 250 years it was the leader in the lumber markets and still commands an important place in the markets today. It is a tree of a thousand uses. From it are fashioned match sticks; window shade rollers; boxes and crates for packaging foods, fresh fruits and vegetables; window sashes and interior trim; toys and many other items which we use in our daily life.

No matter where you go in Iowa, you are likely to find at least a few white pine trees. Although the white pine grows naturally in the state only in the northeast section, it has been planted widely for shade, ornamental, windbreak and erosion-control purposes. Thus, it is found growing in a variety of locations. However, where it grows native it is found in localities with limestone outcroppings and is best adapted to soils with good internal drainage. It thrives naturally throughout the northeastern United States, southeastern Canada and the Lake states.

The eastern red cedar is the other important evergreen found naturally in the state and is widely distributed in most sections of Iowa. It is a medium-sized, hardy tree of a moderate rate of growth and grows on a wide variety of soils from the rocky bluffs along the Mississippi River to the dry, windblown bluffs along the Missouri River. It was planted quite widely as an ornamental and windbreak tree by the early settlers and has spread from these early plantings. It is a beneficial wildlife tree, forming a dense crown which begins close to the ground and provides wonderful protection for birds and animals alike. Its fruit is a favorite food of many birds which eat the seed and then scatter it along fence rows, under open-grown trees and in pastures where they stop to rest or roost.

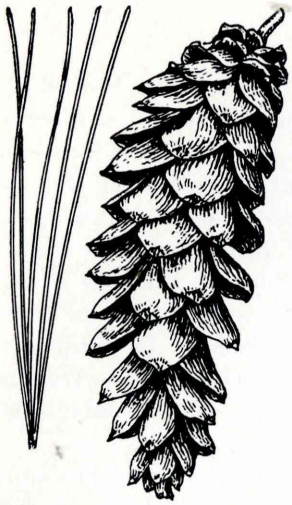
The wood is very durable and has a distinct, aromatic odor. It is put to a number of uses such as cedar chests and wardrobes. Its odor protects the contents of the chests and wardrobes from moths. Other uses are for pencils, small boats, scientific instruments, fence posts and poles.

One of the reasons the red cedar has not been planted more widely is that it harbors one stage of the cedar-apple rust which is injurious to apple trees. On the cedar this rust is evident during the wet, spring months in the form of spherical, warty galls. These become covered with a mass of orange-yellow, fingerlike, gelatinous projections during periods of high humidity. During the drier summer months they become quite hard and of a reddish-brown color. In the spring, spores are discharged from these galls and are carried by the wind to apple trees where they infect the leaves and fruit. In the fall, spores are carried from the apple tree to the cedar where these trees are again infected. The general recommendation for the control of this disease is to keep cedars separated from apples as far as possible. A distance of 1 or 2 miles is recommended.

The common juniper and the yew are unimportant species and are confined to a few counties in the extreme northeastern section of the state.

In addition to the evergreen trees found growing native in the state, several species have been successfully planted for a number of years. In fact, some of these introduced species are more familiar to the residents of the state than the native species. It is felt that even though they are not native, it would be well to include the most common and important ones, since they have been used so widely.

The introduced species which are being included are Austrian pine, jack pine, Scotch pine, red pine and western yellow pine; blue spruce, Norway spruce, white spruce and Black Hills spruce; Douglas fir, white or concolor fir, larch and the white cedar or arbor vitae. They have all been planted quite widely either for farmstead windbreaks or for ornamental use, and some for erosion control and wildlife cover. Many of them have become so common on the Iowa landscape that they can almost be considered as belonging here.



WHITE PINE—*Pinus strobus*

The white pine is a large, straight-stemmed tree. It grows 50 to 100 feet tall in Iowa. It is found in restricted localities in northeast Iowa, usually where there are limestone outcroppings and porous soils with good internal drainage.

The leaves are needles 3 to 5 inches long, bluish green on the upper surface, whitish beneath and *occurring in bundles of five.*

The fruit is a slender, gradually tapering cone, 3 to 6 inches long with *the ends of the cone scales prominently light tan to whitish and smooth.*

On small branches and twigs, the bark is smooth and reddish green. On older branches and the trunk, it breaks into broad, flat-topped ridges and is dark gray.

The wood of the white pine is light, soft, smooth and easily worked. It is cream to light brown in color, often tinged with red and is one of our most valuable woods.

EASTERN RED CEDAR—*Juniperus virginiana*

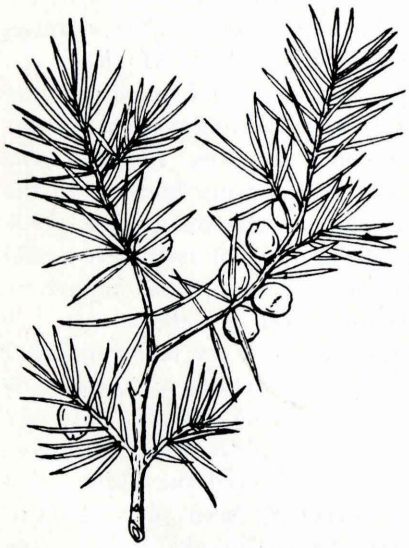
The red cedar is a small, hardy tree of moderate rate of growth, forming a dense conical crown with branches to the ground. It is found throughout Iowa on a wide variety of soils.

This tree has two types of leaves—one dark green, *very small and scalelike,* clasping the stem in four ranks so that the stem appears square. The other kind, often appearing on young growth or vigorous shoots, is *awl-shaped,* quite sharp pointed, spreading and whitened beneath.

The berrylike fruits are about 1/4 inch in diameter and bluish to bluish white in color. The fleshy part is sweetish and resinous, enclosing one or two hard seeds.

The bark is very distinct, being thin, reddish brown in color. It peels off in long, *shredlike strips.*

Red cedar is one of our most durable woods. It is light in weight with an aromatic odor and a distinctly *reddish to purplish-red heartwood* and cream-colored sapwood.



COMMON JUNIPER (DWARF JUNIPER)—*Juniperus communis*

In Iowa this is often only a large, bushy shrub, seldom reaching tree size. It has a short, irregular trunk. It is found over practically all of the United States, Canada, Alaska and even in the Old World.

The awl-shaped leaves are spreading, *spiny and scalelike* and 1/3 to 1/2 inch long. They are more flattened and white on the upper surface than the red cedar and turn a rich bronze color during the winter.

The bluish or purple fruit is an irregular, ball-shaped berry, with one to three small hard seeds.

The bark is reddish brown and becomes papery scaled.

Because of the shrubby character of the tree, the wood has no commercial value, but it is hard, close grained and very durable.

BALSAM FIR—*Abies balsamea*

This conifer is a medium-sized tree, 50 to 60 feet in height and found quite extensively in southeast Canada, northeast United States,

the Lake states and extending into northeast Iowa where it grows on moist slopes.

The leaves are blunt needles ½ to 1¼ inches long, dark green on the upper surface to silvery white on the lower surface and *spreading at nearly right angles to the branch.*

The fruit is an oblong, cylindrical cone 2 to 4 inches long, *purplish in color* and *growing upright* on the upper branches. When ripe, the cone breaks up into pieces, so one never finds a mature cone on the ground.

The brown bark breaks into small plates covered with scales. The young bark is often covered with pitch blisters, hence the name "balsam."

Because of the scarcity of this tree in Iowa, the wood has no commercial value. It is light in weight, soft, not strong and is coarse grained. It is not durable and decays readily when in contact with moisture.

YEW—*Taxus canadensis*

The yew is a low, straggling bush found occasionally in northeast Iowa. Its needlelike leaves are short stalked, dark yellowish green above, turning a reddish brown in the winter.

It has a characteristic red berrylike fruit, about 1/5 inch long and broader than long. Some species of yew, and especially that found in the West, at one time was in much demand as a wood for making bows and arrows. The wood has no value in Iowa, but the plant is often used for ornamental plantings. It thrives in complete shade.

RED PINE (NORWAY PINE)—*Pinus resinosa*

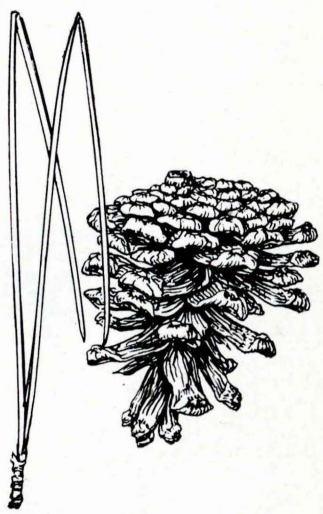
This is a native of the Lake states and eastward throughout New England and southeastern Canada. It had not been planted widely in Iowa until the 1930's. Since then it has been planted quite widely for both erosion control and water conservation, and some for farmstead windbreaks. When growing under natural conditions, the red pine reaches a height of 90 to 100 feet and a diameter of 30 to 40 inches, with a tall, straight, clean trunk and an open, rounded, picturesque crown.

The leaves occur in bundles of two. They are 4 to 6 inches long, dark green in color, quite soft and flexible, and *when bent sharply they snap or break cleanly rather than just folding over as do the needles of the other pines.*

The cone of the red pine is about 2 inches long, short and thick, and the cone scales are *smooth and without spines.*

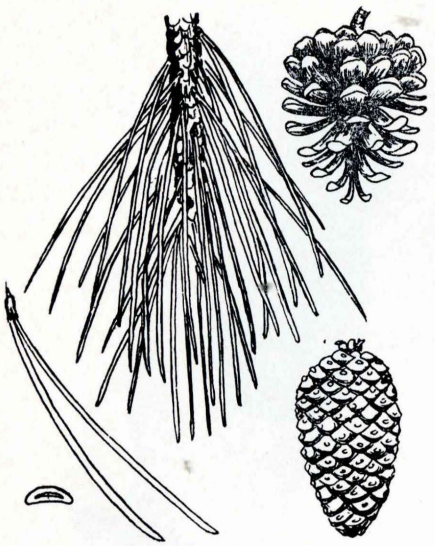
The tree gets the name of red pine from the bright orange-colored or reddish bark, which divides into large plates as the tree matures.

The wood is of a light reddish color, with a thin, nearly white sapwood. It is heavier, harder, and more coarse grained than white pine. It is a popular lumber tree in the northeastern states.



AUSTRIAN PINE—*Pinus nigra austriaca*

Although not native to Iowa, the Austrian pine has been planted quite widely in the state and especially in the western one-third where



it has been planted both in farmstead windbreaks and as an ornamental. It was originally introduced into this country from Europe, where it is native to northern and central parts. The tree grows moderately fast, is hardy and is quite drouth resistant. When grown in the open, it holds its branches quite close to the ground and is one of the best windbreak trees for western Iowa.

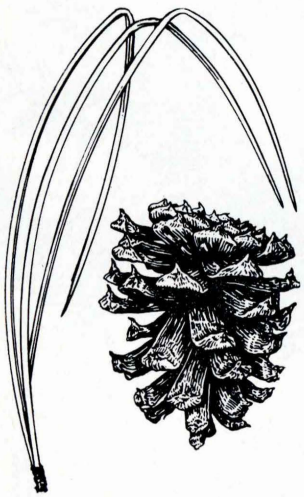
The needlelike leaves occur in *bundles of two, are 3 to 6 inches long,* are *stiff and sharp pointed* and of a light green color.

The buds are prominent, hard, ½ to ¾ inches long, *sharp pointed. They are resinous and whitish in color in the wintertime and resemble small white candles. The twigs are stout and heavy.*

Like most other pines the Austrian pine's fruit is a heavy, stubby cone enclosing the winged seeds. The cones open during the late fall and early winter.

The grayish-brown to orange-colored bark breaks into wide, flat ridges.

The wood is quite hard, heavy and strong. It is of no commercial importance in Iowa, but in Europe the Austrian pine is an important lumber tree.



WESTERN YELLOW PINE—*Pinus ponderosa*

Not native to Iowa, the western yellow pine occurs widely throughout the Rocky Mountain region and as far east as the Black Hills of South Dakota and the Pine Ridge section of northwestern Nebraska. It is one of the largest of our pines, reaching a height of 150 feet or more and a diameter of 8 feet. It is a hardy, drouth-resistant tree and has been planted some in western Iowa for windbreak and ornamental use.

The 4- to 7-inch needles are coarse and quite stiff, but not as stiff and sharp pointed as those of the Austrian pine. *The needles occur in bundles of two and three on the same tree.*

The cone is similar to that of the Austrian pine, except that it is larger—3 to 6 inches long—and the *cone scales are armed with stout, slender barbs, usually hooked backward.*

The twigs are short, thick and often many branched.

On young trees the bark is dark brown to nearly black and is broken into rounded ridges. On older trees the bark becomes orange colored to cinnamon red.

The wood is strong, comparatively fine grained, smooth textured, light red in color and its sapwood is nearly white. It is used for cabinets, interior trim, paneling, general construction and many other uses.

SCOTCH PINE—*Pinus sylvestris*

The Scotch pine is not native to Iowa. It is a European species that was brought to this country by the English. It proved to be hardy in the New England states. As the development of the country moved westward, the Scotch pine was moved westward also. It has been planted widely in Iowa, both for farmstead windbreaks and ornamental use. It is a fast-growing tree in early life, but most strains of it soon slow down in height growth and develop a flat, wide spreading top of

gnarled and crooked branches. It has become popular in the east as a Christmas tree.

The needlelike leaves have a bluish cast when young, occur in bundles of two, *are 2 to 3 inches long and are twisted or spiral as they leave the twigs.*

The cone is small, 1 to 1½ inches in length *and is quite persistent on the tree.* The branching of the tree is quite open and the branches appear sparse.

At the base of older trunks the bark is grayish brown to brown in color, *but on the upper trunk and larger branches the bark is bright orange and flaky, with the outer bark peeling off in large scales.*

The wood is of little commercial importance in Iowa, but in Europe the Scotch pine is an important lumber tree.

JACK PINE—*Pinus banksiana*

Like the red pine, the jack pine is a native of the Lake states, the northern New England states and much of Canada, where it grows on dry sandy and rocky soils. It has been planted quite widely in Iowa but is a less desirable tree than many of the other pines. It will survive on the driest soils in the state, and makes rapid growth during the first 10 to 15 years. It is a rather small tree, reaching a height of 40 to 60 feet and a diameter of 18 to 24 inches under favorable conditions. Normally the tree has thin, open foliage and is not tolerant of shade. As the lower branches are shaded and die, they remain on the tree for many years.

The needles occur in bundles of two, *are shorter than most of the other pines—about 1 inch long*—are quite stiff and pointed *and tend to spread apart from one another forming a V.*

The branches are persistent, and the tree does not prune itself readily.

The small cones are about 1½ inches long, *often strongly curved, are persistent* and sometimes remain on the trees and contain good seeds for many years.

The dark brown bark is irregularly divided into small scales.

Once considered a weed tree, the jack pine is gaining in importance as a commercial timber tree. The wood is light, soft, not strong and is used for farm construction, railroad ties, pulp, laths and boxes.

BLUE SPRUCE—*Picea pungens*

Native only to the Rocky Mountain states, the blue spruce is one of our most beautiful evergreens (especially the shiners) and has been planted widely throughout Iowa for ornamental use. It is a hardy tree with a compact, dense foliage and a slow growth rate. The foliage of the blue spruce varies quite widely in the degree of "blueness" and the silvery, blue-gray trees are highly prized for ornamental use.

The needles are *single, very stiff and sharp pointed, angular or four-sided,* ¾ to 1 inch in length, *with a bluish color especially distinct on the new growth.*

The twigs are rather coarse and stiff, with *large buds which become "flowerlike"* in late winter because of the curling of the thin edges of the scales.

The light brown cylindrical cones are 2 to 4 inches long, with

thin scales under each of which are two small chestnut-brown, winged seeds.

The light, ashy-brown bark is composed of many thin scales divided into vertical ridges.

The wood of the blue spruce has little commercial value. It is light, soft, brittle and weak, nearly white in color and frequently knotty.

NORWAY SPRUCE—*Picea abies*

A native of Europe, the Norway spruce has been planted widely in this country and Iowa for ornamental use and for windbreak plantings. It is a large, fast-growing tree requiring a fertile, moist soil. When grown in the open it is a graceful, cone-shaped tree with many fine, drooping branchlets.

The needlelike leaves are single, angular or four-sided, *yellow green in color,* about ¾ inches long *and slightly curved. More of the needles are borne on the upper surface of the twigs where they usually point forward.*

The *bright, brownish-orange twigs* are sometimes hairy, and *many of the branchlets are drooping or pendulous.*

The cone of the Norway spruce is large, 4 to 7 inches long and cylindrical. It is rounded at the end and heavier and stiffer than the cones of the other spruces. *The cone scales are cut off almost square across the upper end.*

The scaly bark is gray to reddish brown.

In Europe this is an important timber tree, but the wood has little commercial importance in Iowa since it is planted only for ornamental and windbreak use.

WHITE SPRUCE—*Picea glauca*

Not native to Iowa, the white spruce occurs quite widely over the northern portion of the Lake states, northern New England and much of Canada, on a wide range of soils. It has been planted quite extensively in Iowa for ornamental and windbreak use. It does best in the eastern part of the state. In the western part of the state a variety, the Black Hills spruce, does the best. The Black Hills spruce is a variety of the white spruce which has become adapted to the dry conditions found in the Black Hills.

Like the other spruces, the leaves are single, four-sided and crowded along the branchlets. They are ½ to ¾ inches long, pale bluish when young and dark bluish green when mature, are sharply pointed and *have a disagreeable odor when crushed.*

The twigs are slender and less bright in color than those of the Norway spruce, and the branchlets do not droop.

The cone of the white spruce is small, 1½ to 2 inches in length, cylindrical, *thin and flexible when mature and the cone scales are rounded and soft at the ends.*

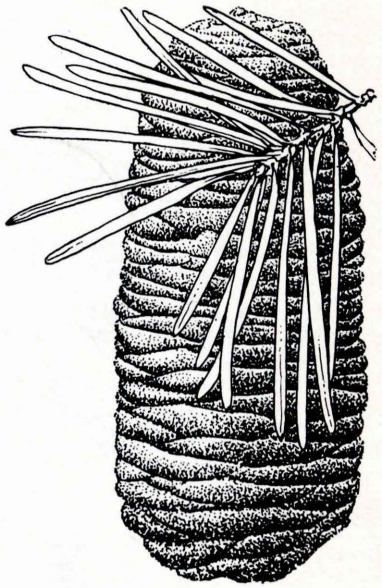
The scaly bark is dark gray or gray brown in color.

