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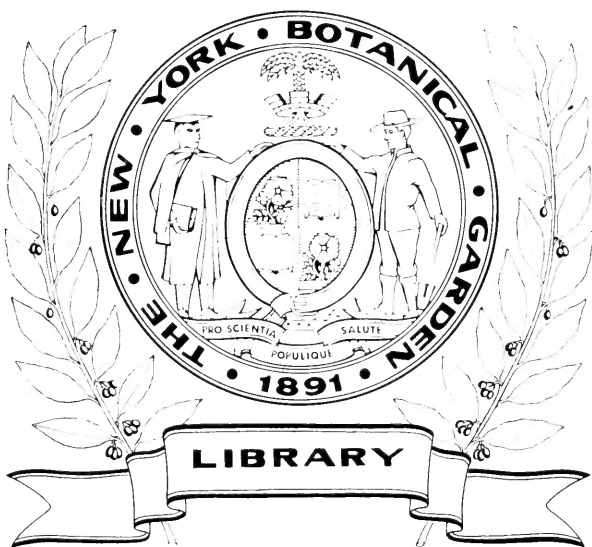
COPE, J. A.

FIFTY COMMON TREES OF
NEW YORK.

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FIFTY COMMON TREES OF NEW YORK
FORESTRY FOR 4-H CLUB BOYS AND GIRLS
SECOND YEAR—FOREST APPRECIATION

J. A. COPE AND GARDINER BUMP

Since one-half of the entire land area of New York State is better adapted to growing trees than to any other use, forestry is a vital part of agriculture within the State.

Work in forestry should appeal to boys and girls because of its outdoor nature and the possibility of combining therewith activities in nature study, camp, and woodcraft.

Because of the number of years required to grow a crop of wood, the boys and girls, as future land owners, will reap the direct benefits of the principles learned and the work undertaken.

Boys and girls who have planted 1000 forest trees as the first-year project in forestry are now ready to take up a detailed study of our native forest trees.

To have a real appreciation of the forest is to know the importance of the forest to agriculture and industry, to have a thorough knowledge of the trees of which the forest is composed, and to know the relative values of these trees in producing crops of timber. The first step, therefore, in the appreciation of the forest is to become familiar with the various kinds of trees, the individuals of the forest community. They must be met at home, in the forest where they can be found in conditions most natural to their growth. Each kind of tree will be found to have certain characteristics that distinguish it from other trees. No two trees have bark, leaves, or fruit exactly alike. Varying as much as these external characteristics of the tree is the wood, and upon the characteristics of that wood depends the use to which it can be put. In growing timber for a definite use or in choosing trees to be cut for a certain purpose, it is important to know what woods can be put to that use or will answer to that purpose.

AUTHORS' ACKNOWLEDGEMENTS. The descriptive text (pages 10 to 61) covering the tree characters is largely a compilation rather than the result of original investigations. *Trees in Winter* by Albert Francis Blakeslee and Chester Deacon Jarvis was freely consulted in the matter of bark characters; *Trees of New York State* by H. P. Brown furnished valuable suggestions in the way of uses; and the recently published *Common Trees of New York* by J. S. Illick was followed closely in many particulars.

The cuts for the book were furnished through the courtesy of W. R. Mattoon of the Forest Service from a set cooperatively published some years ago by the Forestry Departments of the States of Maryland, North Carolina, Virginia, and Tennessee.

In listing scientific names The *Check List of Forest Trees of the United States*, Miscellaneous Circular 92 of the United States Department of Agriculture, was followed.

In order to assist boys and girls in becoming better acquainted with the forest trees of their neighborhood, this bulletin has been prepared. There are probably a hundred distinct varieties of trees native to the State, but some of them are so small that they are in this State scarcely more than shrubs and do not deserve to be classed as trees. In such a group are the alder, the pussy willow, and the witch-hazel. Still other varieties, while of real forest-tree size, are confined to very limited localities, such as the willow oak and the sweet gum on Long Island. No attempt has been made, therefore, to provide an all-inclusive list of trees in this publication¹, but rather to pick out and to describe the commoner trees that are generally distributed throughout the State and that are likely to be found in the average woodlot.

With this bulletin as a guide, it should be possible for every boy and girl electing the forestry projects to become familiar with all the forest trees in their neighborhood. As future woodland owners, this basic knowledge of the trees of the forest will put them in a position to cut wisely and well in bringing about better forests.

HOW TO USE THE BULLETIN

The place, of course, to study the trees is in the woods. Take this publication along with you, look for the characters—bark, twigs, buds, leaves, and fruit. Compare the actual specimens with the outline drawings to see how they agree.

Pay considerable attention to the bark. It is always present, summer and winter, and even in the log you can tell the tree if you know the bark. Keep in mind the points mentioned in the text, such as color, and texture, whether smooth or furrowed, scaly or firm.

The twigs are interesting to study in the winter time. They, too, vary in color; some are brittle, while others are equally tough and pliable; some are slender, while others are coarse. A taste of the twig will often help, as in the case of the cherries or the black birch.

The buds go along with the twigs as part of the winter study of the trees. It frequently may be important to be able to recognize a forest seedling in the early spring before the leaves are out. Particularly is this true in case you wanted to transplant the seedling or if it were a valuable forest tree, like a sugar maple, and it was desired to cut around it and give it more light. In such instances the buds are a very helpful means of identification. You will note in the text that all deciduous-leaved trees are listed as having either a terminal bud present or absent.

¹For complete study of the trees of New York State, the reader is referred to *Trees of New York State, Native and Naturalized* by H. P. Brown, New York State College of Forestry, Syracuse, New York. Technical publication 15. 1925.

Study the winter twigs carefully. It is obvious that hickories have a terminal bud as do also the maples and the ashes. But watch out when you come to the basswood, the elms, and the birches. They may look at first glance as if they had a terminal bud, but on closer examination you will see that there is really a leaf scar on the end of the twig and the bud is a little below and to one side. The color of buds will also be helpful; for example, by a glance at the color of the bud you can tell at once whether you have a soft or a hard maple. Under *leaves* you will find a statement as to whether they are arranged opposite or alternate. This will apply also to the buds and will help to tell some trees apart.

Leaves are, for those just starting in the study of our forest trees, the easiest approach. As you study the leaves and compare them, look for the following points: Are they simple (one leaf to a stem) or compound? Are they arranged opposite on the twig or alternate? How is the margin of the leaf shaped? This is very important. In some leaves the margin is entire (no breaks at all); in some, it is like the fine teeth of a carpenter's saw, this we have called *serrate* (saw-like); in others, the margin is more deeply notched, as in the chestnut, the beech, and the big-toothed aspen, these margins we have called *toothed*. Then we come to the oaks and some others where the margin is very deeply cut and the leaves are described as *lobed*, and the hollows between are called *clefts*.

Trees have flowers as do most of our green plants, but they are as a rule inconspicuous, and high up in tree tops where they cannot easily be obtained to aid in identification. Then, too, they are only present for a very brief season. In the interest of using available space for more important features, the description of flowers has been left out.

The fruit of the forest trees is an important item in the appreciation of the forest, not so much as a means of identifying the tree, but as recognizing the origin from which the different forest trees must spring. Fruit, it should be remembered, does not mean in this connection necessarily fleshy, edible products, such as apples or cherries, but includes any seed and the covering in which it develops, whether cone, pod, samara (winged-seed), burr, or husk. Make careful note as to the time of year the seed matures, which is given in the text in every case.

Some brief mention is also made of the uses of the tree and where it is to be found growing naturally. This should round out your knowledge and appreciation of the trees of your community.

MAKING A TREE COLLECTION

One of the requirements of the forest-appreciation project is to make a collection of (1) a winter twig, (2) a leaf, and (3) a fruit of at least

fifteen native forest trees. We hope you will want to know all the forest trees of your section, but as a tangible evidence of your year's work a collection of only fifteen is required. Such collections may be used for exhibit material at school and county fairs and at the state fair.

Collecting the specimens for mounting

1. **Twigs.** The twigs may be collected in the fall any time after the leaves drop. Using a sharp knife, cut a section from the end of the twig about 5 inches long, taking the twig from a side branch, never from the top shoot. Do not take the twig from a stump sprout or a very vigorous-growing young sapling as it will not be average; on the other hand, do not collect from a small lower branch that is dying due to lack of light. Cut the end of the twig slanting so as to show a section of the pith. This is particularly important in the case of walnuts. If collecting a number of twigs in any one day, each should be tagged so as to avoid mistakes later on.

2. **Leaves.** Since this project starts in the fall, there will be many deciduous-leaved trees whose leaves cannot be collected until the following spring, but by the end of May most leaves will be out in an average season. Here again avoid taking specimens from little seedlings or sprout growth. Have a good-sized notebook along when making a leaf collection so that the leaves can be placed out flat and carried home in that condition. In the case of compound leaves, such as locust or ash or walnut, remember that the whole leaf must be shown, not just a leaflet. Many leaves, such as walnut, are longer than the 8½-by-11½-inch standard paper used for the collection, but usually a typical, yet somewhat smaller-sized leaf can be found.

3. **Fruit.** It will be important to begin looking in the autumn for the fruit of some of the trees. If you wait until June of the following year, the collection will be incomplete.

Preparing the specimens for mounting

1. **Twigs.** Twigs after collecting should be stored in a cool, dry place where they will dry out gradually. The name of the tree written on a piece of paper and the twig stuck through the paper will keep the twigs separate.

2. **Leaves.** Leaves for mounting must be carefully dried and pressed as soon as brought from the woods. For this, use a press such as is provided for preparing flower specimens at school. A simple press can be made by placing newspapers on a flat surface and placing a weighted board on the papers.

3. **Fruit.** Fruit and seeds need not be pressed, but should be kept in envelopes or paper sacks with the name of the tree carefully written on the outside.

Mounting the specimens on paper

Standard covers 9 by 12 inches will be furnished by the Department of Forestry for the collection. Therefore, the paper for mounting should be not larger than $8\frac{1}{2}$ by $11\frac{1}{2}$ inches. Heavy white paper or light cardboard, either white or buff, is to be preferred. Have also on hand a supply of Dennison's gummed-cloth mending tape $1\frac{1}{4}$ inches wide. Cut across the tape, making little strips about $\frac{1}{8}$ inch wide. Punch holes in one margin of the paper to correspond with the holes in the covers furnished for the collection.

With these materials ready, remove the specimens from the press. Place a piece of the mounting paper on a flat surface with the punched margin to the left. This will make all your specimens appear on the right-hand page as one opens the book. Do not mount anything on the other side of the sheet.

Place the leaf on the portion of the sheet nearest the center, leaving the twig and the seed for the outside, and at least 2 inches of space below for the name of the tree and its principal uses. In cases of larger leaves, especially compound leaves, only one can be placed on the sheet, but two averaged-sized leaves can be mounted, one above the other, to advantage, one showing the upper surface and the other the lower surface. (Note the difference in the case of black oak.) Do not fail to have all of the leaf stem along with the leaf.

To hold the leaf in place, paste strips of gummed cloth across the stem and the points of the leaves (figure 1). Use as few gummed strips as possible; too many strips spoil the neatness of the mount. In the case of the needle-leaved trees, particularly spruce, fir, hemlock, and larch, it will be necessary to glue each needle to the mounting paper, otherwise the needles will eventually fall off and leave the twig bare.

There is an easy way to spread the glue over the needles. First spread a very thin coating of the glue over a piece of paper. Then place the needles on the glued paper and press down gently until every needle has come in contact with a small amount of the glue. Now shift the needles onto the paper on which you wish to mount them, press them down gently and place a weight on them to hold them in place while the glue is drying. In this way, it is easy to stick every needle fast to the mounting paper.

Twigs will be mounted on the right-hand side of the page. The twig should be so turned as to expose the slant cut through the twig and the central pith.

Small fruits, more or less flat, such as those of black locust, maples, ashes, elms, blue beech, basswood, and poplars, can be mounted easily on the paper below the twig. A seed where it is easily separable, as in the black locust or blue beech, should also be mounted alongside the fruit. In some cases, it is impossible to mount the fruit due to its shape, size, or condition, but it is possible to mount the seed. This applies to all evergreens (conifers), birches, hop hornbeam, sycamore, cherries, cucumber, and the like. In these cases it will be necessary to draw a sketch, first in pencil, then inked in, of the fruit, either natural size or to a stated scale. In case of large-seeded specimens, such as walnuts, hickories, beech, chestnut, and oaks, it will be necessary to sketch the seed. This can be shown natural size in every instance. In case of mounting fruits or seeds, glue is preferable to the strips of gummed mending tape.

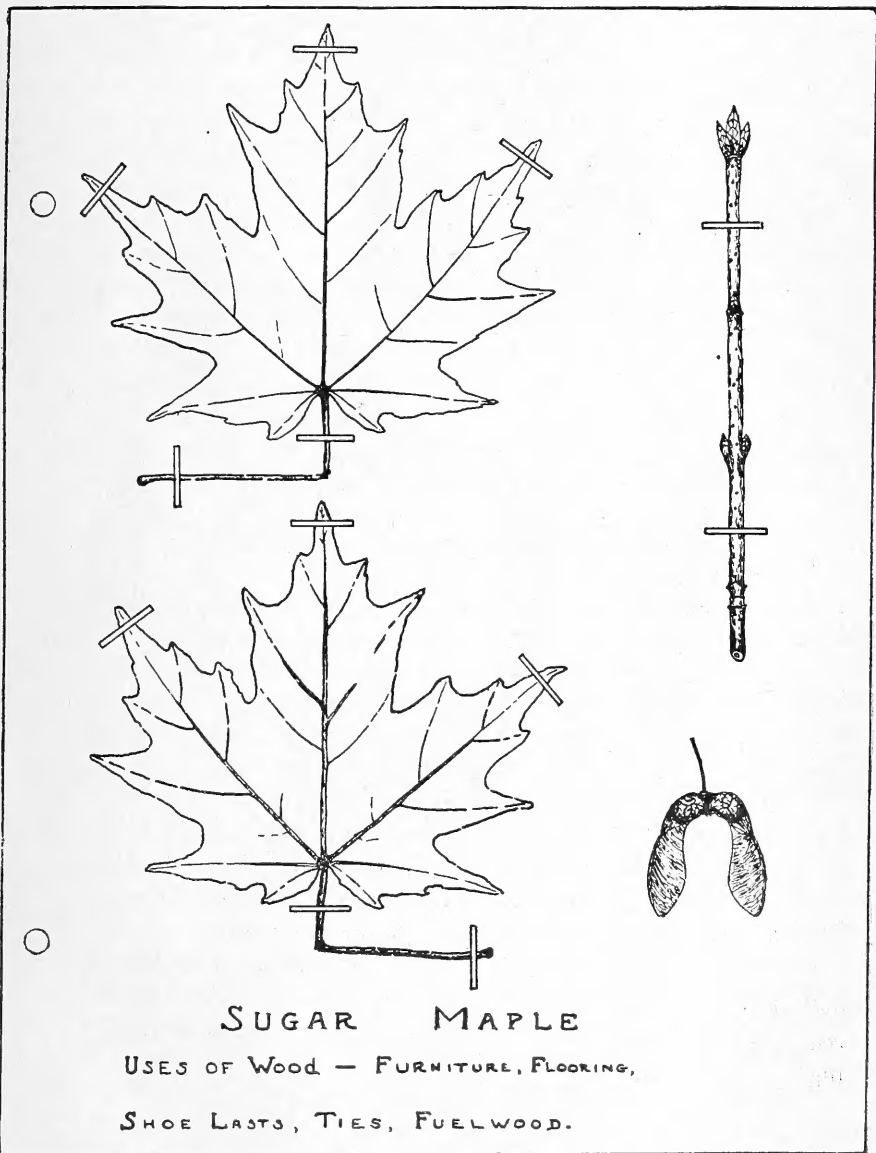
Labeling the mounted specimens

In the space left at the bottom of the mounting paper, neatly write in ink the common name of the tree from which the specimens were taken, together with the most important uses of the wood of the tree (figure 1). Trees must be labelled by their full names. For example, it is not sufficient to write *maple* for *sugar maple* (figure 1). Learn and use the common names given in this bulletin even if you have known the tree by other names. These common names were selected because of their general wide acceptance throughout the State. Do not depend on what is written in the bulletin for the uses of the tree. If you know of other uses, by all means put them down. Make inquiries in your section from lumbermen and find new uses in that way.

