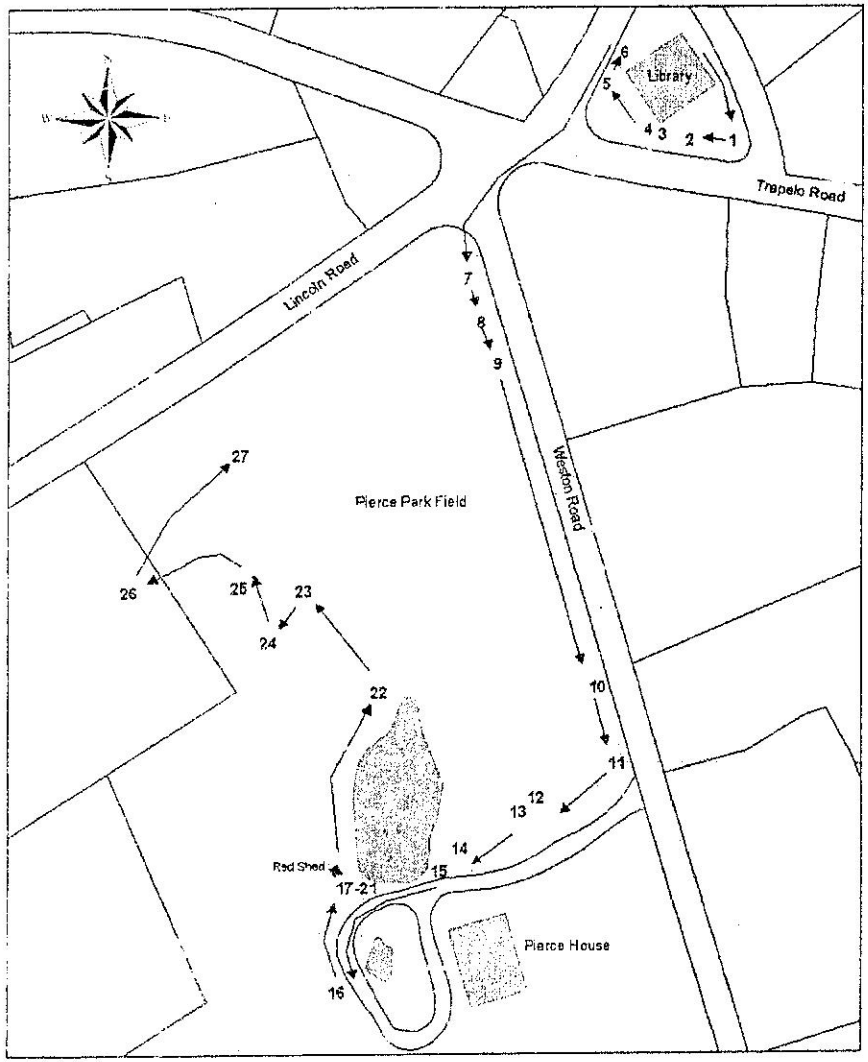
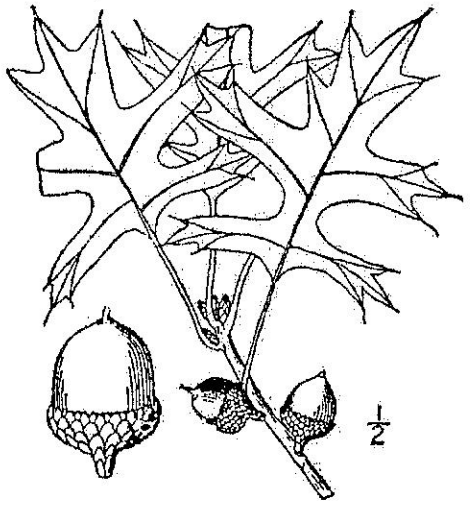
Tree Identification Trail



A Tree Identification Trail

On the Properties of the Lincoln Library and Pierce Park



Pin Oak (*Quercus palustris)*

Lincoln Public Library
Lincoln Land Conservation Trust
Lincoln Conservation Commission

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October 2004.