The most important use of the wood of this tree is for paper pulp. The wood is light in color and weight, soft, weak, not durable but the long fibers make it well suited for making high-quality paper.

The Black Hills spruce is a more slender tree, more irregular in shape with heavier, thicker and darker cones.

WHITE FIR (CONCOLOR FIR)—*Abies concolor*

Native to the western mountain states, the white fir has been planted in Iowa for ornamental and windbreak use. Many consider it one of our most beautiful evergreens. Where native, it is a large tree 150 to 220 feet tall. In Iowa, it reaches a height of 50 to 80 feet. It is a hardy tree and grows on a wide range of soils.



The needles are flat and *blunt pointed and are 1 to 2 inches long. They stand out distinctly from two sides of the branch and are curved.* The young needles have a bluish cast. As they mature they become more pale and take on a whitish cast, which, with the light-colored bark, gives the tree its name.

The cones are *2 to 4 inches long, occurring on the upper branches where they stand upright. They are ashen-tinged olive green to purple in color. When mature they break up while still on the tree.*

The comparatively smooth bark is ashy gray *and covered with conspicuous resin blisters.* The resin or "balsam" contained in the blisters has several medicinal and scientific uses. On older trees the bark thickens and breaks into deep, longitudinal furrows.

The white, straight-grained wood is fine textured, free from resin, moderately strong and not durable. It is used for construction, boxes and crates.

DOUGLAS FIR—*Pseudotsuga menziesii*

Native to the western mountain states, the Douglas fir makes its greatest growth in the coast states of Washington and Oregon where it reaches a height of more than 200 feet and a diameter of 10 feet or more. It is one of our largest timber trees. In the Rocky Mountain states its growth is slower, and it does not reach such a large size. Growing on a wide range of soils and climatic conditions, it is a hardy tree. Trees from the Rocky Mountain seed source have been planted widely in Iowa for ornamental and windbreak use. This fir is one of our best windbreak trees as well as a popular Christmas tree.

The tree has a dense and compact foliage, holds its branches well to the ground. In Iowa to date it has been found to be less subject to insect and disease damage than any of the other evergreens.

The Douglas fir is in the nature of a botanical puzzle, because it strongly resembles the spruce and fir, as well as the hemlock. The name "pseudo" means "false" and "tsugo" means hemlock, and together they mean false hemlock.

The needles are soft, flattened, slightly pointed, 1 to 1½ inches long and grow around the branch to give it a full, rounded appearance. *They are grooved on the upper surface, and have a white band on each side of a prominent midrib beneath.*

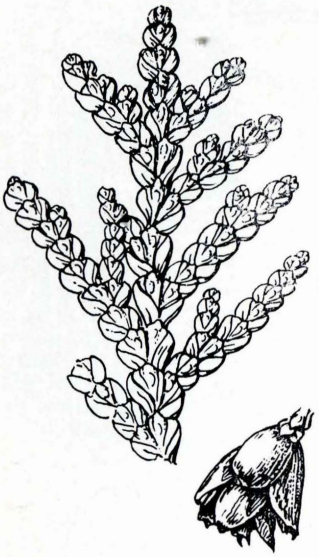
The twigs are fine and the buds are *long, pointed, dark orange red in color and shiny.* They are sometimes termed "cigar-shaped."

The cones of the Douglas fir definitely identify the tree. They are 1½ to 4 inches long and pendulous on the branches. *Protruding from beneath the thin rounded scales is a conspicuous, three-pointed bract.*

On old trees the reddish brown bark is broken into oblong, longitudinal plates and may be 10 to 12 inches thick. On young and smaller

trees the bark is thin, ashy gray and may have resin blisters like the true firs.

In terms of weight, the wood is the strongest of all our American woods. It is yellowish to light red in color, fairly light in weight, works well and is our most important commercial lumber tree. It is put to a wide variety of uses and is one of our best construction woods.



NORTHERN WHITE CEDAR (ARBOR VITAE)—*Thuja occidentalis*

The northern white cedar or arbor vitae is native to the Lake states, the eastern states as far south as Georgia and northward into southeastern Canada. It grows on moist to wet soils and often occurs in "cedar swamps" where it becomes an important game tree. Deer often form their "winter yards" in such areas, where they browse on the foliage of the smaller trees. It has been planted in eastern Iowa as an ornamental, and in northeastern Iowa it makes one of our better windbreak trees because of its heavy, dense foliage.

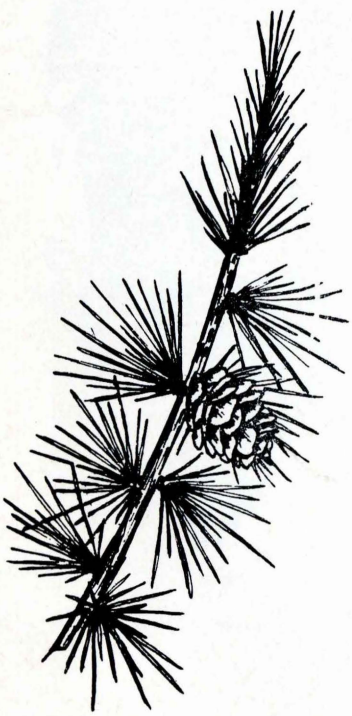
The leaf *is a scalelike needle* $\frac{1}{8}$ *to* $\frac{1}{4}$ *inch long and is arranged to make the small branches flat.* The leaves have a pleasant, aromatic odor when crushed.

The branches and twigs are flattened or fan-shaped because of the arrangement of the scalelike needles.

The fruit is a small, oblong cone, $\frac{1}{2}$ *inch long, yellowish brown and borne singly or in large clusters at the ends of the branches.*

The thin gray to reddish-brown bark separates into long, vertical, narrow shreddy strips.

The wood is pale brown in color, durable, light and soft. It is used for making canoes, fence posts, railroad ties, telephone poles and shingles.



LARCH (TAMARACK)—*Larix decidua*

Several species of larch have been planted in the state, mostly for farmstead protection. The larch is not a true evergreen since it is one of the few conifers which lose their leaves in winter. It is a tall tree with a straight, central trunk and many spreading branches.

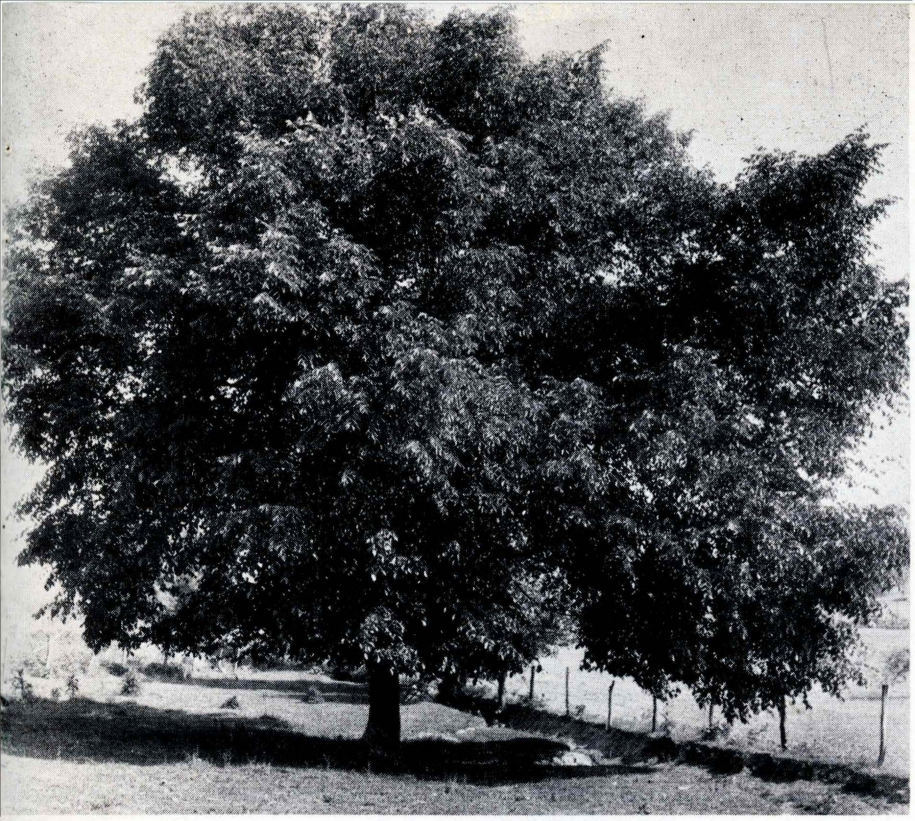
The leaves are needlelike, but are flat, soft, slender, 1 to $1\frac{1}{2}$ inches long and *borne in clusters on spurlike branches.* In the spring the needles are bright green and very soft and flexible. In the fall they turn to a dull yellow just before falling.

The fruit is a small, nearly spherical cone, $\frac{1}{2}$ to $\frac{3}{4}$ inches long. The young cones are reddish to green in color, turning brown as they mature and often remaining on the tree for several years. As they mature and open in the fall, they liberate small, winged seeds.

The twigs are light brown to gray in color, and covered with numerous tiny spurs or short branches.

The rough bark separates on the surface into thin, reddish-brown scales.

While used in Iowa mostly as an ornamental and windbreak tree, its wood is of commercial importance where it grows as a native tree. The wood is light yellowish brown, heavy, hard, durable and strong. It is used for posts, poles, railroad ties, fuel, paper pulp and lumber.



White Ash

The Ashes

IOWA IS WELL supplied with four species of ash trees. These are the white, green, blue and black.

The trees range from medium to large in size, attaining a height of from 80 to 90 feet, with the green and white ash growing the largest. They all do best on a moist soil, but can adapt to a variety of conditions. The green ash can be grown easily from seed and has been planted extensively throughout the state for shelterbelts and windbreaks and for erosion control. However, when planted on the heavier and drier soils its growth is retarded. The green ash is found mostly on flood plains when growing in its natural state. The blue ash and white ash are not considered to be flood-plain trees, and are found growing on well-drained bottomlands and moist slopes. The blue ash is restricted to the extreme southeast corner of the state. The white ash is the most important of the four from a commercial standpoint.

The wood of the ash is quite heavy, strong, elastic, resists shock and is free from taste or odor. Its principal uses are for handles, cooperage, furniture, boxes, crates, baskets and athletic equipment. It is practically the only wood used for the long handles of such tools as shovels, forks, scythes, hoes and rakes. It is one of the principal woods used for skis.

All of the ashes have opposite-branching and pinnately compound leaves which almost immediately identify them. The seeds look like miniature canoe paddles.

WHITE ASH—*Fraxinus americana*

The white ash is the largest and finest of all the ashes, and is one of the leading commercial hardwoods of the United States. It grows 70 to 80 feet tall, with a diameter of 2 to 3 feet. It is found over the eastern, central and southern parts of the state on moist slopes and rich bottomlands.

The compound leaves have 5 to 11 sharp-pointed, broad leaflets which are dark green above and whitish underneath.

With opposite branching, the twigs are grayish brown and the buds are dull rusty brown and rounded.

The wing on the seed of the white ash does not extend around the seed proper.

The seed is rather slender and 1 to 2 inches long.

Varying in color from a light gray to gray brown, the bark has rather *narrow ridges separated with marked regularity by deep, diamond-shaped fissures.*

The wood is of considerable commercial importance. It is heavy, hard and strong, and is used for many purposes where a tough, strong wood is required, as for tool handles and athletic equipment.

BLACK ASH—*Fraxinus nigra*

The black ash is a lower flood plain tree which reaches a height of 50 to 70 feet and has a rounded or oval crown. It is found throughout Iowa close to banks of streams or close to swampy areas, but is much less common in the western and northwestern parts of the state.

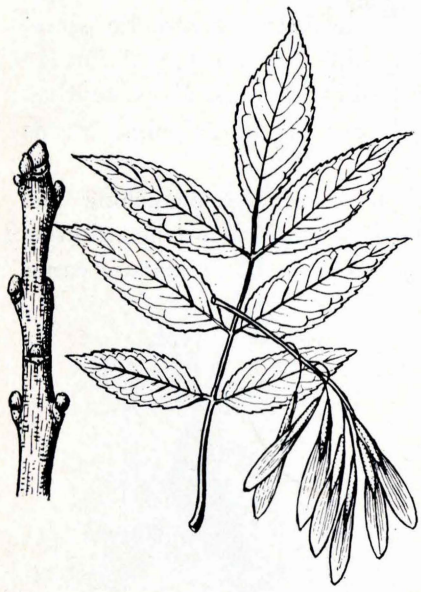
The leaves are compound, large, with seven to eleven leaflets. *The leaflets have no stalks,* are dark green above and paler green below with *prominent midribs and veins.*

The tree has large, stubby twigs which are opposite and which are ashy gray with prominent spots. The buds are also prominent and are rusty gray to blackish in color.

A distinct notch at the tip characterizes the winged seed fruit which is 1 to 1½ inches long, broader than the other ashes and with the *wings extending along the side of the seed proper.*

The shallow furrowed bark has a rather scaly surface with a creamy tan underbark.

The wood is strong and coarse grained but not as heavy as green or white ash. It is used for interior trim and finish because of its showy grain.



GREEN ASH—*Fraxinus pennsylvanica*

Very closely resembling the white ash, the green ash grows in all parts of the state. It has been widely planted for windbreaks, shelterbelts and erosion control. On good soils it reaches a height of 75 to 80 feet.

Like the other ashes, the leaves are compound with five to nine leaflets, *smooth and bright green on both surfaces* and attached to the axis of the leaf by a short stalk.

With opposite branching, the buds are broad, slightly flaky and rusty brown.

The twigs are greenish gray and smooth.

Similar to white ash, the fruit is a seed 1 to 2 inches long, with a narrow and tapering wing extending well along each side of the seed.

The finely furrowed bark is dark gray and very similar to white ash. The underbark is creamy tan.

Like the wood of white ash, the wood is heavy, hard and strong and is put to the same uses as that of the white ash.

BLUE ASH—*Fraxinus quadrangulata*

The blue ash is restricted in its range in Iowa, being found only sparingly in the southeast part of the state. On good soils, it may reach a height of 75 to 80 feet but is usually much shorter.

It, too, has compound leaves with seven to nine short-stemmed, sharp-pointed leaflets. They are smooth yellow green to dark green above, paler below and sometimes have tufts of hair in the axils of the veins.

The *twigs are opposite* and *characteristically four-sided or square*, and ashy gray.

The buds are blunt and dull rusty brown.

Similar to other ashes, the fruit is 1 to 2 inches long, flattened, usually notched at the outer end. The wing is about *twice the length of the seed-bearing portion and extends down the sides past the middle.*

The scaly bark on older trees *becomes somewhat shaggy. The inner bark will tint water blue.*

The blue ash also has wood which is heavy, hard and close grained. The color is light yellow, streaked with brown.

The Birches

FIVE MEMBERS or species of the birch family are found growing native in Iowa. These are the paper, river and yellow birches, the blue beech and ironwood. The last two are not true birches, but because of similar characteristics have been classified as belonging to the same family as the true birches.

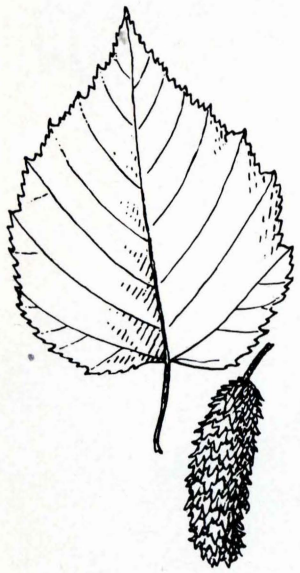
The birches are among our most beautiful trees, and this is especially true of the paper or white birch. This species and its varieties are widely planted as ornamentals. The three true birches are found growing over a wide part of southeastern Canada, northeastern United States and westward to Iowa and beyond. The paper birch stands out prominently in the forests because of its showy, white bark. The bark peels easily from the tree in large, thin sheets, from which it gets the name "paper birch." The bark is used widely for making souvenirs and toys. It was used widely by the Indians for making canoes, baskets and other items for carrying and storing foods. It is also known as canoe birch.

Of the three, the river birch is the most common in the state—white and yellow birch are more restricted in their distribution. The yellow birch is the most valuable and is put to a number of uses

Paper Birch

such as veneer, furniture, baskets, crates, kitchen woodenware, handles and interior trim. The paper birch is used some for these purposes and for thread spools, toys, paper rolls or cones, dowels, shoe pegs and toothpicks. All are used for paper pulp, railroad ties and fuelwood.

The blue beech and ironwood are widely distributed over the state. The ironwood is a shade-loving tree, and is usually found in mixture with other trees in heavy stands. The blue beech is not as shade loving as the ironwood, but resembles it in many other ways. The wood of both is heavy, hard, strong and tough, but has little commercial value in Iowa.



PAPER BIRCH (WHITE BIRCH, CANOE BIRCH)—*Betula papyrifera*

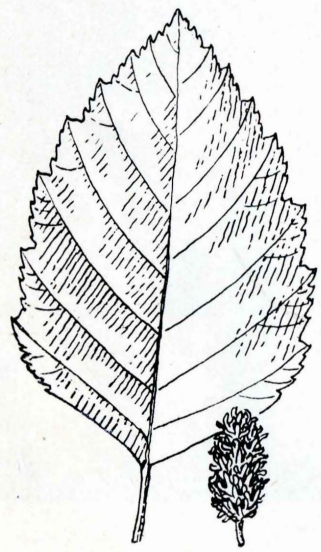
This is a showy tree in the woods with its white bark. White birch and its varieties are used for ornamental planting. It is not a large tree in Iowa. When grown in mixture with other trees, it has a clear, straight trunk and thin, rounded crown. In Iowa it is found principally in the northeastern part, extending southwestward to Eldora. It occurs on moist wooded slopes and along streams.

The oval or heart-shaped leaves are pointed at the apex, *rounded at the base* and are irregularly double toothed. They are rather *thick* in texture and *dull green on the upper side and yellowish green on the lower side.*

The slender twigs are orange brown to dull red in color and have the characteristic aromatic birch odor and taste.

The heavily layered bark peels off in *large sheets.* Its *chalky white color* distinguishes this tree from all others in the forest. At the base of old trunks the bark becomes blackish and furrowed.

While not durable, the wood is hard, strong, close grained and tough. It is used for thread spools, shoe lasts, pegs, furniture, toothpicks and other small articles. The white bark covering makes the wood popular for decorating fireplaces.



