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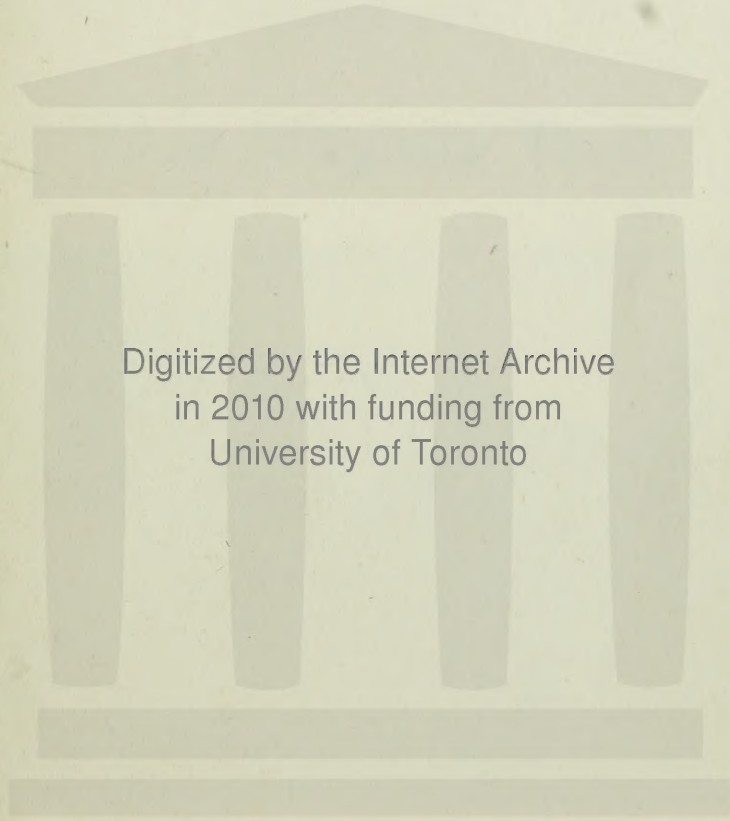

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Bulletin 175 September, 1920

Agricultural Experiment Station
College of Agriculture, West Virginia University

JOHN LEE COULTER, Director,
MORGANTOWN

West Virginia Trees

A Stand of Young White Pines.

BY
A. B. BROOKS

173136
4/8/22

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PREFACE

The native trees of West Virginia number about 125, of which 101 are described and illustrated in this publication. The omissions are principally species of unimportant willows and hawthorns which can be identified only by specialists. Some of the more common introduced trees are mentioned in the family descriptions on pages 13 to 27, and a few are illustrated in groups after the descriptions of native species. It has been the object to simplify everything in this publication as much as possible. The meaning of unfamiliar words in the keys and descriptions can be learned by consulting the glossary beginning on page 237.

The keys are based principally on characters of leaf and fruit since these are usually available for study during several months in the summer and fall. The text, however, contains brief descriptions of the flowers which often denote most surely the natural relationship of species.

Scientific names and the order of arrangement are essentially those of the seventh edition of Gray's New Manual of Botany.

The drawings were made by the writer from specimens collected during the past few years.

This bulletin has been prepared mainly for those who desire to become more familiar with our native and introduced trees, but who do not have access to the larger publications on the subject. It will serve also as a basis for future forestry studies in the State. Popular interest in forestry, which is sadly lacking in West Virginia at this time, will be stimulated by a more general and more intimate acquaintance with the different kinds of trees. It is hoped that this bulletin will help to create the needed interest. If difficulty is found in determining the name of any tree, specimens mailed to the West Virginia Agricultural Experiment Station, Morgantown, West Virginia, will be named, if possible, without charge.

— *A. B. BROOKS.*

Morgantown, W. Va.
September 1, 1920.

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West Virginia Trees

By A. B. BROOKS

KEY TO THE GENERA

(Based on leaves and fruit)

a.—Leaves simple.

b.—Leaves needle-shaped, awl-shaped, or scale-like, usually evergreen; fruit a cone or berry-like.

c.—Leaves in bundles of 2-many; fruit a cone.

Leaves in bundles of 2-5, evergreen . **Pinus**, p. 13.

Leaves in clusters of 8-many on short spur-like branchlets, deciduous in autumn . . . **Larix**, p. 13.

c.—Leaves not in bundles, solitary.

d.—Leaves alternate or whorled.

Leaves 4-angled, harsh, needle-shaped . **Picea**, p. 13.

Leaves flat, whitened beneath, ½-1¼ inches long, sessile, aromatic; cones 2-4 inches long with deciduous scales; bark of twigs smooth, and on old trunks with raised resin-filled blisters . . . . . **Abies**, p. 14.

Leaves two-fifths to one-half inch long, short-petioled, flat and whitened beneath; cones about ¾ inch long with persistent scales; bark of twigs rough . . . . . **Tsuga**, p. 14.

d.—Leaves opposite.

Leaves scale-like, decurrent on the stem, all of one kind; twigs flattened; fruit a small elongated cone with 8-12 over-lapping scales . **Thuja**, p. 14.

Leaves of two kinds, either scale-like or awl-shaped, not decurrent on the stem; twigs nearly terete; fruit a bluish, berry-like strobile. **Juniperus**, p. 14.

b.—Leaves flat and broad, usually deciduous.

c.—Leaves alternate or clustered.

d.—Leaves without lobes.

e.—Leaves with margins entire or slightly undulate.

f.—Leaves deciduous.

Leaves 2-5 inches long, oval; fruit an ovoid, blue berry-like drupe, borne 1-3 in a drooping cluster . . . . . **Nyssa**, p. 25.

Leaves 2-5 inches long, ovate; fruit a spherical, blue berry-like drupe, borne many in an upright cyme, (*Cornus alternifolia*) . . . . . **Cornus**, p. 25.

Leaves 4-6 inches long, oval; fruit an edible berry ¾-1¼ inches in diameter. . . . . **Diospyros**, p. 26.

Leaves 4-12 inches long, obovate-lanceolate; fruit banana-like, 3-5 inches long, with many flattened seeds in the yellow flesh . . . . . **Asimina**, p. 20.

Leaves 6-24 inches long, ovate-obovate; fruit a cone-like or cucumber-like cylindrical mass 2-4 inches long . **Magnolia**, p. 20.

Leaves 3-5 inches long, heart-shaped; fruit a pod 2-3 inches long . . **Cercis**, p. 23.

Leaves 4-6 inches long, oblong-lanceolate; fruit an acorn (*Quercus imbricaria*) . . . . . **Quercus**, p. 17.

f.—Leaves evergreen.

Leaves 3-4 inches long; fruit many dry spherical capsules in a corymb . . . . . **Kalmia**, p. 26.

Leaves 4-11 inches long, evergreen; fruit an oblong, dry capsule, several in umbel-like clusters . . . . . **Rhododendron**, p. 26.

e.—Leaves with margins toothed.

f.—Branches armed with stiff, sharp thorns.

Leaves 1-3 inches long, serrate or doubly serrate; fruit a small pome . **Crataegus**, p. 22.

f.—Branches not armed with thorns.

g.—Base of leaf decidedly oblique.

Leaf-blade broad, heart-shaped, serrate; fruit a spherical woody drupe on stalks attached to an oblong bract . . . . . **Tilia**, p. 25.

Leaf-blade oval, doubly-serrate, primary veins straight; fruit an oval samara . . . . . **Ulmus**, p. 19.

Leaves 2-4 inches long, serrate; fruit a small sweet purple drupe . **Celtis**, p. 19.

g.—Base of leaf nearly symmetrical.

h.—Teeth coarse, 2-5 to the inch.

Leaves smooth, oval, 3-5 inches long; fruit a small bur with weak prickles and 3-faced nuts ½-¾ inch long . . . . . **Fagus**, p. 17.

Leaves 6-8 inches long; fruit a bur with stiff prickles and 1-3 rounded, brown nuts . **Castanea**, p. 17.

Leaves 2-4 inches long, broadly ovate to sub-orbicular; fruit a small capsule falling in spring. . . . . **Populus**, p. 15.

Leaves 4-8 inches long, lanceolate to obovate; fruit an acorn . . . . . **Quercus**, p. 17.

Leaves wavy-toothed with sharp spines, evergreen; fruit a small red drupe . . . . . **Ilex**, p. 24.

Leaves 4-6 inches long, oval; fruit a short woody pod with black seeds . . . **Hamamelis**, p. 21.

h.—Teeth fine, 6-many to the inch.

i.—Leaves not doubly serrate.

Leaves 1½-2 inches long, nearly as broad, tremulous on long petioles; fruit a small capsule. (*P. tremuloides*) . . **Populus**, p. 15.

Leaves 2-6 inches long, often narrow; twigs easily separated at the joints; fruit a small capsule . . . . . **Salix**, p. 14.

Leaves 5-7 inches long, 1½-2½ inches wide, very smooth; bark acid; fruit a 5-valved capsule borne in clusters . . . . . **Oxydendrum**, p. 26.

Leaves 2-5 inches long, ovate to lanceolate; bark often bitter; fruit a drupe . . . **Prunus**, p. 22.

Leaves 3-4 inches long; fruit a red berry-like pome in clusters . . . . . **Amelanchier**, p. 22.

Leaves 3-5 inches long, nearly as wide, often heart-shaped, sometimes 2-5-lobed; fruit oblong, about 1 inch long, composed of many small drupes . . . . . Morus, p. 19.

Leaves 3-4 inches long, often doubly serrate or lobed on sterile shoots; fruit a greenish-yellow pome about 1 inch in diameter . . . . . Pyrus, p. 21.

Leaves 4-6 inches long, ovate-lanceolate; fruit 1-2 inches long, dry, 4-winged . . . Halesia, p. 26.

Leaves 4-5 inches long, ovate; fruit scarlet berry-like drupes on short stems and scattered along the branches (*Ilex monticola*) . . . . . Ilex, p. 24.

Leaves 2-5 inches long; fruit cone-like, containing many dry scales (*B. lenta*) . . Betula, p. 16.

i.—Leaves doubly serrate.

Leaves 2-4 inches long, thin; fruit a small nut enclosed in a halberd-shaped leaf-like involucre; trunk smooth and fluted. . . . . Carpinus, p. 16.

Leaves 3-5 inches long; fruit hop-like, composed of several inflated bracts overlapping and each containing a flat seed; bark brown with loose scales. . . . . Ostrya, p. 16.

Leaves 2-4 inches long; bark peeling off in papery scales; fruit oblong or ovate, 1-2 inches long, composed of numerous 3-lobed scales, bearing winged nuts . . . . . Betula, p. 16.

Leaves 1-3 inches long, sometimes serrate or lobed; twigs armed with stiff thorns; fruit a hard pome . . . Crataegus, p. 22.

Leaves 3-4 inches long, often serrate or lobed; fruit a sour yellowish pome about 1 inch in diameter . . . . . Pyrus, p. 21.

d.—Leaves lobed.

e.—Margins of lobes entire.

Leaves oval often without lobes or with 2-3 lobes, smooth, aromatic; fruit a dark blue drupe borne on a thickened red stem. . . . . Sassafras, p. 21.

Leaves broadly ovate, with truncate apex, 2 apical and 2-4 basal lobes; fruit a cone-like aggregate of dry, lance-shaped carpels. . . . . Liriodendron, p. 20.

Leaves variously lobed, some with bristle-tipped teeth; fruit an acorn . . Quercus, p. 17.

e.—Margins of lobes not entire.

Leaves thick, glossy, star-shaped, with fine pointed serrate lobes; fruit a pendulous spiny spherical head about 1 inch thick, composed of numerous capsules . . . . . Liquidambar, p. 21.

Leaves oval, pointed, often without lobes, thin, margins serrate or doubly serrate; fruit a yellowish pome 1-1½ inches thick. . . . . Pyrus, p. 21.

Leaves oval, pointed, often without lobes, thin, margins serrate or doubly serrate; fruit a pome about two-fifths of an inch thick, often red; twigs armed with thorns . . . . . Crataegus, p. 22.

Leaves often broadly ovate and not lobed, sometimes with 2-5 lobes, serrate; fruit oblong, about 1 inch long, an aggregate of many small dark purple drupes . Morus, p. 19.

Leaves nearly round in outline, 3-5 lobed, coarse sinuate-toothed; fruit a round pendulous head 1 inch thick; composed of many hairy achenes . . . . . Platanus, p. 21.

c.—Leaves opposite.

d.—Leaf margins entire or slightly undulate.

Leaves 3-5 inches long, ovate; fruit a bright red ovoid drupe, two-fifths inch long in small bunches . . . . . Cornus, p. 25.

Leaves 4-8 inches long, ovate; fruit a dark blue ovoid drupe, ¾ of an inch long, in drooping, loose clusters . . . . . **Chionanthus**, p. 27.

d.—Leaf margins not entire.

Leaves 3-5 lobed, finely or coarsely toothed, fruit a drooping samara . . . . . **Acer**, p. 24.

Leaves not lobed, 1-3 inches long, oval, finely toothed; fruit a dark blue drupe borne in clusters . . . . . **Viburnum**, p. 27.

a.—Leaves compound.

b.—Leaves alternate.

c.—Margins of leaflets entire.

Leaves pinnate, 8-14 inches long; fruit a pod 2-4 inches long; limbs bearing short spines in pairs at the nodes . . . . . **Robinia**, p. 23.

Leaves 3-foliate; fruit a samara, winged all around, in drooping clusters . . . . . **Ptelea**, p. 23.

Leaves pinnate with 9-21 leaflets; fruit small, red or white dry drupes in dense upright or loose drooping clusters . . . . . **Rhus**, p. 23.

c.—Margins of leaflets not entire.

Leaves pinnate with 11-23 serrate leaflets; fruit a large sculptured nut . . . . . **Juglans**, p. 15.

Leaves odd-pinnate, with 3-11 leaflets; fruit a smooth or angled nut . . . . . **Carya**, p. 15.

Leaves odd-pinnate, with 13-17 lance-shaped leaflets; fruit a small red acid pome, borne many in a flat-topped cluster. (*Pyrus Americana*) . **Pyrus**, p. 21.

Leaves doubly compound with many ovate serrate leaflets; fruit a small ovoid black berry in large branching clusters; twigs and trunk armed with sharp spines . . . . . **Aralia**, p. 25.

b.—Leaves opposite.

c.—Leaves pinnate, fruit a samara.

Leaflets, 3-5, samaras paired . . . . . **Acer**, p. 24.

Leaflets, 5-11, samaras, not paired . **Fraxinus**, p. 26.

c.—Leaves digitate, fruit a globular capsule containing large brown nuts . . . . . **Aesculus**, p. 25.

PINACEAE—THE PINE FAMILY

The Pine family comprises nearly 300 species belonging to 34 genera, distributed principally in temperate regions throughout the world. This family is of great economic importance, supplying a larger quantity of lumber than any other family as well as enormous amounts of tannin, turpentine, resin, tar and pitch. Many of its members also are highly useful for ornamental purposes.

The leaves of the trees and shrubs belonging to the Pine family are needle-shaped, awl-shaped, or scale-like, and are usually persistent for more than one year, the American Larch or Tamarack being the only exception to this rule in West Virginia. The seeds are borne either in true cones, or in berry-like fruits such as are produced on the cedars.

The following are the genera of Pinaceae represented in West Virginia:

Pinus.—Of the 34 species of pines native to North America only 5 are found in West Virginia. These are described and illustrated on following pages. Besides the native pines several introduced species are planted on lawns and in parks. The most common of the exotics are Red Pine (*Pinus resinosa*, Ait.) and Scotch Pine (*Pinus sylvestris*, L.), the former having smooth cones about 2 inches long and leaves 4-6 inches long, two in a bundle, and the latter having cones 1½-2½ inches long, and leaves 1½-3½ inches long, two in a bundle.

KEY TO THE SPECIES OF PINUS

Leaves 5 in a cluster; cones smooth, 4-10 inches long . . P. strobus, p. 29.
Leaves fewer than 5 in a cluster; cones less than 4 inches long.
  Leaves 3 in a cluster; cones with prickles . . . . . P. rigida, p. 31.
  Leaves 2 in a cluster.
    Leaves stiff, sharp-pointed, 2-4 inches long; cones 2-4 inches long with very thick sharp spines . . . . . P. pungens, p. 33.
    Leaves twisted 1½-3½ inches long; cones 2-3 inches long; scales terminated with prickles . . . . P. virginiana, p. 37.
    Leaves slender, not twisted, 3-4 inches long, often 3 in a cluster, especially near the ends of twigs . . . P. echinata, p. 35.

Larix, (page 39).—There are 10 known species of Larches found principally in the colder regions of the northern hemisphere. Three of these are indigenous to North America and one extends as far south as the northern part of West Virginia. Unlike most of the members of the Pine family the Larches shed their leaves each fall. The European Larch (*Larix decidua*, Mill.) is frequently planted for ornamental purposes. It can be distinguished from the native species by its much larger cones.

Picea, (page 41).—Eight of the 18 or 20 known species of Spruces are native to North America and one species is found in West Virginia. The 2 introduced Spruces most commonly planted are

Norway Spruce (*Picea Abies,* (L.) Karst.) and Colorado Blue Spruce (*Picea pungens,* Engl.). The Norway Spruce can be distinguished from our native species by its much larger cones, and the Colorado Blue Spruce by its blue-green foliage.

Tsuga, (page 43).—This genus comprises 8 species, 4 of which grow in Asia and 4 in North America. One of the 2 Eastern Hemlocks is common in West Virginia, the other (*Tsuga caroliniana,* Engl.) grows from the mountains of Virginia south to Georgia.

Abies, (page 45).—The 25 known species of Firs are found principally in cold and temperate regions. Of the 10 species in North America only 2 are found east of the Rocky Mountains and 1 in West Virginia. The other Eastern Fir is *Abies balsamea,* (L.) Mill; which does not extend southward into this State.

Thuja, (page 47).—Four species of Arbor Vitae are known, 2 of which are native to North America, one in the West and the other in the East. The limited distribution in West Virginia of the latter is given on the page describing this species.

Juniperus, (page 49).—This is a large genus comprising 40 trees and shrubs. Of these, 16 species are found in North America. Red Cedar, described in this bulletin, is common in West Virginia and *Juniperus communis,* L. has been reported from Wood, Mineral and Fayette counties.

Other members of the Pine family which may be seen occasionally planted on lawns in West Virginia are the following:

White Cedar (*Chamaecyparis thyoides,* (L.)B.S.P.)

Bald Cypress (*Taxodium distichum,* Rich.)

Ginkgo Tree (*Ginkgo biloba,* L.) and several other species and varieties of Junipers, Pines, Spruces, and Yews.

SALICACEAE—THE WILLOW FAMILY

The Willow family, which includes also the Poplars, comprises about 200 species, a large proportion of which are distributed in temperate and arctic zones. Several shrubby species extend far into the arctic regions.

On the whole this family is not important commercially, but with the disappearance of the more valuable kinds of trees the rapid-growing and easily-propagated Willows and Poplars are receiving more attention.

The 2 genera belonging to this family are given below:

Salix, (page 51).—This genus comprises no fewer than 175 known species, 100 of which are native to North America. The following species are reported from West Virginia: *S. nigra,* Marsh., *S. amygdaloides,* And., *S. discolor,* Muhl., *S. humilis,* Marsh., *S. cericea,* Marsh, and *S. cordata,* Muhl. Doubtless several other species occur

in the State. The task of determining the different species of Willows is one for the specialist who has devoted much time to their study. For this reason only one species, the common Black Willow of our stream banks, is described and illustrated in this bulletin. The most common introduced Willows are the well-known Weeping Willow (*Salix babylonica*, L.) and a yellow-twigged variety of the White Willow (*Salix alba*, var. *vitellina*, (L.) Koch.).

Populus.—The species of Poplars and Aspens number 27 of which 19 are native to North America and 3 to West Virginia. White Poplar (*P. alba*, L.) and Balm of Gilead (*P. candicans*, Ait.) are the principal introduced species planted in the State.

KEY TO THE SPECIES OF POPULUS

Leaves broadly deltoid, acuminate, marginal teeth somewhat incurved; trees of stream banks and extensively planted along streets . . . . . P. deltoides, p. 57.
Leaves ovate to sub-orbicular
Leaves coarsely sinuate-toothed, 3-5 inches long . . . . . P. grandidentata, p. 55.
Leaves finely serrate, less than 3 inches long . . . P. tremuloides, p. 53.

JUGLANDACEAE—THE WALNUT FAMILY

The Walnut family, with its 6 genera and 35 species, is represented in North America by 2 genera (Juglans and Carya) and 19 species. This family is a very important one, contributing much of the costliest and most durable timber as well as large quantities of edible nuts. The wood of Black Walnut is especially adapted to fine cabinet work and that of the Hickories to the manufacture of vehicles, handles, etc., where strength and flexibility are desired.