A Tree Identification Trail

From The Lincoln Library to Pierce Park

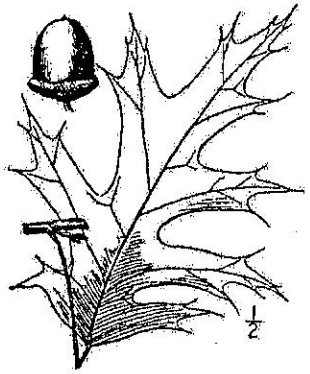
This brochure describes trees on the grounds of two Town properties, the Lincoln Library and Pierce Park. The trail starts out clockwise around the Library, then crosses Trapelo and Weston Roads, and continues along the stonewall bordering Weston road, down to the Pierce House driveway, and back around the pond (there is a map of the walk in the back of this brochure). If you wish to do a short tour only, then follow the guide around the Library for the six trees described there. The authors hope that you will then be inspired to return and continue the tour at another time.

With a few exceptions, this brochure covers only native tree species that have grown in this area for thousands of years. Therefore many of the smaller, ornamental trees are ignored. If you desire further information, there are several excellent tree guides available at the library.

Because some of the terms describing trees in this brochure may be unfamiliar, there is a brief glossary of the most common ones in the back. Words included in the glossary are initially printed in *italics* (along with scientific names). Common tree names appear in bold print. The authors wish you an enjoyable and educational trip.

1. Stand on the terrace outside the main entrance on Library Lane and look to your right. At the corner of the lawn, where Library Lane joins Trapelo Road, is a massive **Red Oak** (*Quercus rubra*). Note first that the leaves and branches of this tree occur in an *alternate* pattern, and that the *simple* leaves have 7-11 lobes with hair-like bristle tips. The dark-green leaves feel sturdy, almost leather-like. On each leaf there is a central vein, which goes from the stem of the leaf (called the *petiole*) to the tip, with other prominent

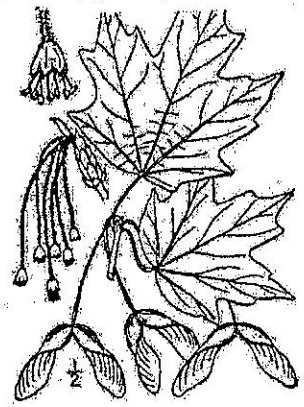
Red Oak



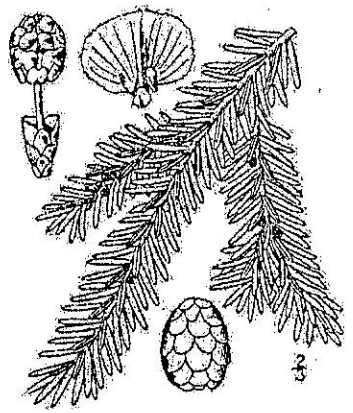
veins branching out from the central vein to each lobe. This venation pattern is called *pinnate*. The multiple *buds* at the ends of twigs are clustered (an important distinguishing characteristic of all oaks), pointed, and a dark "shiny" reddish brown. The acorns have saucer-shaped, "beret-like", shallow caps that enclose only about 1/5 of the nut. The bark of red oak is typically dark gray with lighter colored smooth furrows running up the main trunk, sometimes giving it a "striped" appearance. Look closely for reddish-hued grooves running up the trunk as well.

2. With your back to the oak, look up the hill toward the five-corners intersection. As you look at the "flower pot," the large tree slightly to your right is a **Sugar Maple** (*Acer saccharum*). Unlike the red oak, notice that the leaves and branches occur on this tree in an *opposite* pattern (the leaves branch from the stem in pairs and the same is true of the branches). If you see branches that do not come off in pairs from a larger branch, it is because one has broken off. This habit of opposite branching is typical of all maples, and will help you identify this tree. The maple's simple leaves are more rounded than the oak's, and although the leaves of both oaks and maples have pointed lobes, they are very different. Notice that the 5-7 main veins on the maple leaf all start from the base of the leaf and branch out, one to each lobe, like the palm of a hand. These leaves are *palmately* lobed and veined. The petiole of each maple leaf is long, about the same length as the broad part of the leaf. By contrast, oak leaves have very short petioles. You are likely to find some seeds developing on the maple, with their distinctive "wings." The wings of the sugar maple form a wide "U", unlike the Norway maple that we'll see later. The bark of this tree is grayish and furrowed, with long, plates curling away from the trunk. The buds are narrow and conical, brown and sharply pointed. This is the tree tapped for sap in early spring to make maple syrup. There are at least three places in Lincoln where syrup is made.