RIVER BIRCH (RED BIRCH, BLACK BIRCH)—*Betula nigra*

This is a medium-sized tree in Iowa. As the name implies, it is found on the rich, moist soils along streams, rivers and swampy areas mostly in the southeastern and central parts of the state.

Its leaves are smaller than those of the yellow birch. They are *distinctly wedge-shaped at the base with a dark green* upper surface and with a double-toothed margin.

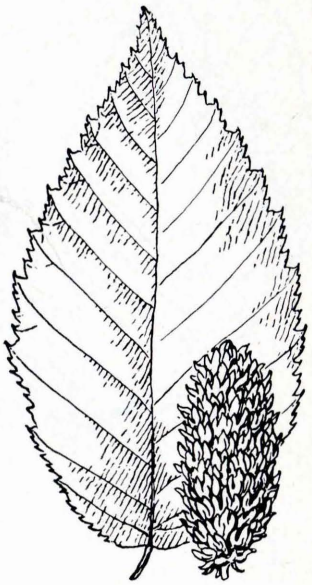
Similar to those of yellow birch but *darker reddish brown,* the twigs have the characteristic aromatic birch odor and taste.

The conelike fruit, containing small, flat, brown winged seeds, stands erect on the twigs.

While not in large, thin sheets like bark of the white birch, the characteristic bark peels up in *thin, ragged or grayed papery layers* varying from a reddish brown to a cinnamon red in color, with the layers *persisting on the trunk.*

While not of much commercial importance, the wood is quite hard, strong and close grained. It is used for fuel, furniture, railroad ties and small articles.

YELLOW BIRCH—*Betula alleghaniensis*



From a commercial standpoint, this is the most important of the birches. It is larger than the other birches, but in Iowa it does not attain a large size. In the open it develops a broad, deep, spreading crown. It is found only occasionally in the state in the northeastern part on moist uplands.

The leaves have an oval shape with a rounded base and a finely double-toothed margin. They are *dark dull green on the upper surface* and lighter on the under surface, with fine hairs along the veins.

The slender twigs are *shiny brown and aromatic,* and the buds are a *bright chestnut brown.*

Like the fruit of the river birch, the fruit is erect, conelike and contains small, flat, brown, winged seeds.

The bark is smooth, silver gray or brownish gray on smaller branches, and on young 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.

The hard, heavy, strong and close-grained wood is used for flooring, woodenware, furniture, interior trim and small articles. It is used widely for veneer for birch paneling in doors, cabinets, etc.

BLUE BEECH (HORNBEAM)—*Carpinus caroliniana*

While not a true birch, the blue beech belongs to the birch family. It is a small, slow-growing, bushy tree with a spreading top of crooked or drooping branches. The trunk is more or less angular and is usually crooked. It is quite common in eastern and central Iowa and is found mainly on moist slopes, along streams or on deep, moist woodland soils. The blue beech has no commercial value in Iowa.

Similar to elm leaves in shape, its leaves are more slender, smaller and thinner with *depressed veins on the upper surface.* They are dull blue green above, pale green below and have hairy tufts at the base of the veins.

The fruit occurs in *clusters with leaflike bracts,* each with a *small nutlet* attached to the outside. The leaflike bract may act as a wing in aiding seed distribution by the wind.

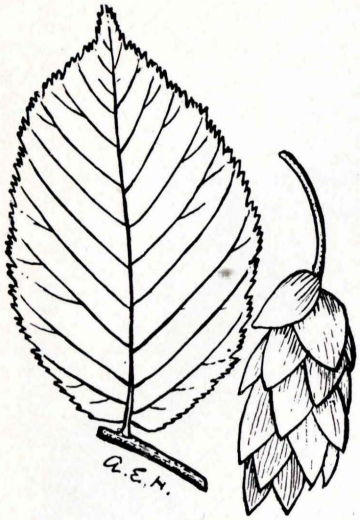
Fluted or irregular ridges like muscles on the *smooth bluish-gray bark* extend up and down on the trunk of the tree and quite definitely identify the tree as the blue beech.

While the limited supply makes the wood of no commercial importance in Iowa, it is heavy, tough, hard and strong with light brown heartwood and light-colored sapwood. Where more abundant, the wood is used for levers, tool handles, wooden cogs, mallets, wedges and fuel.

IRONWOOD (HOPHORNBEAM)—*Ostrya virginiana*

This is a shade-loving tree of small size with a slender trunk and sparse foliage. It is found throughout Iowa from dry slopes and ridges to moist slopes in the shade of other hardwoods. It is not important in Iowa and is often referred to as "weed" tree. The young trees closely resemble young elm.

While closely resembling the leaves of the elm, the leaves are *more finely toothed, tissue paperlike* in texture and pale green in color.



The buds are small, brown and pointed, and the twigs are *much more slender than elm* and shiny brown.

The tree gets its name of hophornbeam from its fruit which is clusters of leafy, podlike structures which enclose flat, ribbed, pointed nutlets.

The light brown or reddish-brown bark is finely ridged and covered with fine thin scales. *The ridges are never as heavy as the ridges of elm bark.* Often, the bark tends to spiral up the trunk.

The strong, hard, tough wood is light brown to white in color with thick, pale sapwood. It is used occasionally for tool handles, mallets and other small articles.

The Dogwoods

THERE ARE 17 species of dogwood found in the United States, and six are found in Iowa. Many of these do not reach tree size, however, and only two of the six species found in Iowa are discussed here. These are the alternate-leaf and rough-leaf species. The most popular of the 17 species —the flowering dogwood—is not found in Iowa, but grows in the eastern United States and west to Illinois. In the spring when it produces masses of white flowers, it is one of the most ornamental trees native to the United States.

Dogwoods are rich in tannic acids, and the roots, bark, leaves and unripe fruit were used in early days for medicinal purposes such as tonics and astringents.

The two species are not important in Iowa from a commercial standpoint, because of their small size. In regions where the trees reach a larger size, the wood—especially that of the flowering dogwood—is used extensively for shuttles for textile weaving. The shuttle carries the weft thread between the warp threads. It is shot back and forth across the loom at high speeds and rubs against the warp threads as it crosses. The need for a wood that will stay perfectly smooth under this rubbing is evident, as the least roughness in the shuttle means a broken thread and stoppage of the loom.

The dogwoods are used for ornamental plantings in the state, and they make a good shrub row in windbreak plantings.

ALTERNATE-LEAF DOGWOOD (BLUE DOGWOOD, PIGEON BERRY, GREEN OSIER, PAGODA DOGWOOD)—*Cornus alternifolia*

In Iowa this dogwood is a shrub or at most only a small tree with a flat-topped, open head and with the branches in distinct whorls. It is widely distributed in the state except in the northwestern section and is found in woodlands or bordering woodlands in moist, rich soil.

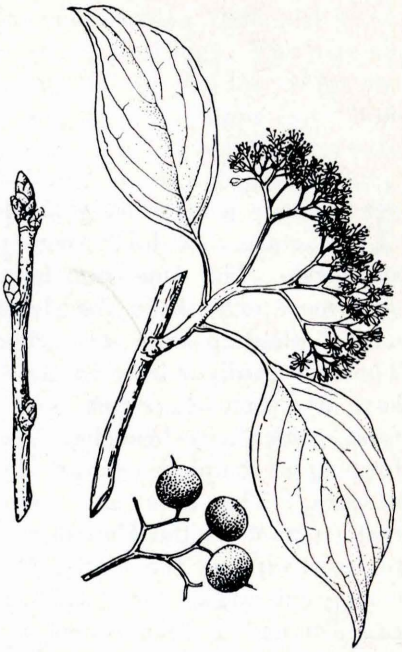
Clustered at the ends of branches, the leaves are alternate instead of opposite on the twigs, and bright or yellow green above and pale or almost white below. The margins are smooth and sometimes wavy.

At first the twigs are reddish green, later becoming dark green with gray or white stripes.

The fruit is a loose, open cluster of purplish or blue-black berries arising from *small, cream-colored flowers in dense, flat clusters and not surrounded by a conspicuous whorl of bracts.*

On young stems the bark is orange or yellow green, turning darker and becoming red brown or dark brown. On older stems it is finely fissured.

Like the wood of all the dogwoods, the wood is heavy, hard and close grained, but it is not of value in Iowa because of the small size of the tree.



ROUGH-LEAF DOGWOOD—*Cornus drummondii*

This dogwood is also only a shrub or small tree in Iowa. It has an irregular, open head. It is found widely over the state but is not as exacting in soil and moisture requirements as alternate-leaf dogwood.

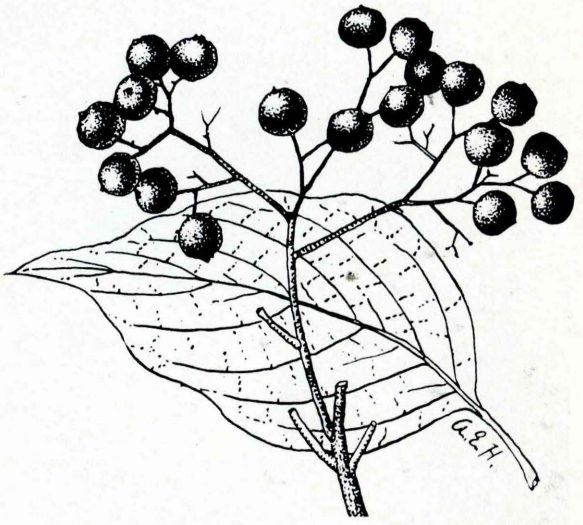
The leaves are opposite on the branches, and smaller than those of the alternate-leaf dogwood. They are dark green, roughened above, pale or gray below, *firm* in texture and *harsh or rasping to the touch.* The leaf stem is slender and covered with rough hairs.

Buds also are opposite on the branches, and the twigs are yellowish at first but become *reddish* or *brownish* and later gray.

The fruit is a white berry instead of purple and is about 1/4 inch in diameter. It arises from a cluster of cream-colored flowers much like alternate-leaf dogwood flowers.

On older stems the bark is gray brown or gray, and very finely fissured or covered with small scales.

Even though the wood is hard, heavy, strong and fine grained, it is of no commercial value in Iowa because of the small size of the tree.



The Elms

THE ELMS are probably the best known trees in the state. At least some of them are found state-wide. The American, or white, elm has been used more extensively for shade, street and ornamental planting than any other one tree in Iowa. There is hardly a city in the state that does not have at least one street lined with these stately trees, with their branches interlacing above and forming a complete canopy above those who pass beneath. The elms are found throughout the eastern part of the United States, and extend as far westward as the Rocky Mountains. They are among our largest forest trees, specimens of American elm having been found measuring 30 feet in circumference, 100 feet tall and with a crown spread of 147 feet.

Of the six species of elm found in the United States, three are found in Iowa. These are the American, the red or slippery, and the rock elm. In addition to these three species of true elm, one additional tree found in the state belongs to the same family, and will be treated with the elms. It is the hackberry.

Of the three true elms found native to the state, American elm is the most common, with red elm or slippery elm next and rock elm the least commonly found. The American elm prefers moist bottomland soils and the borders of streams. Red elm, like the American, prefers moist locations but is found on rocky ridges and slopes. Rock elm is the least exacting of the three as to moisture requirements and is found in drier locations. Like the American and red elm, the hackberry prefers a rich, moist soil, and attains its best growth on bottomlands and borders of streams.

The wood of the elm is of value because of its

American Elm

excellent bending qualities, strength and ability to withstand usage. Elm and hackberry woods are used principally for slack cooperage, basket rims and handles, bent work in vehicles and chairs and framework for furniture. The wood has an attractive grain, or figure, and is becoming popular for veneer and other furniture making. It is taking the place of some of our scarcer furniture woods.

Of late there has been considerable concern over the American elm because of two serious diseases which have gained considerable headway in the East and seem to be spreading westward. These are the phloem necrosis and Dutch elm disease. Phloem necrosis was first discovered in Ohio in 1918, and the Dutch elm disease was introduced to this country from Europe between 1926 and 1933, through the medium of elm burl logs. The diseases have caused widespread damage to the white elm in the middle east, and vigorous steps have been taken to stamp them out. Phloem necrosis has been found in southeast Iowa in the Burlington vicinity. There is a good possibility that it has or will spread further west. There seems to be an east-west line extending through southern Iowa, north of which the disease does not spread. At the time of this writing the Dutch elm disease has not been reported in Iowa. Should these two diseases become widespread in the state, they will cause a serious situation insofar as ornamental plantings are concerned.

AMERICAN ELM (WHITE ELM)—*Ulmus americana*

The American elm is one of our largest timber and shade trees. It has a spreading, vase-shaped crown, and often reaches a diameter of 3 to 4 feet and a height of 90 to 100 feet. It is found throughout the state on moist slopes, bottomlands and along streams. It has been planted widely as a shade and ornamental tree.

The leaves are oval, sharp pointed with double-toothed margins and have prominent midrib and lateral veins, the latter being almost parallel. They are dark green above and light green below. They usually are quite smooth, while leaves of the red elm are rough and sandpapery.

The winter buds of the American elm are small, *smooth and reddish brown.* The twigs are slender, smooth, reddish brown to gray in color and bitter in taste.

The oval-shaped fruit is winged, with the seed in the center of the wing. The fruit appears on the tree in clusters.

The bark will always identify the American elm. It is light to dark gray, irregularly ridged and deep furrowed. If a piece of the bark is removed from the tree and broken crossways, it will be found to be *built up in alternate brown and creamy white layers.*

The wood is not durable, but it is heavy, strong and exceedingly tough. It is used for slack cooperage, basket handles, vehicle parts, furniture and veneer.

RED ELM (SLIPPERY ELM)—*Ulmus rubra*

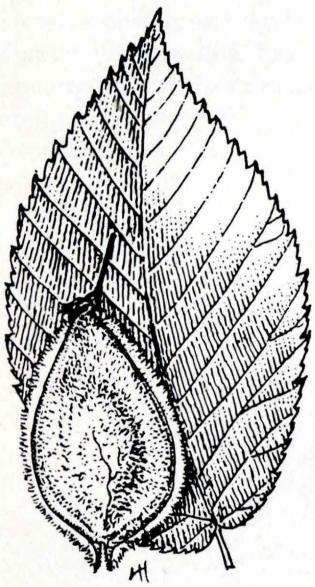
This is not as large a tree as the American elm, and not as spreading or vase-shaped. It has a more central stem with an *irregular, open crown.* It too is found throughout the state on moist slopes and rich bottomlands.

The leaves are similar to the American elm, but are larger. They, too, are dark green above and paler green beneath, but are *rough, feeling raspy or sandpapery. The buds are large, rounded, reddish brown and fuzzy.*

The twigs are hairy and greenish to light brown, later becoming gray. They are not bitter when chewed, but fragrant, creating a slimy, mucilage-like substance. From this characteristic the tree gets the name of slippery elm.

The inner bark is *fragrant and slick* and the outer bark is thick, dark grayish brown and *broken by shallow fissures into flat ridges.* The bark is *not* made up of alternate brown and creamy layers as is the white elm.

The wood is more valuable than white elm and is used for furniture, agricultural implements, veneer, caskets and barrels. It is very tough and strong and is a valuable wood for farm construction.



ROCK ELM (CORK ELM)—*Ulmus thomasii*

The rock elm is the most important lumber tree of the elms. It is smaller than the American elm and has a straight trunk and oblong crown. It is found over much of the state on both moist lowlands and dry uplands, but not as extensively as the American and red elms.

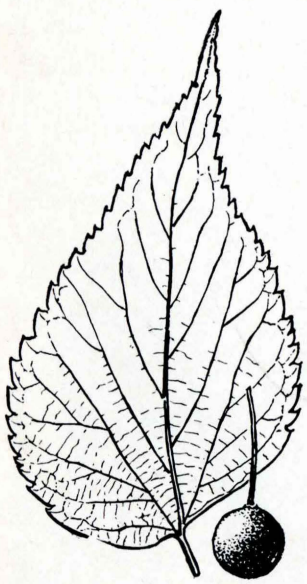
The leaves resemble the leaves of the other elms, but are smaller, smoother on both sides, shiny dark green above and *light green and slightly hairy beneath. The leaf stems are hairy.*

The larger twigs have *corky, irregular, prominent ridges.* The brown buds are broadly rounded and velvety.

The waferlike fruit is winged, contains one seed and is similar to the fruit of other elms but is narrower and velvety.

The characteristic corky ridges are present on the small trunks and branches and on larger trunks the bark is broken into narrow, interlacing ridges.

The wood is more valuable than that of other elms. It is hard, extremely tough and strong. It is sought after for truck bodies, in addition to the regular uses for other elms.



HACKBERRY—*Celtis occidentalis*

This member of the elm family is not a true elm. It has a stronger central stem, more horizontal branching and a more open crown. It grows 70 to 80 feet tall. The hackberry is found generally over the state, but prefers moist bottomlands and slopes. It makes a desirable ornamental tree.

Resembling the leaves of elm, the leaves are more *lance-shaped, and have a thinner texture and paler green color. They are quite prominently veined* but the lateral veins are not distinctly parallel.

The twigs are more stubby and rough than twigs of the elms.

The small, berrylike fruit is purplish in color, contains a pit similar to a cherry and is on a long stem. The fleshy part is sweet and edible and was used by the Indians for grinding with dried meat. It is a favorite bird food.

The bark on the older trunks will always identify the hackberry. It is grayish and very rough, with *high, narrow ridges standing out perpendicularly and with wide furrows and smooth patches between.*

The moderately heavy and moderately strong wood is tinged with yellow and is used principally for furniture, veneer, boxes, baskets and other containers.

The Haws or Rose Family

THE ROSE family is one of the largest families of trees found in Iowa. It includes 12 species which are discussed here. It includes the haws, plum, cherries, crab, Juneberry and mountain ash. In addition, the rose family includes many of our most valuable cultivated fruits including the apple, pear, quince, strawberry, raspberry and blackberry. It may seem strange that so many widely different trees and plants fall in the same family, but if the flowers and fruits of the many species of the rose family are examined, it can be seen how this should be. The fruit of the common wild rose and the red haw and mountain ash are similar, as are the flowers of the rose, plum and cherry.

In the haw group alone, there are several hundred species growing in the United States. Five of these are found in Iowa and reach sufficient size to be discussed in this publication. It is extremely difficult to distinguish between so many species.

Of the 12 species of the rose family found growing in Iowa, only one is of commercial importance as a timber tree. This is the black cherry. This tree has long been prized as a furniture wood, and much of our early colonial furniture was made from the black cherry. These old pieces of furniture are now highly prized as antiques, along with early walnut pieces. It still is used extensively as a furniture wood.