Juglans.—The 15 species comprising this genus are found principally in the north temperate zone. Five species are native to North America and two are found in West Virginia. The English Walnut (*Juglans regia*, L.) which has been introduced and widely planted in the United States yields the valuable Circassian Walnut woods used in the manuacture of fine furniture as well as the walnuts sold in our markets.

KEY TO THE SPECIES OF JUGLANS

Leaflets 11-17, often viscid-hairy; pith chocolate-brown; fruit elongated, sticky-hairy . . . . . J. cinerea, p. 59.
Leaflets 13-23, not viscid-hairy; pith cream-colored; fruit globose, not sticky-hairy . . . . . J. nigra, p. 61.

Carya.—The Hickory species number about 10, all of which are native to that part of North America lying east of the Rock mountains. At least 5 of these are found in West Virginia. *Carya microcarpa*, Nutt., not described herein is reported from Fayette County.

The Pecan Hickory (*Carya illinoencis* (Wang.) K. K.), a southern species prized for its nuts, is occasionally planted.

KEY TO THE SPECIES OF CARYA

a. Bark of trunk not deeply furrowed or shaggy; husk of fruit less than ⅛ inch thick.
  Leaflets usually 5-7, glabrous beneath; the upper 2-2½ inches broad; kernel of nut sweet . . . . **C. glabra, p. 69.**
  Leaflets usually 7-11, somewhat downy beneath, the upper 1-1½ inches broad; kernel of nut bitter. **C. cordiformis, p. 71.**

a. Bark of trunk deeply furrowed or shaggy; husk of fruit more than ⅛ inch thick.
  Leaflets 5-7, scurfy or pubescent; bark rough but not shaggy; buds densely hairy . . . . . **C. alba, p. 67.**
  Leaflets usually 7; nuts 1¼-2 inches long, pointed at both ends, dull white; bark shaggy . . . . . **C. laciniosa, p. 65.**
  Leaflets usually 5; nuts smaller, rounded or notched at the base, white, thin-shelled; bark shaggy . **C. ovata, p. 63.**

BETULACEAE—THE BIRCH FAMILY

The 6 genera and about 75 species belonging to this family are principally confined to the higher latitudes of the northern hemisphere. In North America there are 5 genera and about 30 species, of which the 5 genera and at least 9 species grow in West Virginia. The Common Hazelnut (*Corylus americana,* Walt.) and the Beaked Hazelnut (*Corylus rostrata,* Ait.) are both common shrubs of the State. The Smooth Alder (*Alnus rugosa,* (DuRoi) Spreng.) and the Hoary Alder (*Alnus incana,* (L.) Moench.) are both to be found, the former abundant along our streams, and the latter rare in upland swamps. *Alnus alnobetula* (Ehrh.) K K. is also reported from Greenbrier, Fayette, and Randolph counties.

This family produces products of great value. The wood of Birches is used extensively for furniture and interior finish, and for fuel. Black Birch supplies a volatile oil of considerable importance. The wood of some of the Alders is becoming valuable on account of its use in the manufacture of gunpowder, and the fruits of the Hazelnuts bring a good price on the market. The following are our tree genera:

Ostrya, (page 73).—Four species of Hop Hornbeam or Ironwood are known, 2 being found in North America. One of these is limited in its range to the Grand Canon of the Colorado, in Arizona; the other is widely distributed and is common locally in West Virginia.

Carpinus, (page 75).—Eleven species of Hornbeams are native to Asia and Europe and only 1 species is found in North America. This is abundant in most parts of West Virginia.

Betula. This genus comprises 25 known species of trees and 10 species of shrubs. About 15 of these are native to North America

and 3 to West Virginia. Besides our native species the Gray Birch (*Betula populifolia*, Marsh.) and varieties of White Birch (*Betula alba*, L.) are often planted for ornamental purposes.

KEY TO THE SPECIES OF BETULA

Bark of the trunk light-colored with thin layers curling or peeling off.
- Outer bark yellowish, fruits usually sessile; leaves usually rounded at base; twigs with slight wintergreen taste . . **B. lutea, p. 79.**
- Outer bark reddish-brown, inner bark tinged with red; fruits on slender stalks; leaves usually wedge-shaped at base; not aromatic . . . . . **B. nigra, p. 81.**

Bark of trunk rough, dark gray, without thin outer layers; bark of twigs with wintergreen taste . . . . . **B. lenta, p. 77.**

FAGACEAE—THE BEECH FAMILY

There are 6 genera and about 400 species of trees and shrubs belonging to the Beech family of which 5 genera and about 60 species are native to North America. Fourteen species of Oaks, 2 species of Chestnuts, and 1 species of Beech occur in West Virginia.

This large family is second in importance only to the Pine family and in some respects surpasses it. Nearly all its members, especially the various kinds of oaks, produce wood of superior quality and adapted to a great variety of uses.

Fagus, (page 83).—This genus comprises, in the world, 5 species, only 1 of which is found native in America. The others are Asiatic and European species. The European Beech (*Fagus sylvatica*, L.), and its varieties having purple leaves, cut leaves or pendent branches are often planted for ornamental purposes.

Castanea, (pp. 85, 87).—Of the 5 or more species of chestnuts belonging to this genus, none is found in the western part of North America and 3 species are native to the eastern part of the United States. *Castanea alnifolia*, Nutt., is a shrub found in the southern Atlantic states. The European Chestnut (*Castanea sativa*), the Japanese Chestnut (*Castanea Japonica*) and the Chinese Chestnut (*Castanea mollissima*) are all planted in this country for their nuts. The Japanese and Chinese species are more or less resistant to the chestnut bark disease and for this reason they and their hybrids with our native species are likely to receive much attention from nut-growers. The common Chestnut and the Chinquapin, both of which are natives of West Virginia, may be exterminated by the disease mentioned above.

Quercus.—The Oak genus comprises 300 known species in the world. Of these about 55 are indigenous to North America and 14 to West Virginia. The Oaks belong to two classes, namely, those that mature their acorns in one season and those that mature them

in two. The West Virginia species are grouped below according to their classes:

White Oak Class:

1.—White Oak (*Quercus alba*).
2.—Post Oak (*Quercus stellata*).
3.—Bur Oak (*Quercus macrocarpa*).
4.—Swamp White Oak (*Quercus bicolor*).
5.—Yellow Oak (*Quercus Muhlenbergii*).
6.—Chestnut Oak (*Quercus Prinus*).

Black Oak Class:

1.—Red Oak (*Quercus rubra*).
2.—Pin Oak (*Quercus palustris*).
3.—Scarlet Oak (*Quercus coccinea*).
4.—Black Oak (*Quercus velutina*).
5.—Spanish Oak (*Quercus falcata*).
6.—Scrub Oak (*Quercus ilicifolia*).
7.—Black Jack Oak (*Quercus marilandica*).
8.—Laurel Oak (*Quercus imbricaria*).

The following key will assist in distinguishing the species.

KEY TO THE SPECIES OF QUERCUS

a. Apex of leaves or their lobes sharp-pointed, usually bristle tipped; acorn maturing at end of second season.

b. Leaves entire, not lobed.
Leaves often pubescent beneath . . . . **Q. imbricaria, p. 115.**

b. Leaves lobed.

Leaves very broad toward apex, with shallow lobes, brownish tomentose beneath . . . . **Q. marilandica, p. 113.**

Leaves not uniform, lobes usually long and lanceolate, often scythe-shaped . . . . . **Q. falcata, p. 109.**

Leaves 2-5 inches long, densely white pubescent beneath; tree small, often a shrub . . . . . **Q. ilicifolia, p. 111.**

Leaves with sinuses extending not over half way to the mid-rib, dull green above; inner bark pinkish; acorn cup saucer-shaped . . . . . **Q. rubra, p. 101.**

Leaves of upper branches similar in shape to those of *Q. rubra* but bright green above; those on lower limbs and young trees often with lobes rounded; inner bark yellow; acorn cup top-shaped . . . . . **Q. velutina, p. 107.**

Leaves with sinuses extending at least ⅔ of the way to mid-rib; acorn cup large and top-shaped . **Q. coccinea, p. 105.**

Leaves similar to those of *Q. coccinea* but with acorn cup small and saucer-shaped; a tree of low grounds with lower branches drooping . . . . . **Q. palustris, p. 103.**

a. Apex of leaves or their lobes without bristle tips usually rounded; acorns maturing at end of first season.

b. Leaves not deeply lobed.

Leaves coarsely sinuate-crenate; acorns on stems 1-3 inches long; bark of branches with papery scales turning back . . . . . Q. bicolor, p. 95.

Leaves coarsely crenate-toothed; acorns 1-1½ inches long, glossy, cup deep and thin; bark of trunk deeply furrowed, dark gray or black . . . . . Q. Prinus, p. 99.

Leaves equally and sharply coarse-toothed; acorns less than an inch long; bark of tree not deeply furrowed, light gray, resembling that of White Oak . . . . . Q. Muhlenbergii, p. 97.

b. Leaves deeply lobed.

Leaves 6-12 inches long, cut near the middle almost to mid-rib by two opposite rounded sinuses, 5-7 lobed, the terminal lobe large; acorn ¾-1½ inches long; cup deep, fringed around the outer rim . Q macrocarpa, p. 93.

Leaves thick, leathery, usually 5-lobed, bright yellow-green above; acorns small, ½-¾ inch long . . . . . Q stellata, p. 91.

Leaves 3-9 lobed, medium thin; acorn ¾-1¼ inches long . . . . . Q alba, p. 89.

URTICACEAE—THE NETTLE FAMILY

The trees and shrubs alone belonging to the Nettle family number 1000 or more, most of which are tropical. The herbaceous representatives of this family in West Virginia are mostly unimportant weeds, but the 3 genera and 4 species of trees have considerable commercial value and are attractive ornamentally.

Ulmus, (pp. 117, 119).—There are about 15 known species of Elms of which 6 are native in North America and 3 in West Virginia. The English Elm (*Ulmus campestris,* L.) is planted for ornamental purposes. The Cork Elm (*Ulmus racemosa,* Thomas) is reported from Summers, Monroe, and Randolph counties.

Celtis, (page 121).—There are about 60 species of Hackberries, 9 being natives of North America and 2 natives of West Virginia. Besides the species herein described *Celtis pumila,* Pursh, a shrubby variety, grows at Harpers Ferry and other stations in the eastern part of the State.

Morus, (page 123).—About 10 species of Mulberries are known, of which 3 are native to North America and 1 to West Virginia. The White Mulberry (*Morus alba,* L.) a native of Asia, introduced to furnish food for silk worms, has become established in many sections.

The Osage Orange (*Maclura pomifera,* (Raf.) Sch.), a member of this family found native in the southwestern states, has been introduced into many sections where it is planted for hedges.

Paper Mulberry (*Broussonetia papyrifera,* Vent.), a Japanese species, is reported from Jefferson, Berkeley, Kanawha, and other counties. The Common Fig Tree (*Ficus Carica,* L.) is occasionally found in the eastern part of the State where it has been planted.

MAGNOLIACEAE—THE MAGNOLIA FAMILY

The Magnolia family, comprising about 10 genera and 85 species of trees and shrubs, is represented in North America by 4 genera, two of which contain only shrubs. The other two include the valuable Magnolias and Tulip Tree which not only produce large quantities of choice lumber but are among the most desirable of our ornamental trees.

Magnolia, (pp. 125, 127, 129).—Most of the 25 species of Magnolias are tropical only one venturing as far north as southern Canada. Three species are native in West Virginia. *Magnolia virginiana,* a fragrant-flowered species growing farther east and south, is sometimes planted in West Virginia but is not hardy. Several shrubby and arborescent Chinese and Japanese species are also grown for ornamental use.

Liriodendron, (page 131).—The Chinese *Liriodendron chinensis* and our common Tulip Tree are the only known species belonging to this genus.

ANONACEAE—THE CUSTARD APPLE FAMILY

This family is essentially tropical, only a few of the 600 species being found in temperate regions. It has 2 genera, *Asimina* (page 133) and *Anona,* the former having 5 species of shrubs in the south Atlantic and Gulf states, and one tree growing in the eastern half of the United States. *Anona* is a tropical genus.

The trees of this family are small and the wood has no commercial value. The fruit of our Common Pawpaw is sweet and edible, but to many persons distasteful. The tree is highly ornamental and interesting when growing singly or in groups.

LAURACEAE—THE LAUREL FAMILY

The Laurel family, with about 40 genera and nearly 1000 species, is represented in North America by 6 genera, of which 4 are arborescent. Most of the species are tropical. The 2 genera represented in West Virginia are *Sassafras*, (page 135) and *Benzoin*, the latter having 1 shrubby species, the common Spice Bush. The Sassafras described herein is the only member of this genus in North America Another species is found in China.

The members of this family are aromatic trees and shrubs, none of which is important as a wood producer. Some of them possess medicinal properties and all have ornamental value.

HAMAMELIDACEAE—THE WITCH HAZEL FAMILY

The Witch Hazel family comprises about 18 genera with 50 species most of which are native in Asia, South Africa and North America. Of the 3 North American genera 2 are arborescent. The genus *Hamamelis* (page 137) has 2 species in Asia and 1 herein described. *Liquidambar* (page 139) also comprises 2 Asiatic and 1 North American species, the latter being found in West Virginia.

The species produce hard, dark-colored and handsome wood.

PLATANACEAE—THE PLANE TREE FAMILY

The Plane Tree family has a single genus, *Platanus,* (page 141) with about 7 species, 3 of which are native to North America and 1 to West Virginia. Of the exotic species the Old World *Platanus orientalis,* L. is frequently planted along streets for shade.

ROSACEAE—THE ROSE FAMILY

The Rose family with about 90 genera and 1,500 species is one of the largest and most important families of plants, including the apple, pear, cherry, plum, quince, raspberry, blackberry, and strawberry. About 90 species, 30 or more of which are trees, are found in West Virginia. The genera which include our tree species are given below:

Pyrus, (pp. 143, 145). This genus comprises about 40 species of trees and shrubs, 10 of which are native to North America and 2 or more to West Virginia. The apple and pear, introduced from Europe, are placed by some authors under the genus *Malus*, and Mountain Ash under the genus *Sorbus*. The latter is included under *Pyrus* in this bulletin. The European Mountain Ash (*Pyrus aucuparia,* (L.) Ehrh.) is often planted for ornamental purposes.

Amelanchier, (page 147).—The Juneberry species number about 30. About 23 of these are found in North America, 6 of which attain tree size. Besides the species described herein, variety *botryapium* has been reported from Preston County and a specimen collected in Tucker County has been pronounced by Dr. C. S. Sargent as the recently-named *Amelanchier laevis.* A shrubby species (*Amelanchier oligocarpa,* (Michx.) Roem.) is found in Tucker and Pocahontas counties.

Crataegus, (pp. 149, 151).—A few species of this genus occur in Europe and Asia, but most of them are native to North America. About 700 species of Thorns have been described. According to some authorities there are fewer species than have been described, while others affirm there are many yet to be found. Millspaugh's Flora of West Virginia lists 22 species, and the writer has collected several additional species that have been examined and identified by Eggleston and others. Because the Thorns are of little commercial importance and are very difficult to identify only 2 species are described in this bulletin.

Prunus.—This genus includes the Plums and Cherries. Of the 100 or more species distributed in Asia, Europe and America, about 30 are native in the United States, and 4 or 5 are found in West Virginia.

KEY TO THE SPECIES OF PRUNUS

a. Fruit in long racemose clusters.
   Leaves 2-5 inches long; fruit purplish-black . . **P. serotina, p. 153.**
   Leaves 2-4 inches long; fruit dark crimson . . **P. virginiana, p. 155.**

a. Fruit in 4-5 fruited, umbel-like bunches.
   Leaves lanceolate, thin, 3-5 inches long; fruit ¼ inch in diameter, light red . . . . . **P. pennsylvanica, p. 157.**
   Leaves obovate, thick, rough above, 1½-4 inches long; fruit 1 inch in diameter, red or yellow . . . **P. americana, p. 159.**

LEGUMINOSAE—THE PULSE FAMILY

The Pulse family embraces over 400 genera with about 7,350 species of trees, shrubs, and herbs. Out of this number 100 genera with about 1,400 species are found in North America, and about 25 genera with 65 species are recorded for West Virginia. Only 3 genera with 3 species in this State can be classified as trees.

Gleditsia, (page 161).—About 11 species belonging to this genus are distributed throughout the temperate regions of Asia and

eastern North America, 3 of which are native to the south-central and eastern parts of the United States. One is found in West Virginia.

Cercis, (page 163).—This genus includes 7 species of small trees and shrubs distributed in parts of Europe, Asia and North America, 3 of which are found in the United States and one in West Virginia. The genus is of little commercial importance.

Robinia, (page 165).—This is an American genus containing 7 species, 4 of which are shrubs, one tree species being found in West Virginia. Locusts have been introduced into Europe where they are widely planted. The Rose Acacia (*Robinia hispida,* L.) is occasionally planted for ornamental purposes.

The Kentucky Coffee tree (*Gymnocladus dioica,* (L.) Koch.) has been planted in many sections of the State, and is reported by Millspaugh as native in Randolph and Webster counties.

RUTACEAE—THE RUE FAMILY

This large family is confined chiefly to the Old World and the southern hemisphere, and is largely made up of herbs. Four genera have tree representatives in the United States. The species are not commercially valuable. *Ptelea* (page 167) is the only genus native to West Virginia. Prickly Ash (*Zanthoxylum americanum,* Mill.) grows in Monongalia, Jefferson, and Taylor counties, probably as an introduced species.

SIMARUBACEAE—THE QUASSIA FAMILY

The Tree of Heaven (*Ailanthus glandulosa,* Desf.), introduced from Asia, has been extensively planted along streets and on lawns from which it has escaped in many places.

ANACARDIACEAE—THE CASHEW FAMILY

The Cashew or Sumach family is mainly tropical comprising about 50 genera with 500 species of trees, shrubs and woody vines. Its members are not valuable as wood producers but in many cases they have commercial importance on account of their acrid, milky, or resinous juice, used in medicine, tanning, and the manufacture of varnishes and resins, and on account of their attractive appearance when planted as ornaments. The genus *Rhus,* (pp. 169, 171, 173) is the only one native to Northeastern America. There are 120 known species of *Rhus,* about 16 of which are found in North America and 6 in West Virginia. Besides those described in this bulletin the following shrubby species grow wild in the State: Smooth Sumach

(*Rhus glabra*, L.), Poison Ivy (*Rhus Toxicodendron*, L.) and Fragrant Sumach (*Rhus canadensis*, Marsh.)

The Smoke Tree (*Rhus Cotinus*, L.), an introduced tree, is planted on lawns.

AQUIFOLIACEAE—THE HOLLY FAMILY

The Holly family with 5 genera and nearly 300 species is distributed in temperate and tropical regions of both hemispheres. *Ilex*, (pp. 175, 177) which is represented in West Virginia by 4 species of small trees and shrubs, is the only genus of this family which is important in number of species or is widely distributed. Our hollies, not described herein, are Winterberry (*Ilex verticillata*, (L.) Gray), a low shrub common in high swamps; and a rare shrubby species with long-stalked fruits (*Ilex longipes* Chapm.) recently collected in Randolph County. *Nemopanthus mucronata*, (L.) Trel., also a member of this family, is a common shrub growing at high altitudes in this State.

ACERACEAE—THE MAPLE FAMILY

This family includes only 2 genera, one of which (*Dipternia*) contains a single Chinese species. The genus *Acer* comprises about 70 species distributed principally in the northern hemisphere. There are 13 species native to the United States, 6 of which are found in West Virginia.

The maples not only produce much valuable wood but are used more extensively than any other group for ornamental purposes. The principal exotic species are Norway Maple (*Acer platanoides*, L.), and Sycamore Maple (*Acer Pseudo-Platanus*, L.).

The following key will be of use in distinguishing the species:

KEY TO THE SPECIES OF ACER

a. Leaves simple.
  b. Leaf sinuses acute at base.
    Leaf-lobes long and narrow, leaves silvery white beneath; fruit in pairs, each key 1-2 inches long, falling in May . . . . . **A. saccharinum, p. 187.**
    Leaf-lobes short and broad, leaves white-downy beneath, 3-lobed; fruit small, several, persistent till fall, in long drooping clusters; a small tree or shrub . **A. spicatum, p. 181.**
    Leaves whitish and nearly glabrous beneath, 3-5 lobed, lobes broad and short; fruit in small clusters, falling in early summer . . . . . **A. rubrum, p. 189.**
  b. Leaf sinuses rounded at base, leaves 3-lobed, finely and evenly toothed; fruit several in drooping racemes; a small tree or shrub with striped bark . . . . . **A. pennsylvanicum, p. 179.**
    Leaves usually 5-lobed (or 3-lobed in variety **nigrum, p. 185**), the lobes sparingly wavy-toothed; fruit in small clusters, persisting until fall; a large tree **A. saccharum, p. 183.**
a. Leaves compound; twigs greenish; fruit in long drooping racemes . . . . . **A. negundo, p. 191.**

SAPINDACEAE—THE SOAPBERRY FAMILY

This family embraces 100 genera and about 1000 species, chiefly tropical in the Old World. Six genera of trees occur in North America. The genus *Aesculus*, (pp. 193, 195) comprises 14 species, 10 of which are found in America and 2 in West Virginia. No other genus of this family is represented in the flora of the State. The Horse Chestnut (*Aesculus Hippocastanum*, L.) is a common introduced species.