Sugar Maple



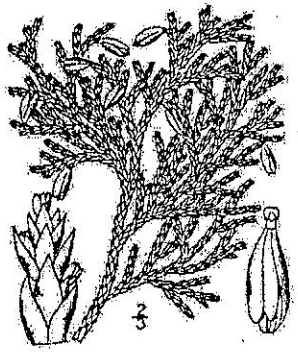
3. The *evergreen* tree next to the sugar maple is an **Eastern Hemlock** (*Tsuga canadensis*). Note it's short, flat needles (its leaves) which extend outwards on two sides, so that the branches look flattened, like the "hem" of a skirt. The upper surface of the needles is shiny and dark green in contrast to the underside, which is whitish, with white lines on either side of the central vein. From a distance this *coniferous* tree has a "feathery," somewhat drooping, look, and feels very soft, compared with other evergreens. Often hundreds of the small rounded cones are visible, each about ¾ of an inch long. This tree is of special concern because many of our larger and most beautiful hemlocks are infested with a nonnative insect, the hemlock wooly adelgid. It produces a white cottony material on the tips of the branches, where the larvae are hatched and hide out. This insect, a kind of aphid, is so voracious that it can kill a tree within a few years. Throughout New England, people are working with different techniques to combat the adelgid. There are many more hemlocks on the Pierce Park property.



Eastern Hemlock

Northern White Cedar

4. Next to the hemlock at the corner of the library is a second evergreen, a **Northern White Cedar**, also called **Arborvitae** (*Thuja occidentalis*). Note how its leaves are very small, flattened, and scale-like, occurring in an opposite pattern on the twigs. The branches and twigs fan out into ever more delicate, noticeably flattened sprays. This tree also feels very soft to the touch, and its bark, unlike most trees, is fibrous and



shredding, gray to reddish brown, with long furrows.

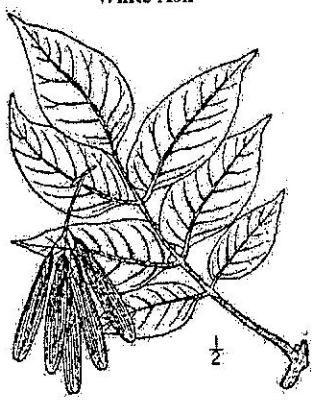
5. As you continue walking towards Bedford Road, you will see the **Catalpa** tree (*Catalpa sp.)*, with its amazingly twisted trunk and large heart-shaped leaves, up to 12 inches long and 8 inches wide. These leaves are mostly attached to the branches in groups of three, in a *whorled* pattern, which is a highly unusual trait. In June, large clusters of white tubular flowers with yellow and purple throats bloom profusely, which eventually turn into long bean-like pods about a foot long. The twisted trunk of this tree is highly unusual and is not typical of the catalpa tree. This tree is really a group of several catalpas, planted around 1900, with several trunks intentionally twisted together. This is a fast growing, non-native tree and there are several smaller catalpas on the Pierce property and throughout Lincoln.

6. Next to the catalpa is a **European** or **Copper Beech** tree (*Fagus sylvatica)*. Note its distinctively smooth, gray bark. This tree is not native, but is nearly identical to our native American beech, except for the reddish leaves. Note that the leaves are alternate, simple, coarsely toothed, and distinctly pinnately veined. The veins branching from the central vein are remarkably straight, as if drawn with a ruler. The fruit, which appears in the fall, is a burr with soft, curving prickles. Inside is a triangular nut, much favored by many of our native animals. The buds on this tree are remarkably long, thin and pointed.

Once you examine these six trees, our tour continues on the grounds of Pierce Park, across Trapelo Road. Go carefully across Trapelo and then Weston Roads. Once on the other side, turn left (downhill) and go through the opening in the stone wall.

7. As you walk through the opening in the wall, you pass under the branches of a **White Ash** (*Fraxinus americana*). Note its finely grained bark, with delicate ridges creating many diamond-shaped crevices, a pattern typical of most ash trees. The leaves are *compound*, with 5-9 *leaflets* (usually seven) arranged in pairs with one leaflet at the tip. When the leaf drops in the fall, the entire leaf goes as one unit: the petiole and all the leaflets. Note also that these large leaves are attached to the branch in pairs, just like the maple tree. Ashes, like maples, have opposite branching and leafing, and their opposite branching pattern is an effective way to begin the identification of these two species, especially in winter. Some of the fruits are likely to be visible, and like all ash trees, each seed has a wing-like blade that is one to two inches long and helps the wind carry it away from the parent tree. This tree can grow very large, up to 80 feet tall and three feet in diameter. Its wood is hard and strong, excellent for firewood and a favorite wood for baseball bats. The white ash generally turns yellowish in the fall, often almost maroon on the tips of the branches, and more yellow towards the center. The *terminal* buds are large, rounded, and rusty brown on greenish twigs.