Although the other members of this family of trees are of little importance as commercial woods, they are without a doubt our most valuable group of trees from a wildlife standpoint. The fruit of all is edible, and it is especially attractive to birds. The trees often grow in clumps or thickets, and make wonderful nesting and escape cover. The fruit of the cherries and plum also has been a popular food for man, especially before cultivated orchards became common. The early settlers in the state used the fruit for making jams and jellies which were both an attraction and a delicacy on the table during the long, cold winter months, and especially around Christmas.

COCKSPUR THORN—*Crataegus crus-galli*

This is a small tree with a broad, round-topped head and rigid branches. It is not too common in Iowa, but is found occasionally in the eastern, central and southern parts, usually on slopes in rich soil. It is often used for ornamental plantings.

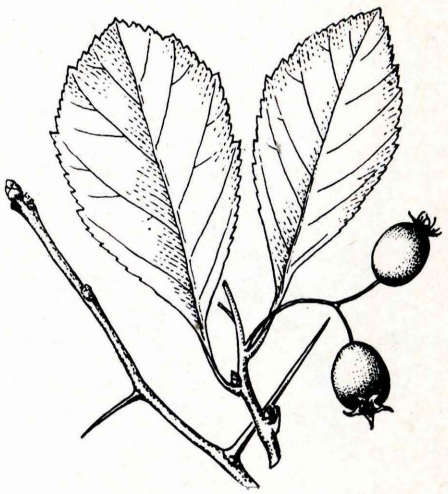
The medium-slender leaves are *broader toward the tip and wedge-shaped at the base,* with the margin finely toothed. They are dark green and rather shiny above and paler below.

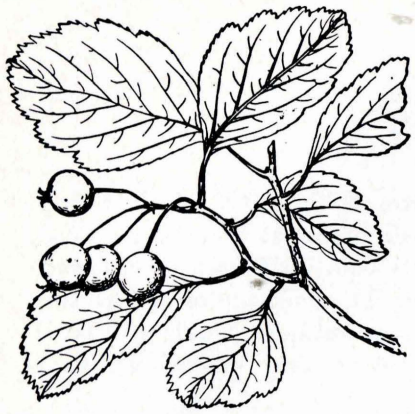
On young branches the twigs are yellowish brown and shiny, and dark grayish brown on older branches and trunks. The *twigs have thorns 3 to 4 inches long,* which are slender and slightly curved. *These spines continue onto the trunks* where they are often branched and 7 to 8 inches long.

The rounded, fleshy fruit is dull red or greenish, often grayish coated and usually containing two seeds.

On the trunk the bark is gray to dark gray brown and breaks into narrow, flat ridges.

The hard, heavy and tough wood is of little value because of the small size of the tree.





HAWTHORNE—*Crataegus margaretta*

Found generally throughout Iowa except in the northwest section, this short tree, with thin, erect branching and a narrow, open crown, prefers the banks of streams and open hillsides.

The small leaves are *narrowed or tapered at the base.* The tips are *round pointed and coarsely toothed, and the base is nearly smooth.*

The slender twigs are at first orange green and smooth, later becoming bright chestnut brown and shiny. The older branches are ashy or reddish gray, with *slightly curved spines* of chestnut brown color, $\frac{3}{4}$ to $1\frac{1}{2}$ inches long.

The fruit occurs in few-fruited, *small* drooping clusters. *It is dark red* or *rusty orange* in color with occasional dark dots and two or three seeds.

On the trunk the bark is gray to dark gray brown and breaks into narrow, flat ridges.

Like the other haws, the wood has no commercial value in Iowa.

PEAR HAW—*Crataegus tomentosa*

The pear haw is found principally in the eastern and central sections of the state. It is a short tree with horozontal branching which forms a wide, flat head.

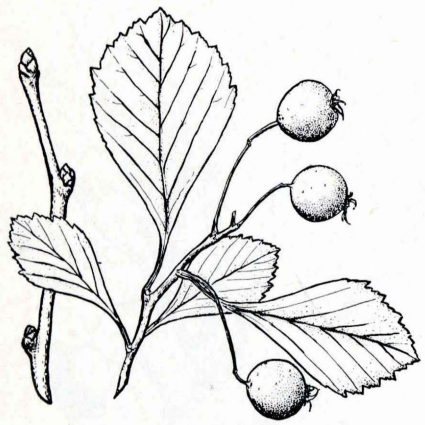
The leaf margins are coarsely double toothed, are oval to broad oval, grayish green in color and *velvety-hairy* beneath.

The young slender twigs are covered with velvety hair, turning dark orange and later ashy gray. There are occasional 1- to $1\frac{1}{2}$-inch spines which are orange to ashy gray.

The fruit of this haw occurs in many-fruited, *erect clusters and the fruit is pear-shaped or elongated.* It is dull orange red in color with two or three nutlets. *The fruit hangs on the tree through the winter.*

Pale gray to dark brown, the bark is quite furrowed.

The wood has no commercial value.



PUNCTATE HAW (DOTTED THORN)—*Crataegus punctata*

Found principally in the northern and central part of the state in open woodlands and pastures, this tree is low growing with a rounded or flat top.

The fan-shaped leaves have a decidedly wedge-shaped base, and the margin is toothed toward the outer end of the leaf only. The leaves are quite thick, firm and gray green above, with the veins *sunken on the upper surface.*

The stout twigs are velvety when young. At first they are light orange in color, later turning ashy gray. The spines are slender, straight, *light orange brown or gray and 2 to 3 inches long.*

The fruit occurs in many-fruited, drooping clusters. The individual yellowish red fruit is $\frac{1}{2}$ to 1 inch long, *marked with many small white dots* and with five nutlets.

The bark is similar to that of the other haws. On branches it is light orange to ashy gray. On older stems and trunk, it is gray to dark gray brown and breaks into flat, narrow ridges.

The wood is of no commercial value.

RED HAW (HAWTHORN, THORN APPLE)—*Crataegus mollis*

This is the most common of the haws found in Iowa as well as the eastern United States. It is found in all counties of the state. It is

also the largest of the haws, reaching a height in Iowa from 25 to 30 feet, with a broad, rounded and open head. It prefers rich bottomlands, stream borders or lower slopes.

The leaves are quite large, broad and coarsely toothed, *rounded at the base and slightly lobed.* They are light green in color with woolly-hairy stems.

Covered with a matting of long white hairs when young, the twigs become darker and smooth with age. The spines are straight, thick and *bright chestnut brown,* 1 to 2 inches long.

Occurring in few-fruited, drooping clusters, the fruit is *scarlet in color* with occasional dark spots. The flesh of the fruit is thick and yellow. Each fruit contains four or five nutlets.

On trunks and older stems the bark breaks into narrow, flat ridges. On twigs and branches, it is light orange brown to ashy gray.

The wood has no commercial value.

WILD PLUM (AMERICAN PLUM)—*Prunus americana*

When grown in the open, the common wild plum is a low-branching, rounded tree, but becomes shrubby when grown in thickets or in crowded conditions. It is found throughout the state along fencerows, borders of woods and waste places. It is a valuable wildlife tree.

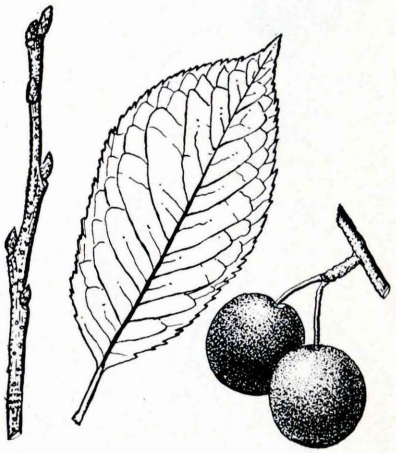
The leaves are similar to cherry leaves in shape, but are *thinner, less firm,* lighter green and less shiny above; light green beneath and with a wrinkled appearance.

The twigs are slender, orange brown, turning *dark reddish brown* and *marked with tiny raised light dots.* The short side twigs often are *spiny.*

The fleshy fruit is sweet, round to oval, about 1 inch in diameter with a rounded seed. It is red to yellowish red when mature in late August. It is used for jams and jellies.

On young stems the bark is *orange brown to dark red brown and is smooth and shiny.* On older stems it is darker colored and breaks into *large, thin scales or plates.*

The wood is heavy, hard, close grained and strong with a reddish-brown heartwood. It is of little importance because of the small size of the tree.



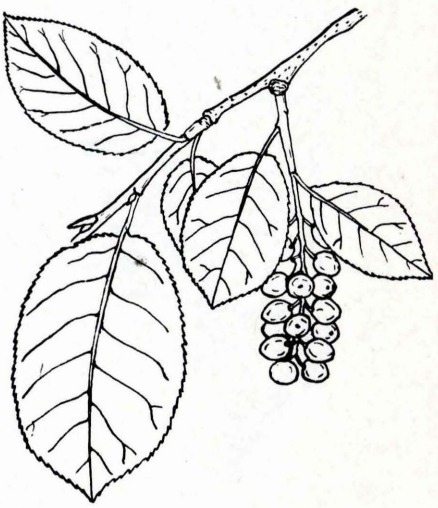
CHOKE CHERRY—*Prunus virginiana*

This is a small tree with frequently a crooked or inclined trunk and a narrow, open, slender-branched head. It is found over most of the state at the edge of woods, in fence rows and waste places. It is a beautiful tree when in flower in the spring, and is a valuable wildlife tree.

The thick and firm leaves are dark green and shiny above, pale and dull beneath. They are oval and quite broad, and narrow toward the base.

The bitter and aromatic twigs are stout, light brown to dark red brown and are *marked with large, oblong white spots.*

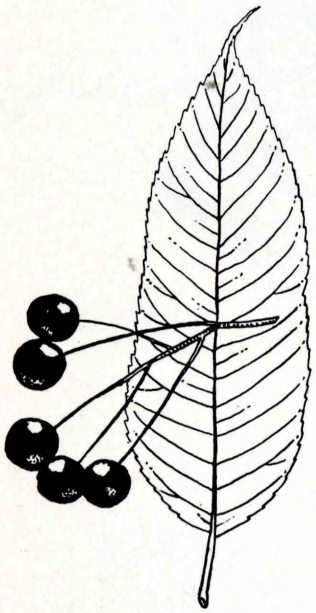
The small, fleshy and cherrylike fruit is found on short stems in



clusters similar to grapes. It is *nearly black* and is edible when ripe. It is used for jellies and jams.

On young stems the bark is smooth and gray. On older stems it becomes *dark gray, slightly roughened or scaly and matted.*

The heavy, hard, close-grained wood is not strong and is of no importance because of the small size of the tree.



PIN CHERRY
(WILD RED CHERRY, BIRD CHERRY)—*Prunus pennsylvanica*

This small, slender tree, with the branches growing in an upright position and forming a narrow, open head, is found over northeastern and central Iowa. The fruit is a favorite of the birds.

The leaves are rather *narrow, sharp pointed at the outer end and slightly rounded at the base.* They are bright green and glossy above and paler green below.

The bright red twigs are *shiny,* covered with *pale, raised spots,* and they have a bitter, aromatic taste. The *older twigs sometimes develop spurlike lateral branchlets.*

The fruit is small and cherrylike in clusters on *long stems all originating at one point on the twig.* The fruit is light red in color.

On young stems the bark is dull red, marked with orange-colored spots and the *underbark is bright green.* On older stems and trunks it is dark red brown and separated into broad, papery scales.

The light, soft and close-grained wood is of little importance because of the small size of the tree.

BLACK CHERRY—*Prunus serotina*

The black cherry is a valuable timber tree of medium size reaching a height of 60 feet and a diameter of 2 feet. It develops a large, rounded, oblong crown when grown in the open and is found generally throughout Iowa, although it is less common in the northwest part. It is found usually on rich, moist soils in mixture with other species.

Larger than pin cherry leaves, but *narrow and pointed at both ends,* the leaves are green and very shiny above.

The twigs are dark red brown, sometimes grayish, with the distinctive taste of the cherries.

The fruit occurs in clusters similar to choke cherry, but the clusters are usually larger. The purplish red fruit is edible when ripe, and it is a valuable bird food.

On young stems the bark is grayish brown to red brown, with prominent white spots. On older trunks it is dark reddish brown to almost black, and very rough, breaking into upturned, stiff thin scales.

The valuable wood is hard, moderately light, strong and straight grained with a satiny surface and rich light brown color. It is easily worked and prized as a furniture and cabinet wood and for interior finish.

IOWA CRAB (WILD CRAB, PRAIRIE CRAB)—*Malus ioensis*

The wild crab is one of our most beautiful trees in the spring during flowering. It is a small, round-topped, open-headed tree with stout irregular branching. Used some for ornamental plantings because of its beauty, it should be preserved whenever possible. Found through-

out Iowa in pastures, open woodlands and along roads, it is not too common in the northwest part of the state.

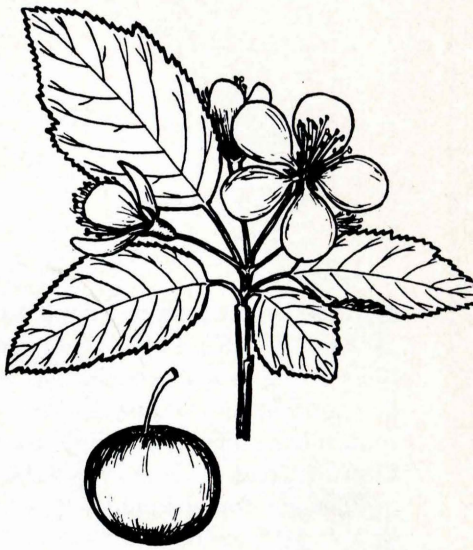
The broadly oval leaves with a slightly wedge-shaped base are toothed or slightly lobed. They are dark green and lustrous above and pale green and slightly hairy below. The leaf stems are short and hairy.

The twigs are irregular, short branched, crooked and often spurlike.

The fruit is a small, round, greenish apple, 1 to 1½ inches in diameter and of poor eating quality.

On stems and trunk the bark is grayish to light brown or reddish brown. On larger trunks it breaks into small, narrow ridges or long, narrow scales.

The hard, heavy and close-grained wood is of no commercial importance because of the small size of the tree.



MOUNTAIN ASH—*Sorbus americana*

This small, slender, beautiful tree is seldom larger than 20 to 30 feet in height, and is used widely for ornamental plantings. It is found only in extreme northeast Iowa.

The compound leaves have oval leaflets pointed at the tip and rounded at the base, and the margins are rather finely and sharply toothed. The leaves are dark green above and paler green beneath, with leaf stems green to somewhat reddish.

The buds are large, sharp pointed and with a curved lip.

The twigs are blunt, at first hairy but later becoming smooth and brownish.

The tree can be identified by its *large clusters of brilliant, coral-red berries* which ripen in the fall and *often remain on the tree during the winter.*

The bark is quite smooth, grayish to gray brown or yellowish brown, becoming somewhat roughened on older trunks by the presence of small platelike scales.

The inner bark is fragrant.

The soft, weak wood is of little value.

JUNEBERRY (SERVICEBERRY, SHADBUSH, SHADBLOW, MAY CHERRY)—*Amelanchier arborea*

A small tree growing to a height of 35 feet under favorable conditions, the Juneberry in the western part of the state is usually only shrublike. The tree flowers in the early spring, and has beautiful, delicate white flowers. It is desirable as an ornamental.

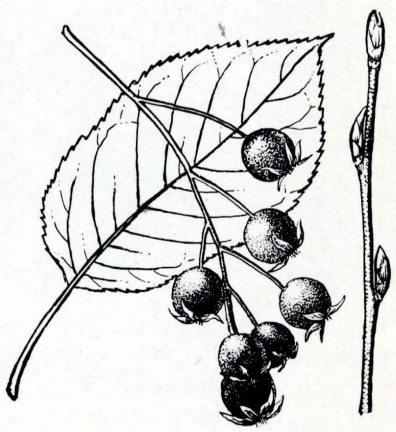
Somewhat like cherry leaves in shape and outline, the leaves are stubbier. They are dark red brown as they unfold, but later dark dull green above, pale below and thick and firm.

The slender twigs have long-pointed, yellowish buds.

The open clusters of small, berrylike fruits ripen in early summer, turning from a bright red to purplish when ripe.

The tree has a *smooth,* dark ashy gray and matted bark.

Although the wood is heavy, strong, hard and close grained, it is of no commercial value in Iowa.

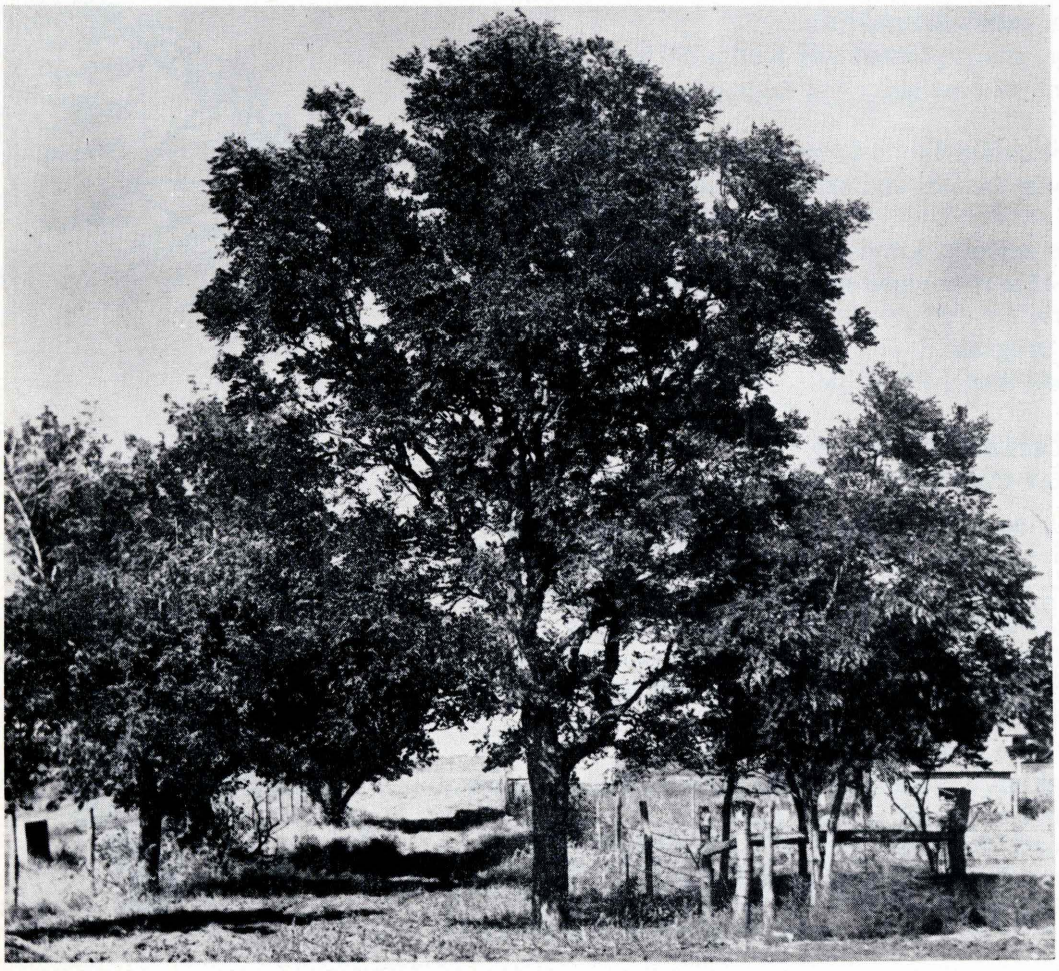


The Legume Trees

THE LEGUME TREES belong to one of the largest families of plants. They get their name from their fruit, which is a legume, or pod, the same as our garden pea. The legumes have root nodules containing nitrogen-fixing bacteria, which make them of great value as a soil-building plant. These nodules are found upon the roots of the tree species as well as the valuable food and forage plants such as clover, vetch, dal, bean, pea and alfalfa.