TILIACEAE—THE LINDEN FAMILY

The Linden family with about 35 genera and over 300 species is chiefly tropical, having more representatives in the southern than in the northern hemisphere. Of the 3 North American genera only one (*Tilia*) is arborescent. Of the 8 species of *Tilia* (pp. 197, 199) found in North America 2 are native to West Virginia. The European Linden (*Tilia Europea*, L.) is occasionally planted.

ARALIACEAE—THE GINSENG FAMILY

This family having about 50 genera with over 400 species is chiefly tropical, though widely distributed in other parts of the world. The genus *Aralia* (page 201) contains the only tree species in North America. This is common in West Virginia.

CORNACEAE—THE DOGWOOD FAMILY

The Dogwood family, with 15 genera, is widely distributed in temperate regions. *Cornus* (pp. 203, 205) and *Nyssa* (page 207) are the only genera having tree representatives in North America. Of the 40 known species of *Cornus* 15 are native to North America and 7 to West Virginia. The shrubby species are listed on page 234. *Nyssa* comprises 7 known species, 5 of which are found in North America and 1 in this State.

ERICACEAE—THE HEATH FAMILY

The Heath family with its 90 genera and 1,400 species is widely distributed in tropical and temperate regions. Of the 40 genera found in the United States 7 have tree representatives. The flora of West Virginia comprises about 22 genera and 40 species belonging to this family. Many of these are shrubs, the names of which are given in the list of native shrubs beginning on page 232.

Three small trees belonging to the following genera are described herein.

Rhododendron, (page 209).—This genus embraces about 100 species of shrubs and small trees in the Northern hemisphere besides a large number in the southern. Of the 17 or more species native to North America only 1 reaches tree size. In addition to the species described herein the flora of the State embraces the Mountain Rose Bay (*R. catawbiense,* Michx.) and several species of Azaleas.

Kalmia, (page 211).—The genus *Kalmia* includes about 5 species in North America, 2 of which are found in West Virginia. *Kalmia angustifolia,* L. is a rare shrub reported from several counties in the State.

Oxydendrum, (page 213).—This genus contains a single species, the Sour-wood, described in this bulletin.

EBENACEAE—THE EBONY FAMILY

The Ebony family with 6 genera and many species is distributed chiefly in tropical regions of both hemispheres. The genus *Diospyros* (page 215) is the only representative of this family in the United States and includes 2 species one of which is native to West Virginia.

STYRACACEAE—THE STORAX FAMILY

This family embracing about 7 genera and comparatively few species is distributed principally in North and South America and in eastern Asia. Of the 3 North American genera only *Halesia* (page 217) is found in West Virginia.

OLEACEAE—THE OLIVE FAMILY

The Olive family comprises about 20 genera with 500 species distributed principally in the northern hemisphere. In North America there are 5 genera with 20 species and in West Virginia 2 genera with 4 species. The Olive Tree (*Olea Europaea,* L.), which produces the olives used for food, belongs to this family. This tree has been introduced into the southwestern part of the United States. The *Syringas,* (Lilacs), *Forsythias,* and *Ligustrums* (Privets) are extensively planted in this State for ornamental purposes and for hedges. The two genera described below have representatives in West Virginia.

Fraxinus, (pp. 219, 221, 223).—The Ashes, numbering about 40 species, are distributed chiefly in the north temperate zone. Of this number 16 occur in North America and 3 in West Virginia. The European Ash, (*F. excelsior,* L.) is occasionally planted.

Chionanthus, (page 225).—This genus embraces only 2 species one of which is found in West Virginia. The other is native to northern and central China.

CAPRIFOLIACEAE—THE HONEYSUCKLE FAMILY

The Honeysuckle family, comprising about 10 genera with 275 species, is represented in North America by 8 genera and in West Virginia by 7 genera and about 18 species. Of this number 15 are shrubs or small trees. The species not described herein belonging to the genera *Viburnum* (pp. 227, 229), *Diervilla, Lonicera,* and *Sambucus,* are given in the list of native shrubs.

WHITE PINE

WHITE PINE

Pinus strobus, L.

Form.—Height 50-100 feet, diameter 2-4 feet; trunk when in close stands long, straight, and free from limbs; limbs arranged in whorls.

Leaves.—Arranged in clusters of 5, slender, 3-sided mucronate, 3-5 inches long, blue-green when mature.

Flowers.—May; monoecious; the staminate oval, light brown one-third inch long, clustered at base of new growth; the pistillate catkins in small groups or solitary along the new growth, cylindrical, about ¼ inch long, pink.

Fruit.—Cones maturing in autumn of second year, drooping, cylindrical, often curved, 4-6 inches long, scales thin without spines; seeds red-brown mottled with black spots, ¼ inch long with wings 1 inch long.

Bark.—On young branches smooth, green, often with red tinge; on old trunks thick, divided by shallow fissures into wide flat-topped ridges covered with purplish scales.

Wood.—Soft, weak, straight-grained, easily worked, not durable in contact with the ground, light brown with whitish sapwood.

Range.—Newfoundland and Manitoba to Pennsylvania, Indiana and Iowa, and south along the Alleghany mountains to northern Georgia.

Distribution in West Virginia.—Originally abundant in parts of Pocahontas, Greenbrier, Raleigh, and Tucker counties, and sparingly distributed in all the counties east of the Alleghanies, and in Gilmer, Jackson, Monongalia, Preston, Ritchie, Tyler, Wetzel, and Wirt counties. Now becoming rare.

Habitat.—Prefers fertile, well-drained soil, but will grow in all soils and situations excepting swamps and dry wind-swept ridges

Notes.—White Pine is easily distinguished from all other native species by the leaves which are in clusters of five. This tree is one of the most valuable and beautiful of the conifers. Its wood is extensively used for shingles, construction, cabinet work, woodenware, matches, etc. As an ornamental tree it is especially attractive. A fungous disease, the white pine blister rust, threatens to destroy the species.

PITCH PINE

PITCH PINE

Pinus rigida, Mill.

Form.—Usually 50-60 feet high, 1-2½ feet in diameter; trunk not straight, tapering; crown rounded, usually open; limbs coarse, gnarled, with thick bark, and persistent old cones.

Leaves.—In clusters of three; stout, rigid, somewhat twisted, often standing at right angles with the branches; yellow-green.

Flowers.—Appear April-May; monoecious; the staminate in crowded spikes, at base of new growth, yellow; the pistillate short-stalked, nearly round, green tinged with rose.

Fruit.—Cones maturing autumn of second year; ovoid, often clustered, divergent from stem, 1-3 inches long, adhering for several years; scales thin, armed with stiff recurved prickles; triangular seeds ¼ inch long with wing ¾ inch long, one-third inch wide, dark brown to black, sometimes spotted with gray or red dots.

Bark.—Twigs green becoming dull orange and then gray-brown with age; trunk with rough, thick, deeply- and irregularly-furrowed, red-brown bark.

Wood.—Light, soft, brittle, coarse-grained, durable, resinous; with thick yellowish sapwood.

Range.—New Brunswick and Lake Ontario, south to Georgia, and west to the Alleghany foothills of West Virginia, Kentucky and Tennessee.

Distribution in West Virginia.—Found locally in the following counties: Boone, Braxton, Berkeley, Clay, Doddridge, Fayette, Gilmer, Grant, Hampshire, Hardy, Jefferson, Kanawha, Logan, Mercer, Monroe, Mingo, Nicholas, Preston, Pocahontas, Randolph, Roane, Summers, Tyler and Wayne. Rare in McDowell, Wyoming, and Webster.

Habitat.—Prefers dry sandy soils of hillsides, sometimes found in swamps.

Notes.—This is our only native pine having all the leaves in bundles of three. It is of much less value than the White Pine but will often grow where other pines will not, and is resistant to fire. Wood used chiefly for mine props, fuel, charcoal, boxes, crates, and construction. Tar is sometimes made from this wood, and the resin-filled knots and wood are excellent for kindling fires.

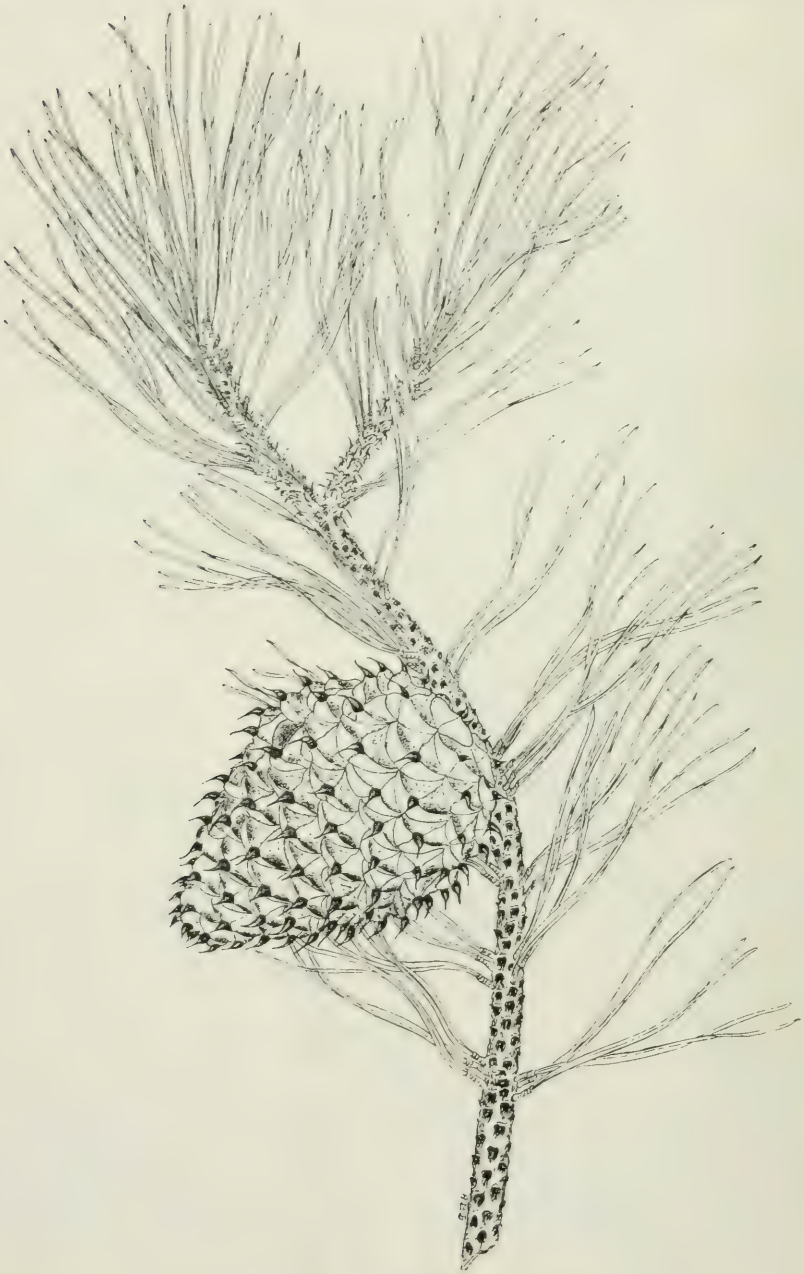


TABLE MOUNTAIN PINE

TABLE MOUNTAIN PINE

Pinus pungens, Lamb.

Form.—A small tree 30-50 feet high, 1-2½ feet in diameter; trunk sometimes with limbs almost to the ground, the lower drooping, the upper ascending; often bearing cones when only a few feet tall.

Leaves.—Two in a bundle, stiff, usually twisted, sharp-pointed, 1½-3 inches long; dark blue-green.

Flowers.—April-May; monoecious; staminate in long, loose spikes, anthers yellow; pistillate clustered on sides of new growth.

Fruit.—Cones large, oblong-conical, oblique at base, 2-3½ inches long, hanging on for many years; scales with very stout, curved prickles.

Bark.—On the trunk broken by fissures into irregular plates with loose red-brown scales.

Wood.—Light, soft, brittle, coarse-grained, resinous, brown with yellowish sapwood.

Range.—Pennsylvania and New Jersey to northern Georgia, in the Appalachian mountains.

Distribution in West Virginia.—Scattered sparingly in the counties along the Alleghany Mountains.

Habitat.—Usually found on dry gravelly slopes and ridges.

Notes.—This species is most easily distinguished from the other pines of the State by the very large and prickly cones and by the bundles of two stiff, short leaves. The yellow pine which has some of its leaves grouped in twos has very small and nearly smooth cones. Not valuable for lumber; used chiefly for fuel and charcoal.

YELLOW PINE

YELLOW PINE

Pinus echinata, Mill.

Form.—From 80-100 feet high, 2-3½ feet in diameter; trunk straight, slightly tapering; crown pyramidal or rounded; limbs not tolerant of shade and in dense stands dropping off early leaving a long, clean trunk.

Leaves.—In clusters of 2 and 3, the leaves in threes more often near the ends of twigs; slender, flexible, 3-5 inches long, blue-green.

Flowers.—April-May; monoecious, pale purple, staminate flowers in clusters at base of new growth; pistillate flowers 2-4 in a whorl near end of new growth, pale rose-colored.

Fruit.—Cones maturing at end of second year; ovoid, 1½-2½ inches long; flat scales, armed with weak, often deciduous prickles; seeds triangular, winged, brown mottled with black.

Bark.—On the trunk broken into large more or less rectangular plates the scales of which readily peel off.

Wood.—Hard, heavy, coarse-grained, yellowish.

Range.—New York to Florida and west to Missouri and Texas.

Distribution in West Virginia.—A scattered growth in the hilly counties lying east of the Ohio river and in the counties along the Alleghany Mountains.

Habitat.—Usually found with hardwoods and other pines on clay or gravelly soil, on hills or stony slopes.

Notes.—The Yellow Pine can be distinguished from the other pines by its clusters of two and three slender leaves and its small cones. It furnishes excellent lumber for commerce and is extensively used for many purposes in buildings.

SCRUB PINE

JERSEY OR SCRUB PINE

Pinus virginiana, Mill.

Form.—A small tree usually 30-50 feet high, diameter 1-2 feet, trunk short and often crooked; crown pyramidal to flat-topped.

Leaves.—Clustered in twos, 1½-3 inches long, twisted, rather stout, sharp-pointed, gray-green.

Flowers.—April-May; monoecious; staminate in clusters at base of new growth, yellow-brown; pistillate near middle of season's growth, pale green, the scale tips rose-colored.

Fruit.—Ovoid when open, sometimes slightly curved; scales thin, nearly flat, bright brown, with persistent prickles.

Bark.—With shallow fissures, and dark brown loose scales.

Wood.—Light, soft, brittle, pale orange with whitish sapwood.

Range.—Southern New York to Georgia, west to Kentucky and southern Indiana.

Distribution in West Virginia.—Common in Berkeley, Jefferson, Morgan, Grant, Mercer and other counties southward along the mountains; less common in Barbour, Boone, Fayette, Kanawha, Logan, Monongalia, Randolph, Ritchie, Wayne and Wyoming counties.

Habitat.—Prefers light sandy and thin rocky soils; often found on exhausted farm lands.

Notes.—This species is most easily confused with yellow pine, but can be distinguished by its uniform 2-leaf clusters, small prickly cones and comparatively smooth bark. The leaves are twisted and divergent, giving the twigs a disheveled appearance. Of little value as a timber tree; wood used chiefly for boxes, crates, fencing, ties, and fuel.

TAMARACK

TAMARACK

Larix laricina, (DuPoi) Koch.

Form.—A tree usually 30-60 feet high, 1-2 feet in diameter; trunk straight, tapering, and having numerous slender, upward-curving branches; crown narrowly pyramidal.

Leaves.—Scattered singly or clustered in dense fascicles on short lateral spurs; linear, triangular in cross-section, ¾-1¼ inches long, light green, falling each year in autumn.

Flowers.—May, with the leaves; monoecious; staminate sessile, sub-globose, yellow; pistillate oblong with light-colored bracts and nearly orbicular rose-colored scales.

Fruit.—Cones mature autumn of first season; ovoid, obtuse, ½-¾ inch long with few light brown rounded scales.

Bark.—Thin, roughened with small rounded red-brown scales.

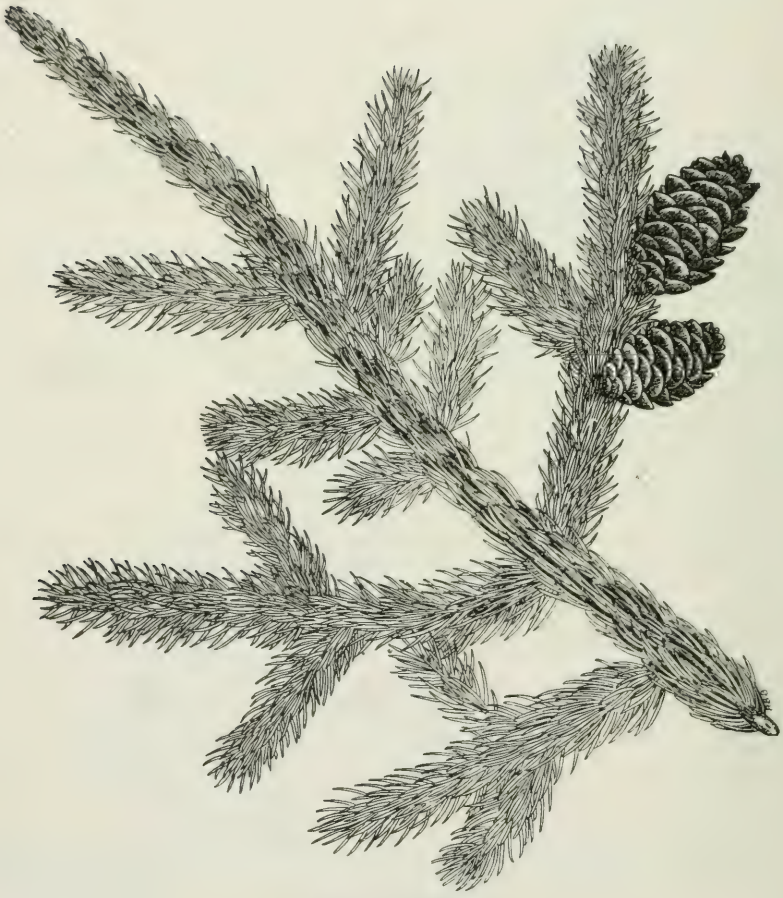
Wood.—Heavy, hard, slightly resinous, very strong, durable in soil, light brown.

Range.—Newfoundland south to Maryland and West Virginia, west to Minnesota and the Rocky Mountains, through British Columbia to Alaska.

Distribution in West Virginia.—A few trees near Cranesville, Preston County, growing in a swamp.

Habitat.—Prefers swamps and lake borders, but thrives in many other places.

Notes.—Tamarack is our only native cone-bearer with deciduous leaves. This tree has been transplanted in several places in the State where it makes a good appearance on the lawn.



RED SPRUCE

RED SPRUCE

Picea rubra, (DuRoi) Deitr.

Form.—Height 70-80 feet, diameter 2-3 feet; trunk straight, continuous, free from limbs to a considerable height when in close stands; crown conical; limbs somewhat drooping below, horizontal in the middle, ascending above.

Leaves.—Crowded and diverging in all directions from the twig; rounded or acute points, ½-⅝ inch long, dark yellow-green.

Flowers.—April-May; monoecious; staminate oval, almost sessile, red; pistillate oblong, with thin rounded scales.

Fruit.—Cones ovate-oblong, narrowed from middle to acute apex; 1¼-2 inches long; scales reddish-brown with entire margins.

Bark.—Roughened by thin, irregular-shaped brown scales.

Wood.—Light, soft, close-grained, not strong, pale in color, with whitish sapwood.

Range.—Newfoundland to West Virginia and southward along the Alleghany Mountains to northern Georgia, west to Minnesota.

Distribution in West Virginia.—Growing at high elevation in Grant, Tucker, Randolph, Pendleton, Pocahontas, Webster, Nicholas and Greenbrier counties. Now largely removed by lumbermen.

Habitat.—Well-drained uplands; also on mountain tops and occasionally on borders of swamps.

Notes.—Since this species is the only native spruce in West Virginia there is no cause for confusing it with anything else. Norway spruce has much larger cones. Originally red spruce was one of our principal lumber trees, but when it is removed there is but little natural reproduction. Often planted for shade. Wood used for construction, musical instruments, furniture, aeroplanes and paper pulp.