White Ash

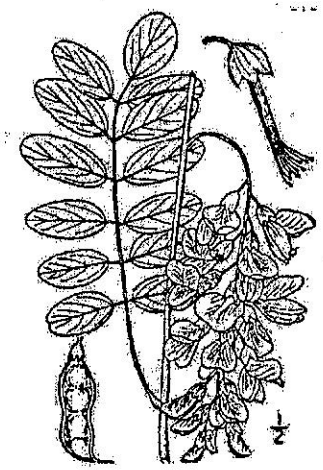


8. As you walk close to the stone wall, with Weston Road on your left, the next several large trees are **Norway Maples** (*Acer platanoides*). These trees are similar to sugar maples, and it can be difficult to distinguish between them. Both have simple, palmately lobed leaves and opposite branching. One difference is that the Norway maple leaves are usually a darker green than the sugar maple leaves and there are often seven rather than five lobes. The foliage of Norway maples stays green much longer into the fall than sugar maples and fails to turn the brilliant colors of sugar maples. Another difference is the buds, which are large, reddish, and blunt, compared to the sharply pointed brown buds of the sugar maple. Its bark is finely striped with ridges and grooves, many of which are diamond-shaped, like ash trees. While this tree is included here, it is not a native, and since it spreads easily, it is now considered a problematic invasive species. In the past, as recently as the 1970s, it was commonly planted in New England gardens, (including this property).

9. The next tree, whose trunk diameter is 4-5 inches, is a **Black Walnut** (*Juglans nigra*). Like the ash tree, this tree has large, pinnately compound leaves. However, the leaves are alternately placed along the branches, not opposite, as in ash trees. On a large tree, the leaves can grow to 12-24 inches long, with 16-24 leaflets per leaf, with two leaflets at each leaf tip. The leaflets are finely toothed, unlike the smooth margins of the ash leaflets, and they are smaller and narrower. The buds are a grayish color, and have a silky-downy appearance. A distinctive feature of this species is its fruit, but none is likely to appear on this young specimen. The black walnut fruit is a large nut covered with a thick, greenish brown husk. Large mature black walnuts can be found in the Smith Andover Field opposite Town Hall.

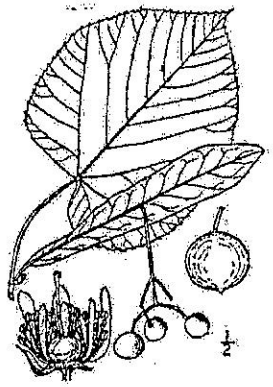
This is a good place, with the stone wall behind you, to notice other trees some distance away. To your right is a cluster of three hemlocks, already described (#3). They have a lacy look and their branch tips arch up gracefully. Slightly uphill of the hemlocks, to the right, by the wall along Lincoln Road is a white pine. Looking to your left, you will see the row of pines along the drive to the Pierce House, and farther right, three willows. These will be discussed as we approach them. Continue along the wall towards the driveway entrance from Weston Road.

Black Locust



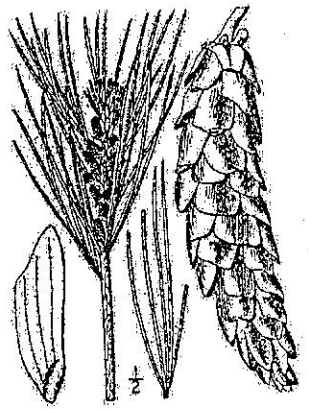
10. Close to the main driveway of the Pierce House, past several Norway maples and smaller recently planted oaks, you pass two **Black Locust** trees (*Robinia pseudoacacia*), very close to the stone wall. These trees have very deeply grooved bark with heavy, coarse ridges. The leaves are pinnately compound with up to twenty very small, rounded, smooth-edged leaflets. In spring, the locust produces large bunches of blossoms like sweet peas and the seeds will develop in bean-like pods, 2-4 inches long. Other key features include the "zig-zag" appearance of the branches, and the stout, paired *spines* at the *nodes* along the branches. Black locusts, peas, and beans all belong to the same botanical family, the Legume family.