Place the mounts in the covers provided. A logical arrangement of sheets would follow that set forth herein. At least all needle-leaved and all broad-leaved trees should be grouped separately. All trees in the same family should be together, as the oaks, the maples, and so forth.

The completed collection of at least fifteen different kinds of forest trees must be sent to the Department of Forestry, New York State College of Agriculture, Ithaca, New York, by June 15. They will be corrected and returned so they may be used during the summer and fall for fair and school exhibits.

A place is provided on the cover for name and address of sender. Do not fail to fill it in.



SUGAR MAPLE

USES OF WOOD — FURNITURE, FLOORING,

SHOE LASTS, TIES, FUELWOOD.

FIGURE 1

1. WHITE PINE

(Pinus strobus Linnaeus)

White pine is one of the most rapid-growing, widely distributed, beautiful, and useful forest trees native to the State. It grows naturally in a wide range of sites from the steep mountain sides in the Adirondacks to the hillsides and valley swamps of central and western New York.



WHITE PINE

Cone, one-half natural size; needles,
natural size

Fruit—a cone, from 5 to 10 inches long, with short stalk, drooping, cylindrical, $\frac{1}{2}$ inch in diameter, tending to curve from stem to apex, requiring two years to mature. *Seeds*—2 under each scale, winged, ripening in September.

The miles of stump fences still standing in the southwestern section of the State are evidence of the abundance of the tree at one time in this region. The wood is soft, even textured, very light brown in color, and easily worked. The lumber has a wide range of use for interior trim, sash and doors, boxes and buckets. In fact, no other wood in the United States has such a diversity of uses.

Bark—thin, smooth, and greenish in color on young trees, becoming deeply furrowed and grayish brown in color on older trees.

Twigs—rather slender, brittle, of a light brown color.

Winter buds—sharp-pointed, yellowish brown in color.

Leaves—needle-like, in clusters of 5, from 3 to 5 inches long, bluish green in color, soft, flexible, staying on the twigs for two years.

2. PITCH PINE

Hard Pine, Yellow Pine

(*Pinus rigida* Miller)

Pitch pine is to be found on dry ridges and slopes, in the northeastern section of the State and on Long Island, and infrequently elsewhere. The wood is coarse-grained and brownish red in color. The tree never reaches a large size and the lumber is generally knotty. Its chief uses are for rough framing lumber, ties, and mine props.

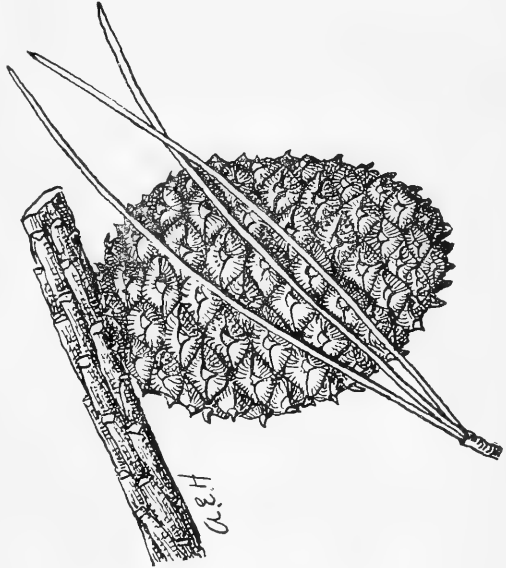
Bark—early becomes very rough and is of a reddish brown to a very dark brown color, with age becoming deeply furrowed into broad flat-topped ridges separating on the surface into loose, dark reddish brown scales. The unusual thickness of the bark makes it the most fire-resistant tree in the State. Clusters of needles are very commonly found on the main trunk.

Twigs—coarse, brittle, of a golden-brown color.

Winter buds—conspicuous, pointed, reddish brown in color, resin-coated.

Leaves—needle-like, in clusters of 3, from 3 to 5 inches long, yellowish green in color, very stiff, staying on twigs from two to three years.

Fruit—a cone, from 2 to 3 inches long, somewhat egg-shaped, without stem, requiring two years to mature; persists on tree for many years. Cone scales—each carries a stiff recurved prickle. Seeds—2 under each scale, dark brown in color.



PITCH PINE
Cone and needles, natural size

3. RED PINE

Norway Pine

(*Pinus resinosa* Solander)

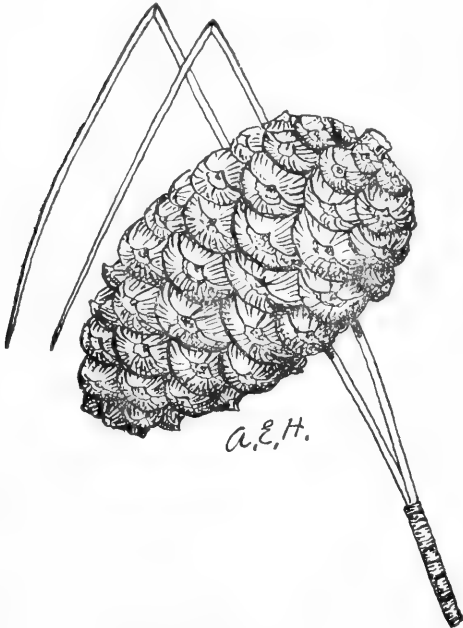
Red pine is a valuable, fast-growing timber tree less generally distributed than the white pine. It is found commonly on the sandy soils adjacent to the Adirondacks and frequently on dry benches in west-

central New York. The wood is light, medium in texture, close-grained, pale red in color, and is often sold as white-pine lumber. Because of its rapid growth and relative freedom from insect and fungous diseases, it is one of the best trees for forest planting on many of the thousands of acres of idle land in the State.

Bark—reddish brown in color, with shallow, flat ridges separating into thin flaky, scales.

Twigs—coarse, reddish brown in color, roughened at base of year's growth.

Winter buds—rather inconspicuous, with pointed reddish brown scales.



RED PINE

Cone and needles, natural size

Leaves—needle-like, in clusters of 2, from 3 to 6 inches long, dark green in color, slender, flexible, remaining on twigs from three to four years.

Fruit—a cone, 2 inches long, without stem, requiring two years to mature, light brown in color when ripe, staying on the tree into the next season. Cone scales—without spines or prickles. Seeds—2 under each scale, winged, light chestnut brown in color, $\frac{1}{8}$ inch long, ripening in September.

4. RED SPRUCE

(*Picea rubra* Link)

Red spruce is a common and valuable forest tree of the Adirondacks and Catskills, and occasionally is found at high elevations (2000 feet) in eastern New York (Schoharie, Delaware, and Otsego Counties). The wood is light, close-grained, soft, and is in great demand for chemical wood pulp. It has a peculiar resonant quality that makes it exceedingly valuable for the sounding boards of musical instruments.



RED SPRUCE

Branchlet and cone, one-half natural size

Bark—very thin, peeling off in small reddish brown scales.

Twigs—slender, reddish brown in color, coated usually with fine pale hairs.

Winter buds—small, pointed, reddish brown in color.

Leaves—needle-like, borne singly rather than in clusters as with the pines, but coming out all around the stem, $\frac{1}{2}$ inch long, without stalk, yellowish green in color, blunt-pointed, 4-sided in cross section, remaining on twigs from five to six years.

Fruit—a cone, from $1\frac{1}{2}$ to 2 inches long, borne on a short stalk, pendant, maturing in one year, mostly falling off before the next season. Cone scales—thin, entire-margined. Seeds—dark brown in color, winged, $\frac{1}{8}$ inch long, ripening in September.

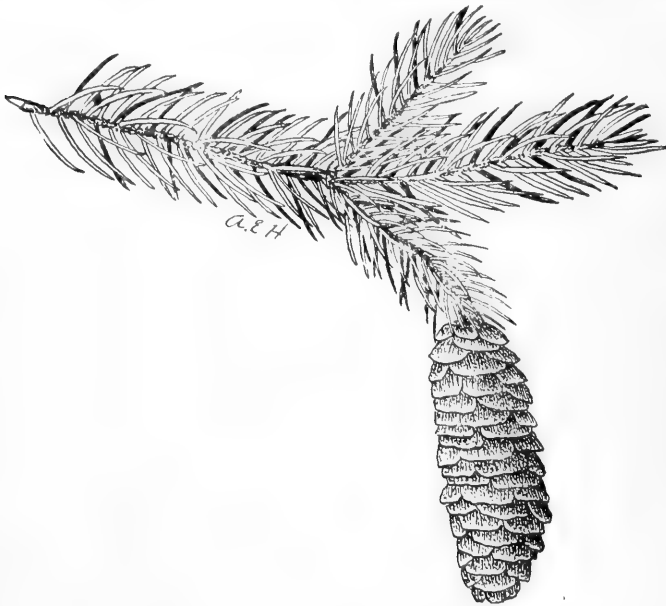
4a. *Black spruce* closely resembles the red spruce and covers the same general range, but is confined to swamps.

5. WHITE SPRUCE

Cat Spruce

(*Picea glauca* (Moench) Voss)

White spruce is confined in its natural distribution to the Adirondacks, reaching its best development in the so-called "spruce flats," but extending also far up the mountain slopes. The wood is in great demand for chemical pulp. Its attractive foliage makes it prized as an ornamental tree, for which purpose it is planted far south of its natural range.



WHITE SPRUCE
Branchlet and cone, natural size

when young, becoming blue green in color, $\frac{1}{2}$ inch long, 4-sided in cross section, without stalk, remaining on the twig from eight to ten years.

Fruit—a cone with very small stalk, pendant, from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, pale brown in color when ripe, maturing in one year. Cone scales—thin, rounded, entire margined. Seeds—2 under each scale, brown in color, winged, $\frac{1}{8}$ inch long, ripening in early autumn.

5a. The *Norway spruce* from Europe is the common ornamental spruce of our lawns and cemeteries throughout the State, also extensively used in forest plantations. The cones more than 6 inches in length easily distinguish it from our native spruce.

Bark—grayish to pale reddish brown, separating in thin scales.

Twigs—smooth, slender, yellowish brown in color.

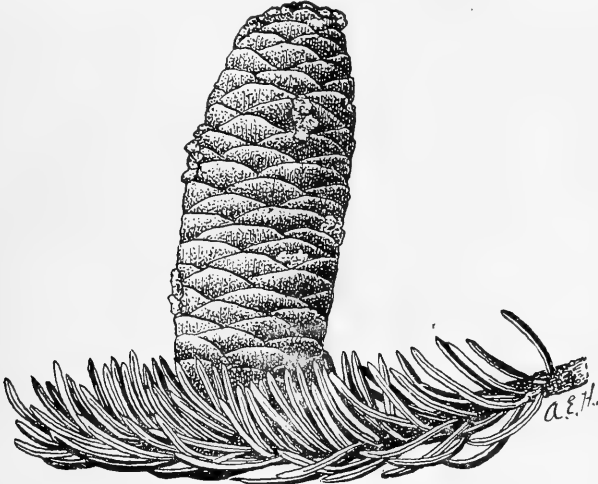
Winter buds small, blunt-pointed, light brown in color.

Leaves—needle-like, borne singly and densely, crowded on twigs, light shiny green in color

6. BALSAM FIR

(*Abies balsamea* (Linnaeus) Miller)

Balsam fir is a medium-sized forest tree generally distributed in deep, cold swamps throughout the State. The wood is light, soft, coarse-grained, not durable, pale brown in color, and is of little value as a source of lumber. It is cut along with spruce for pulp wood, and is desirable as Christmas trees and for lawns.



BALSAM FIR

Branchlet and cone, natural size

Bark—smooth, grayish brown in color, dotted with balsam blisters containing fragrant oily resin; in old trees becoming somewhat roughened with small scales.

Twigs—smooth with age, grayish in color.

Winter buds—small, almost spherical, glossy, clustered at end of twigs.

Leaves—borne singly and twisting so as to appear 2-ranked as in the hemlock, flattened rather than 4-sided as in the spruces, dark green in color above, pale below with 2 broad white lines, $\frac{3}{4}$ inch long, blunt, not stalked, aromatic when crushed, persistent from two to three years. Balsam pillows are frequently made from the needles.

Fruit—an erect cone, from $2\frac{1}{2}$ to 4 inches long, rounded at the top, ripening the autumn of the first year, purplish green in color. Cone scales—longer than broad, somewhat fan-shaped, falling the winter following maturity of cone and leaving only the erect central stalk to which they were attached. Seeds—in pairs, winged, dark brown in color, $\frac{1}{4}$ inch long, ripening in September.

7. HEMLOCK

Hemlock Spruce

(*Tsuga canadensis* (Linnaeus) Carrière)

Hemlock is a valuable forest tree very widely distributed throughout the State, particularly common on northern exposures, shaded gorges, steep mountain slopes, and borders of deep swamps. The wood is light, not strong, coarse-grained, brittle, not durable, splinters easily, and is



HEMLOCK
Branchlet and cone, natural size

light brown in color. It is largely manufactured into construction lumber and is also in demand for mechanical pulp.

Bark—Reddish to grayish brown in color, with shallow, broad connecting ridges; inner bark bright cinnamon red in color. The high-tannin content of the bark is of commercial value in tanning leather.

Twigs—slender, yellowish to grayish brown in color, rough when needles are shed.

Winter buds—very small, reddish brown in color, not resinous-coated.

Leaves—borne singly, twisting to appear 2-ranked with a third row pointing forward on top of the twig; with distinct short stalk, flat, $\frac{1}{2}$ inch long, rounded or notched at the apex, dark green in color above, pale below with 2 white lines, persistent from two to three years.