HEMLOCK

HEMLOCK

Tsuga canadensis, (L.) Carr.

Form.—Height 60-100 feet, diameter 2-4 feet; trunk with limbs nearly to the ground when in the open but free from them to a considerable height when in dense stands; slender horizontal branches form a pyramidal crown which is often irregular.

Leaves.—Arranged on all sides of the branch, but appearing as if in two ranks, flat, thin, rounded or slightly notched at the tip, about ½ inch long, dark green above, pale beneath.

Flowers.—April-May; monoecious; staminate in the axils, globose, yellow; pistillate terminal, pale green, oblong, with broad bracts and short pinkish scales.

Fruit.—Cones mature each autumn; borne on slender stalks; ovate, about ¾ of an inch long; scales rounded, about as broad as long; seeds about ⅛ inch long, half as long as their wings.

Bark.—With deep fissures on old trunks and prominent rounded ridges; inner bark cinnamon-red.

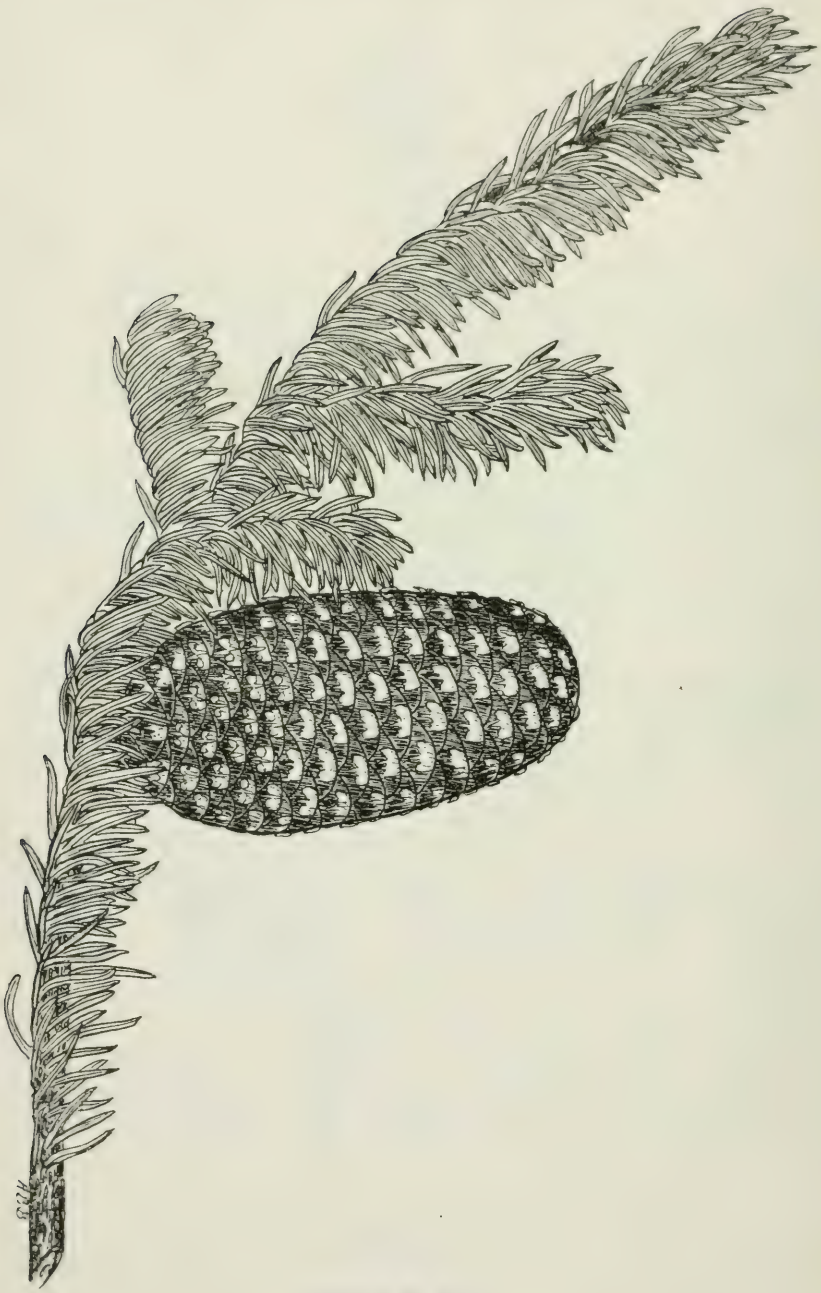
Wood.—Light, medium hard, brittle, coarse-grained, not easily worked, not durable when exposed to the weather; red-brown with lighter sapwood.

Range—Nova Scotia, south to Alabama and west to Minnesota.

Distribution in West Virginia.—Common in nearly all parts of the State, reaching high elevations in the mountain counties, and confined to ravines and rough stony ground in most of the hilly sections.

Habitat.—Prefers damp stony northern exposures, deep stream gorges, river banks, and swamp borders.

Notes.—The hemlock ranks as one of the most useful trees. The wood is used for construction, paper pulp, and lath; the bark is used in tanning; and the trees are often planted on lawns and in hedges.



BALSAM FIR

BALSAM FIR

Abies fraseri, (Pursh) Poir.

Form.—Height 30-70 feet, diameter 1-2½ feet; trunk continuous, tapering; crown pyramidal; rigid horizontal or ascending branches.

Leaves.—Linear, arranged around the stem, ½-¾ of an inch long, dark silvery green.

Flowers.—Monoecious; staminate yellow with red tinge; pistillate with rounded scales and pale yellow-green bracts.

Fruit.—Cones oblong-ovate, about 2½ inches long; width of scales twice their length, dark purple; bracts reflexed covering at maturity about half the scale.

Bark.—Roughened by cinnamon or gray scales.

Wood.—Light, soft, not strong, coarse-grained, pale brown with whitish sapwood.

Range.—From Virginia and West Virginia south to North Carolina and Tennessee.

Distribution in West Virginia.—Growing near Cheat Bridge, Randolph County; on the head of the Greenbrier River, Pocahontas County; and near the head of Blackwater fork of Cheat River in Tucker County.

Habitat.—Grows at high elevations and seems to prefer swampy soil in West Virginia.

Notes.—This species, which reaches the northern limit of its restricted range in Tucker County, is not commercially important. The trunks are occasionally sawed into lumber, and the tree has been widely transplanted on lawns.

ARBOR VITAE

ARBOR VITAE

Thuja occidentalis, L.

Form.—Height 40-50 feet, diameter 1-2 feet; trunk often divided; crown compact, pyramidal.

Leaves.—In 4 ranks on the stems, scale-like, 1/8-1/4 inch long, longest and long-pointed on leading shoots, yellow-green, aromatic.

Flowers.—April-May; monoecious; staminate round, small, yellow; pistillate larger, oblong, reddish.

Fruit.—Cones maturing in early Autumn, oblong, about 1/2 inch long, reddish-brown, and persisting through the following winter.

Bark.—On trunk reddish-brown, slightly furrowed, and separating in ragged and twisted strips.

Wood.—Light, soft, brittle, durable, fragrant, yellowish-brown; sapwood whitish and thin.

Range.—Labrador, Manitoba and Minnesota, southward along the mountains to North Carolina.

Distribution in West Virginia.—Small trees on the South Branch of the Potomac River and on the North Fork of the South Branch in Pendleton County. Reported from Grant and Mineral counties.

Habitat.—River banks, swamps, rocky hillsides.

Notes.—This tree, often called white cedar, is so rare in West Virginia, and of so small a size that it has but little value, except from the standpoint of the botanist. It is commonly planted throughout the State for hedges and other ornamental purposes.

RED CEDAR

RED CEDAR

Juniperus virginiana, L.

Form.—Height 30-40 feet, diameter 1-2 feet; crown pyramidal or rounded, often irregular, dense.

Leaves.—Opposite, of two kinds: (1) scale-like overlapping one-sixteenth inch long, (2) awl-shaped, ¼-½ inch long, less common than the other form.

Flowers.—April-May; dioecious, or occasionally monoecious; in small lateral catkins.

Fruit.—A berry-like strobile, maturing in autumn, about ¼ inch in diameter, dark blue with white bloom, sweet and resinous.

Bark.—Thin, peeling off in long strips, reddish-brown.

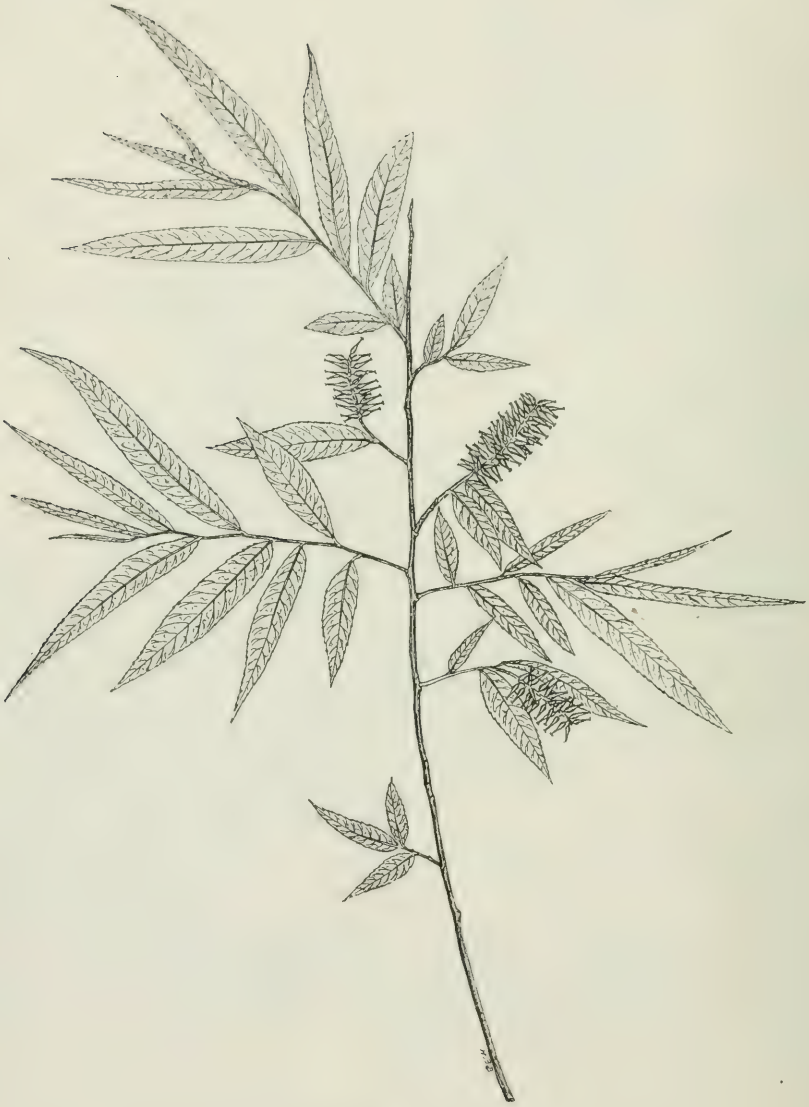
Wood.—Light, soft, fragrant, close-grained, very durable, red, with whitish sapwood.

Range.—Nova Scotia and Ontario, south to Florida and Texas.

Distribution in West Virginia.—Occasionally found in Randolph, Tucker, Upshur, Pocahontas, Webster, Barbour, Harrison, Taylor, Lewis, and in the mountainous parts of Nicholas, Greenbrier, Grant, Preston and Monongalia counties. A scattered growth throughout the western and southern hilly counties. Plentiful in Jefferson, Berkeley, Morgan, Hampshire, and in parts of Gilmer, Calhoun and Putnam counties.

Habitat.—Prefers rough limestone soils and dry hillsides, but grows in a variety of soils and situations.

Notes.—This species is valued on account of its durable wood and attractive appearance. During the past two or three years many red cedars have been destroyed in the eastern section of the State in order to stamp out apple rust which exists in one of its stages upon this tree.



BLACK WILLOW

BLACK WILLOW

Salix nigra, Marsh.

Form.—Height 30-50 feet, diameter 1-2 feet; trunk often crooked or leaning; crown open with long straggling limbs.

Leaves.—Alternate, simple, narrowly lanceolate, taper-pointed, margins finely serrate, 3-6 inches long, ¼-¾ inch broad; large semi-cordate stipules.

Flowers.—March-April, before the leaves; dioecious; both kinds of flowers borne in slender, hairy catkins, 1-3 inches long; calyx and corolla wanting; scales yellow, with 3-6 stamens.

Fruit.—A capsule ⅛ inch long, early splitting open and liberating the hairy seeds which are carried about by the wind.

Bark.—On twigs reddish-brown; on old trunks thick, and rough with many broad connecting ridges, often becoming shaggy.

Wood.—Light, soft, brittle, not durable, very dark colored with light sapwood.

Range.—New Brunswick south to Florida, west to Dakota, Arizona and central California.

Distribution in West Virginia.—A common tree along streams in nearly all parts of the State.

Habitat.—Banks of streams and pond borders.

Notes.—This is the commonest and most easily recognized of the willows. Its greatest value in West Virginia is probably the part it plays in holding stream banks in place. The wood is sometimes used for fuel and charcoal.

AMERICAN ASPEN

AMERICAN ASPEN

Populus tremuloides, Michx.

Form.—Height 30-40 feet, diameter 10-20 inches; trunk usually continuous, supporting a rounded loose crown.

Leaves.—Alternate, simple, 1½-2 inches long, roundish, heart-shaped, thin, margins finely serrate; petioles long and slender, permitting the leaves to tremble with the slightest breeze.

Flowers.—April, before the leaves; dioecious; both kinds of flowers on drooping aments.

Fruit.—A 2-valved capsule ¼ inch long; seeds brown, with long, white hairs.

Bark.—Smooth, greenish, sometimes with raised, warty bands and dark blotches below the bases of limbs.

Wood.—Light, soft, not strong nor durable, brownish with lighter sapwood.

Range.—Alaska to Newfoundland south to Pennsylvania and along the mountains to Kentucky, west to California and Mexico; the widest range of any North American species.

Distribution in West Virginia.—Small trees found growing sparingly in the mountain counties; observed in Randolph, Pocahontas, Pendleton, Grant, Tucker, Preston and Upshur counties. Reported from Calhoun, Gilmer, Monongalia, Mason, Summers and Wirt counties.

Habitat.—Prefers sandy and gravelly soils, but thrives on others; frequent in high cut-over areas which have been burned.

Notes.—This tree, which is locally known as Quaking Asp, can be distinguished from the other poplars by its finely-toothed tremulous leaves. The species is not important in West Virginia, and is seldom used for any purpose.

LARGE-TOOTHED POPLAR

LARGE-TOOTHED POPLAR

Populus grandidentata, Michx.

Form.—Height 30-60 feet, diameter 1-2 feet; trunk continuous, tapering; slender ascending branches forming a somewhat loose oval crown.

Leaves.—Alternate, simple, round-ovate, coarsely sinuate-toothed, thin, dark green above, paler beneath, smooth; petioles long, slender, laterally flattened.

Flowers.—April-May, before the leaves; dioecious; staminate in short catkins; pistillate in elongating looser catkins.

Fruit.—Two-halved, cone-shaped, hairy capsules ⅛ inch long on drooping catkins; seeds brown, small, with long white hairs.

Bark.—Smooth except near the base, gray-green, resembling that of American Aspen, but with more yellowish or buff color on young trunks and limbs.

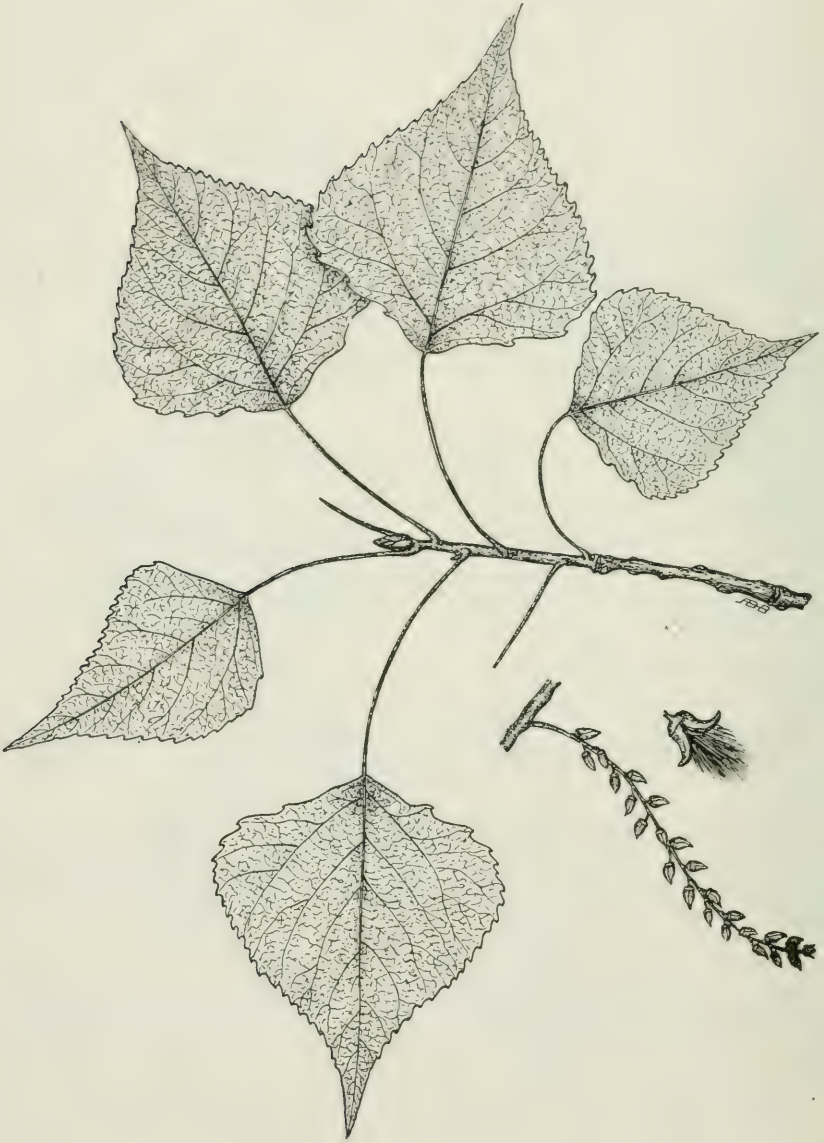
Wood.—Light, soft, not strong, light brown with almost white sapwood.

Range.—Nova Scotia, Ontario, and Minnesota to Iowa, Illinois, Indiana and Delaware; southward along the Alleghanies to North Carolina.

Distribution in West Virginia.—Not common. Found in the following localities: Webster, on Elk Mountain; Randolph, Horton and Gandy Creek; Tucker, near Davis; Monongalia, Deckers Creek; Tyler near Middlebourne. Reported from Ohio and Preston counties.

Habitat.—Rich, moist, sandy soil.

Notes.—This tree can be distinguished by its coarse-toothed leaves. It is comparatively rare and of little importance commercially.



COTTONWOOD

COTTONWOOD

Populus deltoides, Marsh.

Form.—Height 50-100 feet, diameter 3-5 feet; trunk usually continuous and tapering; horizontal and ascending branches forming a long pyramidal crown.

Leaves.—Alternate, simple, deltoid or broadly ovate, 3-5 inches long, margins coarsely crenate toothed except at base and apex, dark shining green above, paler beneath, petioles 2-3 inches long, laterally flattened.

Flowers.—April, before the leaves; dioecious; staminate in short drooping catkins; pistillate in elongating looser catkins.

Fruit.—Capsule 2-4-valved on long drooping catkins; brown seeds covered with a dense mat of long white hairs.

Bark.—Rough on old trees, with deep fissures and with more or less parallel and connected rounded ridges.

Wood.—Light, soft, not easily seasoned, brown with thick whitish sapwood.

Range.—Southern Canada to Florida and west to the Rocky Mountains.

Distribution in West Virginia.—Infrequent; South Branch of the Potomac River near Romney, Hampshire County, and near Petersburg, Grant County. Found at a few other points along the Potomac and its tributaries.

Habitat.—Prefers rich moist soil, along the banks of streams.

Notes.—The Cottonwood, commonly known as Carolina Poplar, is the largest of our true poplars. It is rare and of little value where it grows naturally in the State, but is extensively planted as a shade tree. This species is a very rapid grower but otherwise has little to recommend it for ornamental planting.

BUTTERNUT

BUTTERNUT

Juglans cinerea, L.

Form.—Height 20-60 feet, diameter 2-3 feet; trunk short, dividing into an open, broad crown of large horizontal or ascending branches.

Leaves.—Alternate, compound, 15-30 inches long; leaflets 11-17, oblong, acute, 2-3 inches long, finely serrate except at the base, yellow-green, rough above, pubescent beneath; petioles hairy.

Flowers.—May, with the first leaves; monoecious; staminate flowers in drooping catkins the pistillate solitary or several on a spike, bracts covered with white or pink glandular hairs; pistils red.