American Basswood



11. The first tree in the line of trees along the driveway is an **American Basswood** (*Tilia americana*). Note its large, simple, heart-shaped leaves with little teeth along the leaf margins and an asymmetrical (uneven) base. The leaves near the ground are huge compared with those higher up. They need the extra surface area in order to absorb more of the sun's energy. The fruit of the basswood is very distinctive: little clusters of tiny white-yellowish flowers develop into clumps of 10-15 tiny seeds, which are attached by a stem to the middle of a long, narrow leaf-like structure (a *bract*). Depending on the time of your visit, you may see many of these on the tips of the branches. Because the nectar of its flowers is important for bees, this tree has also been known as the beetree linden.

White Pine

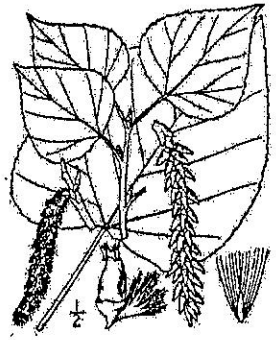


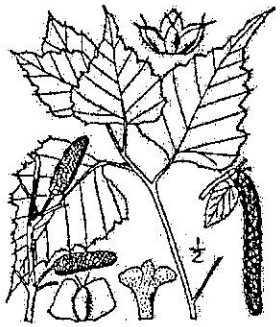
12. Walk left of the basswood, down the driveway past many large hemlocks and a second basswood, to the grove of pine trees. Notice that there are two species here, alternately placed: white pine and red pine. First consider the **White Pine** (*Pinus strobus*). From a distance note its fluffy-looking, blue-green appearance, and with mature trees, the asymmetrical silhouette and horizontal branches. The needles on all pines are attached to the branch in small bundles, and on the white pine, there are five needles per cluster, each about five inches long, (and, conveniently, there are five letters in "white"). The seeds of the

18. The tree immediately next to the blue spruce and looking similar is a **Balsam Fir** (*Abies balsamea*), New Englanders' favorite Christmas tree. If you brush your hand against both the blue spruce and the balsam fir, you will quickly discover how soft the balsam is compared to the spruce; and if you crumple a few needles, you will immediately sense its familiar aroma. The needles, attached singly to the branch, are flat and blunt with two fine white lines underneath. Unlike firs, when the needles fall they leave smooth, circular needle-scars. The cones are 1 to 3", barrel-shaped, reside upright on the branches, and leave a noticeable spike after disintegrating. This tree is native to northern New England and Canada, and is common there, especially in deep, moist woods. This specimen was planted here, where it appears to be doing very well by the pond.

19. The next tree in this cluster before the shed is a small **Quaking Aspen** (*Populus tremuloides*). Observe the alternate, simple, finely toothed, roundish leaves with rather long flattened petioles (which cause the leaves to shake or "tremble" in the breeze). The bark is typically a smooth, pale, greenish gray; and the buds are conical, sharp-pointed, smooth, and a shiny dark reddish-brown. This tree grows quickly and is often seen colonizing old fields and meadows.

Quaking Aspen





Gray Birch

20. Right next to the aspen is a small **Gray Birch** (*Betula populifolia*). The leaves are alternate, simple, coarsely toothed, and triangular in shape with a long, tapering tip and an almost flat base. The bark is typically a chalky white similar to paper birch, but nonpeeling; and there are often triangular black patches present just below the branches. Gray birches are generally short-lived, small trees that often grow in thickets in fields and along wood edges.

If you are here in summertime, notice the healthy clump of jewelweed (*Impatiens capensis*) growing near the shed. This plant has a juice which is said to be very effective in counteracting the effects of poison ivy. So if you have accidentally touched poison ivy, look for some jewelweed, crush it, and spread the juice on the affected area. Supposedly this only works within the first 1-3 hours after you have touched the ivy, however.

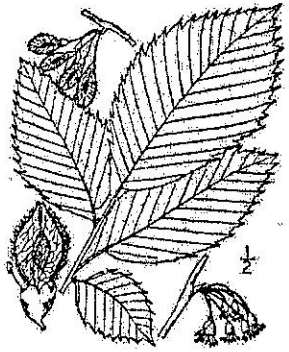
And speaking of poison ivy (*Toxicodendron radicans*), please be wary of all three-leaved plants on the ground or on tree trunks. It is very difficult to control this native vine as it grows very rapidly. It is often abundant underneath the hemlock trees and along the stone wall. Poison ivy leaves are compound, with three leaflets and a long petiole. It is never toothed or serrated, but often has several notches in the leaflets. While new leaves are reddish and shiny, the mature leaves can become very large, are a solid green and NOT shiny.

