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George D. Fuller et al.

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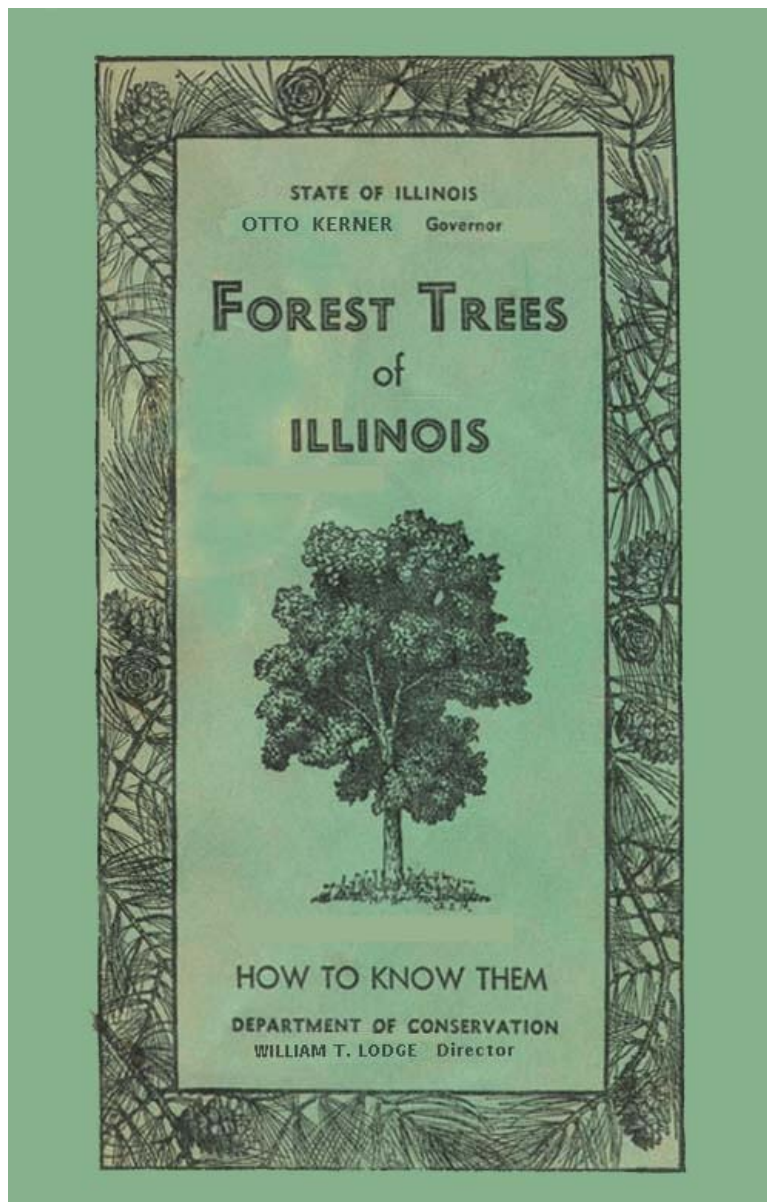
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*** START OF THE PROJECT GUTENBERG EBOOK FOREST TREES OF ILLINOIS: HOW TO
KNOW THEM ***





FOREST TREES OF ILLINOIS

HOW TO KNOW THEM

A POCKET MANUAL DESCRIBING THEIR
MOST IMPORTANT CHARACTERISTICS

Revised by Dr. George D. Fuller, Professor
Emeritus of Botany, University of Chicago,
Curator of Botany, Illinois State Museum, and
State Forester E. E. Nuuttila.

(1st. ed., 1927, by Mattoon, W. R., and Miller, R. B.)

Revised 1955

DEPARTMENT OF CONSERVATION
DIVISION OF FORESTRY
SPRINGFIELD
WILLIAM T. LODGE,
Director

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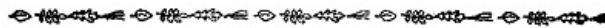


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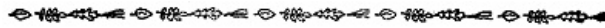
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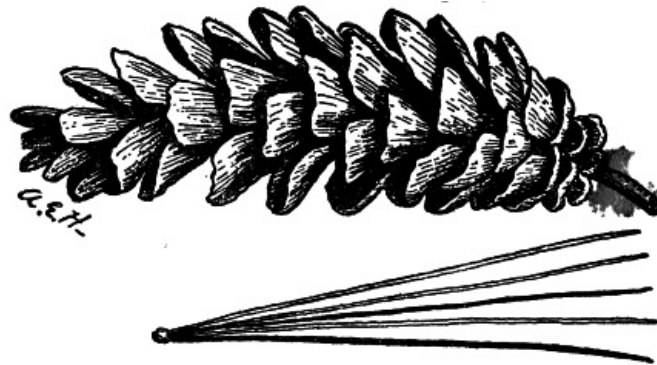
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WHITE PINE *Pinus strobus* L.



WHITE PINE
Two-thirds natural size.

THE white pine is found along the bluffs overlooking Lake Michigan in Lake and Cook counties and is also scattered along river bluffs in Jo Daviess, Carroll, Ogle and LaSalle counties. The only grove of this beautiful tree in Illinois is in the White Pines Forest State Park near Oregon, Ogle County, where there are trees over 100 years old that have attained a height of 90 feet with a diameter of 30 inches. This tree formerly formed the most valuable forests in the northeastern United States, stretching from Maine through New York to Minnesota. The straight stem, regular pyramidal shape and soft gray-green foliage made it universally appreciated as an ornamental tree and it has been freely planted throughout the State.

The *leaves*, or needles, are 3 to 5 inches in length, bluish-green on the upper surface and whitish beneath, and occur in bundles of 5, which distinguishes it from all other eastern pines. The pollen-bearing *flowers* are yellow and clustered in cones, about $\frac{1}{3}$ inch long at the base of the growth of the season. The seed-producing flowers occur on other twigs and are bright red in color. The cone, or *fruit*, is 4 to 6 inches long, cylindrical with thin usually very gummy scales, containing small, winged seeds which require two years to mature.

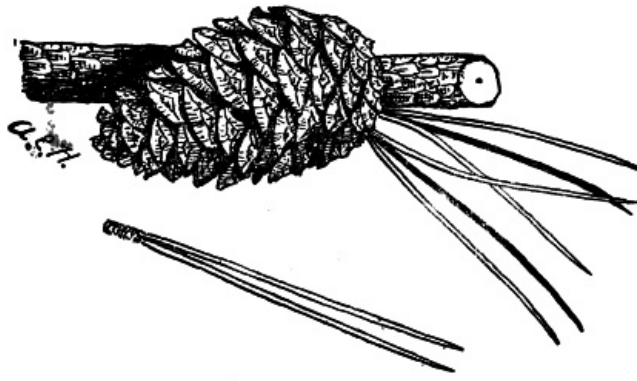
The *wood* is light, soft, durable, not strong, light brown in color, often tinged with red, and easily worked. It was formerly much used in old colonial houses where even the shingles were of white pine. It is excellent for boxes, pattern making, matches, and many other products.

Its rapid growth and the high quality of the wood make it one of the best trees for reforestation on light soils in the northern part of the State. The white pine blister rust was introduced into America about 35 years ago, and has since become widespread and highly destructive of both old trees and young growth.

The Austrian pine, *Pinus nigra* Arnold, has been naturalized in Lake County and has been planted as an ornamental tree throughout the State. Its leaves in 2's, from 3 to 5 inches long, stiff and dark green. The cone is heavy, 3 inches long with short prickles.



SHORTLEAF PINE *Pinus echinata* Mill.



SHORTLEAF PINE
Leaves, one-half natural size. Fruit, natural size.

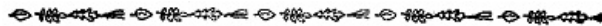
THE shortleaf pine, sometimes called yellow pine, occurs in very small stands in the "Pine Hills" of Union County, in Jackson County, in Giant City State Park, and near "Piney Creek" in Randolph County. It forms forests on light sandy soils in Tennessee, Arkansas, Oklahoma and Texas. At maturity, the tree has a tall, straight stem and an oval crown, reaching a height of about 100 feet and a diameter of about 4 feet.

The *leaves* are in clusters of two or three, from 3 to 5 inches long, slender, flexible, and dark blue-green. The cones are the smallest of our pines, 1½ to 2½ inches long, oblong, with small sharp prickles, generally clustered, and often holding to the twigs for 3 or 4 years. The *bark* is light brownish-red, broken into rectangular plates on the trunk but scaly on the branches.

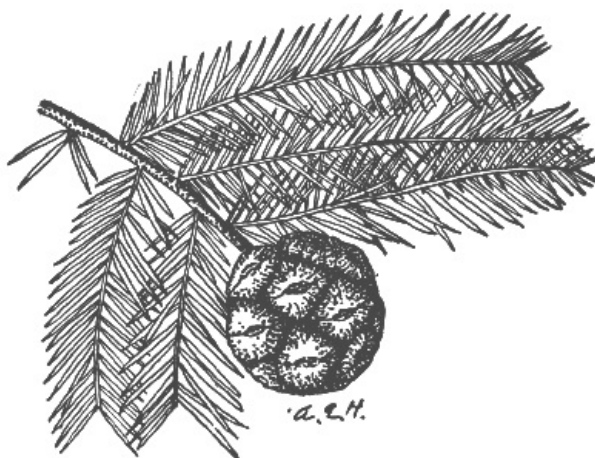
The *wood* of old trees is rather heavy and hard, of yellow-brown or orange color, fine grained and less resinous than that of other important southern pines. It is used largely for interior and exterior finishing, general construction, veneers, paper pulp, excelsior, cooperage, mine props, and other purposes. The tree transplants readily, grows rapidly, succeeds on a variety of soils and has proved valuable for reforestation.

A few trees of jack pine, *Pinus banksiana* Lamb., are found in Lake County. It is a small northern tree with leaves about an inch long, borne in 2's, with cones about 2 inches long. It is planted for reforestation in the State. The Scots pine, *Pinus sylvestris* L., has been freely planted in Illinois and may be known by its orange-brown bark and its twisted leaves 2 to 3 inches long, arranged in 2's. It has become naturalized on the sand dunes in Lake County.

The Norway spruce, *Picea abies* Karst., has been freely planted throughout the State. It forms a dense conical spire-topped crown and reaches a height of 50 to 70 feet. The leaves are needle-shaped, about an inch long, dark green, and persist for about 5 years. The pendulous cones are from 3 to 6 inches long. It is desirable for ornamental planting.



BALD CYPRESS *Taxodium distichum* Richard



CYPRESS
Natural size.

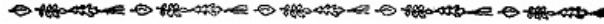
THE bald cypress is a tree found exclusively in deep swamps and was found in southern Illinois from the Mississippi bottoms to Shawneetown. Its straight trunk with numerous ascending branches, and narrow conical outline makes the tree one of considerable beauty. In old age, the tree generally has a broad fluted or buttressed base, a smooth slowly tapering trunk and a broad, open, flat top of a few heavy branches and numerous small branchlets. The original-growth timber attained heights of 80 to 130 feet and diameters of 5 to 10 feet.

The *bark* is silvery to cinnamon-red and finely divided by numerous longitudinal fissures. The *leaves* are about $\frac{1}{2}$ to $\frac{3}{4}$ of an inch in length, arranged in feather-like fashion along two sides of small branchlets, which fall in the autumn with the leaves still attached.

The *fruit* is a rounded cone, or "ball", about one inch in diameter, consisting of thick irregular scales.

The *wood* is light, soft, easily worked, varies in color from light to dark brown, and is particularly durable in contact with the soil. Hence it is in demand for exterior trim of buildings, greenhouse planking, boat and shipbuilding, shingles, posts, poles and crossties.

The tamarack, or American larch, *Larix laricina* K. Koch, resembles the bald cypress in growing in swamps and in shedding its leaves in autumn. This tree is found in Illinois growing in bogs in Lake and McHenry counties. The leaves are flat, soft, slender, about one inch long and borne in clusters. The cones are only $\frac{1}{2}$ to $\frac{3}{4}$ inch long. The European larch, *Larix decidua* Mill., may be distinguished from the native species by having slightly longer leaves and larger cones that are more than an inch long.



RED CEDAR *Juniperus virginiana* L.

RED cedar, the most plentiful coniferous tree in the State, is very valuable, growing on a great variety of soils, seeming to thrive on hills where few other trees are found. It is more common in the southern counties.



RED CEDAR
Natural size.

There are two kinds of *leaves*, often both kinds being found on the same tree. The commoner kind is dark green, minute and scale-like, clasping the stem in four ranks, so that the stems appear square. The other kind, often appearing on young growth or vigorous shoots, is awl-shaped, quite sharp-pointed, spreading and whitened beneath. The two kinds of *flowers*, appearing in February or March, are at the ends of the twigs on separate trees. The staminate trees assume a golden color from the small catkins, which, when shaken, shed clouds of yellow pollen. The *fruit*, ripening the first season, is pale blue with a white bloom, $\frac{1}{4}$ inch in diameter, berry-like with sweet flesh. It is a favorite winter food for birds.

The *bark* is very thin, reddish-brown, peeling off in long, shred-like strips. The tree is extremely irregular in its growth, so that the trunk is usually more or less grooved.

The *heartwood* is distinctly red, and the sapwood white, this color combination making very striking effects when finished for cedar chests, closets, and interior woodwork. The wood is aromatic, soft, strong, and of even texture, and these qualities make it most desirable for lead pencils. It is very durable in contact with the soil, and on that account is in great demand for posts, poles and rustic work.

The arbor vitae or northern white cedar, *Thuja occidentalis* L., is found occasionally on the bluffs overlooking Lake Michigan, on the cliffs of Starved Rock, in Elgin City Park, and in bogs in Lake County. The leaves are aromatic, scale-like, $\frac{1}{8}$ inch long, arranged to give small flat branches. The fruit is a cone $\frac{1}{2}$ inch long. The wood is light, soft, durable, fragrant, and pale brown.



QUAKING ASPEN *Populus tremuloides* Michx.

THIS is one of the most widely distributed trees in North America. Its range goes from Labrador to British Columbia and from New England and New York far south in the Rocky Mountains to Arizona. In Illinois it is common in the north, but of infrequent occurrence in the

south.



ASPEN
Three-fourths natural size.

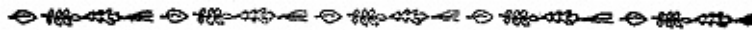
The aspen is a small tree, reaching heights of 40 to 60 feet and diameters of 10 to 20 inches. The young branches are reddish-brown soon turning gray. The *winter buds* are about $\frac{1}{4}$ inch long, pointed and shining. The *bark* is thin, smooth, light gray tinged with green.

The *leaves* are on slender flat petioles, arranged alternately on the twigs, and broadly oval, short pointed and shallowly toothed. They are green, shiny above and dull below, ranging from 2 to 4 inches long and about the same in breadth.

The *flowers* are in catkins and appear before the leaves begin to expand. The two kinds are borne on separate trees, the staminate catkins are about 2 inches long, but the seed-producing flowers form a long slender cluster 4 inches in length. The *fruit* is a conical capsule filled with tiny cottony seeds which ripen in late spring before the leaves are fully expanded.

The *wood* is light brown, almost white. It is light, weak and not durable, and is used for pulpwood, fruit-crates and berry boxes.

The large-tooth aspen, *Populus grandidentata* Michx., is found in the northern half of Illinois and frequently grows alongside the quaking aspen. Its leaves are larger than those of the quaking aspen and the edges are coarsely and irregularly toothed. The winter buds have dull chestnut-brown scales and are somewhat downy. The bark is light gray tinged with reddish-brown.



COTTONWOOD *Populus deltoides* Marsh.

THE cottonwood, or Carolina poplar, is one of the largest trees in Illinois, growing on flood plains along small streams and in depressions in the prairie. It is one of the best trees for forestry purposes for planting where quick shade is desired. The wood is soft, light, weak, fine-grained but tough. It is good for pulp, boxes and berry baskets.



COTTONWOOD
Leaf, one-third natural size. Twig, one-third natural size.

The *leaves* are simple, alternate, broadly triangular, pointed and coarse toothed on the edges, 3 to 5 inches across, thick and firm supported by flattened slender petioles, 2 to 3 inches long. The *winter buds* are large and covered with chestnut-brown shining resinous scales.

The *flowers* are in catkins, of two kinds, on different trees and appear before the leaves. The *fruit*

ripens in late spring, appearing as long drooping strings of ovoid capsules filled with small seeds. These strings of fruit, 5 to 8 inches long, give to the tree the name of "necklace poplar." The seeds are covered with white cottony hairs.