Fruit.—Matures in autumn; solitary or in clusters of 3-5; nut ovate-oblong, deeply furrowed and sculptured into several longitudinal ribs; husk thin, hairy, sticky; kernel sweet, edible, and oily.

Bark.—Light gray on twigs, brownish on old trunks; divided by dark fissures into lighter flat-topped ridges. Inner bark bitter, becoming yellow on exposure to the air.

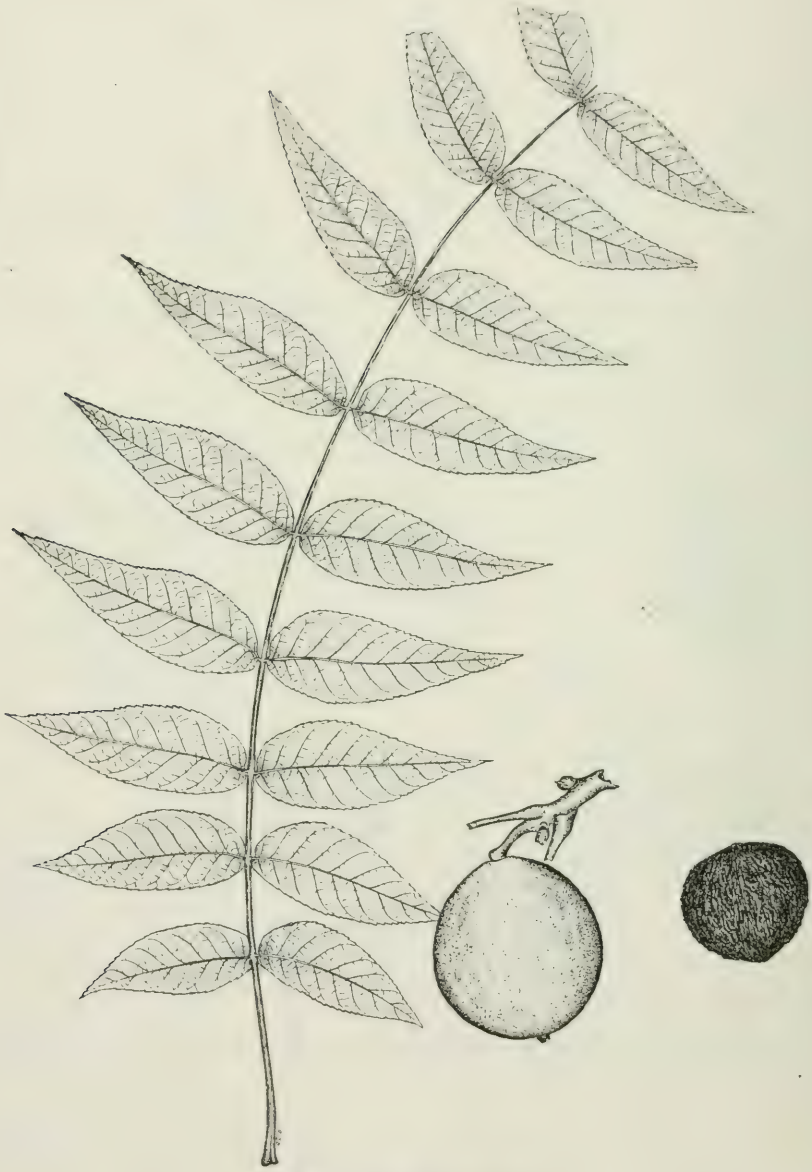
Wood.—Light, soft, not strong, coarse-grained, light brown, light colored sapwood.

Range.—Southern Canada and Minnesota to Delaware and Arkansas, south in the mountains to Georgia.

Distribution in West Virginia.—A common tree, found throughout the State except in the highest mountains and in a few areas south and west, especially in Jackson, Putnam, Mingo, and Wyoming counties. Thrives at higher altitudes than Black Walnut, and grows at 3000 feet, or over, along cold mountain streams and hillsides in Randolph and adjacent counties.

Habitat.—Prefers rich, moist soil.

Notes.—A less common and less valuable tree than its near relative next described.



BLACK WALNUT

BLACK WALNUT

Juglans nigra, L.

Form.—Height 60-100 feet, diameter 2-6 feet; trunk usually straight and clean; crown round and very open.

Leaves.—Alternate, compound, 1-2 feet long, 13-23 leaflets, 3-3½ inches long, 1-1¼ inches broad, sharply serrate, long, sharp-pointed, yellow-green and smooth above, paler and pubescent beneath.

Flowers.—May, with half developed leaves; monoecious; staminate flowers in long, greenish, drooping catkins; the pistillate single or several in a spike.

Fruit.—Matures in autumn, nut round, very rough, 1-2 inches in diameter; husk thick, rough; kernel sweet, edible, oily.

Bark.—Brownish and hairy on twigs, dark brown on old trunks, with deep furrows and rounded ridges.

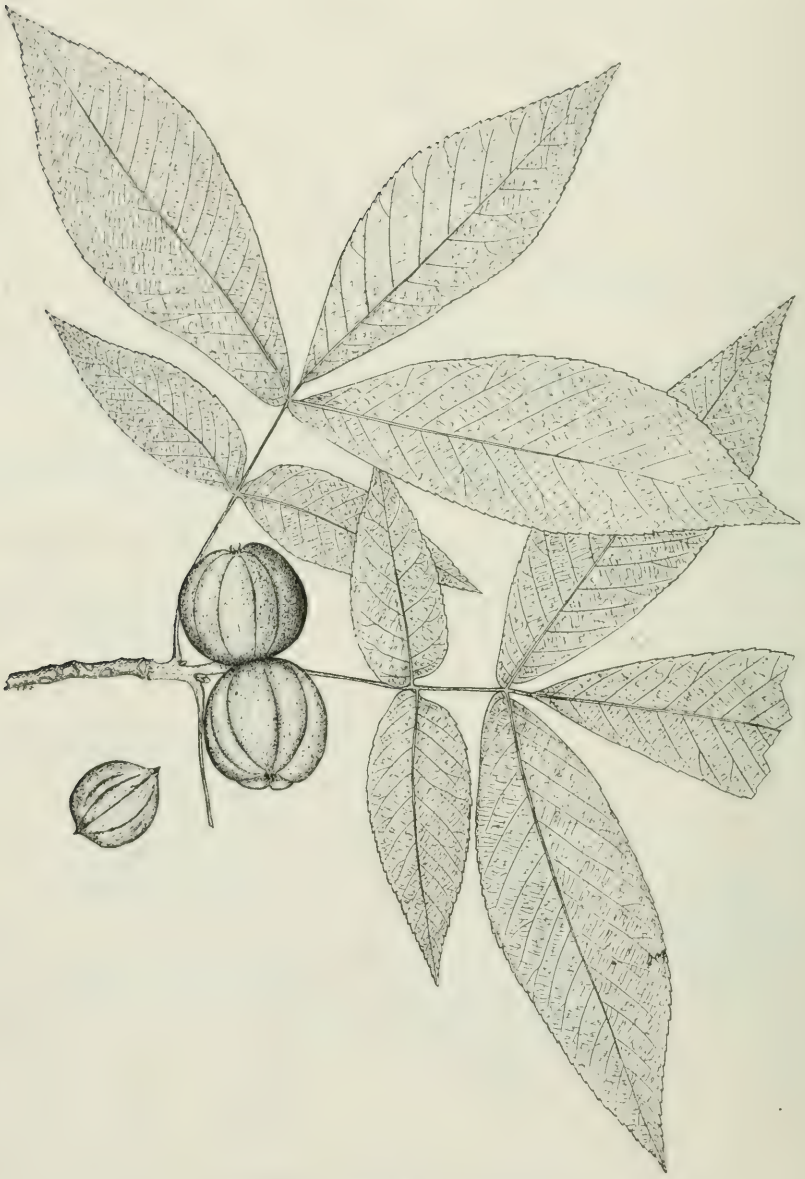
Wood.—Hard, heavy, strong, close-grained, rich dark brown with light-colored sapwood.

Range.—Northern states from Maine to Minnesota and south to Florida.

Distribution in West Virginia.—Common in all parts of the State, but not found at high elevations. The best stands are now cut out.

Habitat.—Prefers rich, moist soils, and requires an abundance of light.

Notes.—The Black Walnut is classed as one of the most valuable of our trees on account of its superior wood. It is also prized on account of its nuts and is sometimes planted on lawns. Where suitable land is available this rapid-growing species may be profitably planted for commercial purposes.



SHELL-BARK HICKORY

SHELL-BARK HICKORY

Carya ovata (Mill.) K. Koch.

Form.—Height 60-100 feet, diameter 1-2 feet; trunk in close stands straight and free from branches to a good height; in the open short and bearing a rounded or oblong crown.

Leaves.—Alternate, compound, 8-14 inches long; leaflets usually 5, ovate or ovate-lanceolate, acuminate, serrate, ciliate on the margins, firm, dark yellow-green and glabrous above, paler and nearly glabrous beneath; petioles usually smooth, sometimes hairy.

Flowers.—May; monoecious; the staminate in pendulous catkins; the pistillate in 2-5-flowered spikes.

Fruit.—Round-oval, nearly smooth, 1-2 inches in diameter; husk thick, splitting freely to the base; nut 4-angled, with a thick or thin wall; kernel sweet and edible.

Bark.—Gray; on old trunks very rough, separating into long loose strips which give the trunk its characteristic shaggy appearance.

Wood.—Hard, heavy, tough, strong, close-grained, pliable, light brown with nearly white sapwood.

Range.—Southern Canada and Minnesota south to Florida and Texas.

Distribution in West Virginia.—A common tree except on the highest mountains. Reported as not plentiful in Wetzel, Roane, Jackson and Summers counties.

Habitat.—Thrives best in rich, damp soils, common along streams and on moist hillsides.

Notes.—The Shellbark Hickory furnishes much of the valuable wood used where strength and toughness are required. The tree is known best to most people on account of its excellent nuts. It can be profitably grown from seed.

BIG SHELL-BARK HICKORY

BIG SHELL-BARK HICKORY

Carya laciniosa, (Michx. f.) Loud.

Form.—Height 60-100 feet, diameter 1-2 feet. Similar to that of the smaller shell-bark.

Leaves.—Alternate, compound; leaflets usually 7, sharp-pointed, serrate, dark green and smooth above, paler and covered with soft hairs beneath.

Flowers.—Very similar to those of the smaller shell-bark, previously described.

Fruit.—Ovoid, with four shallow creases above the middle, 1½-2½ inches in diameter, thick, smooth husk, splitting to the base; nut large, thick-shelled and angled; kernel sweet and edible.

Bark.—About the same as that of the smaller shell-bark hickory.

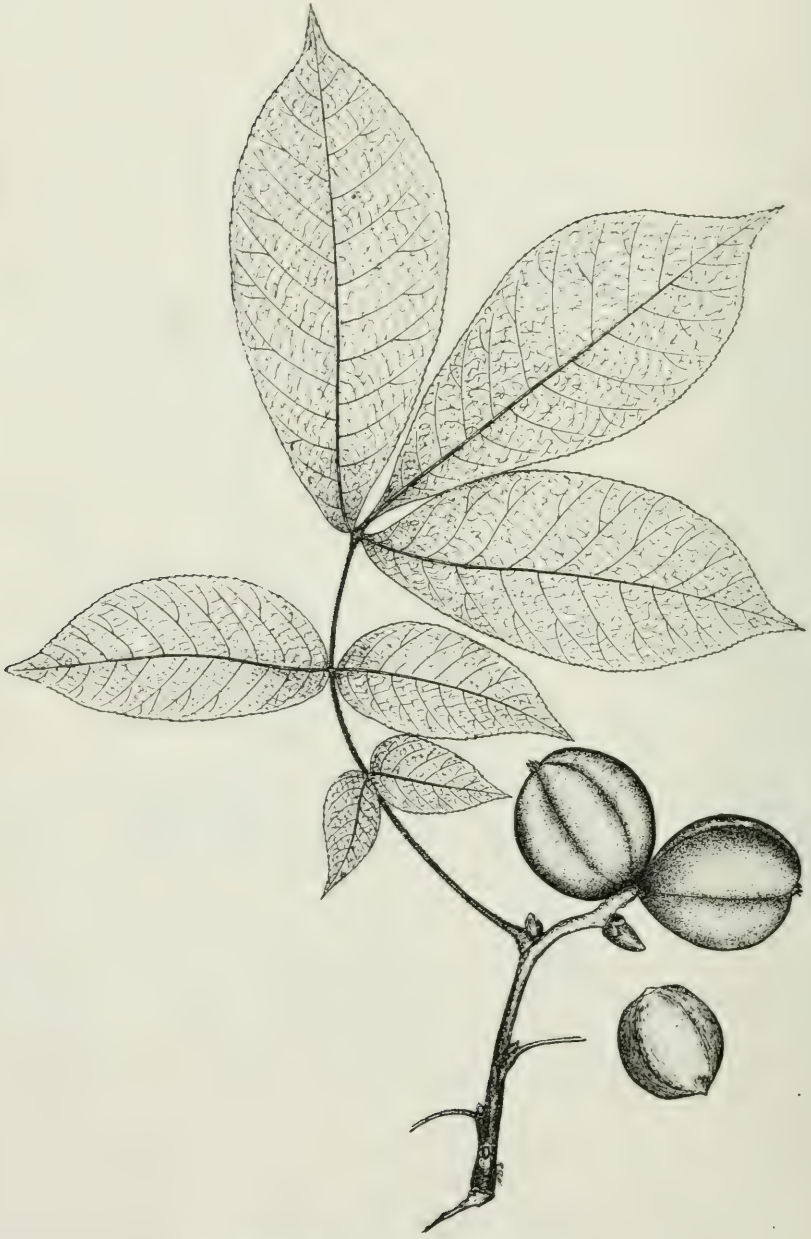
Wood.—The wood of this species can hardly be distinguished from that of the shell-bark hickory.

Range.—Central New York and Southern Michigan to North Carolina and Arkansas.

Distribution in West Virginia.—Not common, found principally near the Ohio River from some distance north of Parkersburg to Kenova. Reported from Harrison, Upshur and Monongalia counties, where possibly the trees have sprung from artificially planted seeds.

Habitat.—Rich, damp bottom lands and coves near rivers.

Notes.—Too rare to be an important tree in West Virginia. The wood is equal to the best of other species of hickory, but the nuts are rendered less valuable on account of the thickness of their shells.



MOCKERNUT HICKORY

MOCKERNUT HICKORY

Carya alba, (L.) K. Koch.

Form.—Height 50-80 feet, diameter 1-2½ feet; trunk in the woods straight and free from limbs for about half its length; crown round or oblong, open.

Leaves.—Alternate, compound, 8-12 inches long; leaflets 5-7, of varying lengths; oblong to ovate-lanceolate, serrate, lustrous yellow-green above, paler and pubescent beneath; petioles pubescent.

Flowers.—May, with the leaves; monoecious; staminate flowers in pendulous green catkins; the pistillate in 2-5-flowered spikes.

Fruit.—Ovoid, 1½-2 inches long; husk thick, splitting nearly to the base; nut indistinctly angled with very hard thick shell and small edible kernel.

Bark.—Gray, tight, rough but not shaggy.

Wood.—Heavy, hard, strong, tough, close-grained, elastic, brown with white sapwood.

Range.—Massachusetts and Ontario to Nebraska, Florida and Texas.

Distribution in West Virginia.—Common, especially on the hillsides and ridges east of the Alleghanies. Less frequent and scattered in the central and western counties.

Habitat.—Prefers rich, well-drained soils of open wooded hillsides.

Notes.—This tree has very thick sapwood which is the most valuable part of hickory wood. It is unsurpassed for handle material and other uses where strength and elasticity are desired. The nut kernels are of good quality but are small and hard to get. The pubescent leaf petioles and the thick husks and thick-walled nuts form easy marks for distinguishing this species from the common shell-bark. Big Bud Hickory and White Heart Hickory are other names for this tree.

PIGNUT HICKORY

PIGNUT HICKORY

Carya glabra, (Mill.) Spach.

Form.—Height 50-80 feet, diameter, 2-3½ feet; trunk usually straight, clean and long; crown rounded or narrowly oblong.

Leaves.—Alternate, compound, 8-12 inches long; leaflets usually 5-7, oblong to obovate-lanceolate, long taper-pointed, sharply serrate, dark yellow-green and glabrous above, paler beneath, fragrant when crushed.

Flowers.—Similar to those of other hickories.

Fruit.—Variable in shape, pear-shaped to ovoid, 1-2 inches long; husk thin, splitting half way or more to the base; nut smooth or obscurely angled, thick-walled and enclosing a sweet or slightly bitter kernel.

Bark.—Dark gray, roughened by many flat-topped ridges, the outside layers of which sometimes become detached at one end, giving the trunk a somewhat shaggy appearance.

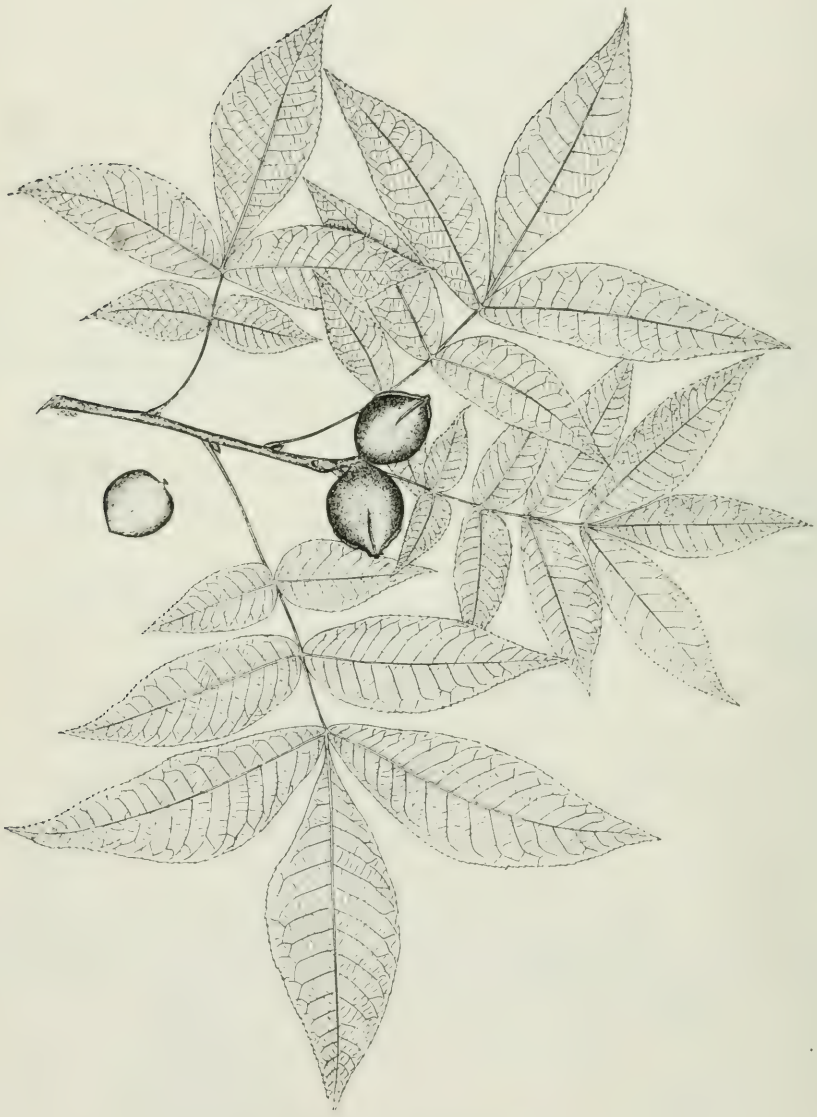
Wood.—As in other species of hickory before described.

Range.—Maine, Ontario and Minnesota to Florida and Texas.

Distribution in West Virginia.—Common in every county, less frequently found at high elevations.

Habitat.—Thrives on almost any rich, well-drained soil of ridges and hillsides.

Notes.—The abundance of this species in nearly every section of the State makes it one of the most useful hickories, especially for the farmer. Its growth in farm woodlands, as in other places, should be encouraged.



BITTERNUT HICKORY

BITTERNUT HICKORY

Carya cordiformis, (Wang.) K. Koch.

Form.—Height 60-75 feet, diameter 1-2½ feet; trunk long and free from limbs; crown rounded, broadest near the top.

Leaves.—Alternate, compound, 6-10 inches long; leaflets 7-11, lanceolate to ovate-lanceolate, taper-pointed, serrate, yellow-green above, paler beneath.

Flowers.—May, monoecious; similar to those of the other hickories.

Fruit.—Spherical to obovate; about 1 inch long, coated with a yellow scurfy pubescence; husk thin, splitting half way to the base, sutures winged at the top; nut nearly smooth with a small bitter kernel.