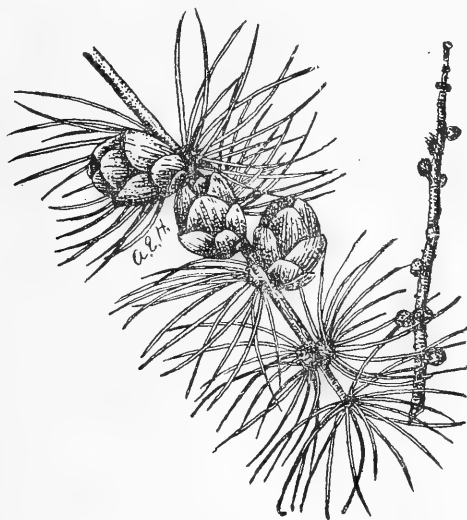
Fruit—a cone, stalked, pendant, $\frac{3}{4}$ inch long, ripening in one year, grayish brown in color when mature, falling during the winter following maturity. Cone scales—with rounded entire margins. Seeds—in pairs, winged, light brown in color, $\frac{1}{16}$ inch long, ripening in September.

8. AMERICAN LARCH

Tamarack, Hackmatack

(Larix laricina (Du Roi) Koch)

American larch is a forest tree of the swamps. In the mountainous sections of the State, it is frequently found well up the slopes, but is confined to cold swamps in eastern, central, and western New York. The



AMERICAN LARCH

Branchlet and cone, natural size

wood is very heavy, hard, and strong, light brown in color, and durable in contact with the soil. It is used for fence posts, telegraph poles, and railroad ties.

Bark—smooth, light gray in color on young trunks; with age becoming roughened with thin reddish brown scales.

Twigs—slender, smooth, glossy brown in color, with short lateral wart-like branches.

Winter buds—scattered along last season's twigs and at the ends of short lateral branches, small, rounded, reddish brown in color, shining.

Leaves—borne singly on twigs of last season's growth, on spurs of older twigs, in clusters of 10 or more, flat, slender, pale green in color, about 1 inch long, falling off in the autumn of the first year.

Fruit—a cone, $\frac{1}{2}$ inch long, borne on short curving stalks, maturing in autumn of the first year, chestnut brown in color, standing upright from the twigs, staying on the tree for several years. Cone scales—concave in shape. Seeds—in pairs, winged, light brown in color, $\frac{1}{8}$ inch long, ripening in early autumn.

9. ARBOR VITAE

White Cedar

(Thuja occidentalis Linnaeus)

Arbor vitae (meaning "tree of life") is a medium-sized, slow-growing forest tree rather common in the northeastern part of the State, less frequent in the central and western parts. Dense arbor-vitae swamps are

common in Madison County and northward and eastward. In the Adirondack region it also occurs frequently outside the swamps. The wood is light, soft, brittle, coarse-grained, light yellowish brown in color, and durable in contact with the soil. It is used extensively for fence posts and small poles.

Bark—ashy gray to light reddish brown, separating in long, narrow, flat, shreddy strips, often more or less spirally twisted.

Twigs—decidedly flattened, arranged in fan-



ARBOR VITAE
Natural size

shaped clusters, and not to be confused with the leaves which cover the last season's growth; with the death of the leaves in the second season, the twigs become reddish brown in color and shiny.

Winter buds—extremely minute, almost covered by the scale-like leaves.

Leaves—scale-like, yellowish green in color, aromatic when crushed, borne in pairs closely overlapping; on leaves of leading shoots, glandular dot conspicuous in center of leaf.

Fruit—An oblong, erect cone, $\frac{1}{2}$ inch long, reddish brown in color, persists through the winter. Cone scales—from 6 to 12, open to the base at maturity in autumn of the first season. Seeds— $\frac{1}{8}$ inch long, in pairs, nearly surrounded by broad wings.

9a. The name *white cedar* properly belongs to a Coastal Plain tree, *Chamaecyparis thyoides*, closely resembling the arbor vitae.

10. RED CEDAR

(Juniperus virginiana Linnaeus)

Red cedar, a small-sized, slow-growing forest tree, is common to the poor, dry soils of the lower Hudson and Mohawk Valleys, is not common in the higher Adirondack region, and is infrequent in central and western New York, except on barren soils adjoining the Finger Lakes. It is found growing only in open woods and pastures where plenty of sunlight is obtained. The wood is soft, light, fragrant, brittle, dull red in color with contrasting white sap wood, extremely durable in contact with the soil, and is easily worked. It is largely used in the manufacture of pencils, cedar chests, cabinet work, and interior finish. As a post wood, it has few superiors.

Bark—light reddish brown in color, separating in long, narrow shreddy strips fringed along the edges.

Twigs—generally 4-sided on mature trees, green in color from the covering of minute leaves, not flattened or arranged in fan-shaped clusters, becoming reddish brown in color after the fall of the leaves.

Winter buds—minute, covered by the overlapping scale-like leaves.

Leaves—various shades of green to reddish brown in color, persistent from three to four years, 2 kinds: (1) scale-like, closely overlapping, opposite in pairs, giving the twig a 4-sided appearance; (2) awl-shaped, from $\frac{1}{2}$ to $\frac{3}{4}$ inch long, usually on young trees or more vigorous shoots and yellowish green to light bluish green in color, very sharp-pointed.

Fruit—a berry-like cone, $\frac{1}{4}$ inch in diameter, light blue in color, with bloom at maturity in the autumn of the first year. Fruit remains on the tree during the winter, highly prized by birds. *Seeds*—from 1 to 2, wingless, brown in color, covered with a thin, sweet flesh with resinous flavor.



RED CEDAR
Natural size

11. BLACK WILLOW

(*Salix nigra* Marshall)

Black willow is the largest and most widely distributed of our native willows, though it is rare above an altitude of 2000 feet in the Adirondacks and in the pine barrens of Long Island. It prefers moist or wet soils along streams or lakes but will sometimes be found on fresh, gravelly or sandy soils where it can get plenty of light. It is of little importance as a timber tree as it often divides into several crooked, medium-sized trunks close to the ground and the wood is soft and weak. It is used chiefly for boxes, excelsior, pulp, and also for artificial limbs on accounts of its lightness.

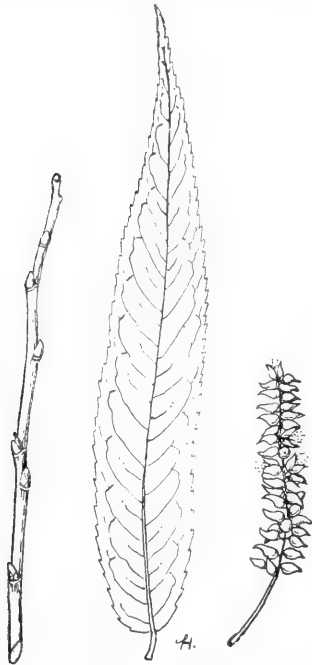
Bark—thick, rough with wide ridges covered by thick scales, varies from light to dark brown in color.

Twigs—slender, smooth, somewhat drooping, very brittle at the base, reddish brown in color; falling to the ground they may take root and grow.

Winter buds—terminal bud absent, lateral buds small, sharp-pointed, reddish brown in color; only one bud scale.

Leaves—alternate, simple, very long and narrow, sharp-pointed, finely serrate margin, dark green in color above, pale green below.

Fruit—a smooth capsule, about $\frac{1}{8}$ inch long, occurring in large numbers on drooping tassels, ripening in the spring, reddish brown in color. *Seeds*—within capsule, covered with a dense tuft of long, silky hairs.



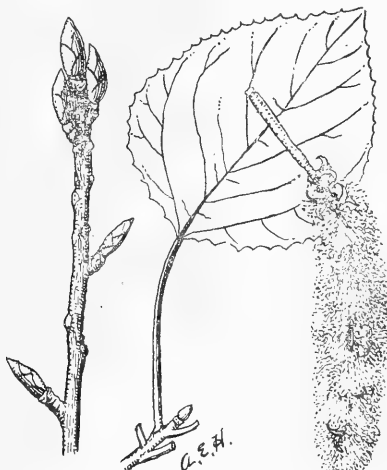
BLACK WILLOW

Twig, leaf, and fruit, two-thirds natural size

11a. The *shining willow* is an attractive small tree of moist soils, used extensively for holding soil in place where erosion is to be feared and also for ornamental plantings. Its shiny, broad leaves and yellowish brown twigs will help to distinguish it from the black willow.

12. TREMBLING ASPEN
Popple, Small-toothed Aspen
(Populus tremuloides Michaux)

Trembling aspen is the most widely distributed tree in North America. It is common in most sections of New York State but is infrequent on the pine barrens of Long Island. It is to be classed as a short-lived



TREMBLING ASPEN
 Twig, natural size; leaf, one-half
 natural size; pistillate flower, natural
 size

“weed” tree, but has some value as a cover tree in slashes, burns, and in old fields where it quickly establishes itself. The wood is soft, weak, not durable, light brown to white in color, and is used primarily in the manufacture of mechanical pulp and excelsior.

Bark—on young trunks and branches yellowish green to whitish in color, on old trunks roughened with broad, flat, blackish ridges.

Twigs—smooth, shiny, reddish brown in color.

Winter buds—terminal bud $\frac{1}{4}$ inch long, narrow, conical, often incurved, sharp-pointed, shiny, reddish brown in color; lateral buds smaller.

Leaves—alternate, simple, from $1\frac{1}{2}$ to 3 inches in width, nearly round, finely serrate margins, with flattened stems which allow the slightest breeze to flutter the leaves, from which the name, “trembling aspen,” is derived.

Fruit—a scattered cluster of small, curved capsules, maturing in early spring. *Seeds*—within capsule, each with a tuft of hairs, carried long distances by the wind when capsule breaks open. This explains why the aspens spring up so quickly after fires on burned-over areas and in abandoned fields.

13. LARGE-TOOTHED ASPEN

(*Populus grandidentata* Michaux)

Large-toothed aspen is a medium-sized, rapid-growing, short-lived "weed" tree developing best on deep moist soils, but occurring commonly also on dry, upland, sandy or stony sites, where it rapidly covers slashes and burns. Here it acts as a temporary shelter for seedlings of more valuable species. The wood is similar to that of the trembling aspen and is used for excelsior, pulp, and woodenware.

Bark—resembles that of small-toothed aspen, though small branches are of a more pronounced yellow color. The lower trunk is generally less deeply furrowed than is that of the trembling aspen.

Twigs—stout, round, reddish or yellowish brown in color in early winter, often pale and downy as contrasted with those of the trembling aspen which are shiny.

Winter buds—usually larger than those of the trembling aspen, terminal bud present; lateral buds generally bending away from twig, dull, dusty-looking, light chestnut brown in color.

Leaves—alternate, simple, from 3 to 6 inches long, roughly triangular with broadly wedge-shaped bases, pointed apices, coarsely toothed margins in direct contrast to the finely serrate margins of the trembling aspen.

Fruit—very similar to that of trembling aspen (page 21) spread by wind in much the same way.



LARGE-TOOTHED ASPEN

Leaf, one-half natural size; twig, one-half natural size; fruit, one-half natural size

14. COTTONWOOD

Carolina Poplar

(Populus deltoides Marshall)

Cottonwood is an exceedingly rapid-growing, moisture-loving species, occurring locally in moist places and along streams and lakes throughout the State except at the higher elevations. The wood is light, soft.



COTTONWOOD
Leaf and fruit, one-half
natural size; twig, one-third
natural size

weak, and dark brown in color with thick nearly white sapwood, warping badly in drying. It is used for pulp and for boxes. The cottonwood has been extensively planted as an ornamental tree along streets, but as such it has few merits as it is short-lived and the roots often penetrate and clog drains and sewers. It is not easy to destroy, for, once cut down, the stump continues to sprout vigorously.

Bark—smooth on young trunks and branches; light yellowish green in color, becoming thick, ashy gray in color, and deeply furrowed with age.

Twigs—stout, round or ridged below the bud, yellowish or greenish yellow in color.

Winter buds—terminal bud present, large, resinous, glossy, smooth, chestnut brown in color; lateral buds smaller, in many instances bending away from the twigs.

Leaves—alternate, simple, broadly triangular, from 3 to 5 inches long, coarsely serrate margins, with long and laterally flattened leaf stalks.

Fruit—a scattered cluster of capsules as in the aspens, though somewhat larger (3 to 6 inches long), arranged in long, drooping tassels. *Seeds*—within capsule, numerous, small, surrounded by a mat of fine hairs, ripening in the spring, conveyed long distances by the wind. The cotton-like mat of fine hairs is responsible for the name “cottonwood.”

15. BLACK WALNUT

(*Juglans nigra* Linnaeus)

Black walnut is one of the most valuable timber trees native to this State. It reaches a large size and produces highly prized wood and large edible nuts. It is common at low elevations in rich, well-drained



BLACK WALNUT

Leaf, one-fifth natural size; twig, three-fourths natural size; fruit, one-third natural size

bottomlands northward to Saratoga and Jefferson Counties and west to Lake Erie. The wood is heavy, hard, strong, durable, rich dark brown in color, easily worked, and takes a fine polish. It is largely used in cabinet-making, interior trim, and for gunstocks. It deserves protection and planting in suitable locations.

Bark—thick, dark, deeply furrowed with rounded ridges between; grayish brown in color; inner bark dark chocolate brown in color.

Twigs—at first hairy, later smooth, stout, orange brown in color, light brown chambered pith.

Winter buds—terminal bud pale, downy, scarcely longer than broad, blunt-pointed, less than $\frac{1}{3}$ inch long; lateral buds less than $\frac{1}{6}$ inch long.

Leaves—alternate, compound, with from 13 to 23 leaflets; leaflets from 3 to 4 inches long, sharp-pointed, serrate along margin, usually stalkless; leaves up to 2 feet in length.

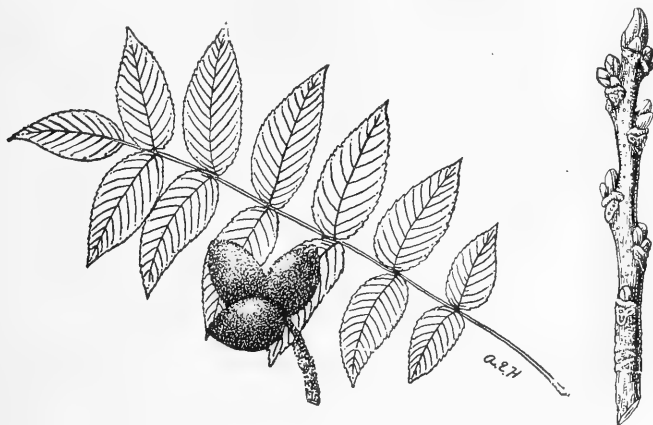
Fruit—a round nut, $1\frac{1}{2}$ inches in diameter, black, the surface roughened by rather coarse ridges, enclosed in a yellowish green, fleshy, husk, usually solitary or in clusters of 2, ripening in October. Kernel—sweet, edible, and when properly cured somewhat easier to extract than the butternut. It is necessary to remove the outer husk if nuts are to be stored.

16. BUTTERNUT

White Walnut

(Juglans cinerea Linnaeus)

Butternut is a close kin to the black walnut though not so valuable a timber tree. It produces attractive wood and edible nuts, but branches freely and seldom reaches a large size. It is common in moist soils, es-



BUTTERNUT

Leaf, one-fifth natural size; twig, one-half natural size;
fruit, one-third natural size.

pecially along fences and roads throughout the State, but is infrequent in the higher Adirondacks. The wood is light, soft, not strong, coarse-grained, light brown in color, and easily worked and polished. It is used for interior trim and furniture.