The swamp cottonwood, *Populus heterophylla* L., occurs in swamps in the southern part of Illinois, and may be known by its broadly ovate leaves, 3 to 5 inches wide and 4 to 7 inches long with blunt-apex and cordate base. A few trees of the balsam poplar, *Populus tacamahaca* Mill., are found in Lake County near the shores of Lake Michigan. The leaves are ovate-lanceolate, pointed, and cordate. The large buds are covered with fragrant resin.

The European white poplar, *Populus alba* L., with light gray bark and leaves, white wooly beneath, is often found near old houses and along roadsides. The Lombardy poplar, a tall narrow form of the European black poplar, *Populus nigra* var. *italica* Du Roi, is often planted and is a striking tree for the roadside.



BLACK WILLOW *Salix nigra* Marsh.

THE black willow is not only a denizen of the forest but it is at home on the prairies and on the plains and even invades the desert. It grows singly or in clumps along the water courses, a tree 40 to 60 feet in height with a short trunk.



BLACK WILLOW
Two-thirds natural size.

The *bark* is deeply divided into broad flat ridges, often becoming shaggy. The twigs, brittle at the base, are glabrous or pubescent, bright red-brown becoming darker with age. The *winter buds* are 1/8 inch long, covered with a single smooth scale. The *wood* is soft, light, close-grained, light brown and weak. It is often used in the manufacture of artificial limbs.

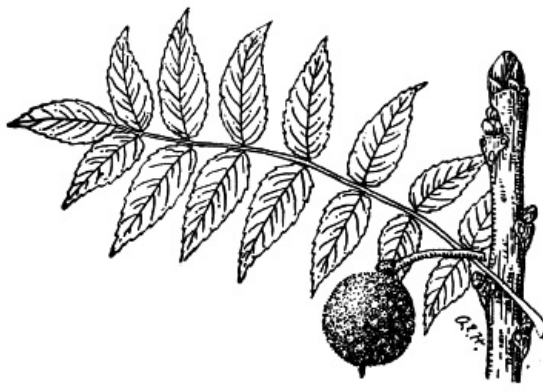
The alternate simple *leaves* are 3 to 6 inches long, and one-half inch wide on very short petioles; the tips are much tapered and the margins are finely toothed. They are bright green on both sides, turning pale yellow in the early autumn. The *flowers* are in catkins, appearing with the leaves, borne on separate trees. The staminate flowers of the black willow have 3 to 5 stamens each, while the white willow has flowers with 2 stamens.

The native peach-leaved willow, *Salix amygdaloides* Anders., is a smaller tree with leaves 2 to 6 inches long, 1/2 to 1 1/2 inches wide, light green and shining above, pale and glaucous beneath, on petioles about 3/4 inch long.

The white willow, *Salix alba*, L., and the crack willow, *Salix fragilis* L., with bright yellow twigs, are European species which are often planted for ornamental purposes. Their flowers have only 2 stamens each and their leaves are silky, bright green above and glaucous beneath. The latter has twigs that are very brittle at the base. Another European species is the weeping willow, *Salix babylonica* L., which may be known by its slender drooping branches.



BLACK WALNUT *Juglans nigra* L.



BLACK WALNUT

Leaf, one-fifth natural size. Twig, three-quarters natural size.

THIS valuable forest tree occurs on rich bottom lands and on moist fertile hillsides throughout the State. The black walnut is found from Massachusetts westward to Minnesota and southward to Florida and Texas. In the forest, where it grows singly, it frequently attains a height of 100 feet with a straight stem, clear of branches for half its height. In open-grown trees, the stem is short and the crown broad and spreading.

The *bark* is thick, dark brown in color, and divided by rather deep fissures into rounded ridges. The twigs have cream-colored chambered pith and leaf-scars without downy pads above.

The *leaves* are alternate, compound, 1 to 2 feet long, consisting of from 15 to 23 leaflets of yellowish-green color. The leaflets are about 3 inches long, extremely tapering at the end and toothed along the margin.

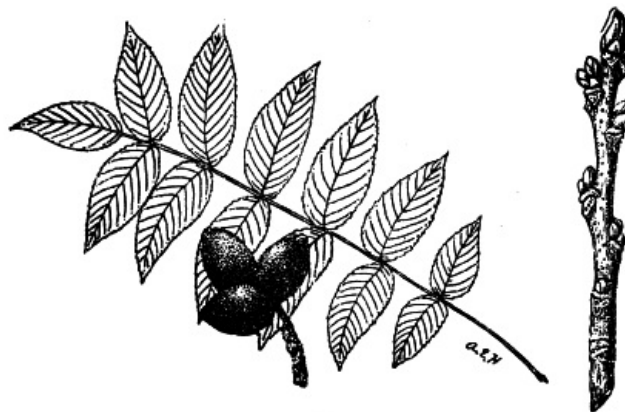
The *fruit* is a nut, borne singly or in pairs, and enclosed in a solid green husk which does not split open, even after the nut is ripe. The nut itself is black with a very hard, thick, finely ridged shell, enclosing a rich, oily kernel edible and highly nutritious.

The *heartwood* is of superior quality and value. It is heavy, hard and strong, and its rich chocolate-brown color, freedom from warping and checking, susceptibility to a high polish, and durability make it highly prized for a great variety of uses, including furniture, cabinet work, and gun-stocks. Walnut is easily propagated from the nuts and grows rapidly on good soil, where it should be planted and grown for timber and nuts. It is the most valuable tree found in the forests of Illinois and originally grew extensively throughout the State.



BUTTERNUT *Juglans cinerea* L.

THE butternut, sometimes called the white walnut, is a smaller tree than the black walnut, although it may reach a height of 70 feet and a diameter of 3 feet. It is found all over the State, but the best is in the ravines of southern Illinois. The butternut is found from Maine to Michigan and southward to Kansas, Tennessee and northern Georgia. The trunk is often forked or crooked and this makes it less desirable for saw timber.



BUTTERNUT

Twig, one-half natural size. Leaf, one-third natural size.

The *bark* differs from that of the black walnut in being light gray on branches and on the trunk of

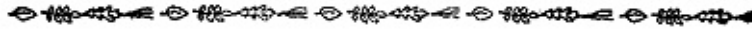
small trees, becoming darker on large trees. This tree may also be distinguished from black walnut by the velvet collars just above the scars left by last year's leaves. The twigs have chocolate-brown chambered pith and bear obliquely blunt winter buds somewhat flattened, brownish and hairy.

The compound *leaves* are 15 to 30 inches long, each with 11 to 17 sharp-pointed, oblong, finely toothed leaflets 2 to 3 inches long.

The staminate and pistillate *flowers* are on the same tree, the former in long yellowish-green drooping catkins and the latter are short with red-fringed stigmas.

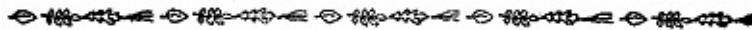
The *fruit* is a nut enclosed in an oblong, somewhat pointed, yellowish-green husk, about 2 inches long, which is covered with short, rusty, clammy, sticky hairs. The nut has a rough, grooved shell and an oily, edible kernel.

The *wood* is light, soft, not strong, coarse-grained, light brown, and takes a good polish. It is used for interior finish of houses and for furniture. A yellow or orange dye can be made from the husks of the nuts.



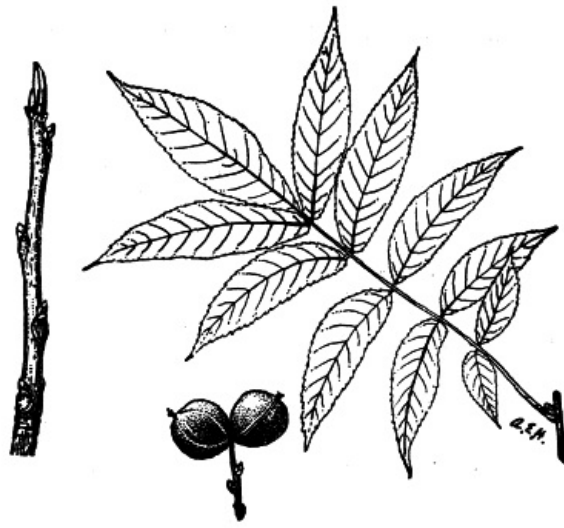
A KEY TO THE ILLINOIS HICKORIES

- A. Bud scales opposite; appearing somewhat grooved lengthwise; leaflets usually lanceolate, generally curved backwards; nut-husks usually winged; nut thin-shelled.
 - B. Leaflets 5-9; leaves 6-10 inches long, winter buds bright yellow; nut gray globose, meat bitter C. cordiformis
 - BB. Leaflets 7-13; leaves 9-13 inches long, winter buds dark brown, nut brown, pear-shaped, meat bitter C. aquatica
 - BBB. Leaflets 9-17; leaves 12-20 inches long, winter buds yellow, nut elongated, meat sweet C. illinoensis
- AA. Bud scales not in pairs; more than 6; leaflets not recurved; nut husks usually not winged; nut thick-shelled.
 - B. Buds large; twigs stout; nut angled; kernel sweet.
 - C. Leaflets 5; leaves 8-14 inches long, nut whitish, bark shaggy C. ovata
 - CC. Leaflets 7-9; leaves 15-20 inches long, nut reddish-brown C. laciniosa
 - CCC. Leaflets 7-9; leaves 8-12 inches long, hairy C. tomentosa
 - BB. Buds small; twigs slender; nut angled. C. tomentosa
 - C. Leaflets usually 5; leaves 8-12 inches long; fruit pear-shaped; kernel astringent C. glabra
 - CC. Leaflets usually 7; leaves 8-10 inches long; fruit ovoid; shell ridged, thin; kernel sweet C. ovalis
 - CCC. Leaflets usually 7; leaves 10-12 inches long; shell thin, conspicuously veined C. buckleyi



BITTERNUT HICKORY *Carya cordiformis* K. Koch

THE bitternut hickory is a tall slender tree with broadly pyramidal crown, attaining a height of 100 feet and a diameter of 2 to 3 feet. It is found along stream banks and on moist soil, and it is well known by its roundish bitter nuts.



BITTERNUT HICKORY

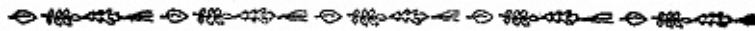
Twig, one-half natural size. Leaf, one-third natural size.

The *bark* on the trunk is granite-gray, faintly tinged with yellow and smoother than in most of the hickories, yet broken into thin plate-like scales. The *winter buds* are compressed, scurfy, and of a bright yellow color.

The *leaves* are alternate, compound, from 6 to 10 inches long, and composed of from 7 to 11 leaflets. The individual leaflets are smaller and more slender than those of the other hickories.

The *flowers* are of two kinds on the same tree; the staminate in long pendulous green catkins, the pistillate in 2 to 5 flowered spikes, $\frac{1}{2}$ inch long, brown-hairy. The *fruit* is about 1 inch long and thin-husked, while the nut is usually thin-shelled and brittle, and the kernel very bitter.

The *wood* is hard, strong and heavy, reddish-brown in color. From this last fact it gets its local name of red hickory. It is said to be somewhat inferior to the other hickories, but is used for the same purposes.



PECAN *Carya illinoensis* (Wang.) K. Koch

(*Carya pecan* (Marsh.) E. & G.)

THE pecan is a river-bottom tree found in southern Illinois extending its range northward to Adams, Peoria, Fayette and Lawrence counties. The tree is the largest of the hickories, attaining heights of over 100 feet and, when in the open, forming a large rounded top of symmetrical shape. It makes an excellent shade tree and is also planted in orchards for its nuts. The outer *bark* is rough, hard, tight, but broken into scales; on the limbs, it is smooth at first but later tends to scale or divide as the bark grows old.



PECAN

One-quarter natural size.

The *leaves* resemble those of the other hickories and the black walnut. They are made up of 9 to

17 leaflets, each oblong, toothed and long-pointed, and 4 to 8 inches long by about 2 inches wide.

The *flowers* appear in early spring and hang in tassels from 2 to 3 inches long. The *fruit* is a nut, 4-winged or angled, pointed from 1 to 2 inches long, and one-half to 1 inch in diameter, borne in a husk which divides along its grooved seams when the nut ripens in the fall. The nuts, which vary in size and in the thickness of the shell, have been greatly improved by selection and cultivation and are sold on the market in large quantities.

The *wood* is strong, tough, heavy and hard and is used occasionally in making handles, parts for vehicles, for fuel and for veneers.

The water hickory, *Carya aquatica* Nutt., is a smaller tree, found in swamps in southern Illinois, with leaves made up of 7 to 13 leaflets; the nut is thin-shelled, angular and bitter.



SHAG-BARK HICKORY *Carya ovata* K. Koch

THE shag-bark hickory is well known for its sweet and delicious nuts. It is a large commercial tree, averaging 60 to 100 feet high and 1 to 2 feet in diameter. It thrives best on rich, damp soil and is common along streams, on rich uplands, and on moist hillsides throughout the State.



SHAG-BARK HICKORY
Leaf, one-third natural size. Twig, one-half natural size.

The *bark* of the trunk is rougher than other hickories, light gray and separating into thick plates which are only slightly attached to the tree. The terminal *winter buds* are egg-shaped, the outer bud-scales having narrow tips.

The *leaves* are alternate, compound, from 8 to 15 inches long, and composed of 5, rarely 7 obovate to ovate leaflets. The twigs are smooth or clothed with short hairs.

The *fruit* is borne singly or in pairs and is globular. The husk is thick and deeply grooved at the seams. The nut is much compressed and pale, the shell thick, and the kernel sweet. The flowers are of two kinds, opening after the leaves have attained nearly their full size.

The *wood* is heavy, hard, tough and strong; it is white largely in the manufacture of agricultural implements and tool handles, and the building of carriages and wagons. For fuel the hickories are the most satisfactory of our native trees.

The big shell bark or king-nut hickory, *Carya laciniosa* (Michx. f.) Loud., becomes a tall tree on the rich bottom lands in the southern half of Illinois. It resembles the shag-bark hickory but the leaves are longer with 7 to 9 leaflets, and the nuts are 2 inches long with a thick bony shell and a sweet kernel.



MOCKERNUT HICKORY *Carya tomentosa* Nutt.

THE mockernut, or white hickory, is common on well-drained soils throughout the State. It is a tall, short-limbed tree often 60 feet high and 1 to 2 feet in diameter.



MOCKERNUT HICKORY

Leaf, one-fifth natural size. Twig, two-thirds natural size.

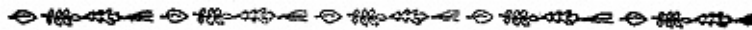
The *bark* is dark gray, hard, closely and deeply furrowed often apparently cross-furrowed or netted. The winter buds are large, round or broadly egg-shaped and covered with a downy growth.

The *leaves* are large, strong-scented and hairy, composed of 7 to 9 obovate to oblong, pointed leaflets which turn a beautiful yellow in the fall.

The *flowers*, like those of all other hickories, are of two kinds on the same tree; the staminate in three-branched catkins, the pistillate in clusters of 2 to 5. The *fruit* is oval, nearly round or slightly pear-shaped with a very thick, strong-scented husk which splits nearly to the base when ripe. The nut is of various forms, but sometimes 4 to 6 ridged, light brown, and has a very thick shell and small, sweet kernel.

The *wood* is heavy, hard, tough and strong; it is white excepting the comparatively small, dark-brown heart, hence the name white hickory. It is used for vehicle parts and handles. It furnishes the best of fuel. This and other hickories are very desirable both for forest and shade trees.

In the southern part of Illinois, the small fruited or sweet pignut, *Carya ovalis* Sargent, occurs on rich hillsides. The leaves have 7 leaflets on reddish-brown twigs, with small yellowish winter buds. The nut is an inch long, enclosed in a very thin hairy husk, the shell is thin and the kernel sweet.



PIGNUT HICKORY *Carya glabra* Sweet

THE pignut hickory is rare in the northern part of Illinois but occurs plentifully in the rest of the State, growing to a medium sized tree on rich uplands. It has a tapering trunk and a narrow oval head with drooping branches.



PIGNUT HICKORY

Leaf, one-third natural size. Twig, one-half natural size.

The *bark* is close, ridged and grayish, but occasionally rough and flaky. The twigs are thin, smooth and glossy brown.

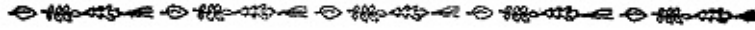
The *leaves* are smooth, 8 to 12 inches long and composed of 5 to 7 leaflets. The individual leaflets are rather small and narrow.

The *winter buds* are ½ inch long, egg-shaped, polished, and light brown.