Bark.—Not so rough as in other species, but with many narrow connecting ridges.

Wood.—Similar to that of other hickories but not so strong and of less fuel value.

Range.—Southern Canada and Minnesota to Nebraska, Florida and Texas.

Distribution in West Virginia.—Found in scattered growth in nearly all parts of the State.

Habitat.—Prefers low ground along streams, but is often seen on higher ground. The name, Swamp Hickory, is not inappropriate.

Notes.—Of less value than our other hickories, but of sufficient worth to warrant its propagation in suitable places. This tree can be distinguished by its more numerous leaflets and by its small bitter-kerneled nuts.

HOP HORNBEAM

HOP HORNBEAM

Ostrya virginiana, (Mill.) K. Koch.

Form.—A small tree not often exceeding 30 feet in height and 1 foot in diameter; trunk usually straight and bearing a rounded crown of slender branches.

Leaves.—Alternate, simple, 3-5 inches long, acute at apex, doubly serrate, thin and tough, smooth above, pale and slightly pubescent beneath.

Flowers.—Appear with the leaves, monoecious; staminate flowers in drooping catkins which develop from the wood of the previous summer, usually three in a bunch; pistillate in erect aments; each enclosed in a bladdery bract.

Fruit.—Small flat nutlets, enclosed in bracts arranged in pendulous light-green clusters resembling hops.

Bark.—Brownish, roughened by narrow ridges with loose flat scales.

Wood.—Strong, hard, tough, close-grained, durable, red-brown, with light sapwood.

Range.—Cape Breton Island and Minnesota south to Florida and Texas.

Distribution in West Virginia.—Not common in many sections but scattered locally throughout nearly all parts of the State. Found usually with other species in the rougher, more elevated situations.

Habitat.—Rich open woods of slopes and ridges.

Notes.—Although this tree has valuable wood it is not sufficiently plentiful nor of such a size as to make it an important species for forestry purposes. It is desirable for parks and lawns. The rough, scaly bark, peculiar fruits, and hard wood are distinguishing marks. Its most common local name is Ironwood.

AMERICAN HORNBEAM

AMERICAN HORNBEAM

Carpinus caroliniana, Walt.

Form.—Small tree, usually from 10-25 feet high; trunk short, often leaning, fluted and bearing an irregular crown of slender, often zigzag branches.

Leaves.—Alternate, simple, 2-4 inches long, thin, oval, long-pointed, doubly serrate, dull green above, lighter beneath, scarlet and orange in autumn.

Flowers.—Appear in April; monoecious; without petals; staminate catkins 1-1½ inches long; the pistillate shorter, with greenish scales and red styles.

Fruit.—Small nuts, enclosed in 3-lobed, leafy bracts grouped on a common drooping stem.

Bark.—Gray, smooth, thin, tight.

Wood.—Heavy, hard, tough, close-grained, light brown with thick nearly white sapwood.

Range.—Northern states to Florida and Texas.

Distribution in West Virginia.—Common throughout the State.

Habitat.—Moist soil of stream borders, swamps and hillsides.

Notes.—This species, commonly called Water Beech, is of no commercial importance, but is attractive on lawns, especially in autumn, and performs a valuable service in preventing the caving in of stream banks where it grows.

BLACK BIRCH

BLACK BIRCH

Betula lenta, L.

Form.—Height 50-85 feet, diameter 2-4 feet; trunk long and clear in dense growths; crown narrow and open.

Leaves.—Alternate in pairs, simple, 3-4 inches long; ovate to oblong, taper pointed, doubly serrate, dull dark green above, paler beneath; petioles short, hairy, grooved above.

Flowers.—April, before the leaves; monoecious; the staminate in pendent yellowish catkins; the pistillate in shorter erect catkins.

Fruit.—An oblong, cone-shaped strobile, 1-1½ inches long, erect, 3-lobed scales smooth; nutlets small, winged.

Bark.—Very dark and broken into thick, irregular ridges and plates; the young and inside bark having a sweet, wintergreen taste.

Wood.—Heavy, hard, close-grained, dark reddish brown, with light sapwood.

Range.—Newfoundland to Illinois, Tennessee and Florida.

Distribution in West Virginia.—Scattered locally through nearly all parts of West Virginia.

Habitat.—Grows in a variety of soils and exposures, but prefers rich moist woodlands.

Notes.—Black Birch is a widely-known tree and is highly valued on account of its wood. The local names, Red Birch and Cherry Birch refer to the appearance of the heartwood and the bark, and Sweet Birch to the flavor of the bark. This tree can be distinguished from Yellow Birch, which it most closely resembles, by its darker-colored bark which does not peel off in loose flakes.

YELLOW BIRCH

YELLOW BIRCH

Betula lutea, Michx.

Form.—Height 60-100 feet, diameter 2-4 feet; trunk short and usually forking near the base; crown rounded, open.

Leaves.—Alternate, solitary or in pairs, simple, 3-4 inches long, acute at apex, doubly serrate, dull green.

Flowers.—April; monoecious; staminate flowers in pendent purplish catkins; the pistillate in shorter, erect, greenish catkins.

Fruit.—Cone-shaped strobiles, 1 inch long and erect, scales of strobile downy on the back and edges; nut small, about as broad as its wing.

Bark.—Silvery yellow-gray, with thin, papery layers separating and often curling at the edges giving the trunk a ragged appearance; slightly aromatic, and bitter. Campers often use the loose outer bark for starting camp fires in wet weather.

Wood.—Heavy, strong, hard, close-grained light reddish-brown, with nearly white sapwood.

Range.—Newfoundland to Minnesota and south to North Carolina.

Distribution in West Virginia.—Frequent, especially in mountain sections, growing with spruce and hemlock; rare in low hilly parts of the State and in the Eastern Panhandle; found along streams and in other damp situations on the outskirts of its range.

Habitat.—Moist fertile uplands and along streams.

Notes.—This large birch is associated with other mountain species such as Spruce, Hemlock, Black Cherry, and Black Birch. It furnishes valuable lumber and is a rapid grower. The characteristic appearance of the bark, described above, will prevent the confusion of this tree with its close relative, the Black Birch.

RED BIRCH

RED BIRCH

Betula nigra, L.

Form.—Height, 50-90 feet, diameter, 1-3 feet; trunk usually short, dividing into two or three large ascending limbs; crown irregular, oblong.

Leaves.—Alternate, simple, 1½ to 3 inches long, round-ovate, acute, doubly serrate, sometimes cut or slightly lobed, deep green, pale yellow-green beneath.

Flowers.—April, before the leaves; monoecious; staminate formed in the fall and remaining over winter as short aments, usually in clusters of three and elongating in the spring to 2-3 inches; pistillate, short, erect, situated on twigs with the staminate flowers and back of them.

Fruit.—Cylindrical strobile, 1-1½ inches long; 3-lobed scales of strobile pubescent; nuts small, hairy, winged.

Bark.—On old trunks dark red-brown and rough, with deep furrows and broken ridges; on younger trees, lighter-colored, the outer papery layers separating freely into thin sheets and turning up at the edges.

Wood.—Light, rather strong, close-grained, light brown with pale sapwood.

Range.—New England, west to Missouri, and south to Florida and Texas.

Distribution in West Virginia.—Observed growing along the banks of the following rivers: Williams, Gauley, Greenbrier, New, Great Kanawha, Little Coal, Elk, Guyandot, Twelvepole, Big Sandy, Little Kanawha, Potomac, Shenandoah, Great Cacapon.

Habitat.—Banks of streams, occassionally on drier ground.

Notes.—A common name of this species, River Birch, signifies its preference for river borders as its habitat. While the tree is not important it serves to hold stream banks from falling in and at the same time adds much to the attractiveness of river scenery. The bark and leaves lack the aroma of some of the other birches.

BEECH

BEECH

Fagus grandiflora, Ehr.

Form.—Height, 50-100 feet, diameter, 2-3 feet; trunk often long under forest conditions, in the open short; crown narrow or rounded.

Leaves.—Alternate, simple, oblong-ovate, acute, coarsely serrate, 3-5 inches long; dark blue green above, light green and very lustrous beneath, petioles short and hairy.

Flowers.—April-May; monoecious, staminate flowers in loose, light green globose heads, about 1 inch in diameter and hanging on long, slender peduncles; the pistillate small, 2-flowered, protected by awl-shaped bracts, and with long red stigmas.

Fruit.—A prickly bur, bearing 2 or 3 triangular brown nuts about ¾ inch long.

Bark.—On the trunk smooth, close, light gray and mottled with darker spots.

Wood.—Hard, strong, close-grained, not durable, light red, with yellowish-white sapwood.

Range.—Southern Canada and Wisconsin, south to Florida and Texas.

Distribution in West Virginia.—Common in nearly all parts of the State; less frequent or rare locally in the Eastern Panhandle and in Summers, Mercer, McDowell, and Wyoming counties.

Habitat.—Prefers rich bottom lands but grows frequently on thin gravelly slopes and flats, sometimes growing at high elevations.

Notes.—This is one of the most familiar of our trees, except in a few restricted areas. It is shade-loving, and is a valuable tree in the farmers' woodland. The wood is used principally for novelty wares, carpenters' tool handles, clothespins, fuel and charcoal.

CHESTNUT

CHESTNUT

Castanea dentata, (Marsh) Borkh.

Form.—Height 60-100 feet, diameter 3-5 feet; trunk, in close stands with few low branches and little taper; in the open having a short trunk and rounded crown.

Leaves.—Alternate, simple, oblong-lanceolate, taper-pointed, 6-8 inches long; coarsely serrate with incurved teeth, thin, dull, yellow-green, glabrous.

Flowers.—June-July; monoecious, the staminate borne in bunches at intervals on long catkins; the pistillate borne in scattered involucres near the base of the upper catkins.

Fruit.—A large prickly bur, opening at its four sutures in early autumn; nuts usually 2-3, compressed, ½-1 inch wide, brown, sweet and edible.

Bark.—Moderately rough, with shallow fissures and flat-topped ridges, gray-brown.

Wood.—Soft, light, not strong, easily split and worked, coarse-grained, durable, red-brown with light sapwood.

Range.—Maine and Michigan southward to Arkansas, Mississippi, and Alabama.

Distribution in West Virginia.—Abundant in most parts of the State; of best quality along the lower western slopes of the Alleghanies.

Habitat.—Thrives in most places in West Virginia, but is less frequently seen on limestone soils and in swampy places.

Notes.—The Chestnut tree is prized for its lumber, its nuts, its tannin, and for its numerous uses, especially on the farm. It is a very rapid grower, and sprouts freely from the base of the stump when cut down. A disease known as chestnut blight has entered the State and threatens to exterminate this tree.

CHINQUAPIN

CHINQUAPIN

Castanea pumila, (L.) Mill.

Form.—Height 20-30 feet, diameter 1-2 feet, in West Virginia usually much smaller; trunk short, supporting a rounded crown.

Leaves.—Alternate, simple, 2-6 inches long, lanceolate or oblong, narrowed at both ends, coarsely serrate, thick, smooth and yellow-green on the upper surface, paler and covered with a whitish down beneath.

Flowers.—May-June; monoecious; staminate flowers in clusters along the catkin; the pistillate borne at the base of the upper catkins in rounded, prickly involucres.

Fruit.—Matures in early autumn; bur covered with stiff spines and enclosing usually only one ovoid brown nut which is very sweet and edible.

Bark.—On trunk lightly furrowed and with flat ridges broken into light brown, loose plates.

Wood.—Light, hard, strong, coarse-grained, brown, with thin hardly distinguishable sapwood.

Range.—Pennsylvania and New Jersey south to Florida and Texas.

Distribution in West Virginia.—Not widely distributed but common in some sections. Observed in the following counties: Mercer, Wyoming, Summers, Fayette, Logan, and Boone. Reported also from Wayne, Monroe, Mingo, Braxton, Gilmer, Pendleton, Greenbrier, Grant and Nicholas counties.

Habitat.—Dry slopes and flats and stream borders.

Notes.—This species is usually a shrub in West Virginia, often bearing fruit when only a few feet high. Several trees observed south of the Kanawha River were well-formed, 20-25 feet tall, and with straight trunks 6-8 inches in diameter. The Chinquapin is chiefly prized on account of its nuts. It is susceptible to the attack of chestnut blight and may eventually be killed out by this disease.

WHITE OAK

WHITE OAK

Quercus alba, L.

Form.—Height 75-100 feet, diameter 3-6 feet; trunk long and free from limbs and with slight taper; crown broad and open with wide-spreading and often twisted branches.

Leaves.—Alternate, simple, 5-8 inches long, obovate-oblong, rounded at the apex and with usually 7 rounded lobes with entire edges, bright green above, glaucous beneath.

Flowers.—May, when leaves are one-third grown; monoecious: the staminate in long pendulous catkins; the pistillate borne above on short stalks in the leaf axils.

Fruit.—Acorns maturing in autumn after flowering; cup with small brown tomentose scales, enclosing about ¼ of the nut; nut ovoid, rounded at apex, light brown, shining; kernel bitter-sweet.

Bark.—On old trunks rough with deep fissures, and ridges which are often broken into short flat light gray scales.

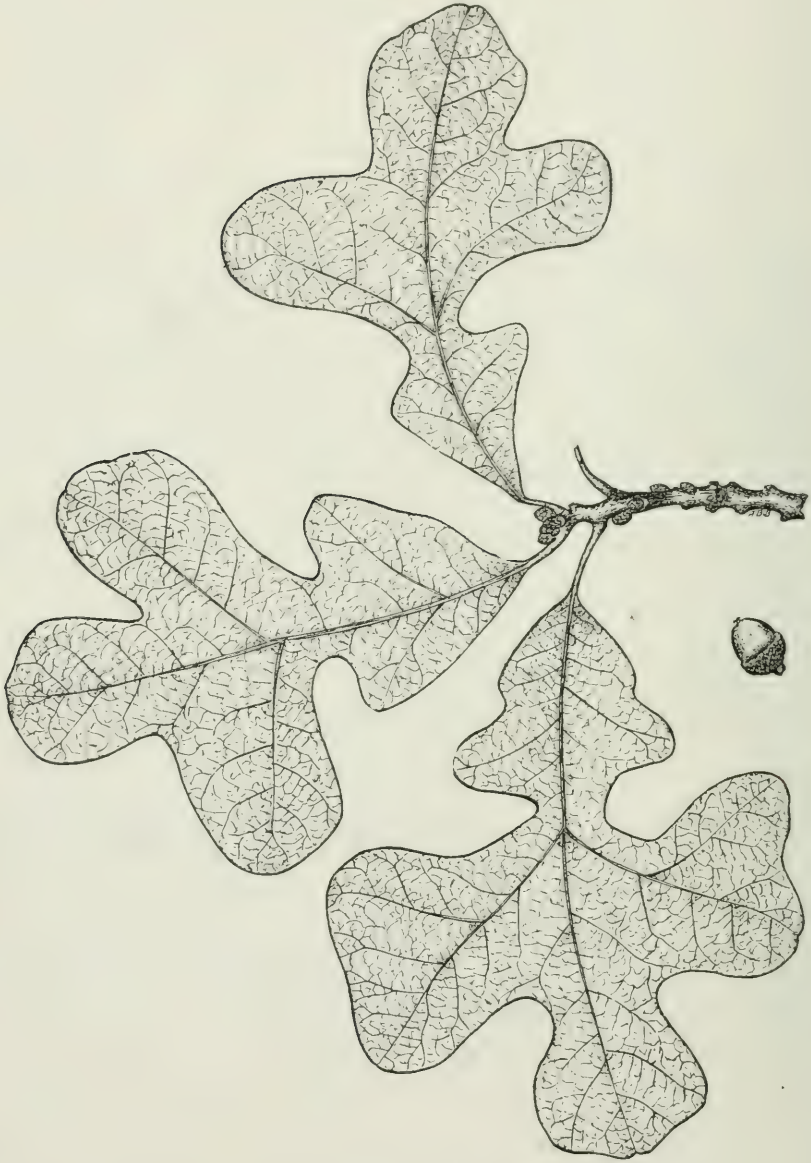
Wood.—Strong, heavy, close-grained, durable, light reddish brown with thin sapwood.

Range.—Maine and Minnesota to Florida and Texas.

Distribution in West Virginia.—Found in every county and in almost every locality except at high elevations.

Habitat.—Grows on many different types of soils and from moist bottom lands to the tops of dry ridges.

Notes.—The White Oak ranks as one of the most valuable timber trees. It is known to more persons than any of our other oaks, and is generally praised as a beautiful and useful tree.



POST OAK

POST OAK

Quercus stellata, Wang.

Form.—Height 50-75 feet, diameter 2-3 feet, trunk usually short; the crown rounded, with spreading branches.

Leaves.—Alternate, simple, about 4-5 inches long, usually with five lobes, the middle pair largest but all short and broad; thick and leathery, nearly smooth above, covered beneath with dense grayish or yellowish stellate pubescence.

Flowers.—May; monoecious; the staminate on long drooping catkins; the pistillate short-stalked and woolly, with bright red stigmas.

Fruit.—Acorn ripening in autumn after flowers; cup small, thin, hairy inside, scales flat and woolly; nut small, oval ½-¾ inch long, brown, sometimes marked with nearly black longitudinal stripes.

Bark.—Similar to that of White Oak, but usually rougher and more yellowish.

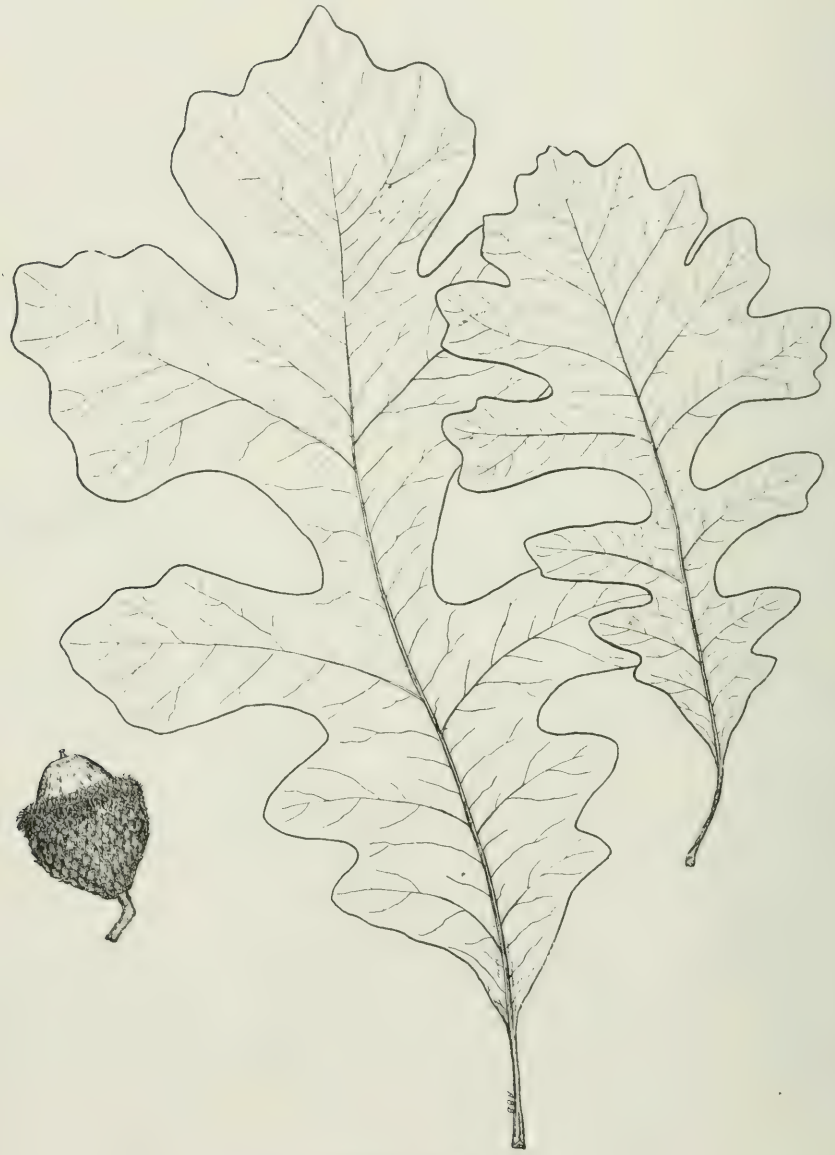
Wood.—Heavy, hard, close-grained, durable in contact with the soil, brown with thick sapwood.

Range.—New England, where it is a shrub, southward to Florida and Texas, and west to Kansas.

Distribution in West Virginia.—Distributed in nearly all the hilly parts of the State, though nowhere very common and in some sections rare.

Habitat.—Prefers dry sandy or gravelly soil.

Notes.—The Post Oak in winter may easily be mistaken for a White Oak, but in summer and fall the small acorns and the peculiar lobing of the leaves assist the student in distinguishing it from other species. It is not commercially important but should be encouraged to grow on account of the superior lasting qualities of the wood when used for fence posts or otherwise in contact with the soil.