The legume trees produce some of the finest cabinet woods as well as a great many minor forest products such as tannins, gums, resins, dyes and drugs. Only three species grow native in Iowa, and none of these is of any great commercial importance. They are the honey locust, Kentucky coffeetree and redbud.

A fourth tree, while not native to Iowa, is discussed because it has been so widely planted in the state. This is the black locust.

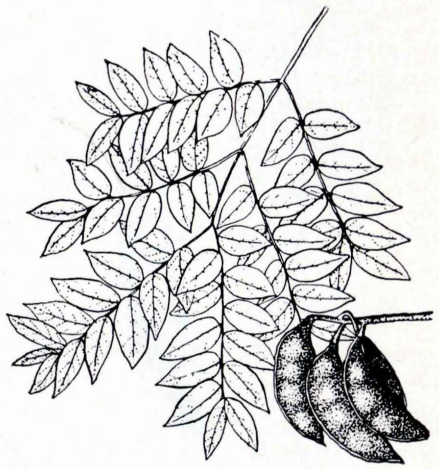


Kentucky Coffeetree

KENTUCKY COFFEETREE

(COFFEE BEAN TREE)—*Gymnocladus dioicus*

The Kentucky coffeetree is a medium- to large-sized tree with *coarse, heavy,* upright branching which gives the tree a naked appearance during the winter months. Found growing over the east central United States to eastern Nebraska and Kansas, it grows quite widely over Iowa as scattered individual trees or small groups of trees, in mixture with other species. It prefers rich bottomlands, but often is found on drier locations.



The leaves are *doubly compound,* with an almost branchlike central stem and are *large, 1 to 3 feet long.* The leaflets are 1 to 2½ inches long, dark green above and a yellow green beneath, sharp pointed at the apex and with margins wavy or almost smooth.

The twigs are *very thick, stocky, blunt and marked by unusually large leaf scars* and with a large, pink pith.

The fruit is a *large, broad, stubby, very hard or horny dark brown pod,* containing *large, brown, flinty, round, somewhat flattened beans,* from which the tree gets its name.

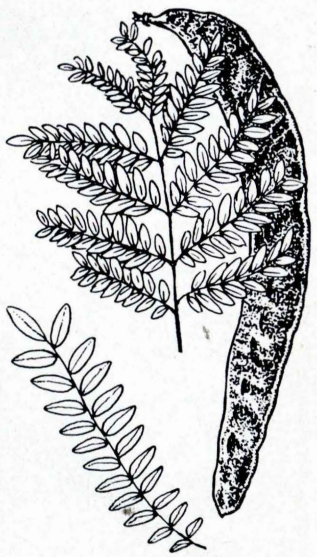
On the trunk and branches the bark is rough and gray, breaking into very characteristic *flat ridges or plates with upturned edges.*

The heavy wood is strong, moderately hard, coarse grained and moderately durable. It is used occasionally in cabinet work, but mostly for posts, railroad ties and farm construction.

HONEY LOCUST

(THORNY LOCUST, THORN TREE)—*Gleditsia triacanthos*

This is a medium to large spreading tree with pleasing, graceful, lacy or fernlike foliage. It is found over the east central United States to eastern Nebraska and Texas and occurs over Iowa on moist soils. It has become a nuisance in many depleted pastures where it has spread widely and flourished.



The *singly or doubly compound* leaves have small leaflets 1 to 1½ inches long with rounded tips. They are dark green above and lighter or yellow green beneath with margins very slightly toothed.

The buds are very small.

The twigs are slender, shiny, greenish brown to reddish brown. Older twigs, branches and the trunk usually are armed with long, pointed, single- or three-branched thorns.

The fruit is a *large, long, dark brown, flexible, curled pod,* with seeds rounded, flattened and bean shaped. The green seed pods contain a honeylike fluid from which the tree gets its name.

On branches and smaller trunks, the bark is dark red brown and fairly smooth. On larger trunks it breaks into long, thin, flat, longitudinal ridges somewhat curled at the edges. The trunk is often armed with many branched, stiff, sharp, pointed, reddish thorns. Some trees are almost free from thorns and a thornless variety has been produced for ornamental use.

The wood is hard, strong, coarse grained and moderately durable. It is used some for posts and farm construction.

BLACK LOCUST—*Robinia pseudoacacia*

Not native to Iowa, the black locust is included here because it has been planted so widely over the state, has escaped from cultivation and is sometimes found growing in mixture with native species. Its natural range extends from Pennsylvania southwestward to Alabama and westward to southern Illinois. It has been planted widely in Iowa for post production and erosion control. The tree often suffers extensive damage from the locust borer insect.

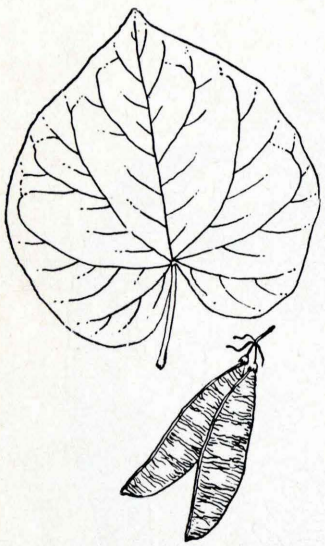
The pinnately compound leaves are *coarser than the honey locust leaves,* with the 11 to 15 leaflets 1 to 1½ inches long, rounded at both ends and with smooth margins.

The twigs are more crooked and angular than those of the honey locust—with short, stout, single, unbranched thorns, ¼ to ½ inch long.

The fruit is a *dark, red-brown, flexible pod 3 to 4 inches long,* containing small, reddish-brown beanlike seeds.

On young branches the bark is smooth and *greenish to brown in color.* On older branches and trunks it is broken into a network of coarse, deep ridges and is gray to gray brown in color.

The very heavy, hard, close-grained wood is very durable. It is used for posts and poles, railroad ties, insulator pins, fuel and occasionally for lumber.



REDBUD (JUDAS TREE)—*Cercis canadensis*

In Iowa this is a small tree or large shrub with coarse foliage and a spreading, open crown. It is found over most of the eastern half of the United States, and in Iowa it is found mostly in the eastern and southeastern section scattered through existing woodlands. It is used widely as an ornamental because of the rose-pink flowers which appear early in the spring along the branches before the leaves appear.

The peculiarly *large, broad and rounded leaves have a distinct heart shape with smooth margins.* They are glossy green and firm, turning in autumn to a bright, clear yellow. They are palmately veined.

The buds are plump and reddish.

The twigs are dull red to red brown, often grayish and not shiny.

The fruit is a pod similar to a pea pod, turning deep red brown when ripe and containing small, rounded, flattened beanlike seeds.

The bark is dark red brown, roughened and breaking into rather fine, narrow ridges on older stems and trunks.

The wood is heavy, hard, weak and of little commercial value.

The Maples

THE MAPLES are among our most important timber trees. Five species are found growing native in Iowa. Two are the box elder (ashleaved maple) and mountain maple, and are of little or no commercial importance. The other three are the black maple, sugar maple and soft maple. All three of these are important timber trees. The soft maple is the most common, and was used widely by the early settlers for planting in groves about their farmsteads. Many of these old groves are still standing. They were planted for shade, protection and forest products such as fuel, fence posts and lumber.

The sugar and black maples are much alike, and many do not distinguish between the two. Both are slow growing, and the supply is becoming limited. It is these two from which maple sirup and sugar are made. There still are a few maple groves in the state today from which sugar and sirup are being made, but this practice is becoming rare in Iowa. Gathering the sap from these maples and boiling it down into sirup and sugar was being carried on by the Indians when the first white settlers arrived in this country. The settlers soon adopted this practice. The sugar maple is the best species for the production of sugar and sirup.

Both the sugar and black maple are widely planted for shade and ornamental purposes. When grown in the open they have a rounded, dense crown, and make an exceptionally heavy shade. In the fall their leaves turn a brilliant color, and they add a great deal of beauty to the landscape. At this time of the year they stand out prominently from the other timber trees.

The wood of both is strong, hard and heavy, and has many special uses. Some of the principal uses are flooring, furniture, shoe lasts, handles, spools, bowling pins and many other small items.

Sugar Maple

SILVER MAPLE (SOFT MAPLE)—*Acer saccharinum*

This is a fast-growing, moisture-loving tree occurring naturally on moist bottomlands and along streams. It is a large tree, often attaining a height of 60 to 80 feet and a diameter of 3 feet or more. It can be planted on a variety of soils, and was planted extensively for windbreaks and woodlots by the early settlers. The remains of many of these old groves still are standing. When grown in the open, it forms a short trunk dividing into a number of large branches. When grown with other timber it forms a long, clear stem with a thin crown.

It is found throughout the eastern United States as far west as Nebraska and Kansas. It is quite general in Iowa along streams except where it has been planted on higher land.

The soft maple has opposite leaves on the stem, 3 to 7 inches long and 3 to 6 inches wide with five lobes. The lobes are sharp pointed and deeply cut. The leaves are bright green above and *pale to silvery white beneath.* The leaf stems are long, slender, smooth and reddish.

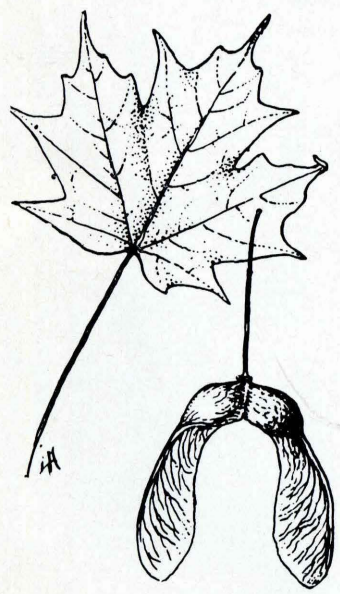
The buds are rounded, blunt pointed and red or reddish brown in color.

The twigs are smooth, shiny and reddish in color. *Late in the winter, many clusters of showy flower buds appear on the tree.*

The fruit is a pair of winged seeds with wings 1 to 2 inches long on slender, flexible, threadlike stems about 1 inch long. It ripens in the late spring.

On branches the bark is *smooth and grayish* with a tinge of pink. On large branches and trunks it is *dark gray, scaly and shaggy* with many loose, scaly plates. It is not deeply furrowed.

The fine-grained wood is soft, fairly strong but not durable. It is used for furniture, local farm needs, boxes, baskets, crating and blocking, toys and fuel. It is a satisfactory wood for general farm construction.



SUGAR MAPLE (HARD MAPLE, ROCK MAPLE)—*Acer saccharum*

The hard maple is one of our largest and finest forest trees, growing to a height of 80 feet with a diameter of 2 or more feet. The tree produces a dense, round, compact crown when grown in the open and is used quite extensively as a shade or ornamental tree. In the fall the yellow, red and crimson colors of the leaves form a very showy and beautiful part of the landscape. It is the best of the maples for production of maple sirup and sugar.

It is found throughout southeastern Canada, the eastern United States and as far west as central Iowa, but is much more common in the eastern part of the state, mostly on the moist soils of bottomlands and lower slopes with north, east or northeast exposures.

The leaves are three to five lobed, but usually *five lobed.* The lobes are *deeply cut* with rounded divisions between the lobes, dark green above and *pale green with a silvery cast below.*

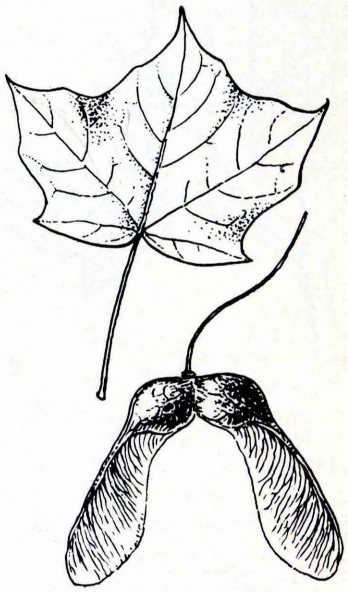
The *twigs are opposite on the stem,* smooth and gray to brown in color.

Similar to other maples, the fruit is a pair of winged seeds about 1 inch long. The seeds ripen in the autumn.

On large branches and trunk the bark is *light to dark gray,*

narrowly ridged with long, deep furrows, sometimes becoming scaly.

The hard, heavy, strong wood is close grained and light brown in color. It is one of our most valuable woods and used extensively for flooring such as for basketball, roller skating and dancing, and for bowling pins, shoe lasts and many other specialty products.



BLACK MAPLE (HARD MAPLE)—*Acer nigrum*

This tree is very similar to sugar maple, for which it is often mistaken. It is also used quite extensively for shade and ornamental plantings. It is found growing further west than the sugar maple, and as far west as Nebraska. It is found over most of Iowa, usually on lowlands and moist slopes.

The leaves are three to five lobed, but with the lobes sharp pointed and *not so deeply cut* as the sugar maple. The leaves are dull green above and *yellow green* below with soft hairs, especially along the yellow veins. The *margins of the leaves droop, making them appear somewhat wilted.*

The twigs are stout, light to dark gray, smooth and opposite on the stems.

The fruit is a pair of winged seeds ripening in autumn as does the sugar maple.

The bark is very similar to sugar maple, except that it is *usually darker.*

The wood is almost identical with sugar maple and is put to the same uses.

BOX ELDER (ASHLEAVED MAPLE)—*Acer negundo*

The box elder is a fast-growing, wide-spreading, short-stemmed tree of irregular shape. It is of medium size and under favorable conditions it attains a height of 50 to 60 feet and a diameter of 24 inches. However, it is a rather short-lived tree, is quite brittle or fragile and is of little value. Because of its rapid growth on good soils, it has been planted frequently for shade and ornamental purposes in areas where other trees do not grow well. It is found over most of the eastern United States as far west as Montana, Utah and Arizona. In Iowa it is found mostly on moist bottomlands and along streams except where it has been planted on higher land.

The compound leaves have three to five notched or lobed leaflets, 2 to 4 inches long and 1 to 2 inches wide. They are dark green above and lighter green below.

The *twigs are green to purplish,* covered at first with bluish white bloom and *later becoming smooth and shiny.* The *branching is opposite.*

The winged seed is similar to the other maples but occurs in *drooping* clusters which mature in the fall and *remain on the tree for several months.*

The finely ridged bark is grayish to dark brown in color sometimes with a greenish tinge.

The wood is light, soft and easily worked but hard to split. It is not durable and is of no commercial importance.

MOUNTAIN MAPLE—*Acer spicatum*

This is the smallest of the maples, growing to 30 feet in height with a broad, rounded, much divided crown. The tree likes shade and grows

in the shade of other timber. It is found in southeastern Canada and the New England states, and as far west as northeast Iowa. Here it is found on rich, moist loam soils. It is not an important commercial tree.

Somewhat heart shaped at the base, the leaves are three lobed, 3 to 5 inches long and nearly as broad. They are coarsely toothed along the margins, and the veins have a sunken appearance. The upper surface is dark green and smooth and the under surface is lighter green and covered with fine hairs. The leaves turn to brilliant red and yellow colors in the fall.

The twigs are hairy, greenish in color, later becoming reddish brown.

The buds are opposite, the same as those on other maples.

The fruit is very similar to other maples in that it is made up of a pair of winged seeds about $\frac{3}{4}$ to 1 inch in length.

The smooth, thin, reddish-brown bark becomes grayish in color and slightly roughened or ridged on older trees.

The wood is of no importance.

The Nut Trees

IOWA HAS TWO groups of nut trees. One is the hickories with seven species found in the state. The other is the walnuts with two species. At least some species of the nut trees, the hickories and the walnuts, are popular with most Iowa youngsters as well as adults because of their fruit. Fall outings are made by many families to gather the nuts of these trees. The flavorful meat of the nuts is used in cakes, cookies and other sweets. The nuts are as popular with squirrels as with humans. The squirrels gather these nuts and store them as winter food.

The nut trees are not only valuable for their fruit, but also are among our most valuable forest trees for the wood products which they furnish. This is especially true of the black walnut, which is one of Iowa's most valuable trees. From earliest colonial days, the black walnut has been a leading wood for furniture making and for gunstocks. Its attractive grain, ease of working, durability, ability to withstand swelling and shrinking and its strength make it very well suited for these uses. Throughout the history of the United States it has been our number one furniture wood. There is hardly a home today that does not have at least one piece of walnut

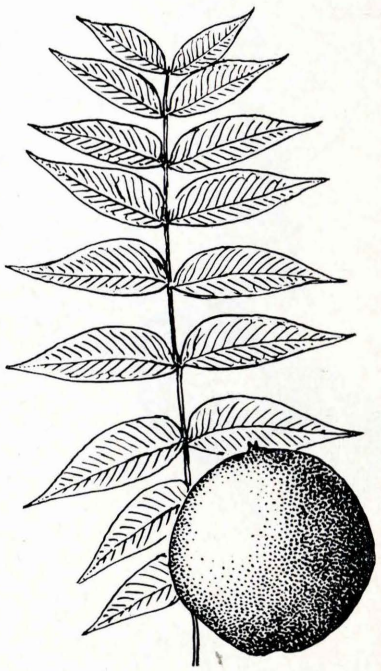
Black Walnut

furniture in it. Many of these are antiques, dating back 100 or more years. The Indians made a dye from the hulls of the white and black walnut nuts.