The *fruit* is pear-shaped or rounded, usually with a neck at the base, very thin husks splitting only half way to the base or not at all. The nut is smooth, light brown in color, rather thick-shelled, and has a somewhat astringent edible kernel.

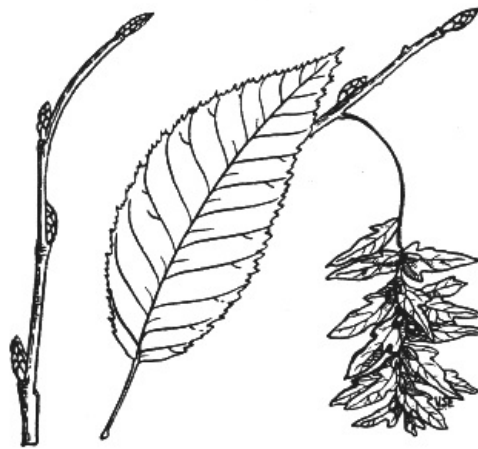
The *wood* is heavy, hard, strong, tough and flexible. Its uses are the same as those of the other hickories.

Buckley's hickory, *Carya buckleyi* Durand, occurs on sandy uplands in the southwest. It is a small tree with spreading, contorted branches. The fruit is contained in a hairy husk, the nut is angular, marked with pale veins and has a sweet kernel.



BLUE BEECH *Carpinus caroliniana* Walt.

THE blue beech, or American hornbeam, belongs to the birch family rather than to the beeches. It is a small slow-growing bushy tree, 20 to 30 feet tall with a diameter 4 to 8 inches. It is found along streams and in low ground through the State.



BLUE BEECH
Leaf, one-half natural size. Twig, one-half natural size.

The trunk is smooth fluted with irregular ridges extending up and down the tree. The *bark* is light brownish-gray to dark bluish-gray in color, sometimes marked with dark bands extending horizontally on the trunk.

The *leaves* are simple, alternate, oval, long-pointed, doubly-toothed along the margin, 2 or 3 inches in length. They resemble those of the American elm, but are smaller and thinner.

The *flowers*, appearing after the leaves, are borne in catkins separately on the same tree; the staminate catkins are about 1½ inches long, the pistillate being only ¾ of an inch long with small leaf-like green scales each bearing 2 pistils with long scarlet styles.

The *fruit* ripens in midsummer, but often remains on the tree long after the leaves have fallen. It is a nutlet about ⅓ of an inch long, attached to a leaf-like halberd-shaped bract which acts as a wing in aiding its distribution by the wind.

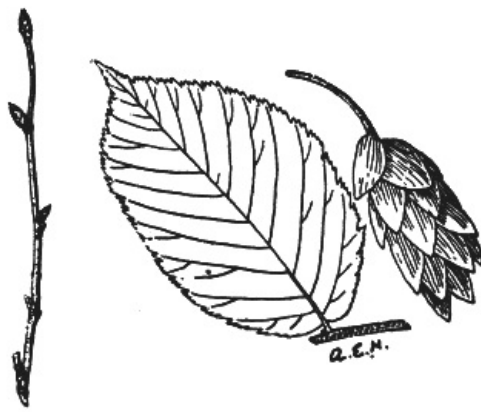
The *wood* is tough, close-grained, heavy and strong. It is sometimes selected for use for levers, tool handles, wooden cogs, mallets, wedges, etc.

Another small tree of the birch family is the speckled alder, *Alnus incana* Moench, which is found occasionally in wet places in the northern part of the State. The black alder, *Alnus glutinosa* Gaertn., a European tree, has been planted near ponds. The flowers of the alders are in catkins and among the earliest in the spring. The fruit is a small cone which persists throughout the winter.



HOP HORNBEAM *Ostrya virginiana* K. Koch

THIS tree is also called ironwood and gets its common names from the quality of its wood and the hop-like fruit. It is a small, slender, generally round-topped tree, from 22 to 30 feet high and 7 to 10 inches in diameter. The top consists of long, slender branches, commonly drooped toward the ends. It is found throughout the State.



HOP HORNBEAM

Twig, one-half natural size. Leaf, one-third natural size.

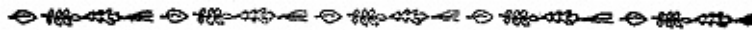
The *bark* is mostly light brown or reddish-brown, and finely divided into thin scales by which the tree, after a little acquaintance, can be easily recognized.

The *leaves* are simple, alternate, generally oblong with narrowed tips, sharply toothed along the margin, sometimes doubly toothed, from 2 to 3 inches long.

The *flowers* are of two kinds on the same tree; the staminate in drooping catkins which form the previous summer, the pistillate, in erect catkins on the newly formed twigs. The *fruit*, which resembles that of common hop vine, consists of a branch of leafy bracts 1 to 2 inches long containing a number of flattened ribbed nutlets.

The *wood* is strong, hard, durable, light brown to white, with thick pale sapwood. It is often used for fence posts, handles of tools, mallets and other small articles.

The white birch, *Betula papyrifera* Marsh., of the North Woods is rare in Illinois. It is found in Jo Daviess and Carroll counties and along the shores of Lake Michigan. The white papery bark distinguishes it from all other trees and was used by the northern Indians for covering their canoes and for making baskets, bags and other useful and ornamental things.



RIVER BIRCH *Betula nigra* L.

THE river, or back birch, is at home, as the name implies, along water courses, and inhabits the deep, rich soils along the borders of the larger rivers of the State and in swamps which are sometimes inundated for weeks at a time.



RIVER BIRCH

Two-thirds natural size.

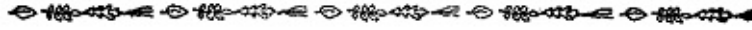
The *bark* provides a ready means of distinguishing this tree. It varies from reddish-brown to cinnamon-red in color, and peels back in tough papery layers. These layers persist on the trunk, presenting a very ragged and quite distinctive appearance. Unlike the bark of our other birches, the thin papery layers are usually covered with a gray powder. On older trunks, the bark on the main trunk becomes thick, deeply furrowed and of a dark reddish-brown color.

The *leaves* are simple, alternate, 2 to 3 inches long, more or less oval in shape, with double-toothed edges. The upper surface is dark green and the lower a pale yellowish-green.

The *flowers* are in catkins, the two kinds growing on the same tree. The *fruit* is cone-shaped about 1 inch long, and densely crowded with little winged nutlets that ripen from May to June.

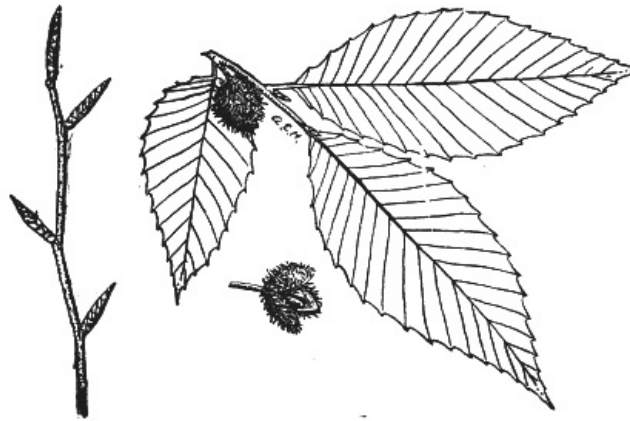
The *wood* is strong and fairly close-grained. It has been used to some extent in the manufacture of woodenware, in turnery and for wagon hubs.

The yellow birch, *Betula lutea* Michx., one of the most valuable hardwood timber trees around the Great Lakes, is represented in Illinois by a few small trees in Lee and Lake counties. It may be known by its bark becoming silvery-gray as the trunk expands and breaking into strips curled at the edges. The wood is strong and hard, close-grained, light brown tinged with red. It is used for interior finish, furniture, woodenware and turnery. It is prized as firewood.



BEECH *Fagus grandifolia* Ehrh.

THE beech is found from Maine to Wisconsin south to the Gulf and Texas, growing along with maples, oaks and tulip trees. It occurs in the ravines of the southern Illinois counties up to Vermilion County. It is one of the most beautiful of all trees either in summer or winter.



BEECH
One-half natural size.

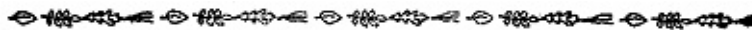
The *bark* is, perhaps, the most distinctive characteristic, as it maintains an unbroken light gray surface throughout its life. So tempting is this smooth expanse to the owner of a jack-knife that the beech has been well designated the "initial tree."

The simple, oval *leaves* are 3 to 4 inches long, pointed at the tip and coarsely toothed along the margin. When mature, they are almost leathery in texture. The beech produces a dense shade. The *winter buds* are long, slender and pointed.

The little, brown, three-sided beech-nuts are almost as well known as chestnuts. They form usually in pairs in a prickly bur. The kernel is sweet and edible, but so small as to offer insufficient reward for the pains of biting open the thin-shelled husk.

The *wood* of the beech is very hard, strong, and tough, though it will not last long on exposure to weather or in the soil. It is used to some extent for furniture, flooring, carpenter's tools, and novelty wares and extensively in southern Illinois for railroad ties and car stock.

The American chestnut, *Castanea dentata* Borkh., extends its range from Maine to Michigan, and southward to Delaware and Tennessee. There is a stand of chestnuts in Pulaski County and some trees have been planted in the southern part of the State. They are easily recognized by their alternate simple, broadly lanceolate coarsely toothed leaves, and their prickly burs about 2 inches in diameter containing 1-3 nuts.



A KEY TO THE OAKS OF ILLINOIS

- A. Leaves without bristle tips; bark gray; acorns maturing at the end of 1 season; white oaks.
 - B. Leaves lobed.
 - C. Acorn-cup not enclosing the acorn.
 - D. Acorn-cup shallow, warted. Q. alba
 - DD. Acorn-cup covering 1/2 of the acorn. Q. stellata
 - CC. Acorn-cup enclosing the acorn. Q. stellata
 - D. Acorn-cup not fringed. Q. lyrata
 - DD. Acorn-cup fringed. Q. macrocarpa
 - BB. Leaves not lobed, coarsely toothed.

- C. Acorn-stalked.
 - D. Acorn-stalks longer than petioles. Q. bicolor
 - DD. Acorn-stalks short. Q. bicolor
 - E. Acorn-cup flat-bottomed; bark like that of white oak. Q. bicolor
- CC. Acorn-cup enclosing the acorn. Q. stellata
 - D. Acorn-cup not fringed. Q. lyrata
 - DD. Acorn-cup fringed. Q. macrocarpa
- BB. Leaves not lobed, coarsely toothed.
 - C. Acorn-stalked.
 - D. Acorn-stalks longer than petioles. Q. bicolor
 - DD. Acorn-stalks short.
 - E. Acorn-cup flat-bottomed; bark like that of white oak. Q. prinus
 - CC. Acorns sessile, cup deep Q. muhlenbergii
- AA. Leaves with bristle tips; bark dark; acorns mature at the end of two seasons; black and red oaks.
 - B. Leaves lobed.
 - C. Deeply lobed.
 - D. Leaves deep green on both sides.
 - E. Acorn-cup broad and shallow.
 - a. Acorn large. Q. rubra
 - aa. Acorn small.
 - b. Acorn ovoid. Q. shumardii
 - bb. Acorn globose. Q. palustris
 - EE. Acorn-cup deep.
 - a. Cup-scales loosely imbricated, winter buds large and hairy. Q. velutina
 - aa. Cup-scales tightly appressed, winter buds small and smooth.
 - b. Acorn small. Q. ellipsoidalis
 - bb. Acorn large. Q. coccinea
 - DD. Leaves pale green beneath. Q. falcata
 - CC. Leaves shallowly lobed, winter buds rusty-hairy. Q. marilandica
- BB. Leaves entire.
 - C. Leaves hairy beneath; acorn sessile. Q. imbricaria
 - CC. Leaves not hairy; acorn stalked. Q. phellos



WHITE OAK *Quercus alba* L.

WITHIN its natural range, which includes practically the entire eastern half of the United States, the white oak is one of the most important timber trees. It commonly reaches a height of 60 to 100 feet and a diameter of 2 to 3 feet; sometimes it becomes much larger. It is found in a wide variety of upland soils. When grown in a dense stand it has a straight continuous trunk, free of side branches for over half its height. In the open, however, the tree develops a broad crown with far-reaching limbs. Well-grown specimens are strikingly beautiful.



WHITE OAK

Twig, one-third natural size. Leaf, one-quarter natural size.

The *leaves* are alternate, simple 5 to 9 inches long and about half as broad. They are deeply divided into 5 to 9 rounded, finger-like lobes. The young leaves are a soft silvery-gray or yellow or red while unfolding, becoming later bright green above and much paler below. The *flowers* appear with the leaves, the staminate are in hairy catkins 2-3 inches long, the pistillate are sessile in axils of the leaves.

The *fruit* is an acorn maturing the first year. The nut is $\frac{3}{4}$ to 1 inch long, light brown, about one-quarter enclosed in the warty cup. It is relished by hogs and other livestock. The *bark* is thin, light ashy-gray and covered with loose scales or broad plates.

The *wood* is useful and valuable. It is heavy, strong, hard, tough, close-grained, durable, and light brown in color. The uses are many, including construction, shipbuilding, tight cooerage, furniture, wagons, implements, interior finish, flooring, and fuel. Notwithstanding its rather slow growth, white oak is valuable for forest, highway and ornamental planting.

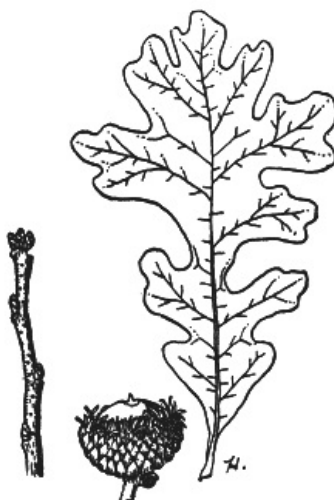
The overcup oak, *Quercus lyrata* Walt., is similar to the white oak, but may be distinguished by the nearly spherical cup which nearly covers the somewhat flattened acorn. This oak occurs in the river bottoms in southern Illinois.



25

BUR OAK *Quercus macrocarpa* Michx.

THE bur oak, which occurs throughout the State takes its name from the fringe around the cup of the acorn. It usually has a broad top of heavy spreading branches and a relatively short body. It is one of the largest trees in the State. In maturity, it attains a diameter of 5 feet or more and a height of over 80 feet. The *bark* is light gray and is usually broken up into small narrow flakes. The bur oak does not often form a part of the forest stand, as do some other oaks, but occurs generally singly in open stands and in fields. It requires a moist but well-drained soil.

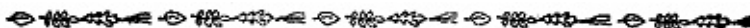


BUR OAK
One-third natural size.

The *leaves* resemble somewhat those of the common white oak, but have a pair of deep indentations on their border near the base, and wavy notches on the broad middle and upper portions of the leaf. They range from 6 to 12 inches long and 3 to 6 inches wide. The *fruit*, or acorn, is a nut set deeply in a fringed cup. It is sometimes 1 inch or more in diameter but varies widely in respect to size and the degree to which the nut is enclosed in the mossy fringed cup.

The *wood* is heavy, hard, strong, tough and durable. It is used for much the same purposes as the other white oaks, lumber, piling, veneer logs, crossties and fuel.

The swamp white oak, *Quercus bicolor* Willd., occurs scattered in swamps, through the State. The leaves are obovate, coarsely toothed and wedge-shaped below. They are thick, dark green and shining above, pale and downy beneath. The acorns are borne in a deep rough scaly cup, on stems 2-4 inches long. The wood is like that of the white oak. The bark is gray-brown, separating into large, papery scales which curl back.



26

YELLOW CHESTNUT OAK *Quercus muhlenbergii* Engelm.

THIS oak, also called the chinquapin oak, which is an excellent timber tree, occurs throughout the State. It grows on practically all classes of soil and in all moisture conditions except in swamps, and is a very tenacious tree on shallow, dry soil. The *bark* is light gray, and breaks up into short narrow flakes on the main trunk and old limbs. It reaches a height of 70 to 90 feet. The straight shapely trunk bears a round-topped head composed of small branches, which makes it an attractive shade tree.



YELLOW CHESTNUT OAK
One-third natural size.

The *leaves* are oblong, 3 to 6 inches in length, 1½ to 3 inches wide, and equally toothed or notched on the edges, resembling the leaves of the chestnut oak. The *fruit*, which ripens in the fall of the first season, is light to dark brown when ripe, and edible if roasted. This acorn is from one-half to nearly an inch long, usually less than one inch in diameter, and is set in a shallow cup.