BUR OAK

BUR OAK

Quercus macrocarpa, Michx.

Form.—Height 40-75 feet, diameter 2-4 feet; trunk usually short, bearing a rounded crown.

Leaves.—Alternate, simple, 6-12 inches long, wedge-shaped at the base, usually crenate lobed toward the apex with deep sinuses and rounded lobes in the middle; thick and firm, dark green and glossy above, pale pubescence beneath.

Flowers.—Similar to the other annual oaks, before described.

Fruit.—Matures in autumn of first season; very large acorn with a deep cup heavily fringed on the rim; nut ovoid, 1-1½ inches long, brown, pubescent, about one-third enclosed in the cup.

Bark.—Deeply furrowed and similar to that of White Oak; corky on the twigs.

Wood.—Heavy, hard, strong, close-grained, durable, brownish, with thin sapwood.

Range.—Nova Scotia and Manitoba south to West Virginia and west to Kansas and Texas.

Distribution in West Virginia.—Rare. Observed in the following localities: Hardy County, between Romney and Moorefield; Grant County, several trees on Lunice Creek near Petersburg; Morgan County, near Great Cacapon station. Reported from Tyler County.

Habitat.—Usually on rich soils near streams.

Notes.—This is a very large and valuable oak in Kansas and other states but is too rare to merit much attention in West Virginia. The beautifully-lobed leaves and large acorns will not fail to interest the student of trees.

SWAMP WHITE OAK

SWAMP WHITE OAK

Quercus bicolor, Willd.

Form.—Height 50-75 feet, diameter 2-3 feet; trunk, in the open, usually short, supporting a broad round-topped crown; in close stands the trunk is longer and well-formed; lower branches usually drooping.

Leaves.—Alternate, simple, 5-7 inches long, 3-5 inches broad, obovate, coarsely sinuate or shallow-lobed, margins thick and firm, smooth and shining above, paler and tomentose beneath.

Flowers.—May, with the leaves; monoecious; the staminate on long drooping catkins; the pistillate few-flowered, borne above on relatively long peduncles.

Fruit.—Matures in autumn after the flowers; acorns on pubescent stems 1-4 inches long; cup deeply saucer-shaped, enclosing about one-third of the nut, which is ¾ to 1¼ inches long, chestnut brown, usually hairy at apex.

Bark.—Rough on trunks with deep furrows and flat-topped and scaly ridges; on branches soon becoming rough, with scales which often curl back at the edges.

Wood.—Heavy, hard, strong, tough, light brown, with thin and hardly distinguishable sapwood.

Range.—Maine, south to Georgia and west to Michigan and Arkansas.

Distribution in West Virginia.—Infrequent. Found in the following localities: Grant County, on Lunice Creek; Hardy, near Moorefield; Pocahontas, near Marlinton; Greenbrier, near White Sulphur Springs; Berkeley, on Back Creek; Randolph, near Huttonsville; Upshur, at Lorentz.

Habitat.—Borders of swamps and low ground along streams.

Notes.—The Swamp White Oak can easily be distinguished from its near relatives; in the winter, by the bark ridges of the small branches and the drooping lower limbs; in the summer and fall by the wavy or sinuate-margined leaves and the long-stemmed acorns. This tree is not considered of much importance in this State.

YELLOW OAK

YELLOW OAK

Quercus Muhlenbergii, Engelm.

Form.—Height 50-75 feet, diameter 2-3 feet; trunk usually short, sometimes buttressed at the base; crown round-topped with relatively short, ascending branches.

Leaves.—Alternate, simple, 4-7 inches long, oblong, tapering at both ends, margins with coarse, sharp-pointed teeth which somewhat resemble those of the Chestnut and Chestnut Oak; bright yellow-green above, pale and pubescent beneath.

Flowers.—May, with the leaves; monoecious; the staminate in long pendulous catkins; the pistillate in short spikes.

Fruit.—Acorns mature in autumn after the flowers; cup enclosing about ½ of the light brown, ¾-inch-long nut; kernel sweet and more edible than that of most other acorns.

Bark.—On trunks moderately rough, the light gray ridges broken into scales; resembles the bark of White Oak.

Wood.—Heavy, hard, strong, close-grained, durable, brown with brownish sapwood.

Range.—Vermont and Minnesota south to Florida and Texas.

Distribution in West Virginia.—Not common. Observed in the following counties: Boone, Doddridge, Fayette, Grant, Hardy, Kanawha, Monongalia, Morgan, Summers and Webster. This tree is more common near Petersburg, Grant County, and on Long Island Creek, Doddridge County, than at any other places where it was found.

Habitat.—River banks and limestone hillsides.

Notes.—The wood of this oak is inferior to that of some other species and it occurs here too infrequently to be classed as very valuable.

CHESTNUT OAK

CHESTNUT OAK

Quercus Prinus, L.

Form.—Height 60-90 feet, diameter 3-5 feet; trunk long but usually more or less bent and often divided, forming a loose, open irregular crown.

Leaves.—Alternate, simple, 6-8 inches long, usually obovate, coarsely crenate, firm or leathery, smooth, dark green above, paler and finely pubescent beneath.

Flowers.—May, with the leaves; monoecious; the staminate flowers in long catkins; the pistillate in short spikes.

Fruit.—Acorns mature in autumn after the flowers; cup thin, deep, enclosing about ½ of the smooth, light brown, oblong-ovoid nut.

Bark.—Very rough with deep fissures and long, dark gray, continuous or broken ridges; rich in tannin.

Wood.—Heavy, hard, strong, close-grained, durable in contact with the soil, dark brown with light sapwood.

Range.—Maine to West Virginia and south along the mountains to Georgia and Alabama.

Distribution in West Virginia.—Common except at high elevations.

Habitat.—Prefers dry gravelly hillsides and ridges.

Notes.—The Chestnut Oak is one of our common trees in the hilly sections and can easily be distinguished by its thick, dark-colored bark, crenate-margined leaves and large, deep-cupped acorns. Many of the best stands have been cut for tan bark. Rock Oak is a common name in some localities.

RED OAK

RED OAK

Quercus rubra, L.

Form.—Height 60-100 feet, diameter 2-5 feet; trunk long and free from limbs when standing in close growth, with a narrow or rounded open crown.

Leaves.—Alternate, simple, 5-9 inches long, with 5-7 toothed, bristle-tipped lobes, becoming narrower outward from rounded sinuses, thin and firm, smooth, lusterless dark green above, paler beneath.

Flowers.—May, with the leaves; monoecious; the staminate flowers in long hairy catkins, the pistillate on short smooth stalks.

Fruit.—Acorns maturing the second autumn after the flowers; cup shallow, saucer-shaped, enclosing only the base of the nut; scales closely-appressed and somewhat glossy; nut oblong-ovoid, 1 inch long; kernel white, bitter.

Bark.—Rough with long fissures and flat-topped ridges, gray brown, inner bark light red, not bitter.

Wood.—Heavy, hard, strong, close-grained, light red-brown.

Range.—Southern Canada and Minnesota to Florida and Texas.

Distribution in West Virginia.—A common tree in all parts of the State. Most abundant and of superior size and quality in the high hilly and mountain sections.

Habitat.—Rich loamy or gravelly soils of bottom lands, slopes and ridges.

Notes.—The Red Oak is most frequently confused with the Black Oak from which it can be distinguished by the light red inner bark, the shallow-cupped acorns and the dull green leaves. This oak is extensively sawed into lumber which is easily worked and capable of a fine finish for furniture and interior work. As a tree for the park or lawn there are few which surpass it.

PIN OAK

PIN OAK

Quercus palustris, Michx.

Form.—Height 50-75 feet, diameter 2-3 feet; trunk usually straight and bearing a conic, well-shaped crown, lower limbs usually drooping and curving upward at the tips.

Leaves.—Alternate, simple, much smaller than those of the Red Oak, with 3-7, coarse-toothed, bristle-tipped lobes, with rounded sinuses; dark green and shining above, pale below, and smooth except for bunches of brownish tomentum in the axils of the principal veins.

Flowers.—Appear with the leaves; monoecious; staminate flowers in catkins 2-3 inches long; pistillate short-stalked and with red styles.

Fruit.—Acorns maturing in autumn of second year after the flowers; cup thin, shallow, about ½ inch across, enclosing about ¼ of the nut; kernel yellowish, bitter.

Bark.—Not as rough as that of most of the oaks, but with shallow fissures and broad flat ridges.

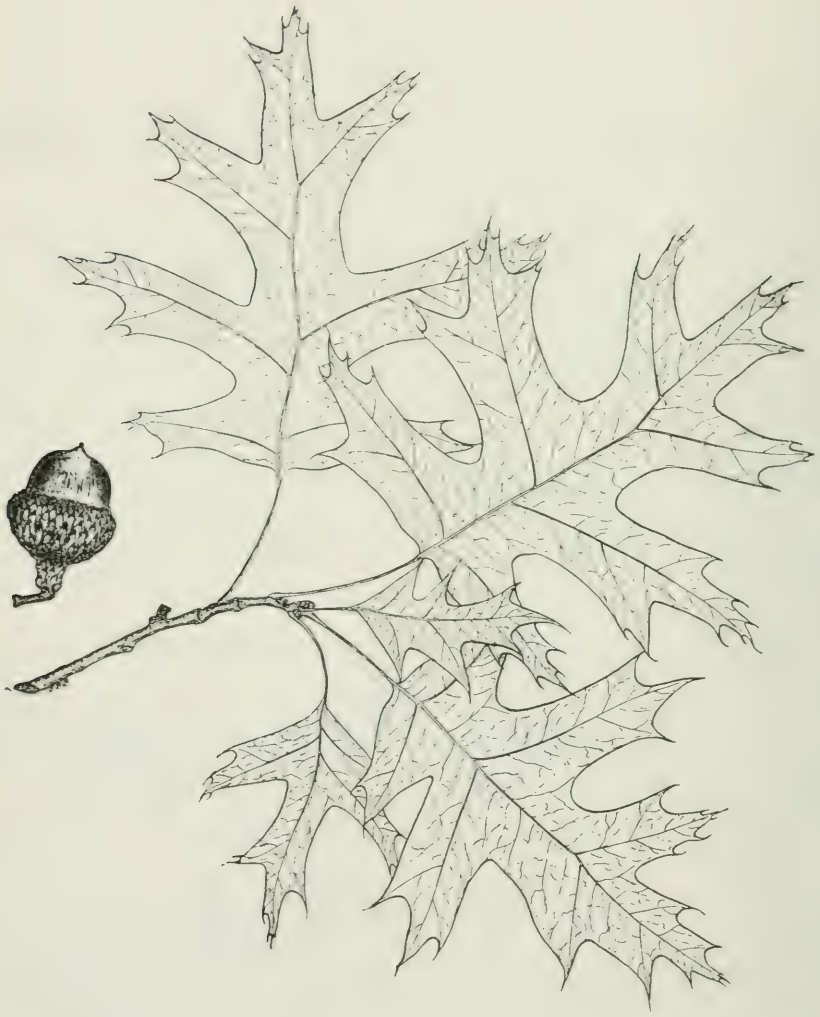
Wood.—Heavy, hard, strong, light-brown.

Range.—Massachusetts and Michigan to Virginia, Tennessee and Oklahoma.

Distribution in West Virginia.—Not a common tree. Plentiful near Princeton, Mercer County, and less common in Hardy and Morgan counties; doubtless growing locally in most of the counties south of the Great Kanawha River.

Habitat.—Prefers low ground along streams and borders of swamps.

Notes.—Pin Oak leaves resemble those of Scarlet Oak, but the appearance of the whole tree is quite different from it. The drooping lower branches and the location of the tree most readily distinguish it, and a comparison of its small acorns with the large acorns of the Scarlet Oak will serve to separate the two species. It is unexcelled as a tree for parks where it grows with a straight trunk and beautiful rounded crown.



SCARLET OAK

SCARLET OAK

Quercus coccinea, Muench.

Form.—Height, 60-80 feet; diameter 2-3 feet; trunk tapering, usually straight; crown open, and narrow when crowded.

Leaves.—Alternate, simple, 3-6 inches long, usually with 7 lobes which are deeply toothed and bristle-tipped at the apex, and separated by oblique sinuses; thin and firm, bright green above, paler beneath, lustrous on both sides; brilliant scarlet in the fall.

Flowers.—May, with the leaves; monoecious; staminate flowers on long catkins; the pistillate on short stalks in the leaf axils.

Fruit.—Acorns mature in second autumn after flowering; cup deep, covering about ½ of the nut, with closely appressed, sharp-pointed scales, somewhat glossy or slightly pubescent, forming a fringe around the edge which is closely appressed to the large ovoid, reddish-brown and sometimes striate nut.

Bark.—On trunks resembling that of Red Oak, but with shallower fissures and narrower ridges; inner bark reddish.

Wood.—Heavy, hard, strong, coarse-grained, reddish-brown.

Range.—Maine to North Carolina and west to Minnesota and Nebraska.

Distribution in West Virginia.—Common in all parts of the State except at high elevations.

Habitat.—Prefers dry sandy soil of hillsides and ridges.

Notes.—The wood of Scarlet Oak is of less value than that of several other oaks, but is frequently used for lumber, cross-ties, and other purposes. The tree is desirable for streets or parks and in autumn is especially attractive.

BLACK OAK

BLACK OAK

Quercus velutina, Lam.

Form.—Height 50-100 feet, diameter 2-4 feet; trunk long, clear, slightly tapering; crown spreading and rounded.

Leaves.—Alternate, simple, 5-10 inches long, lobes usually 7, with coarse, bristle-tipped teeth, thick and firm, dark green and shining above, paler beneath; on lower limbs and young trees, often with rounded, mucronate lobes; petioles yellowish.

Flowers.—May, with the leaves; monoecious; the staminate flowers in long, hairy catkins; the pistillate on short stalks, reddish.

Fruit.—Acorns mature the second autumn after flowering; cup deep, cup-shaped, enclosing about ½ of the nut; scales reddish-brown pubescent, tightly appressed at the base, and loosely over-lapping at the edge forming a fringe-like margin; nut small, light reddish-brown, often pubescent; kernel yellow, bitter.

Bark.—Rough with thick cross-fissured ridges, nearly black, inner bark yellow and bitter.

Wood.—Heavy, hard, strong, brown, with thin lighter sapwood.

Range.—Northern New England and Ontario, west to Minnesota and Nebraska, south to Florida and Texas.

Distribution in West Virginia.—Common throughout the State except at high elevations.

Habitat.—Rich soils of slopes or drier gravelly soils of ridges.

Notes.—Black Oak is very common but of less value than several of the other oaks. The lumber is similar to that of Red Oak. For the characteristics which distinguish this oak from the species with which it is most often confused, see "Notes" on Red Oak. Yellow Oak and Black Jack are two local names for this oak in West Virginia.

SPANISH OAK

SPANISH OAK

Quercus falcata, Michx.

Form.—Height 60-80 feet, diameter 2-3 feet; crown round-topped.

Leaves.—Alternate, simple, 6-7 inches long; variable in shape, with 3-7 toothed bristle pointed lobes, terminal lobes often elongated and falcate, dark green and lustrous above, paler and downy beneath.

Flowers.—April-May, with the leaves; monoecious; staminate flowers in long catkins, the pistillate on short hairy stalks.

Fruit.—Acorns mature the second autumn after flowering; cup hemispheric, ½-¾ inch across, reddish-brown inside and with reddish, pale, pubescent scales; nut ½ inch long, ovoid, pale orange-brown.

Bark.—On trunks with shallow fissures and brownish scaly ridges.

Wood.—Hard, strong, not durable, coarse-grained, reddish with light sapwood.

Range.—New Jersey to Florida and west to Missouri and Texas.

Distribution in West Virginia.—Confined, as far as known, to a few trees on the north side of Great Kanawha River near Charleston.

Habitat.—Dry soil.

Notes.—This tree, which is rare in West Virginia, must be listed in the class of unimportant trees. Its wood is comparatively inferior and it is less desirable for ornamental purposes than many other species.

SCRUB OAK

SCRUB OAK

Quercus ilicifolia, Wang.

Form.—Height 4-20 feet, diameter 2-6 inches; trunk short, branches stiff, contorted forming a flat-topped irregular head.

Leaves.—Alternate, simple, 2-5 inches long, usually 5-lobed, with shallow sinuses and sharp, bristle-tipped divisions of the lobes; leathery, dark green and lustrous above, coated beneath with a dense white pubescence.

Flowers.—May, with the leaves; monoecious; staminate flowers on long catkins, the pistillate on short tomentose stalks, and with red stigmas.

Fruit.—Acorns mature in second autumn after the flowers; cup deep, reddish-brown and soft downy within, with light brown scales, the outer row forming a narrow fringe around the edge; nut ovoid, about half enclosed in the cup; kernel yellow.

Bark.—Dark gray and scaly on old trunks.

Wood.—Strong, hard, with brown heartwood.

Range.—Maine to southern Virginia, west to Ohio.

Distribution in West Virginia.—Common along the Alleghany Mountains and in the Eastern Panhandle.

Habitat.—Dry soils of slopes and mountain tops.

Notes.—This oak is usually a shrub in West Virginia, but it sometimes reaches the form and size of a small tree. In many places it grows in dense thickets covering large areas on mountain sides and flats. The red-brown dry leaves often hang on over winter, giving rise to a common local name, "Red-brush."

BLACK JACK OAK

BLACK JACK OAK

Quercus marilandica, Muench.

Form.—Height 30-50 feet, diameter 12-18 inches; crown narrow and compact with short stout branches.

Leaves.—Alternate, simple, 6-7 inches long, nearly as wide as long, rounded and narrow at the base, broadening outward, with about 3 broad and shallow lobes which are dentate; leathery, dark green and lustrous above, paler and often coated with a rusty, scurfy pubescence beneath.

Flowers.—May, with the leaves; monoecious; the staminate flowers in long catkins, the pistillate on short pubescent stalks.

Fruit.—Acorns mature the second autumn after the flowers; cup deep, covering about ½ of the nut, downy within, scales large, reddish-brown and loose.

Bark.—Rough, with deep fissures and dark ridges which are broken into broad angular plates.

Wood.—Heavy, hard, strong, dark brown.

Range.—New York to Florida and Texas, west to Nebraska.

Distribution in West Virginia.—Observed only on the western slope of Blue Ridge Mountains in Jefferson County.

Habitat.—Sandy or heavy clay soils.

Notes.—The Black Jack Oak is very rare and scrubby in growth in this State. It has no value as a timber tree, but is desirable for ornamental purposes.

LAUREL OAK

LAUREL OAK

Quercus imbricaria, Michx.

Form.—Height 50-100 feet, diameter 1-3 feet; crown pyramidal or round-topped and open, with drooping lateral branches.

Leaves.—Alternate, simple, 4-6 inches long, oblong or lanceolate, margins entire or sometimes undulate, with acute apex, dark green and lustrous above, pale and hairy beneath.

Flowers.—May, with the leaves; monoecious; staminate flowers borne on long catkins; the pistillate on short stalks.

Fruit.—Acorns mature the second autumn after the flowers; cup saucer-shaped, brown and glossy inside, with reddish-brown scales, and enclosing about ½ of the ovoid, dark brown, often striate nut.

Bark.—With shallow fissures and with ridges having brown scales.

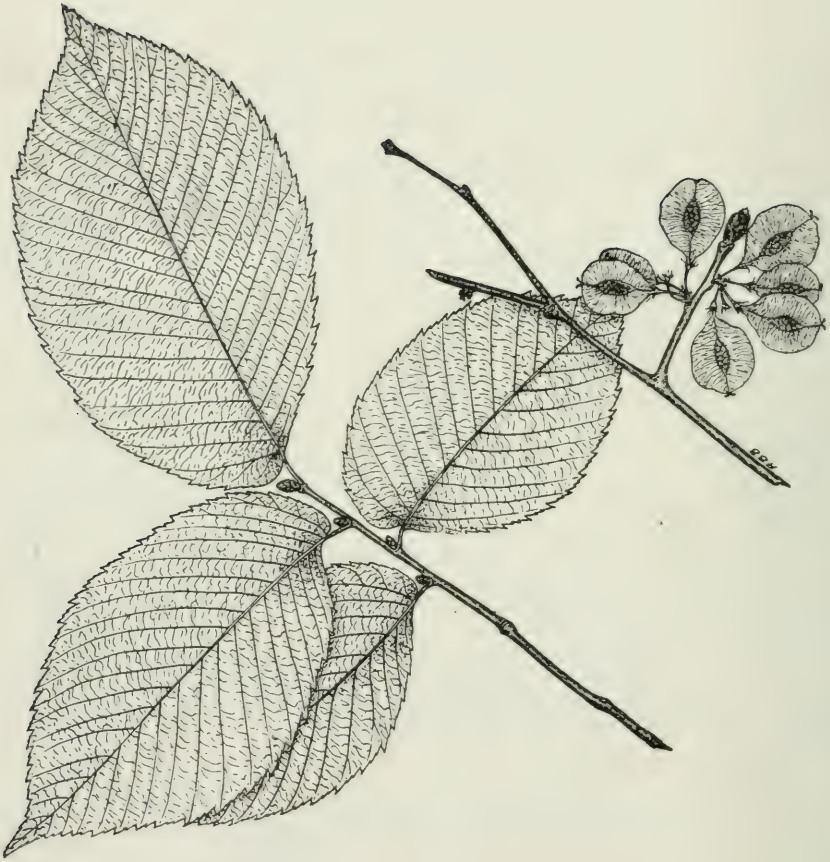
Wood.—Heavy, hard, coarse-grained, reddish-brown.