While no single hickory species is as popular as the black walnut, the hickories are important forest trees and also have special uses. The principal use is for handle stock, especially for handles of tools such as hammers, axes, forks, rakes, hoes and other hand tools. Hickory handles have helped greatly to make the American axe favorably known throughout the world. Other important uses are for agricultural machinery, lawn and rustic furniture and athletic equipment. The hickory is one of the best American fuel woods and is also one of the best woods for smoking meats. Hickory smoked ham, bacon and other meat products are preferred by many because of the excellent flavor the hickory smoke gives the meat. In Iowa the demand for hickory is limited, since none of the specialty markets are located in the state. Iowa black walnut, on the other hand, is highly sought by all walnut firms because of its high quality. The Corn Belt of the central states produces the highest quality walnut in the country.

BLACK WALNUT—*Juglans nigra*

The black walnut is one of our best known and most valuable trees. It is a large, straight-stemmed timber tree with an open crown. When grown in the open it is a short-trunked, low-branching, wide-spreading tree. Widely planted for its nuts, lumber and for ornamental purposes, it is found over the eastern United States as far west as Nebraska, Kansas and Texas. It is found quite generally over Iowa, scattered among other timber. Growing chiefly along bottomlands, in coves and on lower slopes, it prefers a deep, rich, moist but well-drained soil.



The tree has large, pinnately compound leaves, 12 to 24 inches long with 13 to 23 leaflets. The leaf stems are covered with fine hairs, *but are smoother than butternut.* The leaflets are 2½ to 3 inches long, yellowish green in color, tapering at the end and toothed along the margin.

The twigs are brownish, stout, blunt and with *prominent leaf scars.* The *pith is cream colored and chambered, dividing into thin plates or segments.*

The fruit is a large, rounded, brownish-black nut with a hard, thick, finely ridged shell enclosing a rich, oily kernel. The kernel is edible and highly nutritious. The nut is enclosed in a solid, nonsplitting husk, and is borne on the tree singly or in pairs.

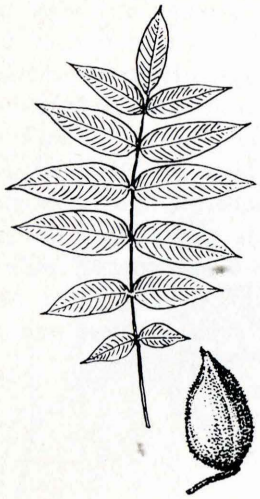
The thick bark is dark brown in color and divided by deep fissures into rounded ridges. It has a *chocolate brown under-color when broken from the tree.*

One of our most valuable woods, the *heartwood is rich chocolate brown and the sapwood is creamy white.* It is durable, strong and highly prized for furniture, cabinet work, gunstocks and finish lumber.

BUTTERNUT (WHITE WALNUT)—*Juglans cinera*

The butternut is smaller than the black walnut, more branched and lower headed. It is not an important timber tree. Occurring over the northeastern United States as far west as Nebraska and Kansas, it is found throughout Iowa mostly on bottomlands and lower slopes on moist, rich soils.

The pinnately compound leaves are similar to black walnut leaves, being 15 to 30 inches long with 11 to 17 sharp pointed, oblong, finely



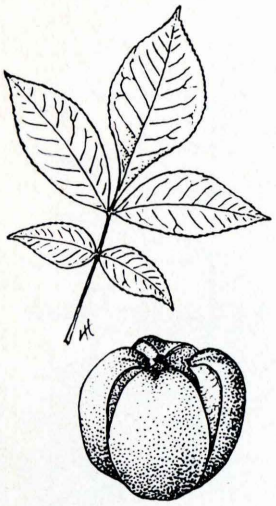
toothed leaflets 2 to 3 inches long. *The leaf stems and leaflets are velvety.*

The blunt, somewhat flattened buds are brownish and hairy. The twigs are stout and blunt with prominent leaf scars and *with a velvety collar just above the scars. The pith is chambered as in black walnut, but chocolate brown in color.*

The large, *lemon-shaped* fruit has a shell which is very rough and sharply ridged, and the kernel is edible. The nut is enclosed in a yellow-green husk with *short, rusty, clammy, sticky hairs.*

On young branches, the bark is *smooth and light gray.* On older branches and trunk it breaks into shallow, flat gray ridges which form a *diamond-shaped pattern.* The under-bark is chocolate brown.

The soft, light, coarse-grained wood is not strong but is smooth textured and works easily. It is light brown in color and takes a good polish. It is used some for furniture and interior trim, and makes good roof boards and sheathing for farm construction.



SHAGBARK HICKORY—*Carya ovata*

The shagbark is the most common of the hickories and is an important timber tree with a narrow, open crown. It is found over the eastern United States and is quite general throughout Iowa from bottomlands and moist slopes to the drier slopes and ridge tops.

The pinnately compound leaves are 8 to 16 inches long with five to seven dark yellow green, *broad oval leaflets* with finely-toothed margins.

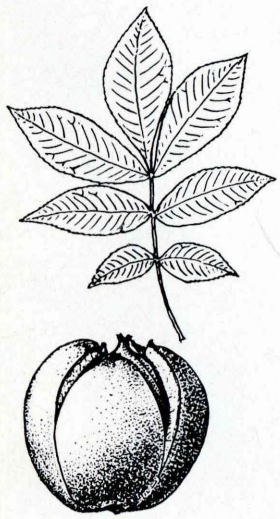
The large terminal buds *are* $\frac{1}{2}$ *to* $\frac{3}{4}$ *inch long, scaly, egg-shaped* and bluntly pointed.

The twigs are smooth, or clothed with short hairs.

The fruit is a brownish nut with a thick shell and a sweet kernel, enclosed in a *thick, splitting husk.*

The gray and very *shaggy bark* separates into *long, narrow, hard, tough, loose scales, lightly attached to the tree.*

The heavy, hard, strong and tough wood is used for fuel, tool handles, implements and cooperage. It is not in much demand in Iowa because of the absence of special markets.



SHELLBARK HICKORY
(KINGNUT, BIGNUT, MISSOURI HICKORY)—*Carya laciniosa*

The shellbark is the largest of our hickories, except the pecan, with a long, straight stem and a narrow crown. It is found in the east central United States and extends into southeast Iowa. It is usually found on deep, rich soils along river bottomlands. The tree is popular because of its large, sweet and highly edible nuts.

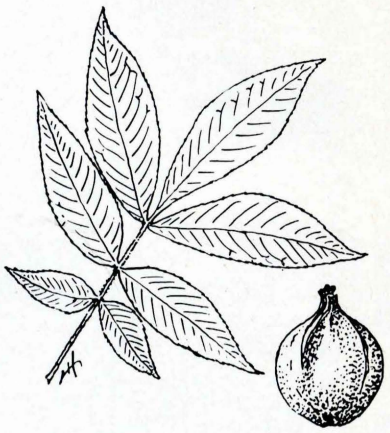
The leaves are pinnately compound, *15 to 20 inches long with 5 to 9 shining dark green leaflets. The leaf stems often hang on the tree over winter.*

The buds are very large, up to 1 inch long.

The bark is gray, similar to the shagbark hickory, and is very rough, breaking into horny plates and scaling from the tree.

The wood has uses similar to the other hickories. It is not an important timber tree in Iowa because of its scarcity.

BITTERNUT HICKORY—*Carya cordiformis*



This is a tall slender tree, 60 to 80 feet tall. It is found on moist sites on upper flood plains and at the bottom of slopes. It is widely distributed over the eastern United States as far west as Kansas and Nebraska. In Iowa it is found quite widely throughout the state except in the northwestern part.

The tree has pinnately compound leaves from 6 to 10 inches long and composed of from five to nine leaflets. The individual leaflets are *more slender than those of the other hickories* except the pecan.

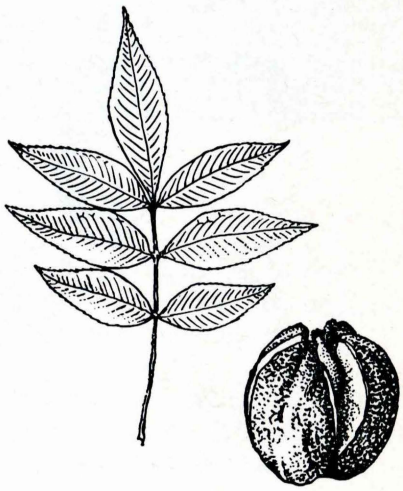
The shriveled buds are *long, slender, pointed and light yellow in color*. They are smaller than the other hickories.

The fruit is a medium-sized nut about 1 inch long with a thin, light green husk. The nut itself has a thin, brittle, creamy colored shell with a *reddish-coated kernel, very bitter in taste.*

Although the bark is made up of *very fine platelike scales*, it is much smoother than the shagbark hickory. On young branches it is gray in color, slightly ridged and often tinged with yellow. On larger branches and trunk it is granite gray and coarser ridged.

The close-grained wood is tough, strong, hard and heavy. It is not durable, and its principal uses are for hoops, handles and fuel.

MOCKERNUT HICKORY (WHITE HICKORY)—*Carya alba*



This is a tall, short-limbed tree with a narrow crown and upright branches. It is found quite generally in the eastern part of the United States as far west as Kansas and Texas and in southeastern Iowa. In Iowa it grows on uplands but usually occurs further down the slopes than shagbark hickory.

The pinnately compound leaves have five or seven leaflets which are *broader toward the tips and more wedge-shaped toward the base* than leaves of the other hickories. The leaflets are yellow green and glossy above, pale to orange brown beneath, with a *soft, velvety surface.* They turn a beautiful yellow in the fall.

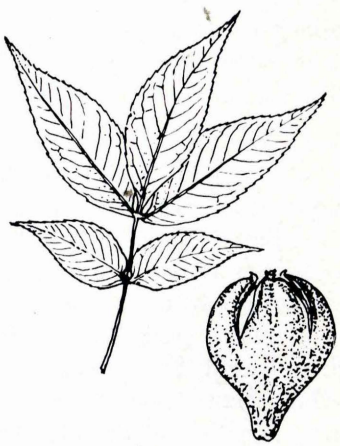
The *end buds are large,* $\frac{1}{2}$ *to* $\frac{3}{4}$ *inches long,* and reddish to dark brown. The twigs are heavy, light gray *with prominent spots.*

The oval, slightly pear-shaped fruit has a thick, strong-scented husk, which splits nearly to the base when ripe. The nut is reddish to dark brown, with a thick shell and small, sweet kernel.

On older branches the bark is light to dark gray and on the trunks it breaks into *broad, shallow and somewhat platelike ridges that are not shaggy.*

The heavy, hard, tough and strong wood is white in color; hence the name white hickory. It is used for vehicle parts, handles, hoops and athletic equipment.

PIGNUT HICKORY—*Carya glabra* (Mill.)



The pignut hickory is a tall, medium-sized tree, with spreading or drooping branches, reaching a height of 75 to 100 feet. It is found quite generally in the east central United States, but only rarely in Iowa in the extreme southeast section and usually on uplands.

The pinnately compound leaves are 8 to 12 inches long with five to seven individual leaflets.

The tree has large terminal buds, grayish and smooth, oval in shape but smaller than the shagbark hickory. The twigs are thin, smooth and glossy brown.

The small fruit has a *smooth shell without prominent ridges.* It is usually quite bitter in taste. The husk is thin, and clings tightly to the nut.

The *light, gray-colored bark is tight and closely ridged. Occa*sionally, it is rough and flaky, but not shaggy.

The heavy, hard, strong and flexible wood is used for fuel, tool handles and equipment.

PECAN—*Carya illinoensis*

The pecan is the largest of the hickories native to Iowa. It has a rather narrow, open crown, and more closely resembles the walnuts than any of the other hickories. It is found mostly in the states of the central Mississippi and Ohio River valleys. In Iowa it is found only in a few places along the Mississippi River and tributaries in the southeastern part of the state and along the river as far north as Dubuque County. It occurs mostly on rich bottomland soils close to streams. The tree has been planted occasionally as an ornamental in southeastern Iowa.

The pinnately compound leaves 12 to 20 inches long have nine to seventeen dark yellow green leaflets. The leaflets are 3 to 7 inches long, pointed, toothed and *narrower than most of the other hickories.*

The buds are sharp pointed, *brownish yellow in color* and *are covered with yellow hairs.*

The fruit is a *light chocolate-brown nut* in clusters of two to eleven, 1 to 2 inches long, oblong, *smooth-shelled* and enclosed in a *thin husk.* They are sweet and very edible.

The thin, tight bark is quite hard. On young branches it is smooth, but on old branches and the trunk it roughens into hard scales or plates.

The wood is hard, strong, heavy and tough, but not very durable. It is used some in the manufacture of handles, machinery and other small items, and is used some for flooring.

The Oaks

THE OAKS ARE the most important group of hardwood trees in the United States, and 13 species are found growing native in Iowa. They are among our most abundant and valuable trees. The strength and beauty of the wood makes it highly sought for a wide variety of uses.

Oaks have played an important part in the history and development of our country. Their first important use was in the construction of the sailing vessels which were so necessary for the early colonization of the country and in defending it in the first war for freedom. The toughness of the oak made it of high value for the keel, ribs and sides of ships. Even after steel began to be used for ship construction, oak keels and ribs were still used. In World War II, which was thought of as a war

White Oak

of steel, high-quality oak was in demand for this use.

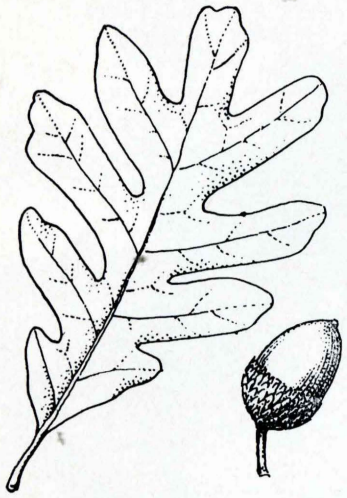
The large expanse of oak forests of the east and east central states must have been a sight to behold in the early days of this country. Only a meager amount of these vast oak forests remains, but the oaks still are one of our leading commercial timber trees. A few of the uses of oak are construction lumber, railroad ties, fuel, fence posts, mine props, flooring, furniture, ships and boats, handles, railroad cars, interior trim, barrels and kegs.

The oaks are among our largest eastern forest trees. A white oak in Maryland is 27 feet, 8 inches in circumference and 95 feet tall. In Maryland stands a red oak tree 23 feet, 5 inches in circumference and 105 feet tall. The oaks are rugged and long-lived trees; hence the old saying "as sturdy as an oak."

The oaks are divided into two groups, the white oak group and the red oak group. The white oak group contains such species as the white, bur, swamp white, chinquapin, overcup and post oak, all of which grow in Iowa. The red oak group contains the red, black, scarlet, black jack, hills, pin and shingle oak. All of these are native to the state. It is often difficult to distinguish definitely between some of the oaks of the same group.

WHITE OAK—*Quercus alba*

The white oak is one of our most important, largest, longest-lived and most valuable timber trees. It grows to 100 feet in height and 3 to 4 feet in diameter. In the timber it forms a tall, straight tree, but in the open it is wide and spreading. Found over all of the eastern United States and widely over Iowa except the northwestern part, it occurs on a wide variety of soils, but usually on upland clay soils.



The single leaves are 4 to 7 inches long and about half as broad, *deeply divided into five to nine rounded, fingerlike lobes.* The young leaves are a soft, silvery gray or yellow to red when unfolding, later becoming bright green above and much paler below.

The acorn is about 1 inch long, elliptical, and covered about 1/3 its length by a finely scaled, rounded cup. The acorn is relished by hogs and other livestock.

The *twigs are fine,* and gray to green in color.

Ashy gray to a very light gray, *the bark is decidedly scaly.* On older trunks it is somewhat ridged, but remains ashy gray and scaly.

This is one of our most valuable woods, and it is put to many uses. It is strong, heavy, hard, close-grained and durable. Its prominent grain makes it a good finish and furniture wood. A few of its many uses are veneers, furniture, posts, railroad ties, flooring, tight cooperage, implements, interior trim, ship building, and many others.

SWAMP WHITE OAK—*Quercus bicolor*

This is a large, narrow-crowned tree found throughout the northeastern United States as far west as Iowa and eastern Missouri. In Iowa it is limited to the eastern and southeastern parts, occurring on deep, rich, moist bottomlands along streams and on low areas.

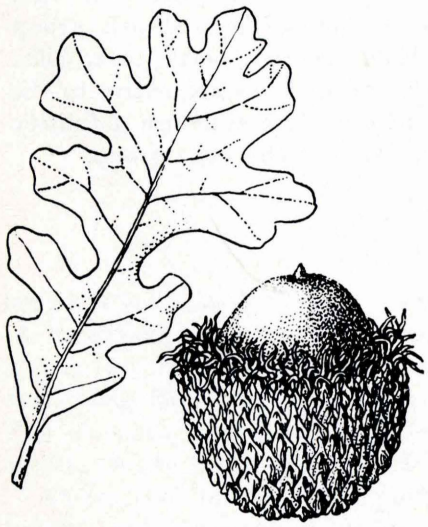
The single leaves have *rounded, shallow lobes,* resembling large, coarse teeth more than lobes. They are dark, shiny green above and gray to shiny white and downy below.

The acorns usually occur in pairs and are very similar to white oak acorns except that they *grow on long stalks.*

The twigs are green and lustrous, becoming light orange colored or brown the first winter.

The bark is smooth on small branches, purplish brown and separates into large, papery scales. On larger branches and trunks, it breaks into broad, flat ridges, with deep fissures between. It is gray brown to reddish brown in color.

The wood is put to uses similar to white oak wood.



BUR OAK (MOSSY CUP OAK)—*Quercus macrocarpa*

Belonging to the white oak group, the bur oak is found on a wide range of soils from deep rich bottomlands where it attains a large size, to dry ridges and western slopes where the tree is small and gnarled. It is strong-branched, usually with a dense crown. The bur oak is found widely over the eastern United States as far west as Montana and western Texas and throughout Iowa. Often it is the only tree on hillsides in the western part of the state. The bur oak was selected as the most typical tree of Iowa for the Memorial Park at Golden Gate, California.