The *wood* is like that of the white oak, heavy, very hard, tough, strong, durable, and takes an excellent polish. It is used in manufacturing lumber and timbers, crossties, fence posts and fuel. A portion of the lumber no doubt goes into furniture.

The basket oak, or swamp chestnut oak, *Quercus prinus* L., is found in the woods in southern Illinois. It resembles the white oak in its bark and branches, but has larger acorns. The leaves resemble those of yellow chestnut oak.

The rock chestnut oak, *Quercus montana* Willd., is an eastern oak that is rare on the hills of Union and Alexander counties.



POST OAK *Quercus stellata* Wang.

THE post oak is usually a medium-sized tree, with a rounded crown, commonly reaching a height of 50 to 80 feet and a diameter of 1 to 2 feet, but sometimes considerably larger. It occurs from Mason County south to the Ohio River being most common in the "Post Oak Flats." The soil is a light gray silt loam underlaid by "tight clay."



POST OAK

The *bark* is rougher and darker than the white oak and broken into smaller scales. The stout young twigs and the leaves are coated at first with a thick light-colored fuzz which soon becomes darker and later drops away entirely.

The *leaves* are usually 4 to 5 inches long and nearly as broad, deeply 5-lobed with broad rounded divisions, the lobes broadest at the ends. They are thick and somewhat leathery, dark green and shiny on the upper surface, lighter green and rough hairy beneath.

The *flowers*, like those of the other oaks, are of two kinds on the same tree, the male in drooping, clustered catkins, the female inconspicuous. The *fruit* is an oval acorn, ½ to 1 inch long, set in a rather small cup which may or may not be stalked.

The *wood* is very heavy, hard, close-grained, light to dark brown, durable in contact with the soil. It is used for crossties and fence posts, and along with other oaks of the white oak class for furniture and other purposes.



NORTHERN RED OAK *Quercus rubra* L.
(*Quercus borealis* Michx.)

THE red oak of the North occurs throughout the State. It usually attains a height of about 70 feet and a diameter ranging from 2 to 3 feet, but is sometimes much larger. The forest-grown tree is tall and straight with a clear trunk and narrow crown.



NORTHERN RED OAK
Leaf, one-third natural size. Twig, one-half natural size.

The *bark* on young stems is smooth, gray to brown on older trees, thick and broken by shallow fissures into regular, flat smooth-surfaced plates.

The *leaves* are simple, alternate, 5 to 9 inches long, and 4 to 6 inches wide, broader toward the tip, divided into 7 to 9 lobes, each lobe being somewhat coarsely toothed and bristle-tipped, and firm, dull green above, paler below, often turning to a brilliant red after frost. The *winter buds* are small, light reddish-brown and smooth. The *flowers*, as in all the oaks, are of two kinds on the same tree, the staminate in long drooping, clustered catkins, opening with the leaves, the female solitary or slightly clustered. The *fruit* is a large acorn maturing the second year. The nut is from ¾ to 1¾ inches long, blunt-topped, flat at base, with only its base enclosed in the very shallow dark brown cup.

The *wood* is hard, strong, coarse-grained, with light, reddish-brown heartwood and thin lighter-colored sapwood. It is used for cooperage, interior finish, construction, furniture, and crossties. Because of its average rapid growth, high-grade wood and general freedom from insect and fungus attack, it should be widely planted in the State for timber production and as a shade tree.

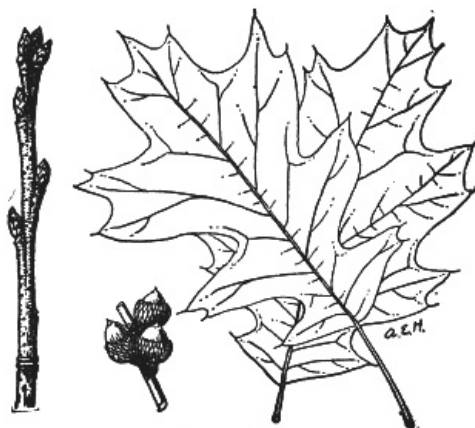
This red oak, *Quercus shumardii* Buckley, is found only in the southern counties along the borders of streams and swamps. Its leaves are dark green and lustrous, paler beneath and have tufts of pale hairs in the angles of the veins. The acorns are long-oval in shape, held in thick saucer-like cups composed of closely appressed hairy scales.



BLACK OAK *Quercus velutina* Lam.

THE black oak, sometimes farther north called yellow oak or yellow-barked oak, usually grows to be about 80 feet in height and 1 to 3 feet in diameter. It is found commonly throughout the

State. The crown is irregularly shaped and wide, with a clear trunk for 20 feet or more on large trees. The *bark* on the very young trees is smooth and dark brown but soon becomes thick and black, with deep furrows and rough broken ridges. The bright yellow color and bitter taste of the inner bark, due to tannic acid, are distinguishing characteristics.



BLACK OAK
 Leaf, one-third natural size. Twig, one-half natural size.

The *leaves* are alternate, simple, 5 to 10 inches long and 3 to 8 inches wide, thick leathery shallow or deeply lobed, the shape varying greatly. When mature, the leaves are dark green and shiny on the upper surface, pale on the lower, more or less covered with down, and with conspicuous rusty brown hairs in the forks of the veins.

The *winter buds* are large, strongly angled, gray and hairy. The *fruit* matures the second season. The light brown nut is from 1/2 to 1 inch long, more or less hemispherical in shape, and from 1/2 to 3/4 enclosed in the thin, dark brown, scaly cup. The scales on the upper part of the cup are loosely imbricated. The kernel is yellow and extremely bitter.

The *wood* is hard, heavy, strong, coarse-grained and checks easily. It is a bright red-brown with a thin outer edge of paler sapwood. It is used for the same purposes as red oak, under which name it is put on the market. Its growth is rather slow.

The jack oak, *Quercus ellipsoidalis* Hill, is a smaller tree found frequently alongside black oak in the northern third of the State. The acorn is ellipsoid, small and enclosed in a deep cup, whose scales are closely appressed. The winter buds are slightly angular, smooth, and red-brown in color. Many small, drooping branches are sent out near the ground, which soon die, and the stubs or "pins" have given this oak the name of northern pin oak.



PIN OAK *Quercus palustris* Muench.

PIN oak is rarely found naturally except on the rich moist soil of bottom lands and the borders of swamps. It is usually not abundant in any locality, but found scattered with other kinds of trees. It more commonly attains heights of 50 to 70 feet, with diameters up to 2 feet, but sometimes larger. The tree commonly has a single, upright stem with numerous long, tough branches, the lower ones drooping, the middle horizontal, and the upper ascending. Many of the lower branches soon die and their stubs are the "pins" which give the tree its name.



PIN OAK
 Leaf, one-third natural size. Twig, one-half natural size.

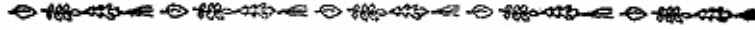
The *bark* on young stems is smooth, shining and light brown; on old trunks light gray-brown and covered by small, close scales. Because of its beauty, its hardiness, and its fairly rapid growth, pin oak makes an exceptionally fine street tree.

The *leaves* generally resemble those of the northern red oak, but they are smaller and much more deeply lobed. They are 3 to 5 inches long and 2 to 4 inches wide.

The *flowers* are of two kinds on the same tree, and appear when the leaves are about one-third grown. The *fruit*, taking two years to mature, is an acorn nearly hemispheric, about one-half inch long, light brown, often striped, enclosed only at the base in a thin, shallow, saucer-shaped cup.

The *wood* is heavy, hard, strong, and usually knotty. It is light brown, with thin, darker-colored sapwood. It is sold and has the same uses as red oak, although it is generally not so good in quality.

The scarlet oak, *Quercus coccinea* Muench., has deeply lobed leaves which turn brilliant scarlet in the autumn. The winter buds are reddish-brown and pubescent. The acorns are ovoid, enclosed for about half their length in a thick, deep cup. It is rarely found in the southern half of the State.



SPANISH OAK *Quercus falcata* Michx.

THIS oak, one of the common southern red oaks, ranges from Virginia and Florida to Texas and Missouri, and appears in a dozen of the southern counties in Illinois. It is usually called the Spanish oak, or southern red oak, and has been known as *Quercus rubra* L. or *Quercus digitata* Sudw.



SPANISH OAK
Leaf, one-third natural size. Twig, one-half natural size.

It is a variable species and hence has been known under so many names. It grows to a height of 70 to 80 feet, and a diameter of 2 to 3 feet, though larger trees are not infrequently found. Its large spreading branches form a broad, round, open top.

The *bark* is rough, though not deeply furrowed and varies from light gray on younger trees to dark or almost black on older ones.

The *leaves* are of two different types: (1) irregular-shaped lobes, mostly narrow, bristle-tipped, the central lobe often the longest; or (2) pear-shaped with 3 rounded lobes at the outer end. They are dark lustrous green above and gray downy beneath, the contrast being strikingly seen in a wind or rain storm.

The *flowers* appear in April while the leaves are unfolding. The *fruit* ripens the second year. The small rounded acorn, about half an inch long, is set in a thin saucer-shaped cup which tapers to a short stem.

The *wood* is heavy, hard, strong, coarse-grained and is less subject to defects than most other red oaks. It is used for rough lumber and for furniture, chairs, tables, etc. It is a desirable timber tree, especially on the poorer, drier soils. The bark is rich in tannin.

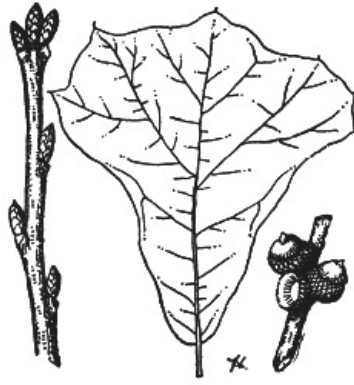
Q. rubra var. *pagodaefolia*, called swamp Spanish oak, has been collected in four southern counties of Illinois.



BLACK JACK *Quercus marilandica* Muench.

THE black jack oak is a tree of sandy and clayey barren lands where few other forest trees thrive. It ranges from New York to Florida and westward into Illinois, Arkansas, and Texas. It reaches its largest size in southern Arkansas and eastern Texas. It is found as one of the main species in the "Post Oak Flats" in the southern half of the State and in the sands along the Illinois River, near Havana. The tree sometimes reaches a height of 50 to 60 feet and a diameter of 16 inches, but it is usually much smaller. Its hard, stiff, drooping branches form a dense crown

which usually contains many persistent dead twigs. The *bark* is rough, very dark, often nearly black, and broken into small, hard scales or flakes.

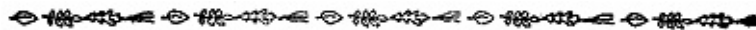


BLACK JACK OAK
Twig, two-thirds natural size. Leaf, one-third natural size.

The *leaves* are of a leathery texture, dark green on the upper surface, lighter, hairy, and brown-scurfy below. The leaves are wedge-shaped, 4 to 10 inches long and about the same in width. There is a considerable difference in the leaves of this oak both in size and shape.

The *fruit* is an acorn about three-quarters of an inch long, yellow-brown and often striped, enclosed for half its length or more in a thick light brown cup.

The *wood* is heavy, hard and strong; when used at all, it is used mostly for firewood and mine props. It is also used for the manufacture of charcoal.



SHINGLE OAK *Quercus imbricaria* Michx.

THIS oak is found throughout the State with the exception of the extreme north portion. When growing alone, the tree develops a symmetrical rounded top, conspicuous on account of the good-sized, regular-shaped, oblong leaves which differ in shape from most other native oaks. It forms a handsome tree. It is sometimes incorrectly called "laurel" oak.



SHINGLE OAK
Leaf, one-third natural size. Twig, three-fourths natural size.

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

The *leaves* are alternate in arrangement along the stem, oblong in shape, 4 to 6 inches long by 1 to 2 inches wide, leathery in texture with smooth margins sometimes wavy in outline, dark green and shiny above, and thick downy or velvety below.

The *fruit* is an acorn about one-half inch in length, borne singly or in pairs on stout stems, full or rounded at the end and faintly streaked, enclosed for about one-half its length in a thin-walled cup. Like all members of the black oak group, the fruit requires two seasons to mature.

The *wood* is heavy, hard, rather coarse-grained, and used for common lumber, shingles (whence it gets its common name), posts and firewood.

The willow oak, *Quercus phellos* L., is a river bottom tree rarely found in southern Illinois. It is readily identified by its leaves, which as the name implies, resemble those of the willows. These leaves are from two to four inches long and one-half to one inch wide, light green, shiny above and smooth beneath.

AMERICAN ELM *Ulmus americana* L.

THIS is a famous shade tree of New England, whose range, however, extends to the Rocky Mountains and southward to Texas. Within this vast area, it is generally common except in the high mountains. It reaches an average height of 60 to 70 feet and a diameter of 4 to 5 feet. The *bark* is dark gray, divided into irregular, flat-topped thick ridges, and is generally firm, though on old trees it tends to come off in flakes. An incision into the inner bark will show alternate layers of brown and white.



AMERICAN ELM

Twig, one-half natural size. Leaf, one-half natural size.

The *leaves* are alternate, simple, 4 to 6 inches long, rather thick, somewhat one-sided, doubly toothed on the margin, and generally smooth above and downy below. The leaf-veins are very pronounced and run in parallel lines from the mid-rib to leaf edge. The *winter buds* are pointed, brown, ovoid and smooth.

The *flowers* are small, perfect, greenish, on slender stalks sometimes an inch long, appearing before the leaves in the early spring. The *fruit* is a light green, oval shaped samara (winged fruit) with the seed portion in the center and surrounded entirely by a wing. This wing has a conspicuous notch at the end and is hairy on the margin, a mark distinctive of the species. The seed ripens in the spring and by its wing is widely disseminated by the wind.

The *wood* is heavy, hard, strong, tough and difficult to split. It is used for hubs of wheels, saddle trees, boats, ships, barrel hoops, and veneer for baskets and crates.

Because of its spreading fan-shaped form, graceful pendulous branches, and long life, the white elm justly holds its place as one of the most desirable shade trees.

The rock or cork elm, *Ulmus thomasi* Sarg., is found occasionally in northern Illinois. Its excurrent branches are very different from those of other elms. Its twigs often have corky ridges and the winter buds are somewhat hairy.

The winged elm, *Ulmus alata* Michx., a small tree, is found in the southern part of the State. The twigs have two thin corky wings.

RED OR SLIPPERY ELM *Ulmus rubra* Muhl. (*Ulmus fulva* Michx.)

THE red elm, or slippery elm, is a common tree in all sections of the State. It is found principally on the banks of streams and on low hillsides in rich soil. It is a tree of small to moderate size, but noticeably wide-spreading. It is usually less than 50 feet in height and 16 inches in diameter although trees of larger dimensions are occasionally found.



SLIPPERY ELM

Twig, one-half natural size. Leaf, one-half natural size.

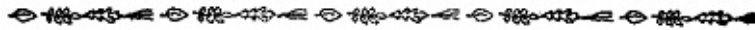
The *bark* on the trunk is frequently one inch thick, dark grayish-brown, and broken by shallow fissures into flat ridges. The inner bark is used to some extent for medical purposes, as it is fragrant and when chewed, affords a slippery, mucilaginous substance, whence the tree gets its name. The *winter buds* are large and conspicuously rusty-hairy.

The *leaves* are simple, alternate on the stem, 4 to 6 inches in length, sharp pointed, their bases unsymmetrical, doubly-toothed on the edges, thick, dark green, and rough on both sides.

The *fruit* consists of a seed surrounded by a thin, broad, greenish wing, about one-half an inch in diameter; the *flowers* appear in early spring and the fruit ripens when the leaves are about half-grown.

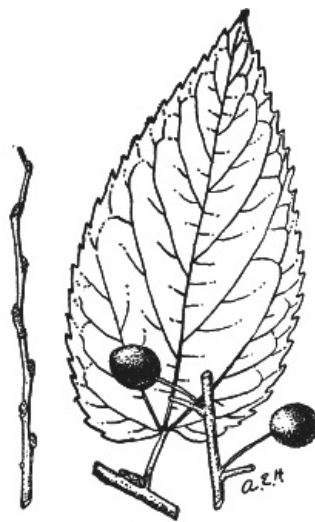
The *wood* is close-grained, tough, strong, heavy, hard, moderately durable in contact with the soil. It is used for fence posts, crossties, agricultural implements, ribs for small boats and for some other purposes.