Bark—smooth on young trunks and branches, light gray in color; on older trunks deeply divided into long, broad, flat-topped, whitish ridges.

Twigs—stout, greenish-gray in color, often hairy, easily identified by a dark-brown furry growth, or “moustache,” found just above most leafscars; chambered pith dark brown as contrasted with the light brown chambered pith of the black walnut.

Winter buds—terminal bud pale, downy, blunt-pointed, from $\frac{1}{2}$ to $\frac{3}{4}$ inch long, flattened, longer than wide; lateral buds smaller and shorter.

Leaves—alternate, compound, with from 11 to 17 practically stemless long-pointed leaflets, margins serrate as in black walnut; leaves up to $2\frac{1}{2}$ feet in length.

Fruit—a rather large nut, $1\frac{1}{2}$ inches long, tapering at the end, black with fine cut ridges, enclosed in a sticky, green husk usually in clusters of from 3 to 5, ripening in October of the first season. Kernel—sweet, oily, but somewhat difficult to extract, much sought after in the autumn. The butternut has the advantage of curing without removing the outer husk.

17. SHAGBARK HICKORY

Shellbark Hickory, Scalybark Hickory

(Hicoria ovata (Miller) Britton)

Shagbark hickory is the best known and most valuable of our hickories in the State. It is common in deep, moist soils throughout New York, though rare in the higher Catskills and Adirondacks, and is not re-



SHAGBARK HICKORY

Leaf, one-third natural size; twig, one-half natural size; fruit, one-third natural size

ported from the pine barrens of Long Island. In the forest it is a tall straight-branched tree but in open fields and along hedgerows where it often grows it usually forks near the ground into stout ascending limbs. The wood is very heavy, tough, elastic, close-grained, and is used chiefly for handles, vehicles, agricultural implements, and fuel.

Bark—light gray in color, smooth and seamy, becoming shaggy with age and peeling off into long strips which are loose at both ends and attached in the middle, thus giving rise to the name “shagbark hickory.”

Twigs—covered with numerous light dots, extremely tough and pliable, reddish brown to gray in color.

Winter buds—large, egg-shaped, blunt-pointed, with papery, dark brown, loose bud scales, the outer scales much darker, persistent through the winter; terminal bud usually more than $\frac{1}{2}$ inch long.

Leaves—alternate, compound, from 8 to 14 inches long, with from 5 to 7 leaflets, the three upper ones being by far the largest.

Fruit—a smooth, white, 4-angled nut, enclosed in a thick, round husk that splits into 4 sections as the nut falls after heavy autumn frosts.

Kernel—large, sweet.

18. PIGNUT HICKORY

Pignut, Brown Hickory

(Hicoria glabra (Miller) Sweet)

Pignut hickory is a fair-sized, upland species preferring dry ridges and hillsides throughout the State, except in the Adirondack region where it is found only at the lower elevations. The wood is strong and very tough. Its uses are similar to that of shagbark hickory.



PIGNUT HICKORY

Leaf and fruit, one-third natural size; twig, one-half natural size

Bark—typically close-fitting, dark gray in color, marked with shallow furrows and narrow ridges which are seldom shaggy, though sometimes becoming detached at end. The variation in bark characteristics of the pignut hickory is very pronounced.

Twigs—comparatively slender, smooth, tough, and pliable, reddish brown to gray in color.

Winter buds—small, oval, blunt-pointed, covered with reddish brown scales, the outer pair of which often drop off in winter; terminal bud less than $\frac{1}{2}$ inch long, much smaller than the terminal bud of the shagbark hickory.

Leaves—alternate, compound, from 8 to 12 inches long, with from 5 to 7 leaflets all of which are alike or nearly alike as to size.

Fruit—a pear-shaped to nearly round, thin-husked, buff-colored nut without ridges, 1 inch long, thick shelled. Kernel—at first sweet, later somewhat bitter. Husk—contrasted with shagbark hickory, all or part usually clings to the nut after it has fallen to the ground.

19. BITTERNUT HICKORY

Swamp Hickory, Water Hickory, Tightbark Hickory

(Hicoria cordiformis (Wangenheim) Britton)

Bitternut hickory is occasional in most sections of the State except in the higher Adirondaeks or Catskills. It is by preference a bottom-land tree growing on wet sites in pastures, fields, and along streams,



BITTERNUT HICKORY

Twig, one-half natural size; leaf, one-third natural size; fruit, one-half natural size

though it is occasionally found on hill-sides. It grows well on moist, rich soil such as is found in many farm woodlots. The wood is heavy, very hard, strong, tough, and dark brown in color with paler sapwood. It is inferior to that of the other hickories but is used for practically the same purposes.

Bark—thin, close, with shallow furrows and narrow regular ridges, usually does

not scale or shag off, light gray in color.

Twigs—slender, often yellowish in color, hairy toward the end; grayish or orange brown in color during the first winter.

Winter buds—long, flattened, blunt-pointed, covered by 4 sulfur-colored scales; terminal bud from $\frac{1}{3}$ to $\frac{3}{4}$ inch long; pith brown and unlike any other hickory in this respect.

Leaves—alternate, compound, from 6 to 10 inches long, with from 7 to 11 long, narrow, sharp-pointed leaflets which are smaller and more slender than are those of other hickories.

Fruit—a nearly round nut, thin-husked, brown in color, from $\frac{3}{4}$ to 1 inch long, without ridges. Kernel—bitter, not edible. Husk—clings to the nut after falling. Shell is so thin that it can easily be crushed between the fingers.

20. GRAY BIRCH

Old-field Birch; White Birch, Poplar Birch

(Betula populifolia Marshall)

Gray birch must be classed with the aspens as one of New York's "weed" trees, being particularly abundant in the lower Hudson Valley where it grows chiefly on dry, gravelly soils of burned-over areas and abandoned farms. Though often confused with the true paper birch, it is far inferior to that species in size and value of the wood. Its white bark renders it more attractive than the aspens, and the characteristic clump effect of its growth is striking, particularly along streams. The tree is short-lived and is rarely as much as 8 inches in diameter. The wood is light and soft, decaying quickly. In New York it is used for fuelwood and pulpwood only.

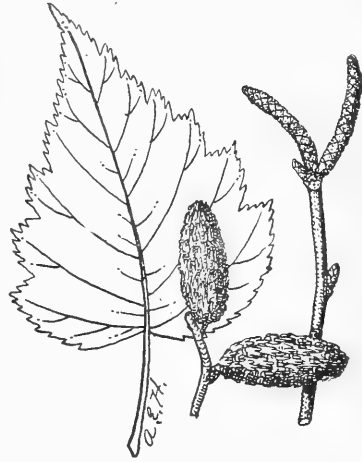
Bark—on small stems, reddish brown in color, becoming with age dull, chalky white, not peeling off in papery layers as in paper birch; with distinct black triangular patch below each branch where it joins the stem.

Twigs—slender, reddish brown in color, becoming dull chalky white with age.

Winter buds—small, smooth, pointed, brownish in color, in many instances bending away from the twigs; end bud on the season's growth not terminal.

Leaves—alternate, simple, from 3 to 4 inches long, triangular in shape, very long-pointed, shiny on upper surface, margin coarsely serrate.

Fruit—a slender, erect, cone-like structure, $\frac{3}{4}$ inch long, $\frac{1}{3}$ inch thick, on a short stalk; consisting of winged nutlets and 3-lobed scales in alternate layers; both become detached from the central stem in late autumn and winter. *Seeds*—minute, broad wings, spread by the wind.



GRAY BIRCH
Leaf and twig, two-thirds natural
size; fruit, natural size

21. PAPER BIRCH

Canoe Birch, White Birch

(*Betula papyrifera* Marshall)

Paper birch is well known throughout the Adirondacks and the Catskills and along the highlands of the Susquehanna and Delaware drainage on account of its white, papery bark. This tree grows on a wide range of soils; it thrives along lakes, streams, and swamps, and main-



PAPER BIRCH

Twig, one-half natural size; leaf and fruit, natural size

tains itself on the higher slopes of our mountains. Spools, woodenware, shoe lasts, wood pulp, and fuel wood are made from its light, strong tough, hard, light brown wood.

Bark—on young stems, golden to reddish brown in color, early becoming chalky white and peeling off in thin, papery layers, which once separated from the tree are never renewed. Because it is tough, resinous, durable, and impervious to water, it was the choice of all northern Indians for their canoes. Now it is the choice of the souvenir hunter.

Twigs—stouter than those in gray birch, dull reddish brown in color.

Winter buds—terminal bud absent as in gray birch; lateral buds small, sharp-pointed, bending away from twig.

Leaves—simple, alternate, blunt-pointed rather than slender at apex, from 2 to 3 inches long, coarsely serrate on margin; at maturity dull dark green in color above, paler below.

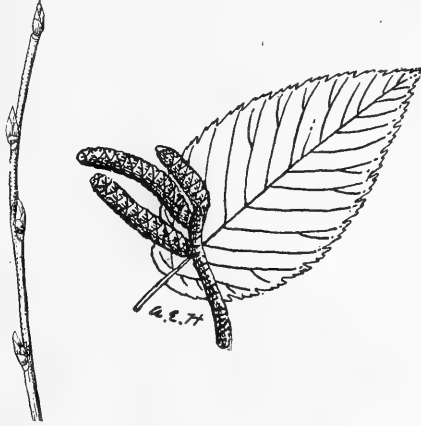
Fruit—a cone-like structure as in the gray birch, 1 inch long, $\frac{1}{3}$ inch thick, usually pendant rather than erect; nutlets and bracts falling in late autumn and winter as with other birches.

22. BLACK BIRCH

Cherry Birch, Sweet Birch

(Betula lenta Linnaeus)

Black birch yields a variety of useful products. From Lake Champlain and the Hudson River Valley to Lake Erie, except along the higher mountains, in moist or dry, gravelly or rocky soils, its twigs are well known to boys and girls for their wintergreen flavor. The wood is



BLACK BIRCH

Leaf and twig, one-half natural size;
staminate catkin, three-fourths natural
size

heavy, strong, hard, close-grained, and dark brown in color with yellowish sapwood, and is the delight of farmers for fuel and of cabinet makers for furniture, especially as a substitute for cherry or mahogany. Oil of wintergreen, used medicinally and for flavoring, is distilled from the twigs, and birch beer is obtained by fermenting the sugary sap.

Bark—on branches smooth, close, not peeling, dark reddish brown in color with conspicuous, light colored, elongated breathing spores; on older trunks breaking into long, thick irregular plates almost black in color.

Twigs—slender, light reddish brown in color, with numerous, short, spur-like lateral twigs; strong wintergreen flavor when chewed.

Winter buds—terminal bud present on spur-like lateral branches only, about $\frac{1}{4}$ inch long, conical, sharp-pointed, reddish brown in color, buds on season's growth usually bending away from twigs.

Leaves—alternate, simple, egg-shaped, from 2 to 5 inches long, sharp-pointed, with finely serrate margins, found usually in pairs, not opposite on lateral spurs.

Fruit—an erect, cylindrical, cone-like structure as in other birches, from $1\frac{1}{2}$ to 2 inches long, without stalk; the winged nutlets falling in autumn and winter.

23. YELLOW BIRCH
Silver Birch, Gray Birch
(Betula lutea Michaux)

Yellow birch is one of the most important and largest timber trees of New York State. It is common throughout the State, except on Long Island, on rich, moist uplands in company with beech and sugar maple, but is found also with red spruce in the swamps and along waterways. The heavy, very strong, hard, close-grained, light brown wood is largely used for furniture, woodenware, flooring, interior finish, and for agricultural implements. Its value for fuel wood entitles it to a place in farmers' woodlots.

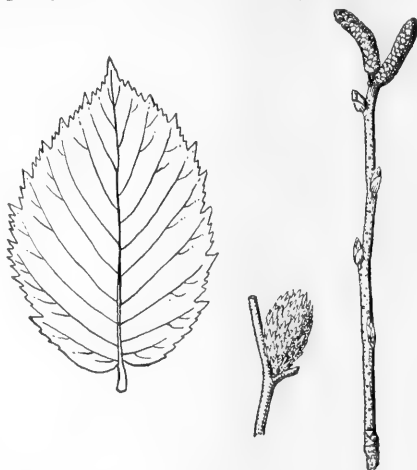
Bark—on young branches close, bright, silvery, yellowish gray in color; with age peeling into thin papery layers which roll back and extend up the trunk in long lines of ragged fringe, making excellent tinder for starting a fire in the rain; on very old trunks becoming rough and furrowed, reddish brown in color.

Twigs—similar to those of black birch though more yellowish brown in color, slightly wintergreen-flavored; abundant, spur-like laterals as in black birch.

Winter buds—similar to those of black birch.

Leaves—similar to those of black birch though with leaf margins more coarsely serrate; undersurface somewhat hairy, particularly along veins.

Fruit—similar to that of black birch though usually wider in proportion to its length, falling in late autumn and throughout the winter. *Braets*—3-lobed, distinctly hairy, while in the black birch they are smooth.



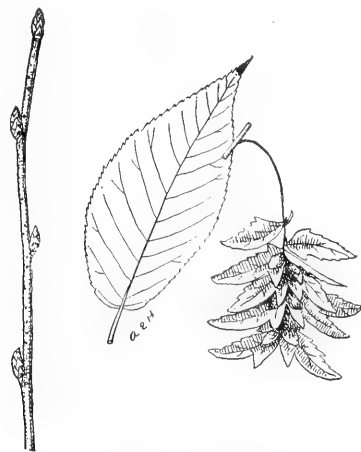
YELLOW BIRCH
 Leaf and twig, one-half natural size;
 fruit, one-fourth natural size

24. BLUE BEECH

Ironwood, Water Beech

(Carpinus caroliniana Walter)

Blue beech is a small-sized, bushy tree frequent along water courses and along the edges of swamps generally throughout the State. It is rarely more than 6 inches in diameter and may be classed as a "weed" tree. The wood is very heavy, hard, strong, close-grained, and is occasionally used for mallets on account of its hardness.



BLUE BEECH

Twig, one-half natural size; leaf, one-half natural size; fruit, one-half natural size

Bark—smooth, thin, dark bluish gray in color, close-fitting, with smooth, rounded lengthwise ridges that resemble tensed muscles.

Twigs—very slender, dark red in color, and shining.

Winter buds—terminal bud absent; lateral buds small, narrowly egg-shaped, pointed, covered with many reddish brown scales.

Leaves—simple, alternate, egg-shaped, from 2 to 4 inches long, finely and doubly serrate on margin.

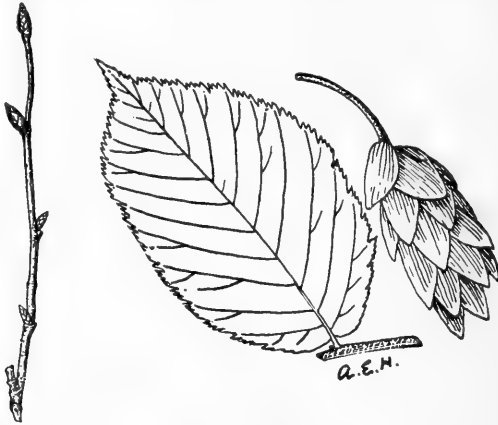
Fruit—a small prominently ribbed nutlet, $\frac{1}{3}$ inch long, enclosed in a 3-lobed leaf-like bract. Bracts with their enclosed nutlets are in long, drooping clusters which ripen and fall before winter.