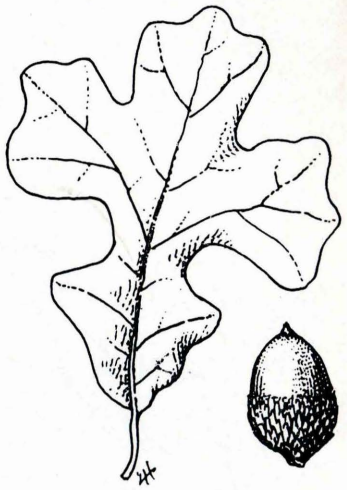
The single leaves have rounded lobes, with a large end lobe, *full and scarcely notched* which distinguishes it from white oak. The leaves are dark shiny green above, and lighter green to gray below.

The twigs are *heavy, rough and corky-barked.*

The fruit is a large, almost round acorn with a large *bur or mosslike, fringed* cup *covering half or more of the acorn.* It is from this burlike cup that the tree gets its name.

The thick, deeply furrowed bark breaks into distinct ridges. On small branches and twigs it is brownish, roughened and corky.

The wood is heavy, hard, strong and close grained, very similar to white oak but usually of lower quality. It is used for the same purposes.



POST OAK—*Quercus stellata*

The post oak is a small tree with a round, strong-branched dense crown. It is of no commercial value in Iowa and is found only in the southeastern part on dry ridges or limestone hills.

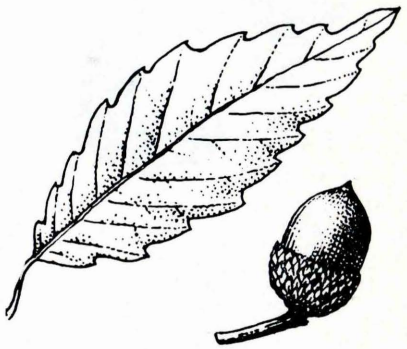
Usually 4 to 5 inches long and nearly as broad, the leaves are *deeply five lobed* with a broad, rounded division. The lobes are broadest at the ends. They are leathery in texture, dark shiny green above and light gray and hairy beneath.

The acorn is similar to the white oak acorn, but usually smaller and sometimes marked with dark, longitudinal stripes.

The young twigs are stout and at first coated with a thick, light-colored fuzz which soon becomes darker and later drops away.

The bark is rougher and darker than the white oak bark, and is broken into smaller scales, deeply ridged.

The wood is very heavy, hard, close grained, light to dark brown in color and durable. It is used largely for fence posts, fuelwood and railroad ties.



CHINQUAPIN OAK (PIN OAK, YELLOW OAK, CHESTNUT OAK, ROCK OAK)—*Quercus muehlenburgii*

A medium- to large-sized tree when growing in favorable locations, the chinquapin oak has a straight trunk and a narrow, rounded head. Found quite widely over the eastern United States to Iowa, where it is found principally in the eastern and southern parts, it prefers the bottomlands along streams or limestone ridges bordering streams where it makes its best growth.

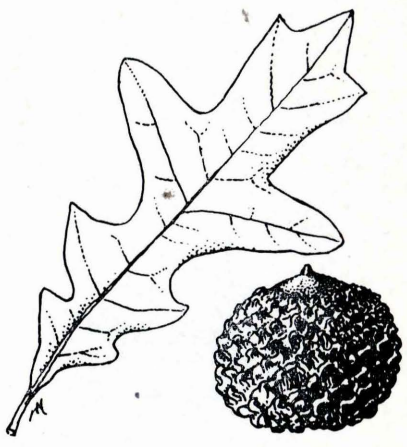
The single leaves are oblong, 3 to 6 inches in length and 1½ to 3 inches wide, *coarsely and sharply toothed.* They are thick and firm, light yellow green above to silvery white below.

The acorn is broadly oval, chestnut brown in color and enclosed for one-half its length in the cup.

The twigs are greenish tinged with red or purplish red, turning orange brown or gray brown.

The bark is quite thin, breaking into platelike scales similar to white oak bark.

The hard, strong wood is close grained and durable. It takes a high polish and is used for purposes similar to white oak, but is not important as a timber tree in Iowa.



OVERCUP OAK—*Quercus lyrata*

The overcup oak is rare in Iowa. It grows in the southeastern United States on moist bottomlands where it becomes a large tree. In Iowa it has been reported only in Iowa, Appanoose and Lee counties.

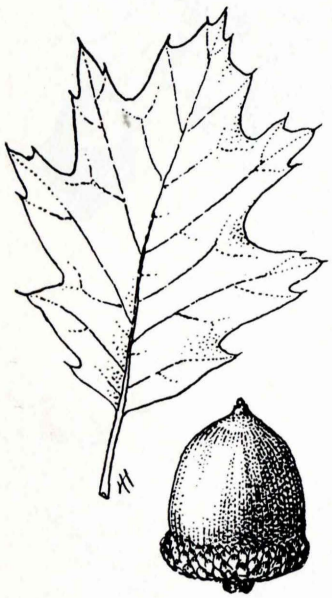
The leaves are single, *narrow and wedge-shaped near the base,* with rounded lobes and with *wide, square or oblique notches.* They are dark green above and silvery and velvety below.

The acorn is from ½ to 1 inch long with a round, rough cup *usually covering nearly all of the acorn.*

The slender twigs are more or less tinged with red and are velvety when they first appear. They later become ashy gray or light brown.

The *light gray* bark is sometimes tinged with red, is rather finely ridged and with a scaly or flaky surface.

The wood is heavy, hard, strong, tough and durable. It is used for nearly the same purposes as white oak.



RED OAK—*Quercus rubra*

This is one of the largest and most important timber trees in Iowa. One of the fastest growing of the oaks, it attains a height of 70 to 80 feet and a diameter of 2 to 3 feet. It has a wide, spreading head with few far reaching branches. Found growing over southeastern Canada and the northeastern United States, it reaches west to central Minnesota, eastern Nebraska and Kansas. It is found over most of Iowa on a variety of soils, except on the drier clay uplands. It prefers moist, rich soils on north, east or northeast exposures.

The tree has a single, lobed leaf with seven to eleven pointed or bristle tipped lobes.

The leaves are *thin, firm, dull green above, yellow green below, varying considerably but typically with lobes broader than others of the red oak group.*

The buds are ¼ inch long, light colored and larger than those of the black oak.

The twigs are small, slender, greenish brown to dark brown.

The fruit is a large, broad, rounded acorn with a *very shallow disk-like or saucer-shaped cup or cap.*

On young branches the bark is *smooth and gray to greenish.* On the trunk it breaks into long, narrow, shallow ridges flat and smooth on top. The *underbark* is light red.

The wood is heavy, hard, strong and coarse grained. It is used by farmers and others in Iowa for local construction. Other popular uses are cooperage, finish lumber, flooring, furniture, railroad ties and many specialty uses.

BLACK OAK (YELLOW OAK)—*Quercus velutina*

The black oak is a medium-sized tree, 60 to 80 feet tall and 1 to 2 feet in diameter, with a wide and irregularly shaped crown. It is found widely over the eastern part of the United States as far west as eastern Nebraska, Kansas, Oklahoma and Texas. It is found quite generally throughout Iowa on dry ridges.

The leaves are single, lobed, bristle-tipped, 5 to 10 inches long and 3 to 6 inches wide, sometimes shallow lobed and sometimes deeply lobed, the shape varying greatly. They are dark green and shiny above and pale beneath, with rusty brown hairs in the forks of the leaf veins.

The buds are *distinctly angular.* The twigs are stout and *dull reddish brown to dark brown in color.*

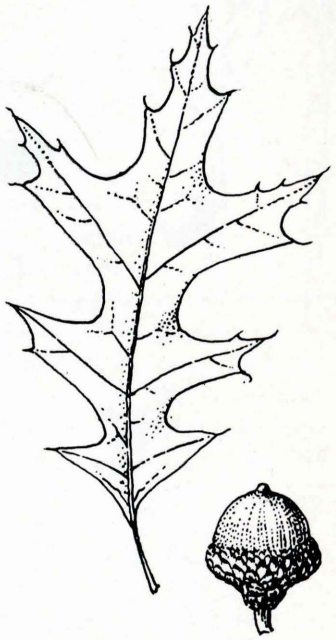
Its small, rounded acorn is often hairy or velvety. The turban-shaped cup has a rather deeply fringed edge.

On branches and young trees the bark is smooth and dark brown.

It is thick and black on older trees, with deeply furrowed and broken ridges. The *inner bark is bright yellow* and bitter to the taste, because of the tannic acid it contains.

The wood is hard, heavy, strong, coarse grained and checks easily. It is a bright red brown with a pale outer edge of sapwood, and is used for the same purposes as red oak but is of a lower quality.

PIN OAK (SWAMP SPANISH OAK)—*Quercus palustris*



This is a large, beautiful tree up to 70 feet tall and 2 feet in diameter. It commonly has a strong, upright single stem with numerous long, tough branches. The lower ones tend to droop, the middle ones are more horizontal and the upper ones are ascending. This gives the tree a pyramidal shape, and the many small, bristling twigs and branches give the tree its name. The pin oak is found widely over the east central United States. In Iowa it is found in the southeastern part of the state on rich, moist bottomland soils, along streams and rivers. It is planted widely for shade and ornamental use.

The leaves are single, lobed and bristle tipped. They are smaller and the lobes more deeply cut than the red oak leaves and with fewer lobes than the black oak leaves. They are dark green and very shiny above, paler and grayish below, with large tufts of pale hairs in the axils of the veins.

The young branches send out *short, stiff, spurlike lateral twigs.*

The fruit is small, about ½ inch long and almost round, with a shallow cup.

On young stems the bark is smooth, shiny and light brown. On old large limbs and trunks it is light gray brown and is covered by small, close scales.

The wood is heavy, hard, strong and usually knotty. It is similar to red oak, but of lower quality, and has the same uses as the other oaks of the red oak group.

YELLOW OAK (HILLS OAK, NORTHERN PIN OAK, JACK OAK)—*Quercus ellipsoidalis*

This tree is similar to the red oak but does not get as large and is heavier branched. Its distribution is restricted to southern Michigan, Wisconsin and Minnesota, northern Illinois and northeastern Iowa and is limited to moist, sandy soils and clay uplands.

The leaf lobes are bristle tipped, with lobes *typically narrower than red oak leaves, much more deeply cut and the leaf is more leathery in texture.* The leaves are dark, shiny green above. The buds are smaller than the red oak, and are darker brown. The twigs are bright reddish brown to dark gray brown.

The acorn is smaller than the red oak acorns, smooth and narrow elliptical, with a turban-shaped cup covering from 1/3 to ½ of the acorn. The edge of cup is not deeply fringed.

The tree has a pale yellow, thin underbark. The outer bark is rather smooth, with shallow, connected fissures. It is dark brown near base of tree to gray brown above.

The wood is similar to that of red oak, but is of a lower quality. Its use is more restricted to rough construction, fuel, posts and railroad ties.

JACK OAK (BLACK JACK OAK)—*Quercus marilandica*

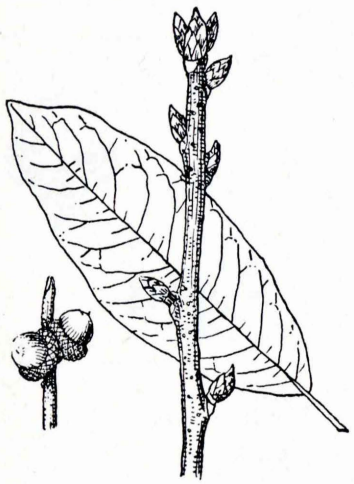
The jack oak is a small tree. It usually grows on a poor soil. It is found throughout the eastern United States to eastern Nebraska and Texas. In Iowa it is found mostly in the southeastern part on dry, sandy or infertile soils. It is of little commercial value.

The leaves are single, very slightly lobed to not lobed, and broadly wedge-shaped. They are thick, firm, dark yellowish green and glossy above, orange to brown and hairy below.

The small acorn is about ¾ inch long, yellow brown and often striped, enclosed for about half its length in a thick, light brown cup.

The rough, very dark—often nearly black—bark is broken into small, hard scales or flakes.

The wood is heavy, hard and strong but of little importance as a lumber tree.



SHINGLE OAK (LAUREL OAK)—*Quercus imbricaria*

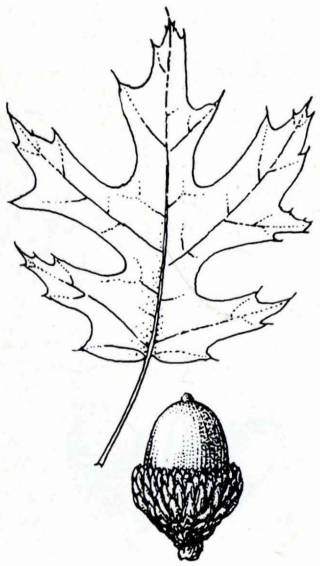
The shingle oak is a small- to medium-sized tree with a rather broad, rounded crown. When growing in the open it has a wide spread. It is distributed quite widely through the Ohio Valley, northward to Michigan and Wisconsin and westward to Iowa. Here in Iowa it occurs mostly in the southeastern part of the state on rich uplands.

The leaves are regular shaped and oblong. They are *not lobed, and in this respect differ from all the other native oaks.* They have a wavy margin, *are leathery in texture,* dark shiny green above and thick velvety underneath.

The fruit is a nearly round acorn, about ½ inch long and covered about halfway with a shallow, turban-shaped cup.

The rather thin bark is divided by shallow fissures into broad ridges of a dark brown color.

The wood is heavy, hard, and rather coarse grained. One of its early uses—for shingles—gives it its name. It is of little commercial importance today.



SCARLET OAK—*Quercus coccinea*

This tree is smaller than the red oak, and has a narrow, open head and slender branches. It is found growing quite generally in the northeastern United States as far west as eastern Iowa and Missouri on the lighter, sandier soils. It is often used as an ornamental because of its bright autumn colors.

The leaves are lobed and bristle tipped. They are bright, shiny green above and paler beneath, deeply lobed, with lobes narrower than the red oak. *They turn a brilliant scarlet in the fall.*

The buds are dark reddish brown and pale, hairy above the middle. The twigs are slender, light red or orange red, later becoming light to dark brown.

The oval acorn is ½ to 1 inch long, enclosed for one-third to one-half its length in a short-stalked cup.

The bark is divided by shallow fissures into irregular ridges covered by small, light brown scales slightly tinged with red.

Similar to red oak, but of lower quality, the wood is used for rough construction, fuel, posts and railroad ties.

The Poplars

THREE SPECIES of poplar grow in Iowa. They are the cottonwood, quaking or trembling aspen and the bigtooth aspen. They all are fast-growing trees and are relatively short lived. The wood of the three species is somewhat similar and not durable. Formerly none of the three was considered of much economic importance. But due to the depletion of the large stands of many of our more important trees and the increasing demand for wood for many uses, the utilization of poplar is increasing. The wood from them is being put to a wide variety of uses, among them pulpwood, veneer, lumber, excelsior and matches.

The quaking aspen is the most widely distributed tree species in North America and is found quite widely over Canada and the northeastern and western United States. It gets its name from its long, slender leaf stalks which cause the leaves to turn and tremble in the lightest wind or air movement. It reproduces both by seed and by root sprouts. The seed is widely dispersed by the wind and it springs up quickly on burned-over areas and old fields. This accounts for its wide distribution in the northeastern states and lake states in places where fires have burned the pines and other conifers.

The bigtooth aspen is similar to the quaking aspen. It has a more limited range and is found only in the northeastern United States and southeastern Canada. It gets its name from the coarse-toothed margin of the leaf.

The cottonwood found in Iowa is the eastern cottonwood, which is found over almost the entire eastern United States. It gets to be a much larger tree than either of the aspens, sometimes reaching a height of 130 feet and a diameter of 6 feet. It is found principally on bottomlands along streams and water courses. The cottonwood played an important part in the early settlement of the prairie states. It was often the only tree present over vast areas of the prairies where it was found along the streams and rivers. It provided the early settlers with shade and protection, fuel, posts, and logs for building materials. Although exacting in its seeding requirements, it can be transplanted readily. As the early settlers arrived on the prairie, one of the first things they attempted to do was to get trees growing about their homesteads. They made long trips of many miles to streams and rivers where they pulled the young cottonwood seedlings from sand bars, transported them to the homestead and planted them. Because cottonwood grows rapidly the plantings soon provided shade, protection from the winter winds, and fuel, posts and building material. The remains of some of these old, early groves still can be found about many farmsteads in the prairie states.

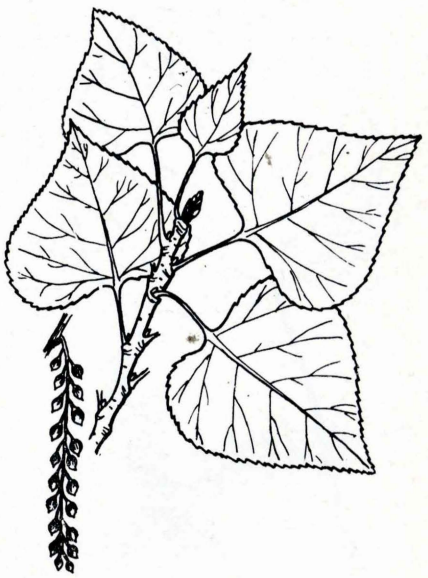
COTTONWOOD—*Populus deltoides*

The cottonwood is a large, relatively short-lived tree with a wide, spreading crown and a large straight trunk. It sometimes reaches a height of 100 to 130 feet and a diameter of 5 to 6 feet. It is found widely over southeastern Canada and the eastern United States as far west as the Rocky Mountains. It is found over all of Iowa on moist bottomlands and along streams and rivers, but it will grow on almost any of our soils.

The leaf is single, *triangular in shape*, with a pointed tip and a rather square base. It is rubbery textured with a coarsely toothed margin covered with soft white hairs on the underside and supported by a long, flattened stem.

The buds are large, ½ inch long, brown, pointed and covered with chestnut brown, resinous scales.

The twigs are coarse and brittle.



The fruit is a catkin with capsules containing light brown cottony seeds from which the tree gets its name. These cottony hairs carry the seed for long distances on air currents. Male and female flowers occur on different trees.

On young stems and branches the bark is light grayish green, breaking up into heavy ridges and becoming ashy gray to dark gray on older trees.