The water elm, *Planera aquatica* Gmel., is a small tree with slender branches forming a low broad head and is found in swamps in the valley of the Wabash River in this State. It reaches its best development in Arkansas and Louisiana. It has dull green leaves 2 inches long and 1 inch wide. The fruit is an oblong, dark brown drupe.



HACKBERRY *Celtis occidentalis* L.

THE rough-leaved hackberry is found sparsely throughout the State. It occurs most abundantly and of greatest size in the rich alluvial lands in the lower part of the State, but thrives, however, on various types of soil, from the poorest to the richest. It is usually a medium-sized tree from 30 to 50 feet high and 10 to 20 inches in diameter, but trees 3 feet in diameter are found in the Wabash bottoms in southern Illinois. Its limbs are often crooked and angular and bear a head made of slender, pendant branches or short, bristly, stubby twigs. In the open the crown is generally very symmetrical. It makes an excellent shade tree.



HACKBERRY

Leaf, one-third natural size. Twig, one-half natural size.

The *bark* is grayish and generally rough with scale-like or warty projections of dead bark. In some instances the bark is smooth enough on the limbs to resemble that of the beech.

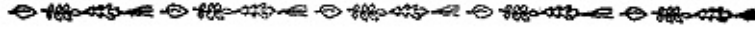
The *leaves* are simple, ovate, alternate, one-sided, 2 to 4 inches long, the edges toothed towards

the long point.

The *flowers* are inconspicuous, and the two kinds are borne on the same tree. They appear in April or May, and are of a creamy, greenish color. The *fruit* is a round, somewhat oblong drupe, or berry, from $\frac{1}{4}$ to $\frac{1}{3}$ of an inch in diameter. It has a thin, purplish skin, and sweet, yellowish flesh. From this characteristic it is sometimes called sugarberry. The berries frequently hang on the tree most of the winter.

The *wood* is heavy, rather soft, weak, and decays readily when exposed. It is used chiefly for fuel, but occasionally for lumber and railroad ties which are given preservative treatment.

The southern hackberry, *Celtis leavigata* Willd., having narrow leaves, is found occasionally along the streams in southern Illinois. The fruit hangs from the axils of the leaves on slender stems. It is orange-red in color, changing to purple-black as it matures.



OSAGE ORANGE *Maclura pomifera* Schneid.

THE osage orange, hedge apple, or mock orange, although not a native of Illinois, is found distributed throughout the State, but does not as a rule occur as a forest tree. It grows chiefly in open fields along fence rows, and as a pure hedge fence. Occasionally it reaches a height of 60 feet and a diameter of 30 inches, but more usually it is found from 20 to 40 feet in height and from 4 to 12 inches in diameter. This tree is sometimes used for shade, but mostly for hedges, and as living fence posts. The *bark* is thin, gray, sometimes tinged with yellow, and on old trees divided into strips or flakes. The bark of the root is used as a yellow dye; that of the trunk has been used for tanning leather.



OSAGE ORANGE
Leaf and fruit, one-quarter natural size. Twig, two-thirds natural size.

The *leaves* are deciduous, with milky sap and producing stout axillary thorns. They are green on the upper surface, 3 to 5 inches long and 2 to 3 inches wide, and turn bright yellow in the autumn.

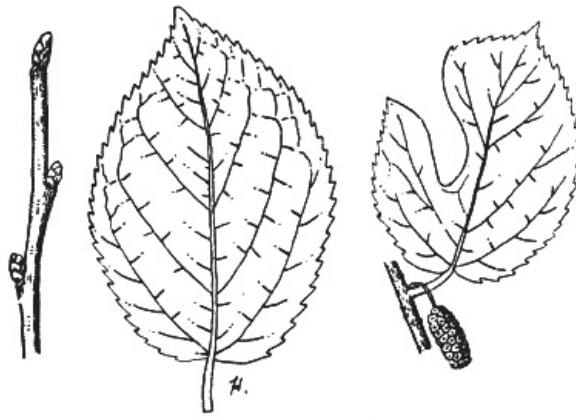
The yellowish *flowers* appear in May. They are of two kinds on the same tree—the staminate flowers in a linear cluster and the pistillate flowers in a rounded ball. The *fruit* is globular, from 2 to 5 inches in diameter, somewhat resembling a very rough green orange.

The *wood* is heavy, exceedingly hard, very strong and very durable in contact with the soil. The heartwood is bright orange in color, turning brown upon exposure. The Indians called it “bois d’arc”, or bow-wood, and used it for their finest bows. It does not shrink with weather changes. It is largely used for posts; sometimes for wheel-stock, lumber and fuel.



RED MULBERRY *Morus rubra* L.

THE red mulberry occurs throughout the State. It prefers the rich, moist soils of the lower and middle districts, but it is nowhere abundant. It is a small tree, rarely 50 feet high and 2 feet in diameter, often growing in the shade of larger trees.



RED MULBERRY

Twig, two-thirds natural size. Leaf, one-third natural size.

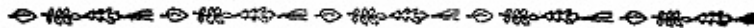
The *bark* is rather thin, dark reddish-brown, peeling off in long narrow flakes.

The *leaves* are alternate, thin, rounded or somewhat heart-shaped, toothed, pointed, 3 to 5 inches long, rough hairy above and soft hairy beneath. Often some of the leaves, especially on the young trees and thrifty shoots, are mitten-shaped or variously lobed.

The *flowers* are of two kinds, on the same or different trees, in drooping catkins. The catkins of the staminate flowers are about 2 inches long; the spikes of the pistillate flowers are about half as long and stand on short stalks. The *fruit* is dark red or black, and resembles a blackberry; however, a stalk extends through it centrally, and it is longer and narrower. The fruit is sweet and edible and greatly relished by birds and various animals.

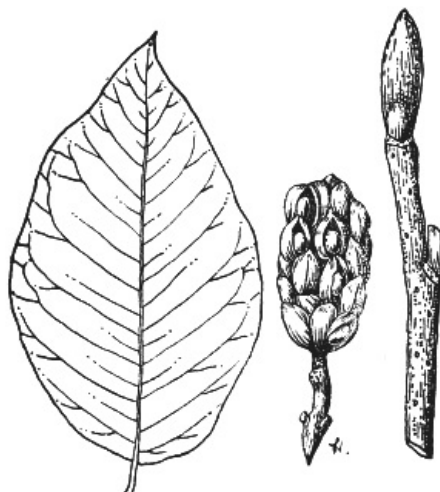
The *wood* is rather light, soft, not strong, light orange-yellow, very durable in contact with the soil. It is chiefly used for fence posts. The tree might be planted for this purpose and to furnish food for birds.

The white mulberry, *Morus alba* L., is a native of China, where its leaves are the chief food of the silkworm. Several varieties are planted for ornamental purposes. Its leaves are broad and smooth; its fruit is long, white, sweet, and insipid. A variety, under the name of the Russian mulberry, *Morus alba* var. *tatarica* Loudon, has been introduced into this country and has been cultivated for its fruit. This fruit varies from creamy white to violet and almost black.



CUCUMBER MAGNOLIA *Magnolia acuminata* L.

THE cucumber magnolia attains an average height of 40 to 80 feet and a diameter of 1 to 2 feet. It occurs singly among other hardwood trees throughout the richer, cooler north slopes and bottom lands of southern Illinois, in Union, Johnson, Pope, Alexander and Pulaski counties.



CUCUMBER MAGNOLIA

Leaf, one-third natural size. Twig, two-thirds natural size.

The *bark* is aromatic and bitter; that of the young twigs is a lustrous red-brown, while the bark of the trunk is rather thin, dark brown, furrowed and broken into thin scales.

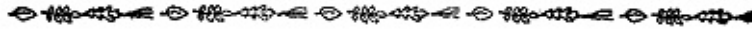
The *leaves* are alternate, oblong, short-pointed, rounded at the base, silky, hairy when unfolding, later smooth or slightly silky, 6 to 10 inches long, 4 to 6 inches wide, often with wavy edges, dark

green above, lighter beneath.

The *flowers* are single, large—though smaller than those of the other magnolias—2½ to 3 inches long. The six upright petals are whitish-green tinged with yellow.

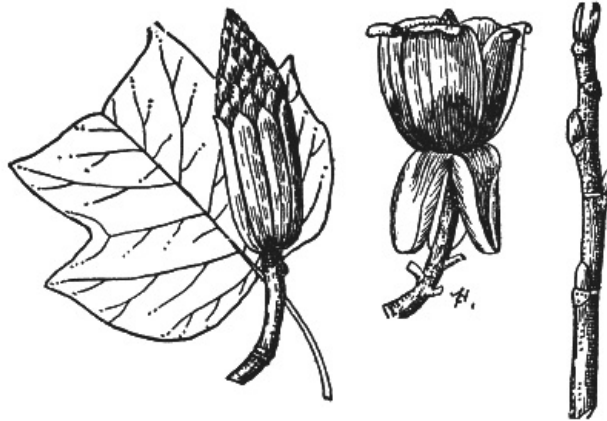
The *fruit* is a smooth, dark red, often crooked “cone”, 2½ to 3 inches long, somewhat resembling, when green, a small cucumber. The seeds are ½ inch long, and covered with a pulpy, scarlet coat, which attracts the birds, particularly as the seeds hang by thin cords from the opening “cones.”

The *wood* is light, soft, close-grained, durable, of a light yellow-brown color and is used for the same purposes as yellow poplar. It is quite desirable for roadside and ornamental planting.



TULIP TREE *Liriodendron tulipifera* L.

THE tulip tree, tulip poplar, is one of the tallest trees in the State with its straight trunk rising to a height of 125 feet. It is one of the largest and most valuable hardwood trees of the United States. It reaches its largest size in the deep moist soils along streams and in the cool ravines of southern Illinois. Vermilion County on the east and Randolph on the west side of the State represent its northern limit. As more commonly seen, it has a height of 60 to 100 feet and a diameter of 3 to 4 feet. Growing with a straight central trunk like the pines, and often clear of limbs for 30 to 50 feet, it has a narrow pyramidal head which in older age becomes more spreading. The tree has been extensively cut, but is reproducing rapidly and remains one of the most abundant and valuable trees in our young second-growth forests. It has been planted as an ornamental and shade tree.



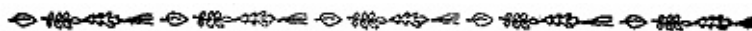
TULIP TREE
Leaf, one-third natural size. Twig, two-thirds natural size.

The *leaves* are simple, 4 to 6 inches in length and breadth, 4-lobed, dark green in summer, turning to a clear yellow in fall.

The greenish-yellow tulip-shaped *flowers* appear in May or June. The *fruit* is a narrow light brown, upright cone, 2 to 3 inches long, made up of seeds, each enclosed in a hard bony coat and provided with a wing which makes it easily carried by the wind.

The *wood* is light, soft, easily worked, light yellow or brown, with wide cream-colored sapwood. It is extensively cut into lumber for interior and exterior trim, vehicle bodies, veneers, turnery and other high-grade uses. It is marketed under the name yellow poplar, because of the yellow color of the heartwood.

The tulip tree transplants easily, grows rapidly and forms a tall stem. It is one of the best trees for forest planting on good moist soil. It can be recommended for roadside planting because it grows tall and has a deep root system. Where conditions of life are not too severe, it may be used for shade tree planting.



PAPAW *Asimina triloba* Dunal

THE papaw, which grows as a small tree or large shrub, is very well known throughout the State, except in the northern parts, and is sometimes called the “wild banana” tree. Most commonly it occurs as an undergrowth in the shade of rich forests of the larger hardwood trees. Its range extends from New York westward to Iowa and southward to Florida and eastern Texas. When growing alone, however, it forms dense clumps on deep, moist soils in creek bottoms. The *bark* is thin, dark grayish-brown, and smooth, or slightly fissured on old trees.



PAPAW

Leaf, one-quarter natural size. Twig, two-thirds natural size.

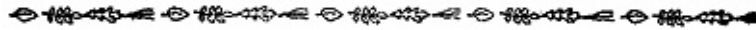
The *leaves* are alternate on the stem, pear-shaped with pointed ends and tapering bases, smooth and light green above, from 8 to 10 inches long, clustered toward the ends of the branches.

The dark purple, attractive *flowers* appear with the leaves singly or in two's along the branch, measure nearly 2 inches across, and produce nectar which attracts the bees.

When thoroughly ripe, the *fruit* is delicious and nutritious. It measures from 3 to 5 inches in length, turns from greenish-yellow to very dark brown in color, and holds rounded or elongated seeds which separate readily from the pulp.

The *wood* is light, soft or spongy, and weak, greenish to yellowish in color, and of no commercial importance.

Because of its handsome foliage, attractive flowers and curious fruit, the papaw has been much used in ornamental planting.



SASSAFRAS *Sassafras albidum* Nees.

THE sassafras is an aromatic tree, usually not over 40 feet in height or a foot in diameter in Illinois. It is common throughout the State on dry soils as far north as La Salle County, and is one of the first broad-leaf trees to come up on abandoned fields, where the seeds are dropped by birds. Its range extends from Maine, southern Ontario to Iowa and south to Florida and west to Texas. In parts of its range it attains large size.



SASSAFRAS

Twig, one-half natural size. Leaf, one-third natural size.

The *bark* of the trunk is thick, red-brown and deeply furrowed and that of the twigs is bright green.

The *leaves* are very characteristic. It is one of the few trees having leaves of widely different shape on the same tree, or even on the same twig. Some are oval and entire, 4 to 6 inches long; others have one lobe, resembling the thumb on a mitten; while still others are divided at the outer end into 3 distinct lobes. The young leaves and twigs are quite mucilaginous.

The *flowers* are clustered, greenish, yellow, and open with the first unfolding of the leaves. The staminate and pistillate flowers are usually on different trees. The *fruit* is an oblong, dark blue or black, lustrous berry, containing one seed and surrounded at the base by what appears to be a

small orange-red or scarlet cup at the end of a scarlet stalk.

The *wood* is light, soft, weak, brittle, and durable in the soil; the heartwood is dull orange-brown. It is used for posts, rails, boat building, cooperage and for ox-yokes. The bark of the roots yields the very aromatic oil of sassafras much used for flavoring candies and various commercial products.

The sassafras deserves more consideration than it has received as a shade and ornamental tree. The autumnal coloring of its foliage is scarcely surpassed by any tree, and it is very free from insect pests.



SWEET GUM *Liquidambar styraciflua* L.

THE sweet or red gum is a very common tree on low lands in southern Illinois, but it is seldom found north of Jackson County in the west or north of Richland in the east. It is usually abundant in old fields or in cut-over woods. The *bark* is a light gray, roughened by corky scales, later becoming deeply furrowed. After the second year the twigs often develop 2 to 4 corky projections of the bark, which give them a winged appearance.



SWEET GUM
Leaf, one-third natural size. Twig, two-thirds natural size.

The simple, alternate star-shaped *leaf*, with its 5 to 7 points or lobes, is 5 to 7 inches across and very aromatic. In the fall its coloring is brilliant, ranging from pale yellow through orange and red to a deep bronze.

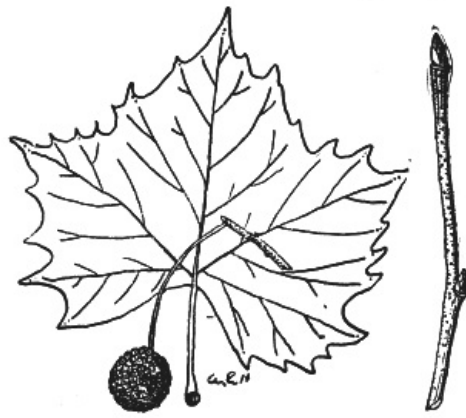
The *flowers* are of two kinds on the same tree, unfolding with the leaves. The *fruit* at first glance reminds one of the balls of the sycamore, but on closer inspection proves to be a head. It measures an inch or more in diameter and is made up of many capsules with projecting spines. It frequently hangs on the tree by its long swinging stem late into the winter.

The *wood* is heavy, moderately hard, close-grained, and not durable on exposure. The reddish-brown heartwood, which suggests the name, red gum, is not present to any appreciable extent in logs under 16 inches in diameter. In the South, the wood is extensively used for flooring, interior finish, paper pulp and veneers for baskets of all kinds. Veneers of the heartwood are largely used in furniture, sometimes as imitation mahogany or Circassian walnut. This tree should be more widely planted for ornamental use.



SYCAMORE *Platanus occidentalis* L.