25. HOP HORNBEAM

Ironwood

(Ostrya virginiana (Miller) Koch)

Hop hornbeam is another "weed" tree closely related to the blue beech and is rather generally distributed throughout New York State on dry, gravelly, and stony soils of slopes and ridges, sometimes taking posses-



HOP HORNBEAM

Twig, one-half natural size; leaf, one-half natural size; fruit, one-half natural size

sion of woodlots in central New York to the exclusion of other species. The tree is slow-growing and is rarely found larger than 10 inches in diameter. The wood is very heavy, hard, and strong, hence the name "ironwood." It is used for tool and implement handles and for levers, and makes excellent fuel wood when seasoned.

Bark—thin, very markedly flaky, light grayish brown in color, broken into narrow, flattish pieces, loose at the ends.

Twigs—fine, reddish brown in color, smooth, and shiny; a very easy winter character for identification of the tree, particularly of young saplings.

Winter buds—terminal bud absent as in birches and elms; lateral buds small, light reddish brown in color, bending away from the twig.

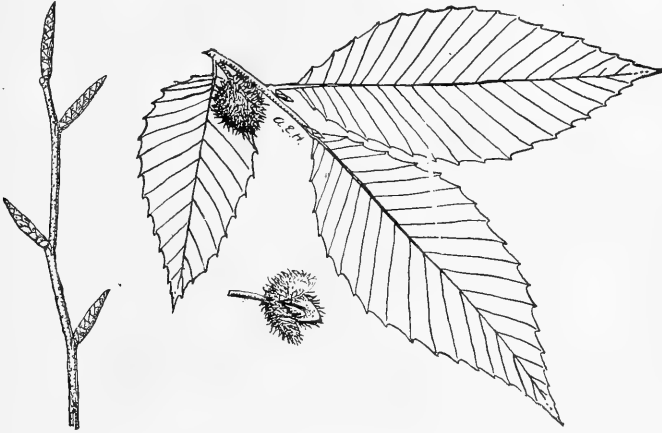
Leaves—alternate, simple, egg-shaped, from 3 to 5 inches long, doubly and finely serrate on margin.

Fruit—a small, seed-like nutlet, enclosed in an inflated, sac-like bract. Bracts—in clusters, from 1 to 2 inches long, resembling hops, hence the name "hop hornbeam." Fruit usually falls before winter.

26. BEECH

(Fagus grandifolia Ehrhart)

Beech has perhaps the widest distribution of any forest tree in the State and for that reason, no doubt, is one of the best known. In the Adirondaeks and Catskills it forms an important part of the hardwood



BEECH

Twig, leaf, and fruit, one-half natural size

forest, but is almost equally common throughout the rest of the State. Though the tree is of large and stately size, the wood is less valuable than that of many of its associates in the woodlot section of the State, with the result that it has been left standing. Because of its heavy shade, it has also excluded more valuable trees. In such conditions, it is, in effect, a "weed" tree. The wood is heavy, hard, strong, tough, and close-grained, and is excellent as fuel wood. It is also used largely in the acid-wood industry and to some extent for furniture.

Bark—smooth, close, steel gray in color, easily recognized by this character.

Twigs—slender, zigzag, smooth, shining reddish brown in color becoming gray on older twigs.

Winter buds—terminal bud present, slender, $\frac{3}{4}$ inch long, sharp-pointed, covered with light brown scales; lateral buds not much smaller than terminal bud.

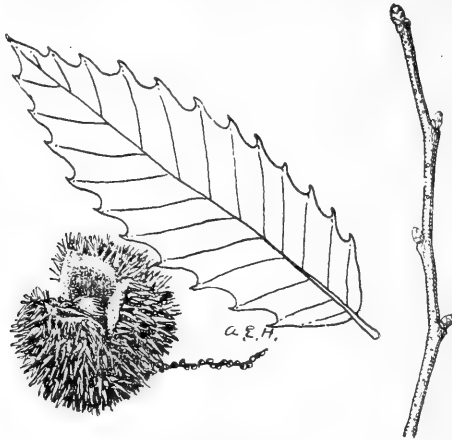
Leaves—simple, alternate, from 3 to 4 inches long, coarsely toothed on margin; at maturity very thin, dull green in color above, pale green beneath.

Fruit—a stalked burr, covered with soft, curving prickles, containing a nut. Burrs—usually in pairs, open up to let the nuts fall in the early autumn, remaining on the tree into the winter. Nut—triangular, pale brown in color, shining, with sweet edible kernel.

27. CHESTNUT

(*Castanea dentata* (Marshall) Borkhausen)

Chestnut, once common across the State south of the Adirondacks, has in the last decade succumbed to the deadly chestnut blight, so that with the exception of Chautauqua County, there are practically no live trees of commercial size in the State. It is only a matter of time until the blight



CHESTNUT
Twig, one-half natural size; leaf and
fruit, one-third natural size

will wipe out the species in Chautauqua County also. Perhaps almost any other species could have been better spared in the farmer's woodlot because of its rapid growth, the many uses of its wood, and the fine crop of nuts it furnished in addition. The wood is light, soft, coarse-grained, reddish brown in color, and durable in contact with the soil. It is used largely for ties, telephone poles, and posts.

Bark—on young trunks smooth, reddish brown in color, with age broken by shallow fissures into long, broad, flat, more or less slanting ridges.

Twigs—stout, greenish yellow or reddish brown in color, somewhat swollen at base of buds.

Winter buds—small, egg-shaped, light chestnut brown in color, set at an angle to the leaf scar; terminal bud absent.

Leaves—simple, alternate, from 6 to 8 inches long, sharp-pointed, widely toothed.

Fruit—a light brown burr, sharp, spiny without and hairy within; opening at the first frost and letting fall generally 3 nuts. Nuts—shiny, woolly at the top; shell very thin; kernel solid, white, sweet, and makes excellent eating.

THE OAKS²

Of the 300 oaks known in the world, fifty-five are native to North America, and most of these occur in the eastern United States. The oaks make up the largest group of forest trees native to New York. In all there are sixteen different kinds of oaks native to this State. They grow under a wide range of conditions and show wide variations in form and other distinguishing characteristics. The oaks of New York do not thrive in the high forests of the mountains; therefore, representatives of the family are found in the Adirondack section, in the sheltered valleys of the foothills. South and westward in the drainages of the Susquehanna, Genesee, and Alleghany Rivers, they become very plentiful in variety and number.

The best way to get acquainted with New York oaks is to divide them into two major groups, the one group to comprise the white oaks and the other the black oaks. It is easy to place the oaks of New York in these two groups by remembering the following characteristics of each:

The white oaks—The leaves of the members of the white-oak group have rounded lobes (not bristle-tipped), and the kernels of the acorns are usually sweet. All the oaks of this group mature their acorns in a single season, for this reason they are sometimes called "annual oaks." The most important members of the group in New York are white oak, swamp white oak, bur oak, post oak, and chestnut oak.

The black oaks—The leaves of the members of the black-oak group have bristle-tipped (not round-lobed) leaves, and the kernels of their acorns are usually bitter. All the oaks of this group require two seasons to mature their acorns; for this reason the representatives of this group are sometimes called "biennial oaks," which means two-year oaks in contrast with the one-year white oaks. The immature acorns are very helpful in recognizing the members of the black-oak group, especially during the winter months when the trees are without leaves. The most important members of this group in New York State are black oak, red oak, scarlet oak, and pin oak.

²Largely adapted from *Common Trees of New York*, by J. S. Illick. 1927.

28. WHITE OAK

(Quercus alba Linnaeus)

White oak is one of the most important forest trees in the southern two-thirds of the State, growing to large size and producing lumber of high grade and value. It is found in moist as well as in dry locations, and was once particularly abundant on what are now the best farm lands



WHITE OAK
Leaf and fruit, one-third natural
size; twig, one-half natural size

of the Genesee Valley. The wood is hard, heavy, strong, and durable. It is highly prized for furniture, flooring, implements, ties, and in general construction where strength is required.

Bark—ashy gray in color, broken by shallow furrows into long, irregular, thin scales which readily flake off; on old trunks furrows frequently become deep.

Twigs—medium in thickness, greenish red to gray in color, smooth, sometimes covered with a bloom.

Winter buds—clustered at end of twigs, blunt, reddish brown in color, $\frac{1}{8}$ inch long.

Leaves—alternate, simple, from 5 to 9 inches long, with from 5 to 9 rounded lobes, generally deeply cut toward midrib, dark green in color above, paler below, frequently staying on tree over winter.

Fruit—an acorn, either with short stalk or stalkless, maturing in one year. Nut—light brown in color, $\frac{3}{4}$ inch long, $\frac{1}{4}$ enclosed in the cup, falling in September, frequently starts sprouting in late autumn. Meat—white, slightly bitter.

29. CHESTNUT OAK

Rock Oak

(Quercus montana Willdenow)

Chestnut oak gets its name from its chestnut-like leaves. It is found principally on dry, rocky ridges and hillsides, and is very common on such soils in the lower Hudson Valley. The wood is similar though somewhat inferior to white oak and is used generally for the same purposes.



CHESTNUT OAK
Leaf, twig, and fruit, one-third natural size

Bark—on young branches smooth, thin, yellowish brown in color; with age becoming dark brown to black in color, deeply furrowed into long, more or less continuous thick, rough ridges which are sharp and angular. At the bottom of the furrow, the bark may be reddish brown in color. The thick bark of mature trees is an important source of tannin.

Twigs—stout, light orange or reddish brown in color.

Winter buds—clustered at ends of twigs, sharp-pointed, light yellowish brown in color, $\frac{1}{4}$ inch long.

Leaves—simple, alternate, thick, yellowish green in color above, somewhat paler beneath, from 5 to 9 inches long, coarsely toothed as in chestnut, but teeth rounded and without bristle tips.

Fruit—an acorn, borne singly or in pairs on short stalks, maturing in September of the first season, starts sprouting soon after falling; one of the larger of our native acorns. Nut—shiny, light chestnut brown in color, from 1 to $1\frac{1}{2}$ inches long, $\frac{1}{3}$ enclosed in the cup. Meat—white, somewhat bitter.

30. RED OAK

(*Quercus borealis* Michaux)

Red oak is the fastest growing and largest of all the oaks native to New York State. It shows adaptability to a wide variety of soil conditions and ranges farther north than any other oak in the State. The wood is heavy, hard, strong, light reddish brown in color, and is used for furniture, interior finish, ties, and general construction, though less durable than white oak.



RED OAK
 Leaf, one-third natural size; twig, one-half natural size; fruit, one-half natural size

Bark—on young trees smooth, gray green in color; with age tardily breaking into rather regular, firm, elongated, flat-topped ridges with shallow furrows between. The smooth ridge tops are markedly lighter in color than are the furrows. On very large trees, this characteristic is lost at the base but is evident higher up the trunk. Inner bark is red in color.

Twigs—stout or slender, reddish to greenish brown in color.

Winter buds—clustered at end of twigs, oval, sharp-pointed, $\frac{1}{4}$ inch long, generally smooth (particularly on the lower half)

Leaves—alternate, simple, from 5 to 9 inches long, from 4 to 6 inches wide, from 7 to 9 lobed; lobes sparsely toothed, bristle-tipped; wide rounding clefts extending halfway to midrib. At maturity thin, dark, shiny green in color above, paler and smooth below.

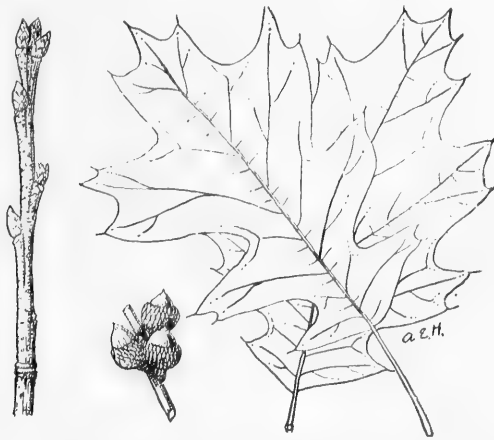
Fruit—an acorn, borne solitary or in pairs, either with or without stalk, maturing in the autumn of the second year; one of our largest acorns. Nut—chestnut brown in color, $\frac{3}{4}$ inch long, only $\frac{1}{5}$ enclosed in a wide, shallow cup. Meat—pale yellow in color, quite bitter.

31. BLACK OAK

Yellow Oak

(Quercus velutina La Marek)

Black oak is another dominant forest tree of the southern part of the State though not so valuable or so fast growing as the red oak. It is usually found in gravelly soils and on drier sites than red oak. The wood is hard, heavy, strong, but not considered so valuable as red oak. It finds its chief use for ties, construction, and fuel wood.



BLACK OAK
Twig, one-half natural size; leaf, one-third
natural size; fruit, one-half natural size

Bark—on young stems smooth, dark brown in color, soon becoming dark gray to black in color, very rough, broken by deep furrows into thick ridges which are further divided by cross furrows; roughened especially at the base of trunk even in quite young trees; inner bark orange yellow in color, rich in tannin, yields a yellow dye.

Twigs—stout, reddish brown in color mottled with gray.

Winter buds—cone-shaped, sharp-pointed, from $\frac{1}{4}$ to $\frac{1}{2}$ inch long, covered with yellowish gray wool, clustered at end of twig.

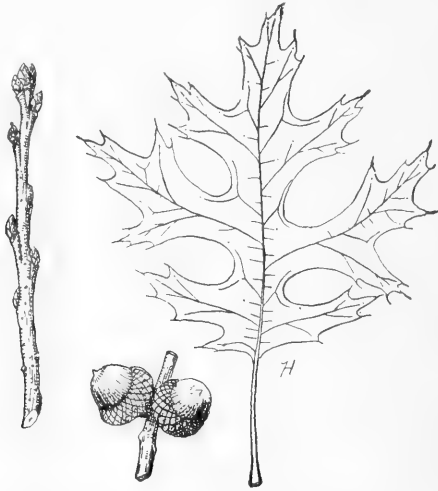
Leaves—simple, alternate, from 4 to 10 inches long, from 3 to 6 inches wide, from 5 to 7 lobed, toothed, bristle tipped, separated by wide, rounded clefts, extending over halfway to midrib; at maturity leaves thick, dark green in color and shining above, paler and woolly beneath.

Fruit—an acorn, borne singly or in pairs, with or without stalks, maturing in autumn of second year. Nut—reddish brown in color, from $\frac{1}{2}$ to $\frac{3}{4}$ inch long, enclosed about $\frac{1}{2}$ its length in light brown cup. Meat—yellow, very bitter.

32. SCARLET OAK

(*Quercus coccinea* Muenchhausen)

Scarlet oak, so called from the brilliant coloring of its autumnal foliage, thrives on poor soils. The wood is hard, heavy, strong, and coarse in texture. It is of inferior commercial value except for props, ties, and fuel. Because of its characteristic shape and brilliant coloring of the leaves in autumn, it is often used for ornamental purposes.