The soft wood is light in weight, not strong or durable and warps if not dried properly. It is suitable for a wide variety of uses, including lumber for farm construction. Other uses are for boxes, baskets, egg crates and crating.

LARGE-TOOTHED ASPEN (POPLAR, POPPLE)—*Populus grandidentata*

This is a fast-growing, relatively short-lived tree, sometimes reaching a height of 70 to 80 feet and a diameter of 24 inches or more. It has a tall, straight bole. It is found over southeastern Canada and the northeastern United States west to Minnesota and south to the Ohio River Valley. In Iowa it is found mostly in the central and northeastern sections on moist soils.

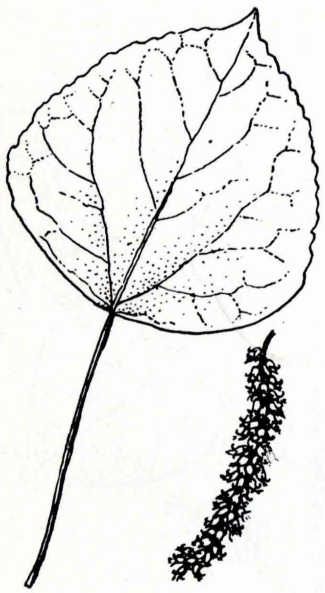
The single leaves are 3 to 4 inches long, with a dark green upper surface and with *large, coarse, irregular teeth.*

The buds are smaller than the cottonwood, more or less pale and *downy rather than resinous.*

The fruit is a catkin like the cottonwood fruit but the capsules are smaller and darker in color, containing brown, fine, tufted seeds. The male and female flowers occur on different trees.

On branches and small trees the bark is *light gray* in color. On older trees it is more *yellowish or brown,* breaking into dark gray to brownish-black shallow ridges near the base.

The wood is light colored with a thin and nearly white sapwood, soft and not strong or durable. It is used for pulpwood, excelsior, baskets, boxes and farm construction.



ASPEN (TREMBLING ASPEN, QUAKING ASPEN, POPPLE)—*Populus tremuloides*

The trembling aspen is a fast-growing, short-lived tree, not often exceeding 50 to 60 feet in height and a diameter of 18 to 20 inches. It has a narrow crown with a long bole free of lower branches. It occurs widely over southeastern Canada, all of western Canada and much of Alaska, the northeastern United States and the western United States. It has the widest distribution of any tree species. It grows on a wide range of soils and is often especially dense in cleared areas and areas which have been burned over by fire. It is common in eastern Iowa, but is less common in the western part of the state.

The leaves are single, broadly oval or nearly round, short, pointed at the end and *finely toothed* along the margins with *small swellings* on the teeth. They are shiny green above, dull gray green below with a *distinctly flattened leaf stem which causes the leaves to tremble* and from which the tree gets its name.

The buds are about 1/4 inch long, pointed and *somewhat resinous.*

The fruit is a catkin of small capsules, like that of the other poplars, and contains brown, fine tufted seeds. The male and female flowers occur on separate trees.

On branches and small trees the bark is smooth and gray green to a very light gray to almost white, often with dark circular markings. On old trunks it is dark gray and deeply furrowed.

The wood is light in weight and is not strong or durable. It is used for excelsior, pulpwood, baskets and boxes.

The Willows

THERE ARE SOME 200 species of willow and probably one-half of them grow in the United States and Canada. They range in size from small plants a few inches high to trees as large as 4 feet in diameter and 140 feet high. All of them grow near water, generally along the banks of streams or lake shores. Six species reach tree size in Iowa. They are the Missouri, pussy, sandbar, shining, peachleaf and black willows, with the black willow reaching the greatest size.

The willows are northern trees and like a cool soil supplied with an abundance of moisture. They are among the first trees to come into leaf and blossom in the spring. They reproduce naturally from seed and from cuttings, and have been used quite widely in the state for planting about farmsteads primarily for wind protection. The wood of the willows is soft, light, smooth textured and not durable. It is used to some extent for lumber, boxes, baskets and crates, and for artificial limbs. In the spring of the year the bark slips easily and is popular with youngsters for making whistles.

BLACK WILLOW—*Salix nigra*

The black willow is the largest of the willows found in Iowa, attaining a height of 75 feet and a diameter of 2 feet or more. It has an irregular, open crown and frequently a cluster of main trunks. It is found throughout southeastern Canada and the eastern United States, including all of Iowa.

The leaves are *narrow and taper pointed, with long, sharp curved tips and finely toothed margins.* They are shiny light green above, duller below and often velvety along the midrib. There are *prominent leaflike stipules at the base of the leaf stem.* The buds are reddish brown. The twigs are reddish or orange brown, slender and brittle.

The fruit is a catkin of small, light reddish-brown capsules, 1/8 inch long, with tufted seeds.

On young branches the bark is yellowish to reddish brown. On larger stems and trunks it is almost black, broadly ridged and shaggy or scaly.

The wood is soft, light in weight, smooth textured and not durable. It is used some for lumber and for baskets, boxes, crates, excelsior, pulpwood and artificial limbs.

MISSOURI WILLOW—*Salix eriocephala*

The Missouri willow is a small- to medium-sized tree with an open, oval crown and is found quite widely throughout the western part of Iowa and especially along the Missouri River drainage. It grows primarily on moist bottomlands.

The leaves are broadly lance-shaped, larger than the other willows, broader near the tip and rounded and tapered near the base. They are *thin, dark green and smooth above, gray green beneath with small leaflike stipules at the base of the leaf stem.*

The buds are reddish brown, woolly and $\frac{1}{2}$ to $\frac{3}{4}$ inches long. The twigs are reddish brown and not shiny.

The fruit is a catkin with light brown, narrow and long-pointed capsules.

The bark is thin, smooth, grayish and tinged with red. The bark is much smoother than that of the black willow.

The wood is light, weak and of little commercial importance.

PEACH-LEAF WILLOW
(ALMOND-LEAF WILLOW)—*Salix amygodaloides*

This small, narrow-crowned tree is found over southern Canada, the north central United States and throughout Iowa.

The leaves are rather short, broad, lance-shaped, sharply pointed and *bright shiny green above to gray green below.*

The buds are dark brown.

The twigs are smooth, shiny and orange to reddish brown.

The fruit is a catkin of *light reddish-yellow capsules,* $\frac{1}{4}$ inch long with brown tufted seeds.

The bark is grayish brown and ridged, but not as rough or scaly as black willow.

The wood is light in weight, soft, weak, brittle and not durable.

SANDBAR WILLOW—*Salix interior*

This small tree is often shrublike and forms dense thickets on newly formed sand bars. It is found over southern Canada and most of the United States. It is common throughout Iowa. It is the pioneer tree on newly formed soils along streams and has a dense, fibrous root system valuable for protecting soil against water cutting.

The leaves are *very narrow and pointed at both ends,* and are more slender than the other willows. They are smooth, *yellow green above,* pale beneath and *not glossy.*

The buds are brown, $\frac{1}{8}$ inch long and sharp pointed.

The twigs are slender, gray to dark orange and smooth.

The fruit is a catkin with light brown capsules $\frac{1}{4}$ inch long.

The bark is smooth and light gray brown on young stems. On trunks it is dark gray to brown and smooth or very shallow fissured.

The soft wood is light in weight, brittle and not durable.

SHINING WILLOW—*Salix lucida*

The shining willow is a small tree, often little more than a shrub. It is found over most of Canada and the northeastern United States. In Iowa it is found in the northeastern part and as far west as Emmet County. The tree is sometimes used for ornamental planting because of its shiny foliage.

The leaves are larger than the other willows with a sharp-pointed tip and a rounded base. They are *dark green* and *very shiny above* and paler below with a *broad, yellow midrib.*

The buds are orange brown, shiny and 1/4 inch long.

The twigs are orange to reddish brown and shiny.

The bark is smooth and brown on young trunks, becoming dark brown and coarsely ridged on old trunks.

The fruit is a catkin with light brown capsules and seeds with *tufted hairs 1/3 inch long.*

The light wood is soft, weak and of no commercial importance.

PUSSY WILLOW (GLAUCUS WILLOW)—*Salix discolor*

A small tree or large shrub with an open irregular or rounded crown, the pussy willow is found throughout southeastern Canada and the northeastern United States. In Iowa it is found along streams and lakes principally in the eastern part of the state. The large, velvety flower buds opening in the early spring have made this tree highly prized for decorative purposes.

The rather broad leaves are more bluntly pointed at the tip than the other willows, and they gradually narrow toward the base. They are *thick, heavy, dark green above and silvery white underneath.*

The buds are 3/8 inch long, reddish brown to purple and shiny.

The *twigs are hairy when young, later becoming smooth, reddish, greenish or purple.*

The fruit is a catkin with narrow, conical, *long, pointed hairy capsules.*

The bark is purplish or reddish on young stems. On older stems and trunks it is light gray brown to reddish, smooth or shallow fissured and somewhat scaly.

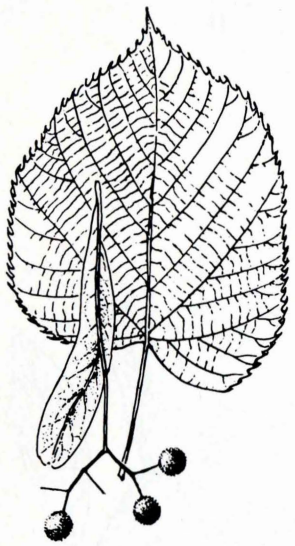
The wood is light, soft, smooth textured, not durable and of no commercial importance.

Miscellaneous

THERE ARE SIX single species of trees present in the state which are the only ones of their group found growing in Iowa. These are the pawpaw, sycamore, sassafras, buckeye, mulberry and basswood. Only two are of commercial importance. These are the basswood and the sycamore.

The basswood is an important timber tree found growing quite widely over the state. It thrives on cool, moist sites and is found principally in coves and on north and east exposures.

The sycamore is found principally in the southern part of the state and is primarily a bottomland tree growing on deep, rich, moist soils, scattered in mixture with other species. While of little importance as a lumber tree, it is popular as an ornamental and is often used for this purpose.



BASSWOOD (LINDEN, LINN)—*Tilia americana*

The basswood is a large, wide-spreading, round-topped tree with dense foliage. It is found through southeastern Canada and the eastern United States. In Iowa it is usually found on cool, moist soils in coves and on north and east slopes. It has been widely planted for street trees in our eastern cities and in Europe. The tree blossoms in late May or June, and the blossoms are a favorite with bees, yielding large quantities of honey.

The large leaves are rounded or heart-shaped, with *toothed margins* and with *one side of the base less rounded than the other*. They are dull green above and lighter green beneath. They vary quite widely in size.

The winter buds are *prominent, plump, bluntly pointed and dark red.*

The twigs are smooth and light brown to gray in color.

The tree has a very distinct fruit. It is an *open cluster of hard nutlets borne on a stem which comes from the center of a narrow, elliptical, leaflike wing.*

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

The wood is long fibered, smooth textured, nearly white and not durable. It is used for pulp, excelsior, woodenware, beekeepers' supplies, veneer, venetian blinds, interior trim, kitchen cabinets and many other uses. The basswood is one of our most valuable trees.

PAWPAW—*Asimina triloba*

In Iowa the pawpaw is only a small tree or large shrub with small, slender branches and an open crown. It is found quite generally over the eastern United States, west to southwestern Iowa, eastern Nebraska, Kansas and Texas. In Iowa it is found mostly on deep, rich bottomland soils or moist slopes in the southern part of the state.

The leaves are quite large, *8 to 10 inches long, somewhat pear-shaped,* bright green in color with prominent midrib and veins and clustered toward the ends of the branches.

The large, fleshy fruit is shaped like a thick, stubby banana, green

at first and turning yellow to dark brown when ripe. It contains large, dark brown, bean-shaped seeds. The fleshy part of the fruit is edible, with a sweet flavor, and is highly prized in some areas.

The buds are oblong, reddish and hairy.

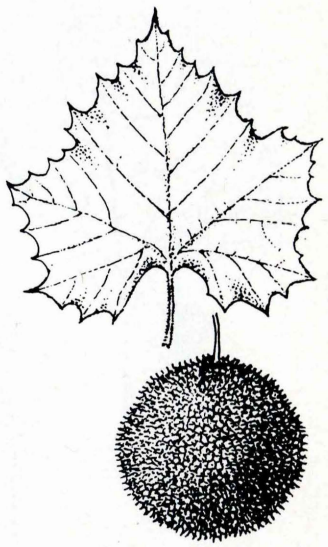
The twigs are light brown, tinged with red and marked with shallow grooves more or less netted.

The thin bark is dark gray brown, rather smooth, marked with ash-colored blotches. It breaks into very shallow fissures. The inner bark is tough and fibrous.

The wood is light in weight, soft, weak and spongy. The heartwood is light yellow in color.

The tree is of no commercial importance.

SYCAMORE (BUTTONWOOD, BUTTONBALL, PLANETREE)—*Platanus occidentalis*



This is one of our largest timber trees with a long, clear, strong central stem and spreading branches forming an open crown with coarse foliage. On favorable soils it will attain heights of 140 feet and diameters up to 10 feet. It requires an abundance of soil moisture, and is usually found growing along the banks of streams and rich bottomlands. However, it adapts readily to drier soils. The tree is found quite widely throughout the eastern United States, west to southern Michigan, central Iowa, eastern Kansas and western Texas. It is used widely for ornamental plantings.

The leaves are shaped much like those of the maples, but are *larger, lighter green* and with a *prominent midrib and palmate veins.* On young stems *leafy growths are present at the base of the leaf stem.*

The buds are conical, blunt, 1/4 inch long, smooth, reddish and shiny with a single closed scale.

The fruit is a characteristic *brown ball* of wedge-shaped, closely packed seeds. The heads of the seeds form the surface of the ball. The balls hang on the tree well into the winter and have given the tree the names of buttonwood and buttonball.

The tree has a very distinct bark which identifies the species. On young stems it is smooth, *grayish* to *greenish* or *brownish gray.* On larger branches and trunks it *breaks into thin, shell-like plates or scales which slough off, producing a grayish or yellowish to greenish patchy or mottled appearance.* The bark on the bases of old trees becomes dark gray and ridged.

The wood is medium hard, strong and tough, and not durable. It is used for lumber, tobacco boxes, butchers' blocks, furniture and interior finish.

BUCKEYE (OHIO BUCKEYE)—*Aesculus glabra*

The buckeye is a medium-tall tree, reaching 50 to 60 feet in height and 18 to 20 inches in diameter with a short, limby trunk and a compact, rounded head. It is found throughout the central part of the eastern United States west to eastern Nebraska, Kansas and Oklahoma. In Iowa it is found scattered in timber in mixture with other species in the southeastern and central parts, usually on moist, bottomland soils.

The leaves are palmately compound, with the five individual leaflets much narrowed toward the base. They are light green and

smooth above, yellowish green below and hairy along the veins. When crushed they have an unpleasant odor.

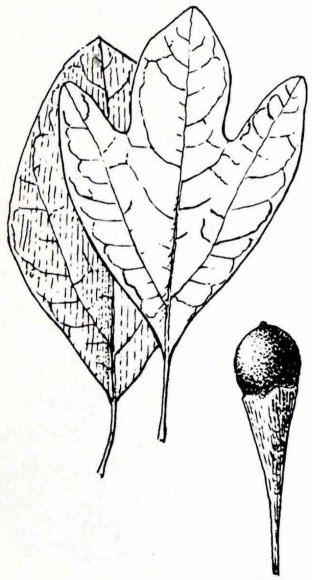
The buds are large, sharp pointed and with ridged scales.

The twigs are reddish brown to ashy gray, upright, *very stout, straight and coarse.*

The fruit is a *large, rounded, fleshy, tan husk dividing into two or three parts, covered with prickles or warts and enclosing one or two round, mahogany-brown shiny nuts with a prominent spot or eye on one end.*

The bark is ashy gray to gray brown, breaking into irregular shallow plates covered with roughened scales.

The wood is light, soft, smooth textured, weak and not durable. It is used some for paper pulp, woodenware and artificial limbs.



SASSAFRAS—*Sassafras albidum*

In Iowa, the sassafras is only a small tree, often no more than a large shrub. It has a more or less crooked trunk and usually a flat-topped, open crown. It is found through the eastern United States west to eastern Iowa, Kansas and Oklahoma. In Iowa it is found mostly along the Mississippi Valley in the southeastern part of the state on rich, sandy, well-drained soils. The bark of the roots furnishes the oil of sassafras which is used in flavoring.

The leaves are 4 to 6 inches long and *vary in shape* from slightly lobed to distinctly three lobed or mitten shaped. They are light green in color.

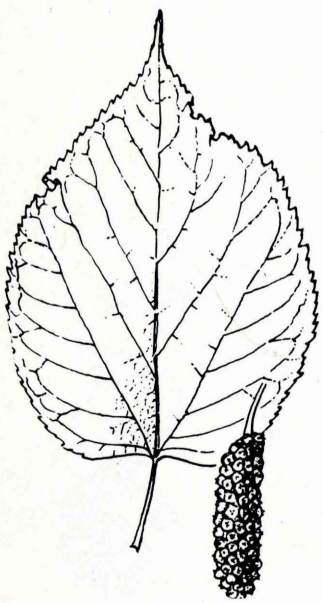
The buds are small, greenish in color and soft and hairy.

The twigs are smooth, yellowish green to reddish in color and have a spicy taste when chewed.

The fruit is an oblong berry *borne on an orange-red, club-shaped stem.* When ripe they are dark blue to black.

On young stems the bark is yellowish green, turning reddish brown on older stems and the trunk. It is comparatively smooth except on older trunks, and often on these it is very deeply and irregularly divided into narrow, coarse ridges.

The wood is light, soft, weak and brittle, but durable. The heartwood is dull orange brown with an aromatic odor. It is of no commercial importance in Iowa.



RED MULBERRY—*Morus rubra*

This is a medium-sized tree with wide-spreading branches and a broad, rounded head. It grows over most of Iowa except the northwestern part, usually on the lowlands and in small openings in other timber.

The rounded or somewhat heart-shaped leaves vary greatly in outline from *unlobed to lobed or mitten-shaped.* They are thin and hairy above and soft and hairy beneath. The berrylike fruit is similar to a blackberry and is sweet and edible. It is a favorite food of many birds and some animals.

The thin, dark reddish-brown bark is not deeply ridged and it peels off in long, narrow flakes.

The wood has an orange-colored heartwood which is heavy, tough and durable. It is of value for fence posts, but has no other uses in Iowa.

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