THE sycamore, also called buttonwood, is considered the largest hardwood tree in North America. It occurs throughout the State, but is most abundant and reaches its largest size along streams and on rich bottom lands. It is one of the more rapidly-growing trees. In maturity it occasionally attains a height of 140 to 170 feet and a diameter of 10 to 11 feet. It often forks into several large secondary trunks, and the massive spreading limbs form an open head sometimes 100 feet across.



SYCAMORE

Leaf, one-third natural size. Twig, one-half natural size.

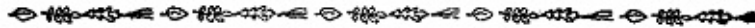
The *bark* of the sycamore is a characteristic feature. On the younger trunk and large limbs it is very smooth, greenish-gray in color. The outer bark yearly flakes off in large patches and exposes the nearly white younger bark. Near the base of the old trees the bark becomes thick, dark brown and divided by deep furrows. The *flowers* are very small and arranged in dense globular green heads.

The *leaves* are simple, alternate, 4 to 7 inches long and about as broad, light green and smooth above, and paler below. The base of the leafstalk is hollow and in falling off exposes the winter bud. The *fruit* is a ball about 1 inch in diameter, conspicuous throughout the winter as it hangs on its flexible stem, which is 3 to 5 inches long. During early spring, the fruit ball breaks up, and the small seeds are widely scattered by the wind.

The *wood* is hard and moderately strong, but decays rapidly in the ground. It is used for butchers' blocks, tobacco boxes, furniture and interior finish.

The tree grows rapidly, bears transplanting well and is often planted as a shade tree.

The European sycamore or London plane tree, *Platanus acerifolia* Willd., is less subject to disease than our native species and has been widely planted in this country for ornament and shade. The leaves are more deeply lobed than our sycamore and there are two or three fruit balls on each stem.



WILD CRAB APPLE *Malus ioensis* Britton

THE wild crab apple, or prairie crab, is found throughout Illinois forming small trees 20 to 30 feet high with trunks from 6 to 12 inches in diameter. In the open it develops a broad open crown with rigid, contorted branches bearing many short, spur-like branchlets, some of which develop into sharp rigid thorns. Under less favorable conditions, these crab apples often form bushy shrubs.



WILD CRAB APPLE

Flower, fruit and leaves one-half natural size.

The *bark* on the branches is smooth, thin and red-brown in color, while on the trunk the thicker bark often breaks into scales. The twigs are at first hoary-hairy, but soon become smooth and reddish.

The *leaves* are alternate, simple, 3 to 4 inches long and almost as broad. They are sometimes slightly lobed and sharply and deeply toothed. They are dark green and shiny above, but pale and

hairy beneath, borne on stout, hairy petioles.

The *flowers*, which are from one to two inches broad, are borne in clusters of 3 to 8, on wooly pedicels about an inch long. The white or rosy petals form a cup which surrounds the numerous stamens and the five styles. The calyx is pubescent.

The *fruit* ripens in October, forming a globose, pale green, very fragrant apple with a waxy surface. It is about an inch in diameter, flattened at each end.

Like the other crabs, its handsome flowers have a delicious fragrance which makes the tree popular for planting for ornamental purposes. The fruit is sometimes gathered for jelly. The *wood* is heavy, close-grained and reddish-brown.

The wild sweet crab, *Malus coronaria* Mill., differs from the above in having more nearly smooth leaves and calyx. It is rarely found in Illinois but is common in Ohio. A cultivated variety, *Malus ioensis plena* Rheder, is sold under the name of Bechtel's crab, and has large, double, rosy-pink blossoms.



SERVICE BERRY *Amelanchier arborea* (Michx. f.) Fern.
(*Amelanchier canadensis* Medic.)

THE downy service berry, or shadblow, as it is more commonly called in the East, has little economic importance except for its frequency throughout the State and the touch of beauty its flowers give to our forests early in the spring before the foliage has come out. It is a small tree 20 to 50 feet high and seldom over 8 inches in diameter, with a rather narrow, rounded top but is often little more than shrub. The name shadblow was given by the early settlers who noticed that it blossomed when the shad were running up the streams.



SERVICE BERRY
One-half natural size.

The *bark* is smooth and light gray, and shallowly fissured into scaly ridges. The *winter buds* are long and slender.

The *leaves* are alternate, slender-stalked, ovate, pointed, finely toothed, 2 to 4 inches long, densely white-hairy when young, then becoming a light green, and covered with scattered silky hairs.

The white *flowers* appear in erect or drooping clusters in early spring, before the leaves, making the tree quite conspicuous in the leafless or budding forest. The petals are slender and rather more than a half inch long.

The *fruit* is sweet, edible, rounded, reddish-purple when ripe, $\frac{1}{3}$ to $\frac{1}{2}$ an inch in diameter, ripening early in June. Birds and denizens of the forest are very fond of the berries.

The *wood* is heavy, exceedingly hard, strong, close-grained and dark brown. It is occasionally used for handles. This is a desirable ornamental tree and should be planted for this purpose and to encourage the birds.

The smooth service berry, *Amelanchier leavis* Wieg., differs from the above species in having smooth leaves, dark green and slightly glaucous when mature, and they are half grown at flowering time. The fruit is sweet, purple or nearly black, glaucous and edible.



COCK-SPUR THORN *Crataegus crus-galli* L.

THE hawthorns, or thorn-apples, are small trees or shrubs of the apple family which are widely distributed throughout the northeastern United States, with fewer species in the South and West. In North America, no less than 150 species have been distinguished, but their proper identification is a task for the expert. There are about a dozen haws that reach tree size in Illinois, attaining a height of 20 to 30 feet and a stem diameter of 8 to 12 inches. Of these, perhaps the best known is the cock-spur thorn with its many strong straight spines and shining leaves. Its *bark* is pale gray and scaly. Its *winter buds* are small, globose and lustrous brown.



COCK-SPUR THORN
Flowers and fruit one-half natural size.

The *leaves* are conspicuous because of their dark green glossy surface. They are broadest toward the apex tapering to the short petiole. They vary in size in different localities, the smaller-leaved varieties seem to be more frequently met with in the southern part of the State than in the north. These leaves are alternate, wedge-shaped, notched on the edges, and from 2 to 3 inches long.

The *flowers* are rather small, arranged in flat-topped clusters, white in color, with about a dozen pink stamens.

The *fruit* is $\frac{1}{3}$ inch thick, greenish-red; the flesh is hard and dry.

This haw is one of the best for planting for ornamental purposes; with its spreading branches, it forms a broad, rounded crown. It is hardy and succeeds in a great variety of soils.

The dotted hawthorn, *Crataegus punctata* Jacq., also has wedge-shaped leaves but they are leathery, dull gray-green in color with conspicuous veins. The tree reaches a height of 25 feet with distinctly horizontal branches forming a broad flat crown. It is often almost without thorns. The fruit is oblong, dull red with pale dots, becoming mellow.

The pear-thorn, *Crataegus calpodendron* Med., is a smaller tree, with broader leaves, very few thorns and pear-shaped fruit. The haw is scarlet or orange-red, the flesh is thin and sweet.



RED HAW *Crataegus mollis* Scheele

LIKE almost all the hawthorns, the red haw is a tree of the pasture lands, the roadside, the open woods and the stream banks. It is the largest of our haws, occasionally reaching a height of 30 feet, with ascending branches usually forming a low conical crown. The twigs are hairy during the first season, but are soon smooth, slender, nearly unarmed or occasionally armed with stout, curved thorns.



RED HAW
Flowers one-half natural size.

The *leaves* are ovate or nearly orbicular, coarsely toothed nearly to the base, usually 3 to 5 pairs of broad, shallow lobes. Both surfaces are hairy.

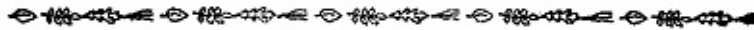
The *flowers* are often nearly an inch across, in compact clusters. They have about 20 cream-colored, densely hairy stamens.

The *fruit*, or the haw, is large, nearly $\frac{3}{4}$ inch across, bright crimson or scarlet in color. The edible sweet flesh is firm but mellow, surrounding 5 bony seeds. It is often used for making jelly.

The *wood* is strong, tough, heavy and hard, and is used for mallets, tool handles and such small articles.

The Washington thorn, *Crataegus phaenopyrum* Med., is a smaller tree, with bright red fruit, but its broad leaves are smooth and bright green. The flowers are small, in very large clusters, followed by small bright scarlet edible haws.

In the southern half of Illinois, growing on moist river bottoms, the green haw, *Crataegus viridis* L., becomes a tree 20 feet tall. The broad leaves are dark green and quite smooth. The fruit is small but produced in large clusters becoming bright red or orange-red as it ripens.



WILD PLUM *Prunus americana* Marsh.

THE common wild plum, or yellow plum, is a small tree which at a height usually of 3 to 6 feet divides into many spreading branches, often drooping at the ends. Not uncommonly it grows in thickets where it attains only large shrub size. The value of the tree lies in its fruit from which jelly and preserves are made, and its handsome form, and foliage, pure white fragrant flowers, and showy fruit which make it desirable for ornamental planting.



WILD PLUM
Three-quarters natural size.

The *leaves* are alternate, oval, pointed, sharply toothed, (often doubly toothed) along the margin, thick and firm, 3 to 4 inches long by 1 to 2 inches wide, narrowed or rounded at the base, and prominently veined on both surfaces.

The *flowers* appear in numerous small clusters before, or simultaneously with, the leaves, and are white with small bright red portions in the center. The *fruit*, or plum, which ripens in late summer, is red or orange colored, about an inch in diameter, contains a stone or pit that is flattened and about as long as the pulpy part, and varies rather widely in its palatability.

The *wood* is heavy, hard, close-grained, reddish-brown in color and has no especial commercial uses.

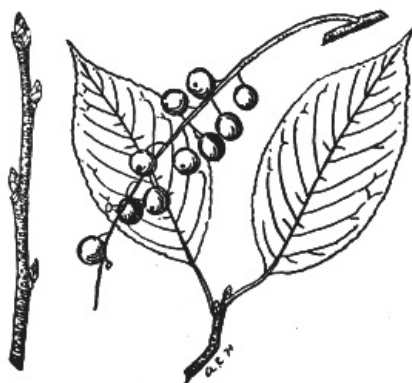
The Canada plum, *Prunus nigra* Ait., is similar to the common wild plum, but the teeth of the leaves are blunt, the leaves are thin and the fruit is orange in color, almost without bloom.

The wild goose plum, *Prunus hortulana* Bailey, has thin lance-shaped leaves; its flowers have short petals and it has a rather hard, small globular fruit.



BLACK CHERRY *Prunus serotina* Ehrh.

A common tree in Illinois and attaining sizes up to about 70 feet in height and 1 to 3 feet in diameter, black cherry as a tree is found all over the State. The forest-grown trees have long clear trunks with little taper; open-grown trees have spreading crowns. The *bark* on branches and young trees is smooth and bright reddish-brown, marked by conspicuous, narrow white, horizontal lines, and has a bitter-almond taste. On the older trunks the bark becomes rough and broken into thick, irregular plates.



BLACK CHERRY

Twig, two-thirds natural size. Leaf, one-third natural size.

The *leaves* are alternate, simple, oval to lance-like in shape, with edges broken by many fine incurved teeth, thick and shiny above, and paler beneath.

The *fruit* is dull purplish-black, about as large as a pea, and is borne in long hanging clusters. It ripens in late summer, and is edible, although it has a slightly bitter taste.

The *wood* is reddish-brown with yellowish sapwood, moderately heavy, hard, strong, fine-grained, and does not warp or split in seasoning. It is valuable for its lustre and color and is used for furniture, interior finish, tools, and implement handles. With the exception of black walnut, black cherry lumber has a greater unit value than any other hardwood of the eastern United States.

The wild cherry, *Prunus pennsylvanica* L., is a small tree, growing on light soils, in the northern part of the State. The bark is a dark reddish-brown; the leaves are lance-shaped bright green and shiny above, while the fruit is round and bright red in color.

The choke cherry, *Prunus virginiana* L., is common along fences and under larger trees in the forest in the northern half of the State. It seldom becomes a tree but it bears a fruit which is sweet but very astringent and is dark purple when ripe.



HONEY LOCUST *Gleditsia triacanthos* L.

THE honey locust occurs scattered throughout the State. It grows under a wide variety of soil and moisture conditions. It sometimes occurs in the forest, but more commonly in corners and waste places beside roads and fields. It reaches a diameter of 30 inches and a height of 75 feet. The *bark* on old trees is dark gray and is divided into thin tight scales. The strong thorns—straight, brown, branched, sharp and shiny which grow on the 1-year-old wood and remain for many years—are sufficient to identify the honey locust.



HONEY LOCUST

Twig, three-quarters natural size. Leaf, one-quarter natural size.

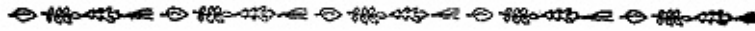
The *leaf* is pinnate, or feather-like with 18 to 28 leaflets; or it is twice-pinnate, consisting of 4 to 7 pairs of pinnae or secondary leaflets, each 6 to 8 inches long and somewhat resembling the leaf of the black locust.

The *flowers* which appear when the leaves are nearly full-grown are inconspicuous, greenish-yellow and rich in honey. The petals vary from 3 to 5, the stamens are 3 to 10 and the ovary is woolly and one-celled.

The *fruit* is a pod, 10 to 18 inches long, often twisted, 1 to 1½ inches wide, flat, dark brown or black when ripe and containing yellow sweetish pulp and seeds. The seeds are very hard and each is separated from the others by the pulp. The pods are eaten by many animals, and as the seeds are hard to digest, many are thus widely scattered from the parent tree.

The *wood* is coarse-grained, hard, strong and moderately durable in contact with the ground. It is used for fence posts and crossties. It should not be confused with the very durable wood of the black locust.

The water locust, *Gleditsia aquatica* Marsh., is found in river bottoms in southern Illinois, becoming a medium sized tree. It may be known by its short pods, 1 to 2 inches long, with only 2 or 3 seeds.



REDBUD *Cercis canadensis* L.

THE redbud is a small tree occurring under taller trees or on the borders of fields or hillsides and in valleys throughout the State. It ordinarily attains a height of 25 to 50 feet and a diameter of 6 to 12 inches. Its stout branches usually form a wide flat head.



REDBUD
Leaf, one-fourth natural size. Twig, and flowers, two-thirds natural size.

The *bark* is bright red-brown, the long narrow plates separating into thin scales.

The *leaves* are alternate, heart-shaped, entire 3 to 5 inches long and wide, glossy green turning in autumn to a bright clear yellow.

The conspicuous bright purplish-red, pea-shaped *flowers* are in clusters along the twigs and small branches and appear before or with the leaves in early spring.

The *fruit* is an oblong, flattened, many seeded pod, 2 to 4 inches long, reddish during the summer, and often hanging on the tree most of the winter.

The *wood* is heavy, hard, not strong, rich, dark brown in color, and of little commercial importance. The redbud is cultivated as an ornamental tree and for that purpose might be planted more generally in this State.

The Kentucky coffee-tree, *Gymnocladus dioica* K. Koch, though not anywhere a common tree, is found on rich bottom lands throughout the State. The much-divided leaves are 2 to 3 feet long. The pods are 5 to 8 inches long and 1 to 2 inches wide and contain hard seeds ¾ inch long. It has few qualities to recommend it for ornamental planting.



BLACK LOCUST *Robinia pseudoacacia* L.

THE black locust is a native to the Appalachian Mountains but has been introduced into Illinois, and now occurs throughout the entire State growing on all soils and under all conditions of moisture except in swamps. It is found generally in thickets on clay banks and waste places or along fence rows.



BLACK LOCUST

Leaf, one-third natural size. Twig and flower, two-thirds natural size.

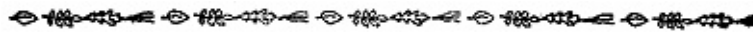
The twigs and branchlets are armed with straight or slightly curved sharp, strong spines, sometimes as much as 1 inch in length which remain attached to the outer bark for many years. The *bark* is dark brown and divides into strips as the tree grows older.

The *leaves* are pinnate, or feather-like, from 6 to 10 inches in length, consisting of from 7 to 19 oblong thin leaflets.

The *flowers* are fragrant, white or cream-colored, and appear in early spring in graceful pendent racemes. The *fruit* is a pod from 3 to 5 inches long containing 4 to 8 small hard seeds which ripen late in the fall. The pod splits open during the winter, discharging the seeds. Some seeds usually remain attached to each half of the pod; the pod thus acts as a wing upon which the seeds are borne to considerable distances before the strong spring winds.