SCARLET OAK
Twig, one-half natural size; leaf, one-third natural size; fruit, one-half natural size

Bark—on young trunks, smooth, light brown in color; with age dividing into irregular ridges with shallow furrows between; in general, ridges not so regularly flat-topped as in red oak or so roughly broken up as in black oak; inner bark reddish in color.

Twigs—medium, stout to slender, light red in color.

Winter buds—broadly oval, blunt at the top, clustered at end of twig, dark reddish brown in color, somewhat woolly.

Leaves—simple, alternate, from 3 to 6 inches long, from 3 to 5 inches wide, from 5- to 9-lobed; lobes toothed, separated by wide, rounding clefts, extending well over halfway to the midrib; at maturity leaves thin, firm, shiny, dark green in color above, paler below.

Fruit—an acorn, borne singly or in pairs with or without stalks, maturing in autumn of second year. Nut—oval, reddish brown in color, from $\frac{1}{2}$ to 1 inch long, from $\frac{1}{2}$ to $\frac{1}{3}$ enclosed in reddish brown cup. Meat—pale yellow, bitter.

33. AMERICAN ELM White Elm

(*Ulmus americana* Linnaeus)

American elm is one of the most beautiful, graceful, and best known of our forest trees. It occupies a wide range of sites though typically a tree of the bottomlands, and grows to be one of the largest trees in the State. (The Gowanda elm has a basal circumference of 39 feet.) The wood is heavy, hard, strong, tough, coarse-grained, difficult to split, and light brown in color; largely used for veneer, barrel staves and hoops, crates and wheel hubs. The graceful symmetry of the crown makes the elm highly prized for ornamental planting.

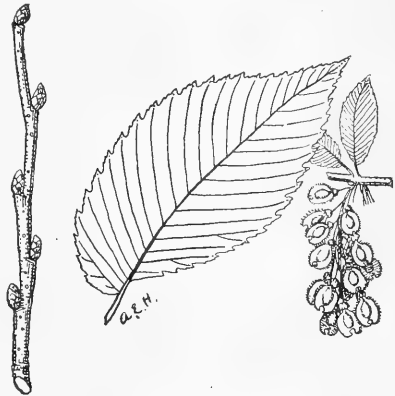
Bark—dark gray in color, divided by irregular up-and-down furrows into broad flat-topped ridges, rather firm or occasionally in old trees flaking off; inner bark in alternate layers of brown and white.

Twigs—slender, smooth, reddish brown in color, not mucilaginous when chewed.

Winter buds—winter twig obviously ends in leaf scar, hence larger bud near end of twig not truly terminal; lateral buds somewhat smaller, egg-shaped, pointed, light reddish brown in color, smooth, $\frac{1}{8}$ inch long.

Leaves—simple, alternate, from 4 to 6 inches long, unequal at the base, margin with coarse saw-like edge; at maturity dark green in color above, lighter beneath, midrib and parallel veins prominent; upper surface of leaf somewhat rough to the touch, though not so pronounced as in slippery elm.

Fruit—flat, winged, deeply notched at the end, $\frac{1}{2}$ inch long, containing one small seed; in clusters, ripens in early May as the leaf buds unfold, falling soon thereafter.



AMERICAN ELM
Twig, one-half natural size; leaf and
fruit, one-half natural size

34. SLIPPERY ELM

Red Elm

(Ulmus fulva Michaux)

Slippery elm is a medium-sized forest tree of stream banks and low fertile slopes and is common south of the Adirondaeks. The wood is hard, heavy, strong, coarse-grained, and fairly durable in contact with the



SLIPPERY ELM
 Twig, one-half natural size;
 leaf, one-third natural size; fruit,
 one-half natural size

soil. This tree is not an important commercial species but is used for fence posts, ties, barrel staves and hoops.

Bark—grayish brown in color, more or less deeply furrowed, the ridges tending to lift more along one edge than in the American elm; layers of outer bark reddish brown in color, shows no alternate layers of brown and white as in the American elm; inner bark, next to the wood, whitish, strongly mucilaginous, giving the name “slippery elm.”

Twigs—light gray in color, hairy, somewhat rough, characteristically mucilaginous when chewed.

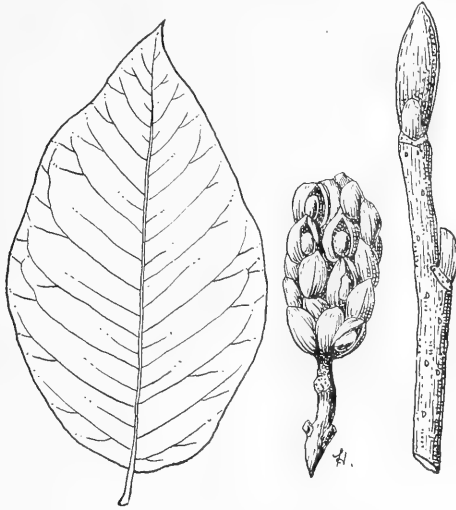
Winter buds—terminal bud absent as in American elm; lateral buds $\frac{1}{4}$ inch long, dark chestnut brown in color, covered at tip with long, rusty hairs.

Leaves—alternate, simple, oval, from 5 to 7 inches long, unequal at the base, margin with coarse saw-like edge; at maturity thick, dark green in color above, decidedly rough to the touch, paler and white-hairy below; midrib and parallel veins prominent.

Fruit—flat-winged, but not notched at the end, from $\frac{1}{2}$ to $\frac{3}{4}$ inch long, containing one seed; in clusters, maturing in late May or early June when the leaves are about half grown, falling soon thereafter.

35. CUCUMBER TREE*(Magnolia acuminata* Linnaeus)

Cucumber tree, so called because of its cucumber-like fruit, is the only magnolia that is at all common to this State outside of Long Island. In rich woods, on moist slopes, and along stream courses, from the central



CUCUMBER TREE
Fruit and leaf, one-third natural size;
twig, two-thirds natural size

part of the State westward and southward, it is to be found locally. The wood is light, soft, close-grained, brittle, and light yellowish brown in color. It resembles that of yellow poplar and has much the same uses. Because of its yellowish green flowers, its large leaves, its rapid growth, and its red seeds, it is often found in lawns and parks.

Bark—grayish brown in color, with long narrow furrows separating into rather loose, scaly, flat-topped ridges.

Twigs—brittle, brown in color, smooth or shiny, aromatic odor.

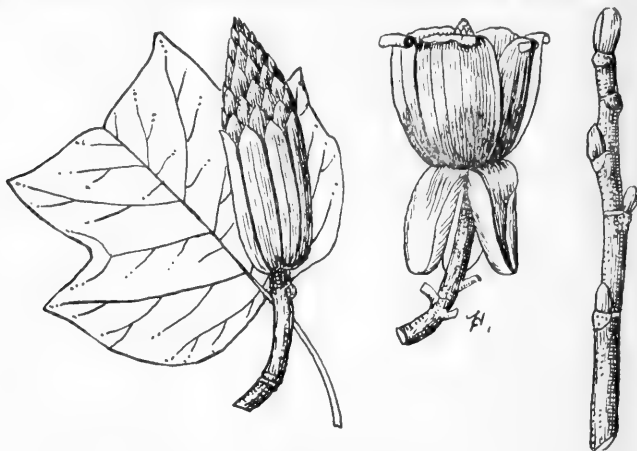
Winter buds—terminal bud oblong, somewhat curved, thickly covered with pale, silky hairs, pointed, about $\frac{1}{2}$ inch long; lateral buds smaller, blunt, also hairy.

Leaves—alternate, simple, egg-shaped, pointed at the tip, from 4 to 10 inches long, entire margin. One of the few forest trees of the State that has an entire-margined leaf.

Fruit—a cone-like or cucumber-like, cylindrical mass, often curved, about $2\frac{1}{2}$ inches long, containing a large number of scarlet, pea-like seeds which dangle from the ends of short, white threads when ripe in the early autumn.

36. YELLOW POPLAR
Tulip Tree, Tulip Poplar, Whitewood
(Liriodendron tulipifera Linnaeus)

Yellow poplar is one of our most distinctive and attractive trees. It is native from Saratoga and Rensselaer Counties westward along Lake Ontario to Lake Erie, and becomes more abundant southward in deep,



YELLOW POPLAR
 Flower, fruit, and leaf, one-half natural size; twig, two-thirds natural size

rich, moist soils. Its large tulip-like, greenish yellow flowers have given rise to the name "tulip tree." The wood is light, soft, brittle, not strong, straight-grained, light yellow or brown in color, and is largely made into lumber and used where a soft, easily worked wood is required.

Bark—on young trees, smooth, ashy gray or brown in color; on older trunks, light gray to brown in color, thick, distinctly and regularly furrowed and ridged.

Twigs—smooth, shiny, rather stout, reddish brown in color, often branching the first year, aromatic odor, very bitter taste.

Winter buds—terminal bud smooth, flattened, about $\frac{1}{4}$ inch long, simple, blunt, covered by two reddish brown bud scales giving the appearance of a mitten; lateral buds similar but much smaller.

Leaves—alternate, simple, from 4 to 6 inches long, almost square in outline, usually 2- or 4-lobed with the tip appearing to be cut off; the most distinctive and unusual leaf of any of our native forest trees.

Fruit—a cone, light brown in color, upright, pointed, from 2 to 3 inches long. *Seeds*—long winged, ripening in September, and for the most part falling soon after; outer ring of winged seeds may stay on the tree into the next season.

37. SASSAFRAS

(Sassafras variifolium (Salisbury) Kuntze)

Sassafras is a small to medium-sized tree, best known, perhaps, for its bark and root which have long been used for making sassafras tea. It is rare or absent in the higher Adirondacks and Catskills but is locally



SASSAFRAS
Twig, one-half natural size; leaf, one-third
natural size; fruit, one-third natural size

common on the sandy soil between these mountain ranges, and is abundant on the hills along the lower Hudson River Valley and on Long Island. Its wood is soft, weak, brittle, coarse-grained, aromatic, and very durable in contact with the soil. It is used locally for fence posts.

Bark—reddish brown in color, deeply furrowed even in young trees, with flat-topped ridges crossed by horizontal cracks; inner layers bright cinnamon red in color.

Twigs—slender, brittle, spicy to smell, at first light yellowish green in color, later becoming reddish brown in color.

Winter buds—terminal bud present, from $\frac{1}{3}$ to $\frac{3}{5}$ inch long, pointed, greenish; lateral buds much smaller.

Leaves—alternate, simple, from 4 to 6 inches long, entire margined. The leaves present a great variation in shape on the same tree, some are egg-shaped, others mitten-shaped (both left and right handed), still others are 3-lobed, more rarely 5-lobed.

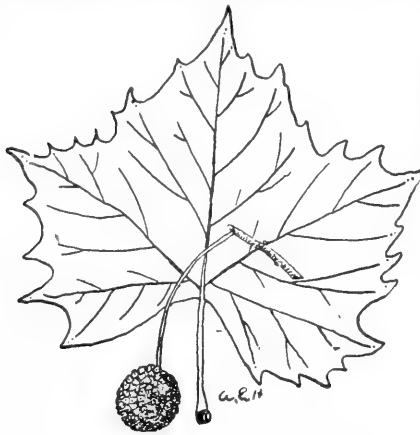
Fruit—berry-like, small, dark blue in color, containing a stony seed $\frac{1}{4}$ inch long, on a stout red stem, usually in clusters; ripens early in autumn.

38. SYCAMORE

Buttonwood, Buttonball, Plane Tree

(*Platanus occidentalis* Linnaeus)

Sycamore is a large-sized forest tree common throughout the State except in the Adirondacks and the higher Catskills and on Long Island. Wherever the soil is moist and fertile, along streams, in river bottoms,



in low, damp woods, and occasionally in dryer places it is likely to be found. Its wood is heavy, tough, hard, not strong, coarse-grained, reddish brown in color, and is difficult to split or work. It is used for crates, tobacco boxes, butchers' blocks, novelties, and occasionally for furniture and for interior woodwork.

Bark—dark brown in color at base of older trunks, shallowly furrowed into broad

SYCAMORE
Leaf, one-third natural size; twig, one-half natural size; fruit, one-half natural size

ridges which are broken up into small plate-like scales; higher up on trunk and branches, peeling off in large, thin plates exposing areas of whitish, yellowish, or greenish inner bark which are very striking in winter.

Twigs—rather stout, somewhat shiny, zigzag, at first green in color and fuzzy, later grayish or brownish in color and smooth.

Winter buds—terminal bud absent; lateral buds conical, dull-pointed, smooth, reddish brown in color, $\frac{1}{4}$ inch long, only one scale visible forming a cap over the bud.

Leaves—alternate, simple, broad, from 4 to 10 inches across, from 3 to 5 shallow lobes, thin, firm, smooth, bright green in color above, pale green and white woolly below.

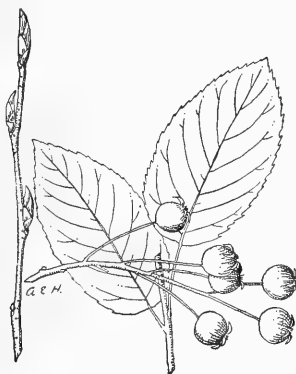
Fruit—a ball, brown in color, about 1 inch in diameter, borne on a long stem, made up of tiny seeds. *Seeds*—each furnished with a long tuft of hairs; seed balls seldom break up before spring.

39. SHAD BUSH

June Berry, Service Berry

(Amelanchier canadensis (Linnaeus) Medicus)

Shad bush is an attractive tree though not commercially valuable because of its small size. In the spring when the shad are ascending the rivers, its small white flowers are commonly noticed along the drier



SHAD BUSH

Twig, leaf, and fruit, one-half natural size

banks of the streams, along fence rows, and on hillsides in open woods. It is common throughout most parts of the State, particularly in the central and southern highlands. Its wood is heavy, harder than white oak, strong, close-grained, and dark brown in color often tinged with red. It is occasionally used for tool handles.

Bark—very smooth, grayish brown in color, with age often marked with dark lengthwise streaks.

Twigs—slender, somewhat zigzag, olive green to purplish brown in color, smooth, but usually covered by a thin grayish outer layer.

Winter buds—terminal bud from $\frac{1}{4}$ to $\frac{1}{2}$ inch long, slender, sharp-pointed, greenish or purplish brown in color; lateral buds somewhat smaller than terminal bud or undeveloped.

Leaves—alternate, simple, egg-shaped, from 2 to 4 inches long, sharp-pointed, finely serrate on margin.

Fruit—a berry, sweet, reddish purple in color, about $\frac{1}{3}$ inch in diameter, contains many seeds; borne in cluster; ripening in June or July; a favorite food of birds.

40. THE HAWTHORNS

Thorn Apple

(Crataegus Linnaeus)

Hawthorns comprise a large group of small-sized trees. More than a score of varieties are common in New York State. The differences are chiefly in flower and fruit and it seems advisable in this publication to



SCARLET HAWTHORN
Leaf, twig, and fruit, two-thirds natural
size

call attention to the general characteristics of the group without going into the minute differences that separate the many species. The very small size of the trees, generally less than 20 feet, make them of no commercial value. In fact, some members of the group may be regarded as a serious pest, because of the rapidity with which they seed up old pastures, shading out its available pasturage or rendering costly the preparation of the land for forest planting.