21. Growing in the midst of the jewelweed is a **Douglas Fir** (*Pseudotsuga menziesii*), another native of the western US, specifically the moist Pacific coast. This tree was planted in honor of a long-time Lincoln resident, Douglas M. Burckett, as indicated by the granite plaque in the grass near the tree. The Douglas fir has flat needles that surround the branch on all sides. It also has distinctive cones with three-pronged bracts protruding from under each scale. In the west, these trees can grow to large sizes and are valued for their timber.

Just past and behind the shed is a thriving mass of oriental bittersweet (*Celastrus orbiculatus*). This is one of our most invasive exotics. Its bright orange berries are beautiful in the winter, so are unfortunately used by people for wintertime decoration. Birds also enjoy the berries, so they are spread far and wide, by both people and birds. The vine climbs up trees, encircling and eventually strangling the trunk, and can eventually cover an entire tree, blocking out the sunlight that the tree needs to survive. If you find this vine growing on your property or elsewhere, it is prudent to remove as much as you can.

22. At the far end of the pond is a lovely large **American Elm** (*Ulmus americana*). Because its branches grow vertically and then arch away from the tree, from a distance, its silhouette has been said to resemble a vase. If you can reach a leaf, note that the leaves are simple, alternate, "sandpapery," and are often hairy below. Their edges are "doubly serrate," that is there are little teeth on top of the bigger teeth. Note also that the leaf bases are asymmetrical: one side of the leaf base is considerably larger than the other. This tree once graced most of our New England roads and village greens. However in the 1950s to 1970s, a fungus was brought in accidentally from Asia by beetles; the beetles carried the fungus into the tree trunks and killed many of our large elms. It is unusual – and wonderful - to find one as large as this tree today.

American Elm



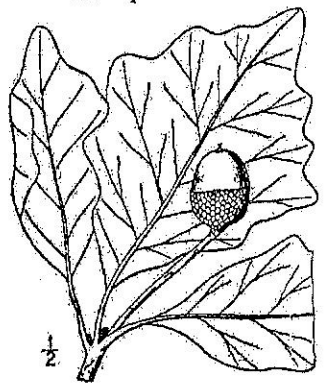
23. Well past the elm tree, standing alone in the lawn, off to the left, is a stately **Pin Oak** (*Quercus palustris*). From a distance note its silhouette: the upper branches reach upwards, the middle branches are horizontal, and the lower branches angle downwards, this pattern is typical of pin oaks. Observe the small, stiff, "pin-like" appearance of the twigs. The leaves of the pin oak are relatively small (compared to other oaks) and strongly indented, with pointed, bristle-tipped lobes. The acorns are smaller than most other oaks as well, and have thin, "saucer-shaped" caps similar to the red oak's. This tree favors acidic soils; it is easy to transplant, survives well in poorly drained soils, and is therefore popular with building contractors.

24. To the left of the pin oak is a grove of trees dominated by hemlocks. Beneath the hemlocks, at the near end, are two struggling **Flowering Dogwoods**, (*Cornus florida*). Note the pattern of opposite branching. The leaves are "simple," and the prominent veins arch gently toward the leaf tip, so that the ends of the veins run parallel to the leaf margin. Observe the unique buds, which are conspicuously stalked and roundish. The "flowers" of the dogwood are actually the protective "bracts," which protect the terminal bud during the winter. In the spring, the bracts enlarge, gain their distinctive white or pink color, and unfold to reveal the small flowers developing within. The trees flower before the leaves appear, unlike the exotic but also common, kousa dogwood, which produces its blossoms after the leaves unfold.

Continue past the dogwoods around this island of trees counterclockwise, with the trees on your left.

25. You will soon encounter on your left two large **Beech** trees, (*Fagus sp.*) and underneath, a thriving patch of poison ivy. Therefore we urge you to study these trees from the edge of the lawn, without going close to the trunks. These beeches exhibit the distinctively smooth gray bark typical of most beech trees. The leaves are alternate, simple, coarsely toothed, dark green, very smooth/shiny on top, and have strikingly straight veins extending out from the central midrib. The leaf margins have tiny points at the tip of each lateral vein. Notice again the long, narrow, cylindrical, light brown buds. This common tree, which grows from Maine to Florida, spreads through suckers, and therefore can regenerate freely (if the main tree is cut or burned, for example).