The *wood* is yellow in color, coarse-grained, very heavy, very hard, strong, and very durable in contact with the soil. It is used extensively for fence posts, poles, tree nails, insulator pins and occasionally for lumber and fuel.

The tree is very rapid in growth in youth but short-lived. It spreads by underground shoots and is useful for holding and reclaiming badly gullied lands. The usefulness of the black locust is, however, very greatly limited by the fact that it is subject to great damage from an insect known as the locust borer.



TREE OF HEAVEN *Ailanthus altissima* Swingle

THIS tree is a native of China but planted in Illinois because of its tropical foliage. It has escaped and become naturalized. It is a handsome, rapid-growing, short-lived tree, attaining a height of 40 to 60 feet, and a trunk diameter of 2 to 3 feet. Its crown is spreading, rather loose and open. The twigs are smooth and thick with a large reddish-brown pith. The *winter buds* are small, globular and hairy, placed just above the large leaf-scars.



TREE OF HEAVEN

Twig, one-half natural size. Leaf and fruit, one-fourth natural size.

The *leaves* are alternate, pinnately compound and one to three feet long. The leaflets number from 11 to 41, are smooth, dark green above, paler beneath, turning a clear yellow in autumn.

The *flowers* appear soon after the leaves are full grown, on different trees, borne in large upright panicles. They are small yellow-green in color with 5 petals and 10 stamens. The staminate flowers have a disagreeable odor.

The *fruit*, ripening in October but remaining on the tree during the winter, is a one-seeded samara, spirally twisted, borne in crowded clusters.

The tree of heaven is useful for landscape planting, succeeding in all kinds of soils and all kinds of growing conditions. It makes a rapid showing and is practically free from all diseases and insect injury.



SMOOTH SUMAC *Rhus glabra* L.

THE smooth sumac is usually a tall shrub but occasionally it develops as a tree 20 to 25 feet tall with a trunk diameter of 6 to 10 inches. A few large spreading branches form a broad, flat, open head. The twigs are smooth and glabrous and have a thick, light brown pith with small round winter buds.



SMOOTH SUMAC
Twig, one-half natural size. Leaf and fruit, one-fourth natural size.

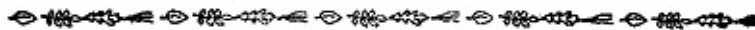
The compound *leaves* are 6 to 18 inches long, composed of 9 to 27 leaflets with sharply notched margins. They are dark green above, whitish beneath, changing to red, purple and yellow early in the autumn.

The *flowers* are small and green, produced in dense terminal panicles. The *fruit* is a small globose berry, covered with crimson hairs and has a pleasant acid taste. The conspicuous deep red panicles of fruit remain unchanged on the tree during the winter.

The *wood* is light and of a golden yellow color. Either as a tree, or as a shrub, the smooth sumac is excellent for ornamental planting, being particularly desirable on terraces or hillsides, where mass effects are desired. It transplants very readily and spreads freely.

The staghorn sumac, *Rhus typhina* L., is a slightly taller tree, as it reaches a height of 20 to 35 feet, and a stem diameter of 8 to 12 inches. The twigs and leaves are similar to those of the smooth sumac but are conspicuously hairy. Its occurrence is limited to the northern part of the State.

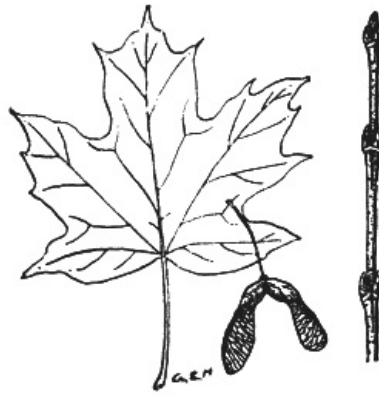
The shining sumac, *Rhus copallina* L., usually occurs in shrub form but it occasionally reaches a height of 20 feet with a stem diameter of 6 inches. The leaves are smooth above but somewhat hairy beneath with a winged rachis and about 9 to 21 leaflets that are slightly toothed. Late in the summer its foliage turns a brilliant red. The fruit clusters are much smaller than the preceding species. It is found throughout the State.



SUGAR MAPLE *Acer saccharum* Marsh.

THE sugar maple is an important member of the climax forests which stretch from Maine to Minnesota and southward to Texas and Florida. It is an associate of the hemlocks and the birches in the North, with the beeches and chestnuts through the middle states, with the oaks in the West and with the tulip and the magnolias in the South. In Illinois it is a common and favorite tree throughout the State. In the open it grows fairly rapidly and has a very symmetrical, dense crown, affording heavy shade. It is, therefore, quite extensively planted as a shade tree. The *bark* on young trees is light gray and brown and rather smooth, but as the tree grows older, it breaks up into long, irregular plates or scales, which vary from light gray to almost black. The twigs are

smooth and reddish-brown, and the *winter buds* are smooth and sharp-pointed. The tree attains a height of more than 100 feet and a diameter of 3 feet or more. The sap yields maple sugar and maple syrup.



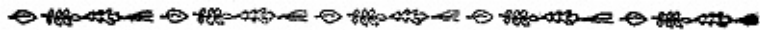
SUGAR MAPLE
 Leaf, one-third natural size. Twig, one-half natural size.

The *leaves* are 3 to 5 inches across, simple, opposite, with 3 to 5 pointed and sparsely-toothed lobes, the divisions between the lobes being rounded. The leaves are dark green on the upper surface, lighter green beneath, turning in autumn to brilliant shades of dark red, scarlet, orange and clear yellow.

The *flowers* are yellowish-green, on long threadlike stalks, appearing with the leaves, the two kinds in separate clusters. The *fruit*, which ripens in the fall, consists of a two-winged "samara", or "key", the two wings nearly parallel, each about 1 inch in length and containing a seed. It is easily carried by the wind.

The *wood* is hard, heavy, strong, close-grained and light brown in color. It is known, commercially as hard maple, and is used in the manufacture of flooring, furniture, shoe-lasts and a great variety of novelties.

The black maple, *Acer nigrum* Michx., occurs with the sugar maple with darker bark. The leaves are usually wider than long, yellow-green and downy beneath, and the base of the petioles enlarged. The two lower lobes are very small; the lobes are undulate or entire.



SILVER MAPLE *Acer saccharinum* L.

THE silver or river maple, also called the soft maple, occurs on moist land and along streams. It attains heights of 100 feet or more and diameters of 3 feet or over. It usually has a short trunk which divides into a number of large ascending limbs. These again subdivide, and the branches droop but turn upward at the tips. The *bark* on the old stems is dark gray and broken into long flakes or scales; on the young shoots it is smooth and varies in color from reddish to a yellowish-gray. The silver maple grows rapidly and has been much planted as a shade tree. Because of the brittleness of its wood, it is often damaged by summer storms and winter sleet.



SILVER MAPLE
 Twig, one-half natural size. Leaf, one-third natural size.

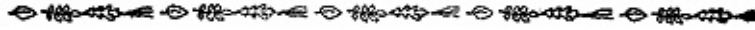
The *leaves* are opposite on the stem, have from 3 to 5 lobes ending in long points with toothed edges and are separated by deep angular sinuses or openings; they are pale green on the upper surface and silvery-white underneath. The buds are rounded, red or reddish-brown, blunt-pointed; generally like those of red maple.

The *flowers* appear in the spring before the leaves, in dense clusters, and are of a greenish-

yellow color. The *fruit* ripens in late spring. It consists of a pair of winged seeds or "keys" with wings 1 to 2 inches long on slender, flexible, threadlike stems about an inch long.

The *wood* is soft, weak, even-textured, rather brittle, easily worked, and decays readily when exposed. It is considerably used for boxboards, furniture, veneers and fuel.

The red maple, or swamp maple, *Acer rubrum* L., has leaves deeply lobed with the lobes sharply toothed. The autumn color is deep red. The flowers also are red and the fruit is small reddish, maturing late in spring.



BOX ELDER *Acer negundo* L.

THE box elder is a fairly rapidly growing tree, found commonly along streams rather generally over the State. It is a tree of medium size, rarely reaching over 24 inches in diameter and 60 to 70 feet in height. It has been considerably planted for shade because in good soil its growth is rapid. Its limbs and branches, however, are fragile, and the tree as a whole is rather subject to disease. It is not long-lived or generally satisfactory for any purpose. It is prolific in reproduction but is largely destroyed by grazing and cultivation.



BOX ELDER

Twig, two-thirds natural size. Leaf, one-third natural size.

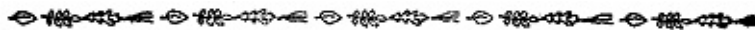
The *bark* on young branches is smooth and green to purple in color; on old trees it is thin, grayish to light brown and deeply divided.

The *leaves* are compound, with usually 3 leaflets (rarely 5 or 7), opposite, smooth and lustrous, green, and borne on a leaf stem or petiole 2 to 3 inches long. The leaflets are 2 to 4 inches long by 1 to 2 inches wide, making the whole leaf 5 to 8 inches in length.

The *fruit* is a samara, or key, winged similarly to that of a sugar maple, but smaller. It ripens in late summer or early fall, and so is like its close relative, the sugar maple, but unlike its close relatives, the red maple and silver maple.

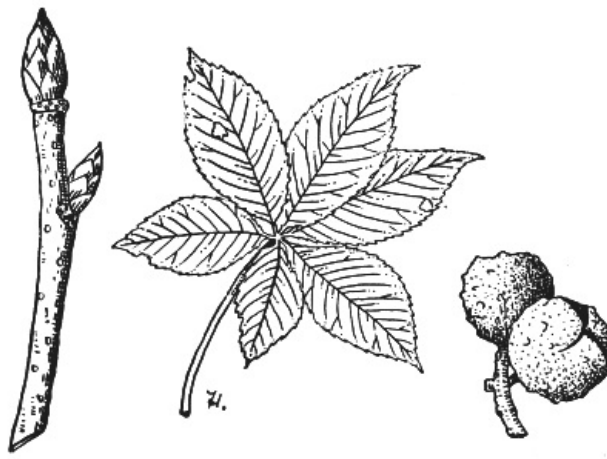
The *wood* is soft, light, weak, close-grained and decays readily in contact with heat and moisture. It is used occasionally for fuel.

The Norway maple, *Acer platanoides* L., is a European species which has been extensively planted. It forms a round, spreading crown of stout branches with coarse twigs. The leaves resemble those of the sugar maple but somewhat broader and the petioles exude a milky juice when cut. The flowers are larger than those of our native maples and fruit is large with diverging wings. It holds its leaves longer in the fall and the autumn coloring is pale yellow. It succeeds well as a city shade tree.



OHIO BUCKEYE *Aesculus glabra* Willd.

THE buckeye is rare in the northern fourth of Illinois, but is known in the rest of the State, forming no considerable part of the forest stand. It reaches a height of 60 to 70 feet and a diameter of 18 to 24 inches. The trunk is usually short, limby, and knotty. The crown or head, is generally open and made up of small spreading branches and twigs orange-brown to reddish-brown in color. The *bark* is light gray and, on old trees, divided or broken into flat scales, which make the stem of the tree rough; the bark is ill-smelling when bruised.



OHIO BUCKEYE

Twig, two-thirds natural size. Nut, one-third natural size.
Leaf, one-quarter natural size.

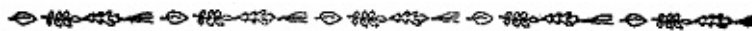
The *leaves* are opposite on the twigs, compound and consisting of 5 long-oval, rarely 7, pointed, toothed, yellow-green leaflets, set like the fingers of a hand at the top of slender petioles 4 to 6 inches long. They usually turn yellow and then fall early in the autumn.

The *flowers* appear after the leaves unfold; are cream-colored; in terminal panicles 5 to 7 inches long and 2 to 3 inches broad, quite downy.

The *fruit* is a thick, leathery, prickly capsule about an inch in diameter, and, breaking into 2 or 3 valves, discloses the bright, shiny, mahogany colored seeds, or nuts.

The *wood* is light, soft and weak, and decays rapidly when exposed. It is used for woodenware, artificial limbs, paper pulp, and for lumber and fuel.

The horse-chestnut, *Aesculus hippocastanum* L., is a handsome European tree with a very symmetrical crown. The flowers are larger than those of our native species and add beauty to the foliage. It forms a desirable shade tree.



BASSWOOD *Tilia americana* L.

THE basswood, or American linden, is a rather tall tree with a broad, round-topped crown. It ranges throughout Illinois and may be found wherever rich, wooded slopes, moist stream banks and cool ravines occur. It grows best in river bottoms, where it is common and forms a valuable timber tree, attaining a height of 80 feet and a diameter of 4 feet. The *bark* is light brown, deeply furrowed and the inner bark furnishes bast for making mats.



BASSWOOD

Leaf, one-third natural size. Twig, one-half natural size.

The *leaves* are broadly heart-shaped, 3 to 6 inches long, coarsely saw-toothed, smooth on both sides, except for some hairs on the axils of the veins. They are dark above but light green beneath.

The *flowers* are yellowish-white, in drooping clusters opening in early summer, and flower stem is united to the middle of a long narrow leaf-like bract. They are very fragrant and from them the bees make a large amount of choice grade honey.

The *fruit* is a berry-like, dry, 1 or 2 seeded, rounded nutlet $\frac{1}{4}$ to $\frac{1}{2}$ an inch in diameter, covered with short, thick and brownish wool. It remains attached in clusters to the leafy bract, which later

acts as a wing to bear it away on the wind.

The *wood* is light, soft, tough, not durable, light brown in color. It is used in the manufacture of pulp, woodenware, furniture, trunks, excelsior and many other articles.

It makes a fine shade tree, grows rapidly and is easily transplanted.

The white basswood, *Tilia heterophylla* Vent., is similar to the preceding species, but with somewhat lighter bark. The leaves are larger, dark yellow-green above, the under surface being generally densely covered with short, silvery or gray hairs with tufts of brown hairs in the axils of the veins. It is more plentiful in the southern part of the State.



FLOWERING DOGWOOD *Cornus florida* L.

THE flowering dogwood is rare in the northern third of the State. It is a small tree, growing under the larger forest trees, usually 15 to 30 feet in height and 6 to 12 inches in diameter, with a rather flat and spreading crown and short, often crooked trunk. The *bark* is reddish-brown to black and broken up into small 4-sided scaly blocks.



FLOWERING DOGWOOD
Leaf and flowers, one-half natural size. Twig, two-thirds natural size.

The *leaves* are opposite, ovate, 3 to 5 inches long, 2 to 3 inches wide, pointed, entire or wavy on the margin, bright green above, pale green or grayish beneath.

The *flowers*, which unfold from the conspicuous round, grayish, winter flower buds before the leaves come out, are small greenish-yellow, arranged in dense heads surrounded by large white or rarely pinkish petal-like bracts, which give the appearance of large spreading flowers 2 to 4 inches across.

The *fruit* is a bright scarlet "berry", ½ inch long and containing a hard nutlet in which are 1 or 2 seeds. Usually several fruits, or "berries", are contained in one head. They are relished by birds, squirrels and other animals.

The *wood* is hard, heavy, strong, very close-grained, brown to red in color. It is in great demand for cotton-mill machinery, turnery handles and forms. One other tree has quite similar wood—the persimmon.

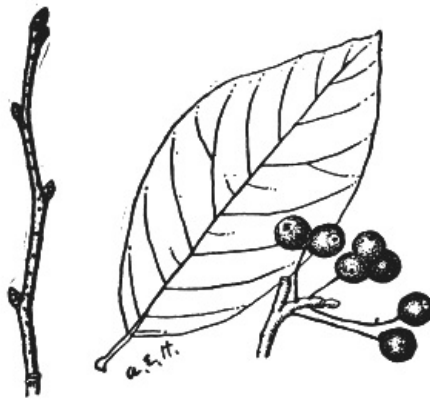
The dogwood, with its masses of early spring flowers, its dark red autumn foliage and its bright red berries, is probably our most ornamental native tree. It should be used much more extensively in roadside and ornamental planting.

The alternate-leaved dogwood, *Cornus alternifolia* L., occasionally reaches tree size with long slender branches arranged in irregular whorls giving the tree a storied effect. The flowers are small, followed by blue-black fruit borne in loose red-stemmed clusters.



SOUR GUM *Nyssa sylvatica* Marsh.

THE sour gum, often called black gum, is found in many types of soil and in most conditions of soil moisture in southern Illinois, but it becomes rare in the northern half of the State. In lowlands, it is occasionally found in year-round swamps with cypress, and in the hills on dry slopes with oaks and hickories.