Bark—generally dark brown to gray in color, scaly.

Twigs—stiff, zigzag, armed with large, generally unbranched thorns from $1\frac{1}{2}$ to 2 inches long.

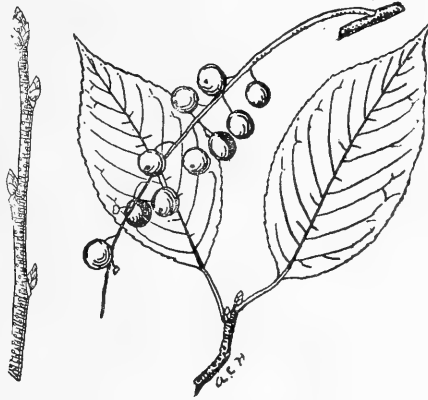
Winter buds—round, chestnut brown in color; terminal bud usually present but no larger than lateral buds.

Leaves—simple, alternate, from 3 to 4 inches long, from 2 to 3 inches wide, serrate on the margin; in some species leaves more or less egg-shaped, others from 5- to 9-lobed.

Fruit—berry-like, in a cluster, each fruit the size of a small cherry; when mature in early autumn, usually red, with from 1 to 5 nutlets in center of fleshy covering; highly prized by birds in winter.

41. WILD BLACK CHERRY*(Prunus serotina Ehrhart)*

Wild black cherry is the largest of the cherry trees found in New York State. It prefers rich, bottomlands, and moist hillsides, but is also found in drier situations. It is common in most sections of the State,



WILD BLACK CHERRY

Twig, two-thirds natural size; leaf, one-third natural size; fruit, one-half natural size

though seldom found above an altitude of 3000 feet in the Adirondacks. Its wood is light, strong, hard, close-grained with pale reddish brown heartwood and is much in demand for cabinetmaking, interior finishing, tools, and ties. It is a most valuable fast-growing timber tree and should be encouraged in every woodlot.

Bark—at first smooth, reddish brown in color, marked with easily seen long, white breathing pores; with age becoming much roughened by irregular, close, dark scaly circular plates with upturned edges.

Twigs—slender, smooth, reddish brown in color, having bitter almond taste which is characteristic of all cherries.

Winter buds—smooth, egg-shaped, from $\frac{1}{8}$ to $\frac{1}{6}$ inch long, sharp-pointed, chestnut brown in color; terminal bud present.

Leaves—alternate, simple, from 2 to 5 inches long, broader than are those of pin cherry, fairly long-pointed, finely toothed.

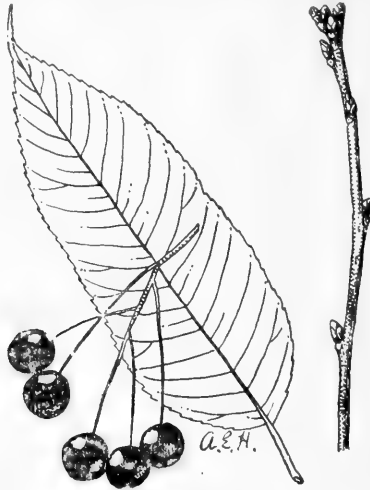
Fruit—a single-seeded juicy fruit, about $\frac{1}{2}$ inch in diameter, grouped on very short stems, in long scattering, drooping clusters, purplish black when ripe in late summer. Birds and animals eat the fruit, though its flavor is decidedly bitter.

42. PIN CHERRY

Wild Red Cherry, Fire Cherry

(Prunus pennsylvannica Linnaeus fil.)

Pin cherry is a "weed" tree coming in on burned, cut-over, and abandoned land throughout the State, except in the higher Adirondacks. It is not a timber-producing species and its main value lies in its ability



PIN CHERRY
Leaf and fruit, natural size;
twig, one-half natural size

to cover waste land and to protect the soil until larger and more important trees can establish themselves and crowd it out. The wood is light, soft, close-grained, with light brown heartwood, and is seldom used.

Bark—bright, reddish brown in color, for the most part smooth, often slightly peeling around the trunk, marked with numerous long, pale breathing pores; in old trees somewhat roughened near the base.

Twigs—slender, smooth, shiny, bright red in color, a characteristic bitter almond taste, peculiar odor.

Winter buds—very small, reddish brown in color, characteristically clustered at the twig tip and sometimes along the sides; terminal bud present, usually smaller than the lateral buds around it.

Leaves—alternate, simple, from 3 to 5 inches long, much longer than broad as contrasted with the broader leaves of wild black cherry, sharp-pointed, with finely serrate margins.

Fruit—a round, juicy, one-seeded fruit, light red in color, about $\frac{1}{4}$ inch in diameter, arrayed on long stems, from 3 to 5 in a cluster, ripening in July. Birds often pick the ripe fruit.

43. **BLACK LOCUST****Yellow Locust, White Locust***(Robinia pseudoacacia* Linnaeus)

Black locust was not originally a native of the State, but was a great favorite with early settlers as a dooryard tree from where it has escaped to form dense thickets along the roadside in many sections of the State. In favorable locations, its spread by means of root suckers is very rapid. It grows with exceptional rapidity on well-drained fertile soils, and in such locations seems better able to survive attacks of the locust borer which in some sections has rendered the tree worthless. The wood is very strong, heavy, hard, and extremely durable in contact with the soil. As a post wood it has no equals and is also used for insulator pins on pole lines and for ties and fuel wood.

Bark—rough even on young trunks, yellowish brown in color, becoming deeply furrowed into distinct, thick, rounded ridges, which are not scaly.

Twigs—slender, brittle, reddish to greenish brown in color; generally bearing short stiff spines from $\frac{1}{4}$ to $\frac{1}{2}$ inch long, in pairs at base of leaves (nodes).

Winter buds—terminal bud absent; lateral buds very small, in a cavity below leaf scars, rusty brown in color, covered with down.

Leaves—alternate, compound, from 8 to 14 inches long, with from 7 to 19 entire leaflets arranged along a central stem; leaflets usually odd in number, short-stalked, oval in shape, from $1\frac{1}{2}$ to 2 inches long.

Fruit—a pod, flat, smooth, brown in color, from 2 to 4 inches long, containing from 4 to 8 small brown or black seeds, ripening in September. Pods—hang on into the winter; finally torn off by the wind in halves with seeds attached, the dried pod acting as a sail to carry the seed considerable distances.

**BLACK LOCUST**

Leaf and fruit, one-third natural size; twig, two-thirds natural size

44. HONEY LOCUST

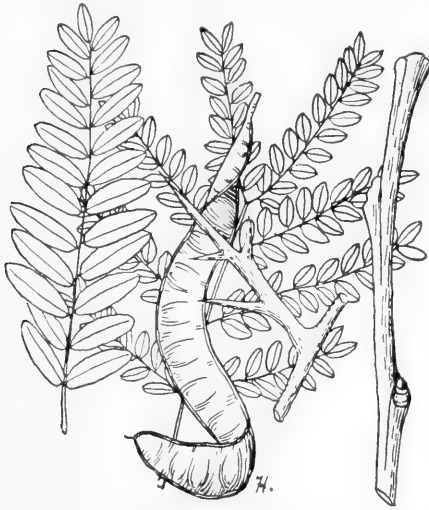
(*Gleditsia triacanthos* Linnaeus)

Honey locust, while native in western New York only, has been widely introduced as a hedge and ornamental tree, and is hardy and frequent throughout the State except in the mountains. The wood is hard, strong,

coarse-grained, but not so durable in contact with the soil as is the black locust. It is not commercially important on account of its scattered distribution and the knotty character of the wood due to its being open-grown as contrasted with forest-grown.

Bark—on young branches smooth, grayish brown in color, with age becoming roughened into firm, broad, blackish ridges with edges that curve outwards.

Twigs—rather stout, smooth, glossy, zigzag; usually bearing stiff, sharp-branched thorns from 3 to 4 inches long, above leaf base (node).



HONEY LOCUST

Leaf and fruit, one-fourth natural size;
twig, three-fourths natural size

Winter buds—terminal bud absent; lateral buds very small, not easily seen.

Leaves—alternate, simply or doubly compound, from 6 to 8 inches long; if singly compound, with from 18 to 28 leaflets; leaflets usually even in number, elliptical, $1\frac{1}{2}$ to 2 inches long; if doubly compound, with from 4 to 7 pairs of secondary leaf stems.

Fruit—a pod, flat, usually twisted, reddish brown in color, from 10 to 18 inches long, $1\frac{1}{2}$ inches wide, from 2 to 3 in a cluster, ripening in late autumn but staying on the tree well into winter; each pod containing from 10 to 20 brown oval seeds, $\frac{1}{3}$ inch long. The fleshy part of the pod is sweet, hence the name "honey locust."

THE MAPLES

Maples are a very important group of forest trees in New York State. Of the nine maples occurring east of the Rocky Mountains, six are found in the State. In the order of their abundance, they are sugar maple, red maple, silver maple, mountain maple, striped maple, ash-leaved maple. The first three only are important timber trees.

Maples as a group are readily distinguishable from other trees by the opposite arrangement of buds, leaves, and twigs together with the characteristically shaped simple maple leaf (the ash-leaved maple as an exception has a compound leaf). The fruit of the maple group is also very distinctive. They are without exception winged-seeds borne in pairs, and popularly known as *maple keys*.

The mountain maple and the striped maple are very small trees or often shrub-like, growing as an understory at higher elevations throughout the State. The ash-leaved maple is a medium-sized forest tree found in moist locations at lower elevations but very common and of little commercial importance. It is the only maple that has a compound leaf.

The three important maples of the State, sugar, red, and silver, are divided by lumbermen into two groups, the hard and the soft maples. The sugar maple is classed as a hard maple due to that characteristic of the wood, while both the red and silver maples are classed as soft maples to denote that characteristic of their wood.

The foliage of both the sugar and red maple is particularly brilliant in the fall, and for that reason these species are often planted as shade trees.

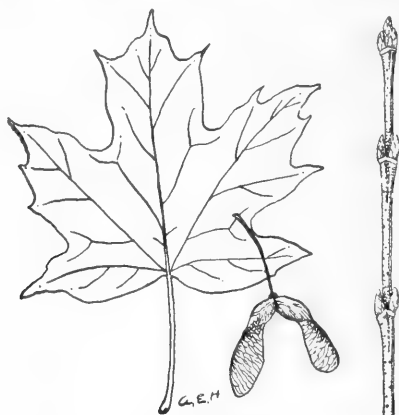
Two important maples from Europe are worthy of mention because of the frequency with which they are planted in the State for shade and ornament. These are the Norway maple and the sycamore maple.

45. SUGAR MAPLE

Hard Maple

(Acer saccharum Marshall)

Sugar maple is a magnificent forest tree everywhere abundant in the State outside of Long Island. If there were state trees as there are state flowers, the sugar maple would have no competitors in New York.



SUGAR MAPLE
Leaf, one-third natural size; fruit
and twig, one-half natural size

Besides providing beautiful borders to many miles of highway, and thousands of gallons of maple sirup from the many hundreds of sugar bushes in all parts of the State, it yields a wood of high grade. It is hard, strong, close-grained, and tough, with a fine, satiny surface, and is in great demand for flooring, interior finish, furniture, shoe lasts, rollers, and as a fuel wood of the best quality.

Bark—on young trees dark gray in color, close, smooth, and firm, becoming furrowed into long irregular plates lifting along one edge.

Twigs—slender, shining, the color of maple sugar.

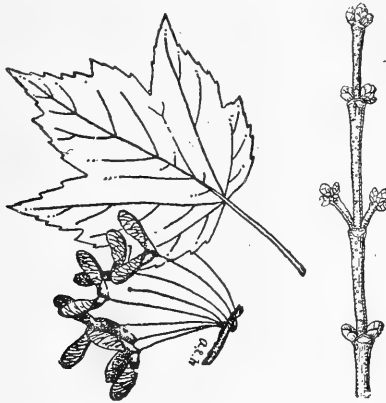
Winter buds—very narrow, sharp-pointed, brown in color, the terminal bud much larger than the laterals.

Leaves—simple, opposite, from 3 to 5 inches long and fully as wide, from 3 to 5 shallow lobes with wide-spaced coarse teeth, dark green in color above, paler below; the clefts are rounded at the base.

Fruit—maple keys, in short clusters, ripening in September. Seeds—join each other in a straight line. Wings—turn down almost at right angles.

46. **RED MAPLE**
Swamp Maple, Soft Maple
 (*Acer rubrum* Linnaeus)

Red maple derives its name from its brilliant autumnal foliage. While common in swamps all over the State, it is also found abundant on moist slopes. It is an extremely rapid-growing tree, furnishing a fairly



RED MAPLE
 Leaf and fruit, one-third natural
 size, one-half natural size

strong, close-grained wood, extensively used for cheap furniture, in the manufacture of baskets and crates, for mine props, railroad ties, and fuel wood.

Bark—on young trunks smooth, light gray in color, often resembling beech; with age becoming darker and roughened into long ridges, often shaggy or scaly on surface; bark character extremely variable on different trees in the same stand.

Twigs—rather slender, bright or dark red in color, without odor when cut or broken.

Winter buds—blunt-pointed, short stalked, red in color; terminal bud slightly larger than lateral buds; numerous large, plump flower buds along the twig.

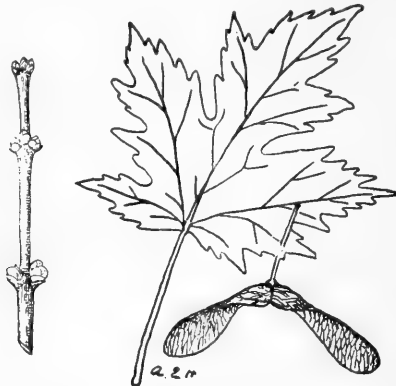
Leaves—simple, opposite, from 3 to 4 inches long, fully as wide, usually 3-lobed; the clefts between lobes shallow as contrasted with deep clefts of silver maple; margins of leaf lobes coarsely serrate; at maturity leaves light green in color above, pale greenish white below.

Fruit—maple keys, in clusters on long stalks, ripening in May or early June. *Seeds*—joined more or less end on end. *Wings*—diverge at wide angles.

47. SILVER MAPLE White Maple

(*Acer saccharinum* Linnaeus)

Silver maple is generally distributed throughout the State, but is not nearly so common as is red maple. It prefers the same general moist soil conditions, and the wood is used for the same purposes as the red



SILVER MAPLE
Twig, one-half natural size; leaf and
fruit, one-third natural size

maple with which it is included under the term "soft maple" by lumberman. Frequently it is planted as a shade tree on account of its rapid growth.

Bark—on young trunks smooth, gray in color with reddish tinge; with age becoming reddish brown in color, more or less furrowed, the surface separating in long thin flakes which become free at the ends and flake off.

Twigs—similar to red maple but having a distinctly rank odor when broken or crushed.