Swamp White Oak



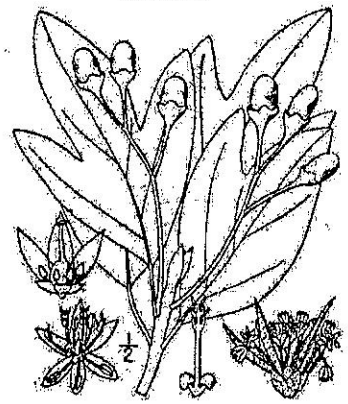
26. You will see immediately, a little distance away from this "island," towards Town Hall, a magnificent oak tree, whose trunk at breast height is about three feet wide. This is a **Swamp White Oak**, (*Quercus bicolor*). Notice the light gray fissured bark on the trunk, and how it turns papery and scaly on the branches higher up. If there are still leaves on the tree, notice that they are alternate, simple, and broadest in their upper half, with shallow, rounded lobes (unlike the deep, pointed lobes of the other oaks we've seen). Also observe that the leaves are very dark green and shiny above, while also being particularly lighter and whitish below (due to a covering of fine hairs). The buds, like other oaks, are

cluster at the ends of twigs, but are smaller and blunt. This tree is often found in nature growing along riverbanks and in wetter areas.

As you turn back towards the fields of Pierce Park, you can walk by a large, mature black walnut a little up the hill towards Lincoln Road.

27. As you head back towards the flower pot and walk past the last island of hemlocks up by the road, you will discover many **Sassafras** trees (*Sassafras albidum*) reaching out among the larger hemlocks. These trees are distinctive in that there are three differently shaped leaves on every tree. The leaves may be unlobed, "mitten"-shaped, or three-lobed! The flowers in spring are small, yellow-green and develop into stalked, ovoid, blue fruits, about 1/3 of an inch long. Also notice the smooth, green, fragrant twigs. The sassafras commonly grows to twenty feet, is rarely over forty-five feet in height.

Sassafras



In the past, this tree has had many uses: the aromatic twigs, bark, leaves and roots were used to make soaps, and the roots and bark in teas. Even today many people enjoy tasting the twig tips for their spicy flavor.

This is the end of your tour. We hope that you have enjoyed your walk on this beautiful Town-owned land, and that you have gained some new information about some of our common trees. The Lincoln Conservation Commission and the Library Trustees would appreciate any comments or suggestions that you may have concerning this brochure and the walk. The Lincoln Conservation Department can be reached at (781) 259-2612.

Remember that this land is here for the benefit and pleasure of all Lincoln citizens, and please come again. Thank you.

Glossary

Alternate - arrange singly at intervals along twigs
Bract – a petal-like structure occurring beneath a flower or fruits
Branchlets – except for the twig, the smallest segment of a branch
Bud – a young, undeveloped leaf, flower, or shoot, typically covered tightly with small scales
Compound (leaf) - a leaf whose blade is divided into multiple, smaller leaflets
Coniferous – of the typically needle-leaved or scale-leaved, cone-bearing trees such as pines, spruces, and firs
Deciduous – leaves fall off seasonally, typically in autumn; shedding or losing foliage at the end of the growing season
Entire – with a continuous unbroken edge, not toothed
Evergreen – having foliage that persists and remains green year-round
Leaflets – a leaf like subdivision or single segment of a compound leaf
Nodes – the point on a branch from which other branches or leaves arise, often swollen in shape
Opposite - occurring in opposing pairs, two at a node
Palmate – major lobes, leaflets, or veins radiating from a singe point, having a shape similar to that of a hand with the fingers extended
Petiole - the stalk supporting a leaf
Pinnate - consisting of several leaflets, lobes, or veins arranged on each side of a common central petiole or vein in a feather-like fashion
Simple (leaf) - a leaf with a single blade
Spines - thorns
Terminal - growing or appearing at the end of a stem or branch
Whorled – arranged in circles around a twig

Drawings from: USDA-NRCS PLANTS Database / **Britton, N.L., and A. Brown. 1913.** ***Illustrated flora of the northern states and Canada.*** **Vol. 1&2.** Courtesy of the Plants Database Website at http://plants.usda.gov/index.html

Brochure produced by Mary Van Vleck and Sean Hale