SOUR GUM
One-half natural size.

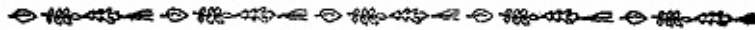
The *leaves* are simple, 2 to 3 inches long, entire, often broader near the apex, shiny, dark green in color. In the fall the leaves turn a most brilliant red.

The *bark* on younger trees is furrowed between flat ridges, and gradually develops into quadrangular blocks that are dense, hard and nearly black. Most of the branches are nearly horizontal.

The greenish *flowers* on long slender stems appear in early spring when the leaves are about one-third grown. They are usually of two kinds, the male in many-flowered heads and the female in two to several-flowered clusters on different trees. The *fruit* is a dark blue, fleshy berry, $\frac{2}{3}$ of an inch long, containing a single hard-shelled seed, and is borne on long stems, 2 to 3 in a cluster.

The *wood* is very tough, cross-grained, not durable in contact with the soil, hard to work, and warps easily. It is used for crate and basket veneers, box shooks, rollers, mallets, rough floors, mine trams, pulpwood and fuel.

The tupelo gum, or cotton gum, *Nyssa aquatica* L., is found in deep river swamps which are flooded during a part of the year. It occurs in 4 or 5 of the southern counties of Illinois in cypress swamps. The enlarged base and the larger fruit serve to distinguish it from the sour gum. This fruit or "plum" is about an inch long, dark purple and has a tough skin enclosing a flattened stone. The wood is light, soft, and not strong and is used for woodenware, handles, fruit and vegetable packages.



PERSIMMON *Diospyros virginiana* L.

THE persimmon, often called "simmon", is well known throughout its range. It is a small tree, rarely exceeding 50 feet in height and 1 inch in diameter, occurring throughout the State from the southern part north to Peoria County. It seems to prefer dry, open situations, and is most abundant in the old fields, though it also occurs on rich bottom lands. The *bark* of old trees is almost black and separated into thick nearly square blocks, much like the black gum.



PERSIMMON
Leaf, one-half natural size. Twig, three-quarters natural size.

The *leaves* are alternate, oval, entire, 4 to 6 inches long, dark green and shining above, paler beneath.

The small *flowers*, which appear in May, are yellowish or creamy white, somewhat bell-shaped, the two kinds occurring on separate trees; the male in clusters of 2 or 3, the female solitary. They

are visited by many insects.

The *fruit* is a pulpy, round, orange-colored or brown berry, an inch or more in diameter and containing several flattened, hard, smooth seeds. It is strongly astringent while green, but quite sweet and delicious when thoroughly ripe.

The *wood* is hard, dense, heavy, strong, the heartwood brown or black, the wide sapwood white or yellowish. It is particularly valued for shuttles, golf-stick heads, and similar special uses, but is not of sufficient commercial use to warrant its general encouragement as a timber tree.

The Hercules' club, *Aralia spinosa* L., grows to tree size in southern Illinois, with a spiny stem 25 to 30 feet tall and a flat-topped head. The doubly compound leaves are often more than 3 feet long. Its small greenish-white flowers are followed by large clusters of purple juicy berries. It is desirable for ornamental planting.



WHITE ASH *Fraxinus americana* L.

THE white ash is found throughout the State, but grows to best advantage in the rich moist soils of bottom lands. It reaches an average height of 50 to 80 feet and a diameter of 2 to 3 feet, though much larger trees are found in virgin forests. The *bark* varies in color from a light gray to a gray-brown. The rather narrow ridges are separated with marked regularity by deep, diamond-shaped fissures.



WHITE ASH
Twig, one-half natural size. Leaf, one-third natural size.

The opposite *leaves* of the white ash are from 8 to 12 inches long and have from 5 to 9 plainly stalked, sharp-pointed leaflets, dark green and smooth above, pale green beneath.

The *flowers* are of two kinds on different trees, the staminate in dense reddish-purple clusters and the pistillate in more open bunches. The *fruit* of the ash is winged, 1 to 1½ inches long, resembling the blade of a canoe paddle in outline, with the seed at the handle end. The fruits mature in late summer and are distributed effectively by the winds.

The *wood* of the white ash is extremely valuable on account of its toughness and elasticity. It is preferred to all other native woods for small tool handles, such athletic implements as rackets, bats, and oars, and agricultural implements. It is also used extensively for furniture and interior finish.

The green ash, *Fraxinus pennsylvanica lanceolata* Sarg., is common in stream valleys throughout the State. The hairy form of this tree is known as the red ash. This species differs from the white ash in having the leaves bright green or yellow-green on both sides. The fruit has the wing portion extending well down past the middle of the seed-bearing part, and with the wing sometimes square or slightly notched at the outer end. The wood is similar to that of the white ash, but is not quite so tough.



BLUE ASH *Fraxinus quadrangulata* Michx.

THE blue ash is not very common but widely distributed in the upland portions of the State, where it is limited to limestone bluffs, occasionally descending to the adjacent bottom lands. It becomes a large tree 60 feet or more in height with a trunk 2 feet in diameter. The young twigs are usually square, sometimes winged or 4-ridged between the leaf bases.



BLUE ASH

Leaf, one-third natural size. Fruit and twig, two-thirds natural size.

The *bark* is light gray tinged with red, $\frac{1}{2}$ to $\frac{2}{3}$ inch thick, irregularly divided into large plate-like scales. Macerating the inner bark in water yields a blue dye.

The *leaves* are 8 to 12 inches long, having 7 to 11 stalked leaflets, long pointed and coarsely toothed, thick and firm, smooth and yellowish-green above, paler beneath.

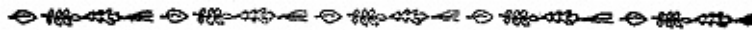
The *flowers* are without petals and appear in clusters when the buds begin to expand.

The *fruit* is flattened and oblong, 1 to 2 inches long and less than $\frac{1}{2}$ inch wide and 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 *wood* is heavy, hard, and close-grained, light yellow, streaked with brown, with a very broad zone of lighter sapwood. It is not usually distinguished commercially from the wood of other ashes.

The pumpkin ash, *Fraxinus tomentosa* Michx., grows in deep river swamps in southern Illinois. It is a tall slender tree, usually with a much enlarged base. The twigs are light gray. The leaves, with 7 to 9 leaflets, smooth above and soft downy below, are from 10 to 18 inches long.

The black ash, *Fraxinus nigra* Marsh., appears occasionally on the flood plains in the northern part of the State. It may be known by its ashy light gray bark, its very thick twigs and sessile, long-pointed sharply serrate leaflets.



CATALPA *Catalpa speciosa* Warder

THIS is a native to the Wabash Valley of Illinois, but has been widely planted and has spread somewhat farther as a result of cultivation. It is a medium sized tree with a short trunk and broad head with spreading branches. Because of its attractive flowers and conspicuous heart-shaped leaves, it is considerably used for shade and ornament. The *bark* varies from dark gray to brown, slightly rough, being divided in narrow shallow strips or flakes. The *leaves* are simple, opposite, oval, long-pointed, 6 to 10 inches long, and heart-shaped at the base.



The *flowers* appear in clusters or panicles in May or June. They are white with purple and yellow markings, and this makes them decidedly showy and attractive. The *fruit* consists of a bean-like pod, 8 to 16 inches long. It hangs on the tree over winter and gradually splits into 2 parts, or valves. The seeds are about 1 inch long and terminate in wings that are rounded and short-fringed at the ends. They are freely carried by the wind.

The *wood* is rather soft, light, coarse-grained and durable in contact with the soil. It is used for fence posts, poles and fuel, and occasionally for railroad ties.

The paulownia, *Paulownia tomentosa* (Thumb). Steud., is a large tree native of China with the aspect of the catalpa with broad opposite leaves. Its upright pyramidal clusters of pale violet flowers which appear with the unfolding of the leaves are strikingly handsome. The individual flowers are bell-shaped, two inches long and spotted with darker purple.



DEPARTMENT OF CONSERVATION Division of Forestry

The State Division of Forestry was organized in 1926 as a division of the Department of Conservation. It was organized at that time as a result of an increased need for proper forestry practices within the State on the part of the owners of timber land and potential timber lands.

The objectives of the Division are as follows:

1. To promote and assist in the reforestation of idle lands unfit for agriculture.
2. To prevent and control woods fires.
3. To control erosion by the planting of trees.
4. To establish State forests to act as demonstration areas in timber land management.
5. To assist Illinois farmers, landowners, and corporations in woodland management practices.
6. To assist in the establishment of county and community forests.
7. To disseminate forestry knowledge through the publication of forestry literature.

Reforestation

Illinois has within its total land area of approximately 35,800,000 acres, 2,500,000 acres of land that should be reforested. These lands are lying idle at present due to the fact that they are too poor for agricultural purposes. As such they provide an economic burden to their owners and to the State because they are unproductive. These same lands will grow trees profitably, therefore, it is necessary that they be planted to trees for a future timber crop which ultimately will bring a revenue to the landowners and community.

To meet this situation, the Department of Conservation, Division of Forestry has developed two large forest tree nurseries capable of producing 15,000,000 trees annually for reforestation and erosion control purposes. These trees are available to farmers and landowners at prices varying from \$5.00 to \$15.00 per thousand, dependent upon the species of trees desired. Trees secured from the State must be used only for reforestation and erosion control and cannot be used for landscape or ornamental plantings.

Definite progress has been made in the State reforestation program of idle lands. The first major distribution of trees took place in 1936 at which time 300,000 trees were planted in the State. Since 1936 the State's reforestation program has steadily been enlarged to the extent that in 1940, 6,250,000 trees were distributed from State nurseries and in 1954, 9,996,000 trees left the Division's nurseries to be planted by farmers and public agencies in the State.

Considerable progress has been made, however, it is hoped that the reforestation program in Illinois will continue to expand until all idle lands in Illinois are growing a useful timber crop.

Forest Fire Protection

Woodland fires in Illinois always present a serious problem to the future growth and quality of our forests. Thousands of dollars worth of damage is done annually to our existing woodlands by fires which not only destroy our merchantable timber but also cause severe mortality to young forest seedlings. Fires seriously affect the soil, destroy wildlife and disrupt the entire biological balance of the forest. Every effort should be made, therefore, to prevent woods fires.

In 1938 the State Division of Forestry inaugurated a program in forest fire protection. Since that time ten fire protection districts and a forest fire protection headquarters have been established in southern Illinois. Fire fighting personnel has been hired, radio communication established, and ten State forest fire towers have been erected. Fire protection has been established on all State forests. Necessary tools and equipment for use by both forestry personnel and volunteer groups have been purchased. As a result, 3,674,000 acres of State and private land are now receiving fire protection. This program will be enlarged as funds permit until all woodland acreage in need of protection will receive necessary fire protection.

Our forest resources are a valuable asset to Illinois and one of the most valuable renewable resources that we have. They can only be so, however, if adequate forest fire protection is afforded them.

Woodland Management

Illinois' total forest acreage, when our first settlers came to the State, included 15,273,000 acres of the finest timber to be found in the Middle West. This represented 42 per cent of the total acreage. Although Illinois today is considered strictly an agricultural State, at one time we were rich in forest resources and they were the State's most valuable asset. Today Illinois has but 3,996,000 acres of woodlands of which 92% is in private ownership. The trained foresters of the Division of Forestry are making every effort to assist farmers and landowners in their woodland management problems. It is vitally necessary that proper forestry practices be conducted on our woodlands today in order that the landowners realize an income from their forest lands and thereby make them an asset rather than a liability. Advice on woodland management is available free of charge from the Division.

The marketing and proper utilization of our existing forest resources is the concern of the Division of Forestry. Approximately 1,000 small sawmills are operating in the State and, of course, much timber is needed annually to keep such mills in operation. Every effort is being made to advise timber landowners as to proper cutting practices and disposal of merchantable timber.

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State Forests

The State at present has 10,110 acres in State forests. It is hoped that this acreage can be enlarged in future years as State appropriations permit. The above acreage includes three State forests located in Union, Mason and Henderson counties. Illinois State forests will always be smaller than those of other states because of the unavailability of low valued land. The Division's proposed State forest plan provides for a large number of small State forests throughout the State which would serve as ideal examples of proper woodland management and reforestation practices. As funds permit these will be acquired in the future.

Our State forests provide ideal recreational areas at present and thousands of visitors use them annually. In addition, as the timber matures on them, they will provide a revenue from timber sales and become self-sustaining.

Community Forests

Community forests are the oldest type of forest lands in public ownership. Some have been in existence for 200 years in the eastern states and records of older community forests have been found in some of the European countries. The Division of Forestry is cooperating with counties and communities in an effort to get a large scale community forest program in Illinois. To date there are 58 community forests having a total acreage of 52,296 acres. Up to the present time 700,000 trees have been planted on these areas in cooperation with the Division of Forestry.

Nine counties in the State have County Forest Preserve Districts at present. The ratio of ten acres for each 1,000 population within the county appears to be a fair goal for county forest preserve systems in accordance with the Illinois State Planning Commission. On this basis 19 counties in Illinois should have forest preserves.

Summary

As a result of increased appropriations for forestry in recent years a definite well-planned forestry program is in effect in Illinois. For additional information on the Division's activities, write the State Forester, Springfield.



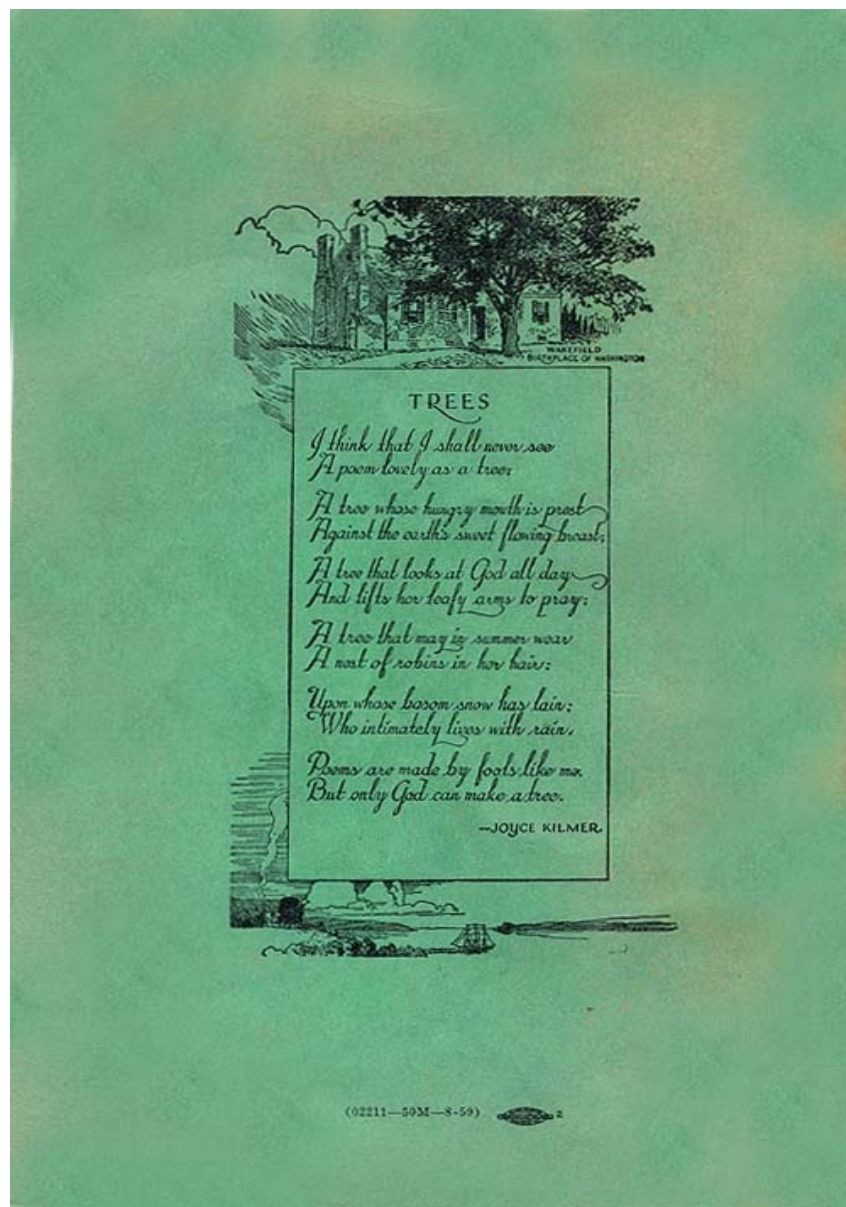
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