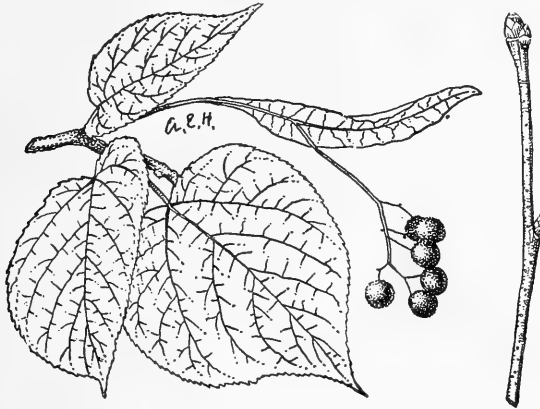
Winter buds—similar to red maple but larger, usually very dense clusters of lateral buds; the large, plumper ones are flower buds.

Leaves—simple, opposite, from 3 to 5 inches long, fully as wide, 5-lobed; margins of lobes coarsely serrate; clefts between lobes, particularly the middle three, very deep; at maturity leaves pale green in color above and silvery white below, hence the name.

Fruit—maple keys, much larger than in the red maple though maturing at about the same time in the spring. *Wings*—more widely divergent than those of the red maple. Sometimes only one side of the key develops.

48. **BASSWOOD****Linden, Whitewood***(Tilia glabra (Ventenat) Linnaeus)*

Basswood takes front rank as a valuable forest tree in New York State on account of its rapidity of growth and the wide range of use for its lumber. It does best in the deep, moist soils of the woodlot sections

**BASSWOOD**

Leaf and fruit, one-third natural size; twig, one-half natural size

but is found generally distributed except in the high Adirondacks and Catskills. The wood is soft, even-grained, light, and fairly strong, and is in demand for boxes, crates, veneer, cheap furniture, woodenware, and paper pulp; often used as a substitute for white pine.

Bark—on young stems smooth, dark gray in color; on older trunks firm but easily cut, becoming furrowed into rather narrow flat-topped ridges; on still older trunks furrows deeper, ridges more rounding and broader, surface scaly.

Twigs—rather slender, smooth, bright red or greenish in color or covered by a gray skin, zigzag, slightly mucilaginous when chewed; fibers of bark on twigs very tough, may be used as rope.

Winter buds—terminal bud absent; lateral buds large, smooth, sometimes lopsided, bending away from the twigs, dark red or sometimes green in color.

Leaves—simple, alternate, heart-shaped, from 5 to 10 inches long, sharp-pointed, coarsely serrate along margin.

Fruit—a nut, round, woody, about the size of a pea, borne singly or in clusters, with a common stalk, attached midway to a leafy bract, ripening in late fall but sometimes remaining on the tree into the winter. *Bract*—acts as a sail to scatter the seed.

49. WHITE ASH

(Fraxinus americana Linnaeus)

White ash shares with the basswood the distinction of being one of the most valuable and rapid-growing trees in the woodlots of New York State. It is common throughout New York, and is found up to an altitude of 2000 feet in the Adirondacks. It prefers to grow in rich moist woods near water. The wood is heavy, hard, strong, close-grained, and tough. Large quantities of it are used for agricultural implements, tool handles, oars, furniture, and in the automobile industry.



WHITE ASH

Leaf and fruit, one-third natural size; twig, one-half natural size

in some instances tending to run together enclosing diamond-shaped hollows.

Twigs—very stout, smooth, shining, grayish brown in color, brittle, flattened at leaf bases (nodes).

Winter buds—plump, blunt-pointed, dark brown or nearly black in color; terminal bud $\frac{1}{5}$ inch long, larger than lateral buds; last pair of lateral buds almost on level with terminal bud.

Leaves—opposite, compound, from 8 to 15 inches long, with from 5 to 9 leaflets; leaflets sharp-pointed, from 3 to 5 inches long, with slightly and sparsely serrate margins; borne on short stems, by this characteristic may be told from black-ash leaflets which are stemless.

Fruit—a winged seed, from 1 to 2 inches long, broadly paddle-shaped with the wing occupying the position of the blade; borne in long, open, drooping clusters, ripening in September, often not dropping off until early winter.

50. BLACK ASH

(Fraxinus nigra Marshall)

Black ash, like the spruce, the balsam fir, and the larch, is a tree of cold, deep swamps. It is common in moist places over most of New York State and in the central and southern parts it forms with swamp white oak and hemlock the main timber species of the swamps. Its wood is heavy, rather soft, tough, coarse-grained, and durable. Because of its toughness, the wood is used for hoops, chair bottoms, and baskets.

Bark—ashy gray in color, somewhat furrowed but generally without deep ridges, forming thin smoothish scales which are easily rubbed off.

Twigs—very stout, similar to those of white ash but not shiny and usually a lighter gray in color.



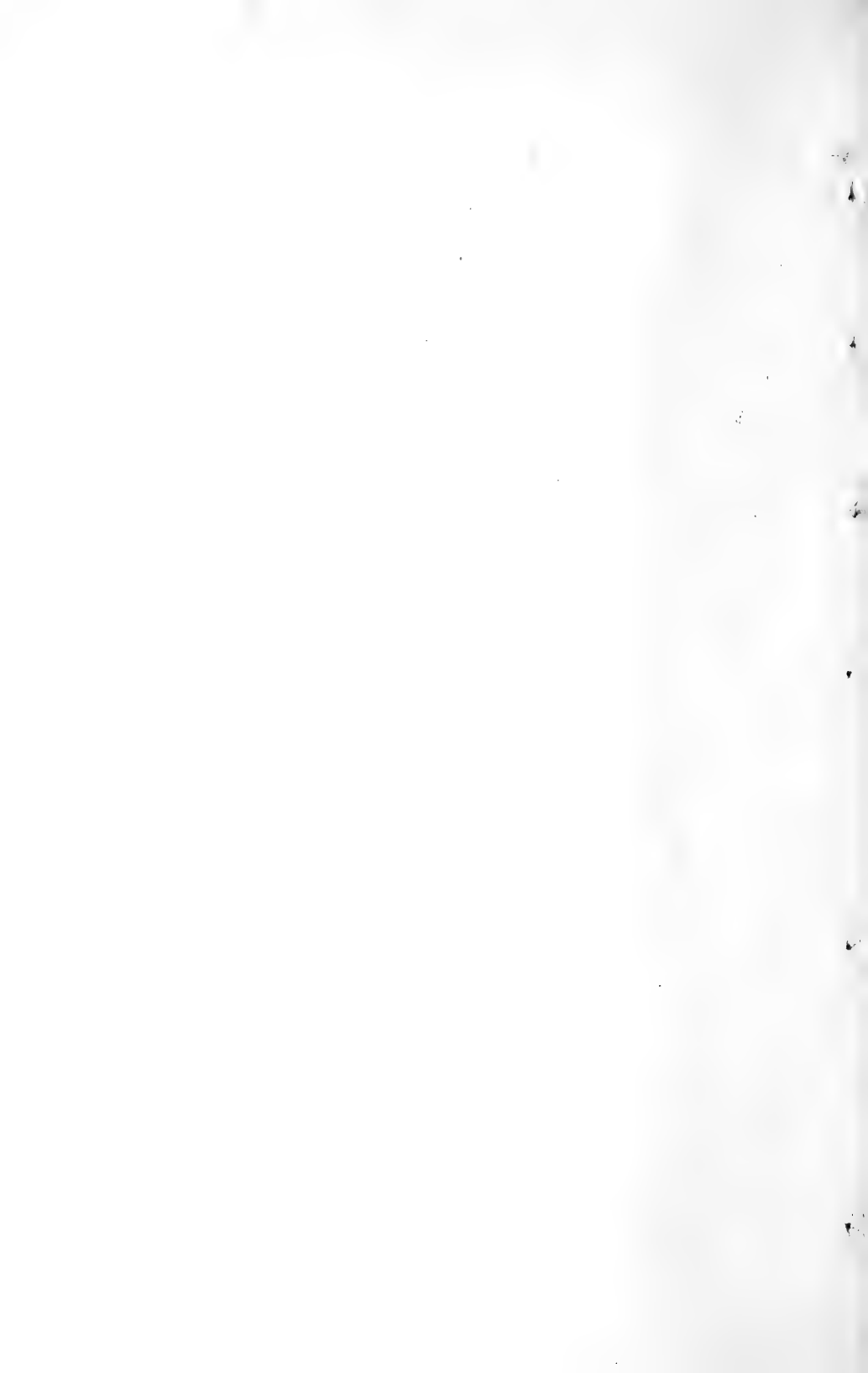
BLACK ASH

Twig, natural size; leaf and fruit, one-third natural size

Winter buds—buds resembling those of white ash though usually decidedly black; terminal bud as long or longer than broad, sharp-pointed; lateral buds much smaller, blunt-pointed; last pair of lateral buds at some distance from the terminal bud instead of nearly on a level with it as in the white ash.

Leaves—opposite, compound, from 10 to 14 inches long, with from 7 to 11 leaflets; leaflets similar to those of white ash but much longer in proportion to their width, without stems.

Fruit—a winged seed, similar to that of white ash though the wing is broader and distinctly notched at the tip; in clusters, ripening in the early autumn.





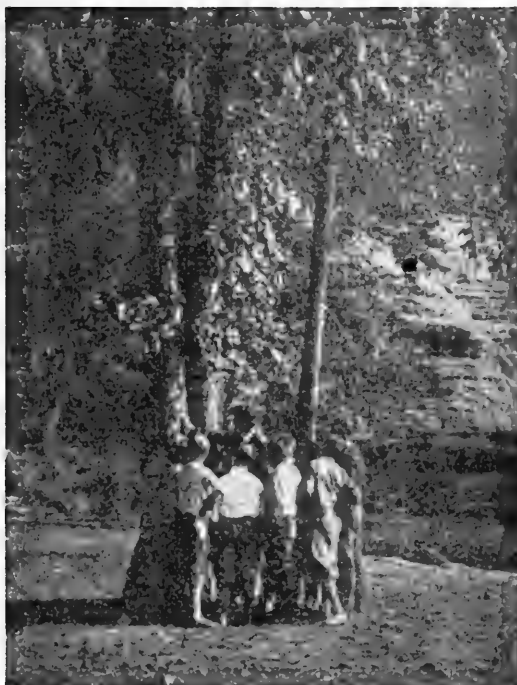


Fifty Common Trees of New York

Forestry for 4-H Club Boys and Girls

Second Year—Forest Appreciation

J. A. Cope and Gardiner Bump



Cornell Junior Extension Bulletin

Published by the New York State College of Agriculture
at Cornell University, Ithaca, New York

C. E. Ladd, Director of Extension Service

Published and distributed in furtherance of the purposes provided for
in the Act of Congress of May 8, 1914

SECOND YEAR—FOREST APPRECIATION

Forest appreciation may be elected by boys and girls who have completed the tree-planting project and who have reached their thirteenth birthday but not their nineteenth birthday at the time of enrollment.

Purposes

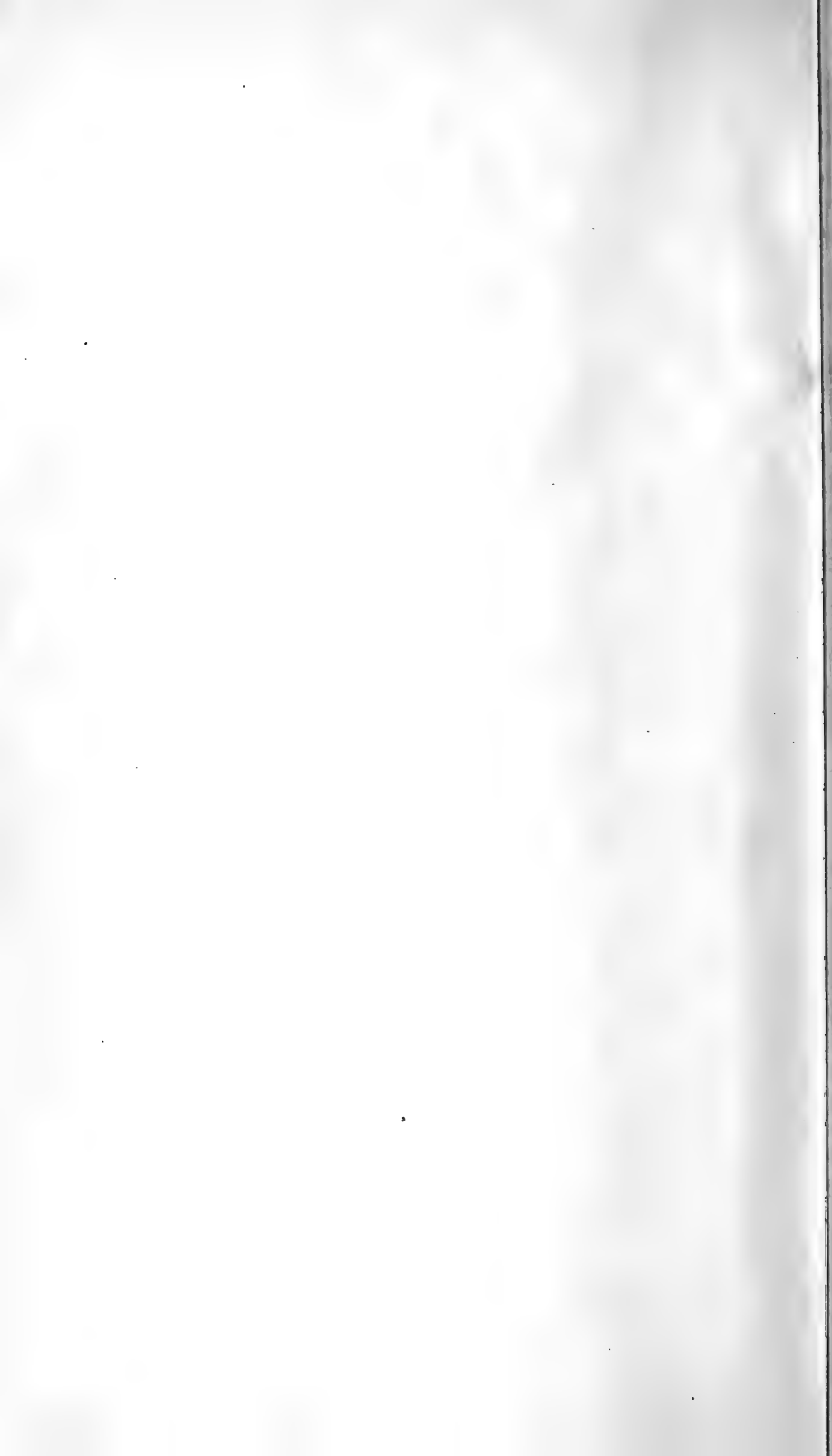
The purposes of this project are to give the boys and girls:

1. An appreciation of the importance of the forest to agriculture and industry.
2. A thorough knowledge of the forest trees of their locality.
3. A knowledge of the relative value of those trees in producing crops of timber.

Requirements

1. Identify at least fifteen forest trees found in your locality.
2. Learn the chief uses of these trees.
3. Make a collection of leaf, fruit, and winter twig of each of the trees identified. The twig, the leaf, and the fruit of each tree is to be mounted and labelled with the common name and the most important use of the tree. These collections are to be sent to the Department of Forestry by June 15 for correction and grading.
4. Write a brief story of at least 250 words telling how the forest is of value to your community. This should be sent in with the mounted specimens of leaves and twigs.









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