Range.—Pennsylvania to Georgia west to Michigan, Nebraska and Arkansas.

Distribution in West Virginia.—Locally distributed in many parts of the State, but nowhere common. Observed in Barbour, Grant, Hardy, Mason, Monongalia, Morgan, and Upshur counties.

Habitat.—Prefers bottom lands along streams.

Notes.—This oak is unusual in appearance since the leaves are entirely without lobes. It cannot be recommended for forestry purposes.



SLIPPERY ELM

SLIPPERY ELM

Ulmus fulva, Michx.

Form.—Height 40-80 feet, diameter 1-2½ feet; trunk usually short and soon branching; crown open and broad.

Leaves.—Alternate, simple, 5-7 inches long, ovate-oblong, oblique at base, abruptly sharp-pointed apex, margin doubly serrate, rough-hairy on both sides.

Flowers.—April, before the leaves; mostly perfect; on short pedicels in crowded branches; corolla absent, calyx green, anthers red, two stigmas purple.

Fruit.—Matures in spring a few weeks after the flowers; a one-seeded samara consisting of a small flat seed surrounded by a wing which is nearly circular in outline and smooth, except over the seed cavity.

Bark.—Thick, divided by fissures and with large, thick appressed scales, brown tinged with red within, inner bark fragrant, mucilaginous and slippery.

Wood.—Heavy, hard, strong, reddish-brown, with thin sapwood.

Range.—Southeastern Canada to Florida, west to North Dakota and Texas.

Distribution in West Virginia.—Common locally, rare in many sections. Found in the folowing counties: Barbour, Braxton, Clay, Fayette, Grant, Mingo, Monongalia, Pocahontas, Putnam, Roane, Tyler, Upshur and Wetzel.

Habitat.—Fertile, rocky soil.

Notes.—The slippery, inner bark, the smooth-margined fruits and the rusty-brown, orbicular, pubescent buds distinguish this from other elms. It is not an important tree for forest planting. It is sometimes called Red Elm.

AMERICAN ELM

AMERICAN ELM

Ulmus americana, L.

Form.—Height 60-100 feet, diameter 2-6 feet, sometimes much larger; trunk usually dividing 25-30 feet above the ground; crown varied in form, usually wide-spreading.

Leaves.—Alternate, simple, 4-6 inches long, oval, coarsely-doubly-serrate, oblique at the base, thick, dark green and rough above, paler and smoother beneath.

Flowers.—April, before the leaves, mostly perfect; borne in dense fascicles, corolla absent, calyx 5-9 round-lobed, stamens with red anthers, styles two, green.

Fruit.—Matures in spring soon after the flowers; oval samara consisting of a flat seed surrounded by a wing which has a terminal notch and ciliate margin.

Bark.—Rough, with deep fissures and scaly ridges, ashy-gray.

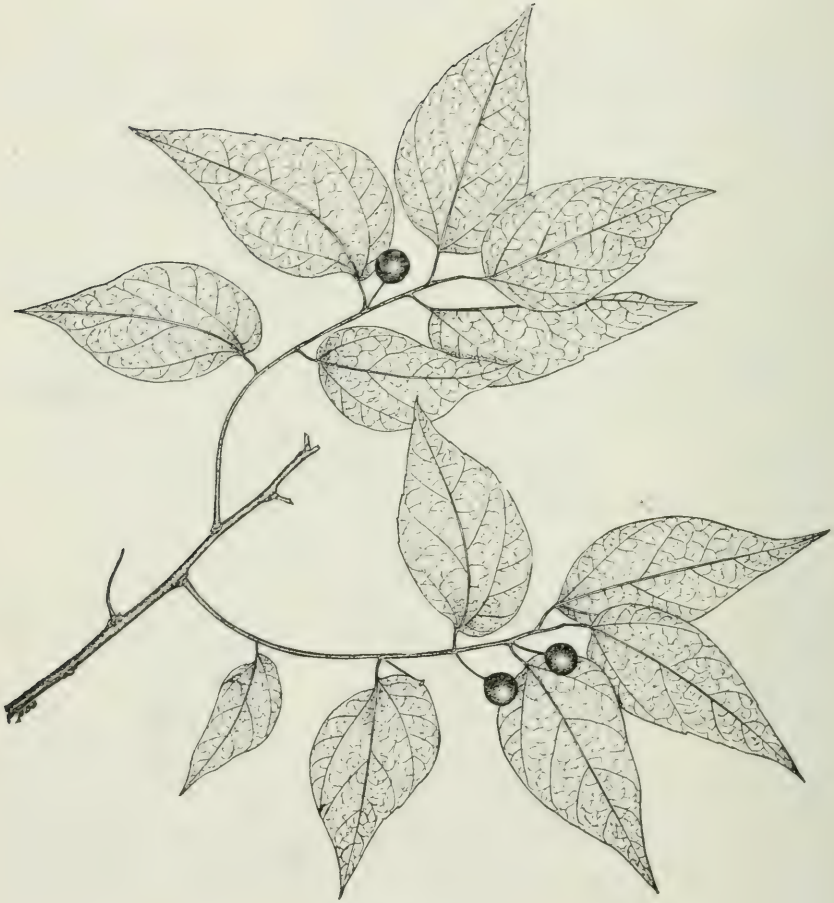
Wood.—Heavy, hard, strong, not easily split, light brown.

Range.—Newfoundland to the Rocky Mountains and south to Florida and Texas.

Distribution in West Virginia.—A very common tree, especially at low elevations. Not often found in the counties adjoining the Alleghanies.

Habitat.—Prefers rich bottom lands.

Notes.—The American or White Elm is one of the most valuable and magnificent trees of the United States. Its wood is extensively used where toughness is desired, as in wagon hubs. It grows to a very large size and over a wide range, and is unsurpassed in elegance of form and other characteristics which make it valuable for park and street planting. In low wet grounds it may be grown for forestry purposes.



HACKBERRY

HACKBERRY

Celtis occidentalis, L.

Form.—Height 25-80 feet, diameter up to 30 inches; trunk long when in close stands with other trees; crown spreading or round.

Leaves.—Alternate, simple, ovate, narrowed to sharp points, rounded oblique base, coarsely serrate, rough above, with prominent veins, light yellow-green. The leaves are soft hairy beneath and pilose above when young.

Flowers.—May, with the leaves; monoecious, or with some perfect flowers; the staminate on drooping pedicels at base of season's growth; the pistillate, few-flowered in axils of the upper leaves, greenish and small.

Fruit.—Ripens in September, a berry-like drupe, ¼ to ½ inch thick, dark purple, sweet and edible, on slender pedicels, often remaining on the tree during the winter.

Bark.—Usually rough with warty projections, light gray.

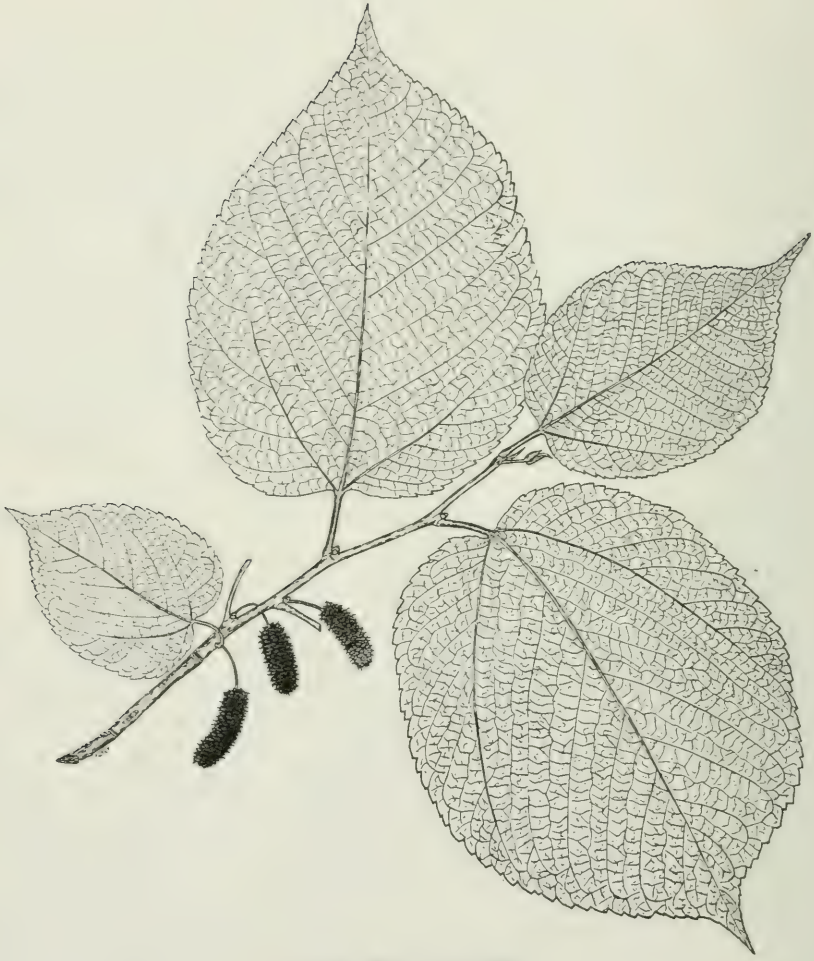
Wood.—Heavy, soft, coarse-grained, yellowish, resembling ash, with light-colored sapwood.

Range.—Most of the United States, east of the Rocky Mountains.

Distribution in West Virginia.—Common in the eastern Panhandle and scattered throughout the State; rare or not occurring in the counties along the Alleghanies and in those adjacent on the west.

Habitat.—Grows best on moist, rich land, but is found in a variety of soils.

Notes.—Sugar Berry and Hoop Ash are two common local names of this species. In some places along the Ohio River the tree grows to a fairly large size with a long clear trunk; in the eastern part of the State it is usually small and scrubby. The tree is most easily distinguished by its peculiar warty bark and by the witches' brooms which are usually present. The wood is often sold as Ash and is used for cheap furniture, cooperage, crates, boxes, agricultural implements, etc. The very small shrubby trees found in the Eastern part of the State should probably be classed as Variety *pumila*, Muhl.



RED MULBERRY

RED MULBERRY

Morus rubra, L.

Form.—Height 15-25 feet, diameter 10-20 inches; trunk usually straight, short, bearing a rounded crown.

Leaves.—Alternate, simple, 3-6 inches long, nearly orbicular in outline, or with 3-5 lobes, coarsely serrate, dark green and usually slightly rough above, paler and hairy beneath.

Flowers.—May-June; monoecious or dioecious; the staminate in dense spikes 1-2 inches long; the pistillate arranged in the same way but in shorter spikes.

Fruit.—July-August; very small drupes aggregate in a dense cylindric cluster about 1 inch long, blackish when ripe, sweet, juicy and edible.

Bark.—On trunks, brownish-gray, roughened by narrow ridges.

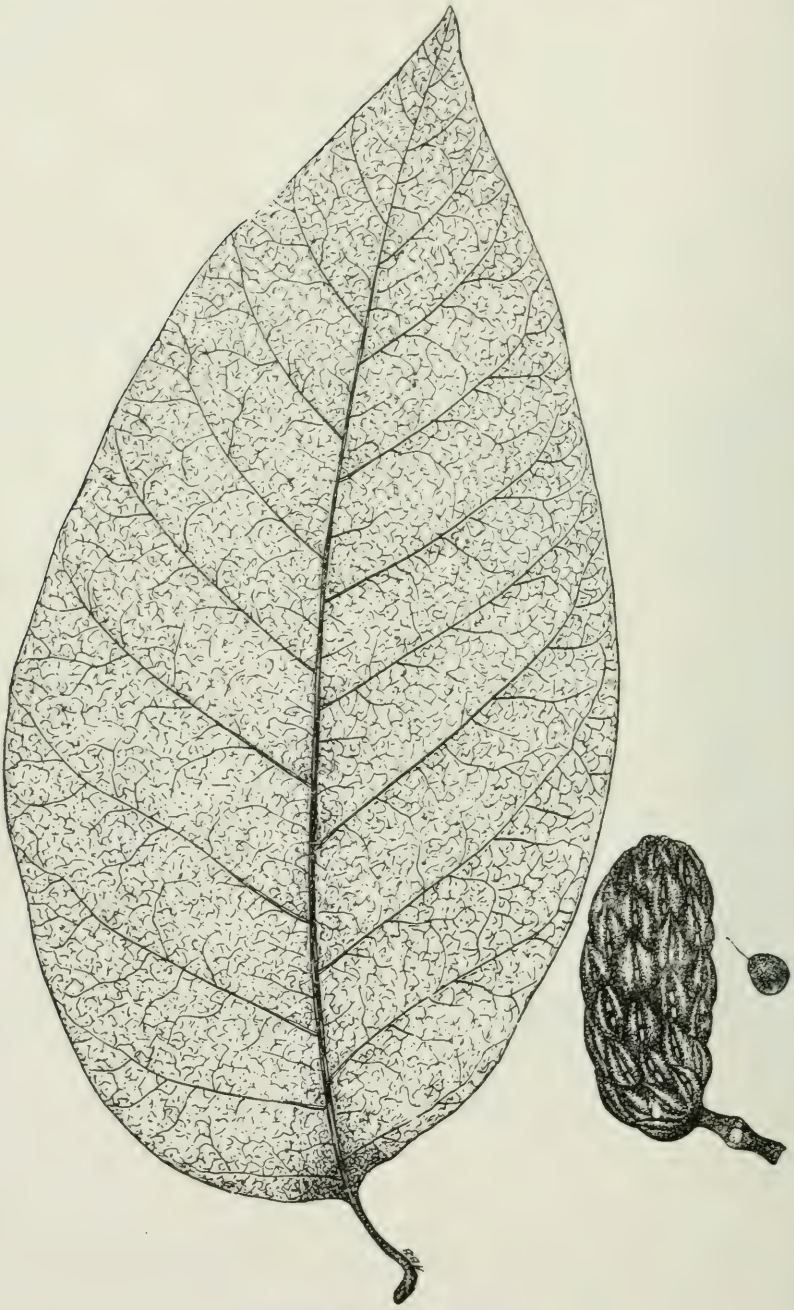
Wood.—Light, soft, tough, coarse-grained, very durable, light orange color.

Range.—Massachusetts to Florida, west to Kansas and Nebraska.

Distribution in West Virginia.—Found in scattered growth throughout the State.

Habitat.—Grows best in rich bottoms, but is found scattered with other hardwoods in various locations.

Notes.—The Mulberry is easily distinguished in summer by its irregular leaf forms and peculiar fruits. It is not important as a lumber tree, though the wood is attractive and durable.



CUCUMBER TREE

CUCUMBER TREE

Magnolia acuminata, L.

Form.—Height 50-90 feet, diameter 2-4 feet; trunk long, clear, straight; crown usually pyramidal with spreading lower branches.

Leaves.—Alternate, simple, ovate, 4-12 inches long, apex pointed, entire, thin, smooth above, pale and downy beneath.

Flowers.—April-June; perfect, upright, solitary, bell-shaped, greenish-yellow, about 3 inches long.

Fruit.—Matures in autumn; fleshy, cucumber-shaped, about 2½ inches long, composed of 1-2-seeded carpels; seeds scarlet, drupe-like, attached by slender extensile threads.

Bark.—Grayish-brown, furrowed, with loose scales.

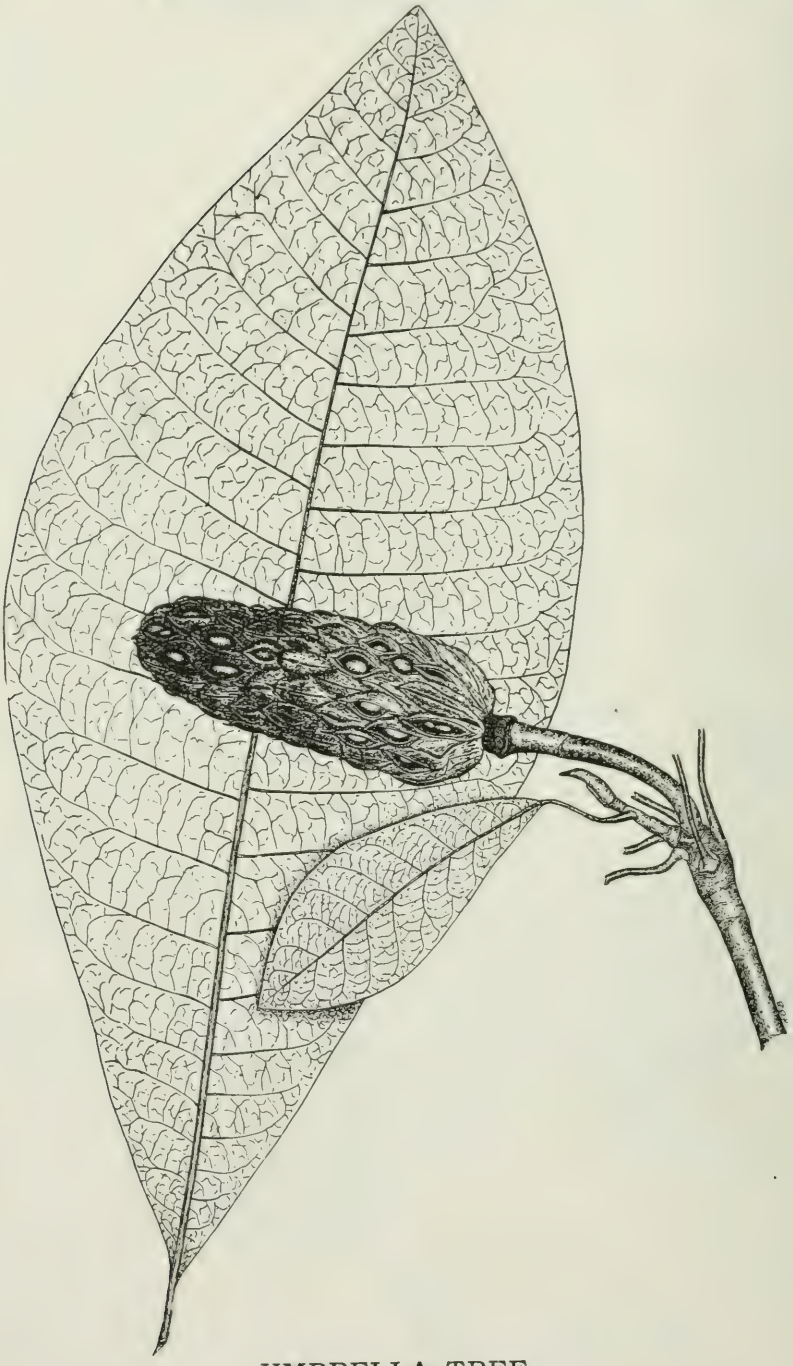
Wood.—Light, soft, close-grained, durable, yellowish, resembling Yellow Poplar, and used for interior finish and other purposes in buildings.

Range.—New York to Georgia, west to Kansas.

Distribution in West Virginia.—With other hardwoods throughout the State. Most plentiful in the mountainous and high hilly sections.

Habitat.—Prefers rich soils of bottoms and hillsides.

Notes.—The Cucumber is valuable as a forest and shade tree and should be propagated for these purposes. It can be distinguished from the other West Virginia magnolias by its smaller leaves, its greenish-yellow flowers, and its usually larger size.



UMBRELLA TREE

UMBRELLA TREE

Magnolia tripetala, L.

Form.—Height 25-50 feet, diameter 10-15 inches; trunk straight, with spreading branches which form a broad, round-topped crown.

Leaves.—Alternate, arranged near the ends of the branches in an umbrella-like circle, simple, obovate-lanceolate, pointed at both ends, 12-24 inches long, with short stout petioles, entire, smooth on both sides when old.

Flowers.—Appear in May; perfect, solitary, erect, surrounded by a whorl of leaves, petals creamy white, 4-5 inches long, slightly scented.

Fruit.—Matures in autumn; cylindric or oblong, cone-like, 2-4 inches long, fleshy, composed of numerous rose-colored follicles which split on the back at maturity and liberate small flat, red seeds.

Bark.—Smooth, light gray, sometimes roughened by scattered irregular projections.

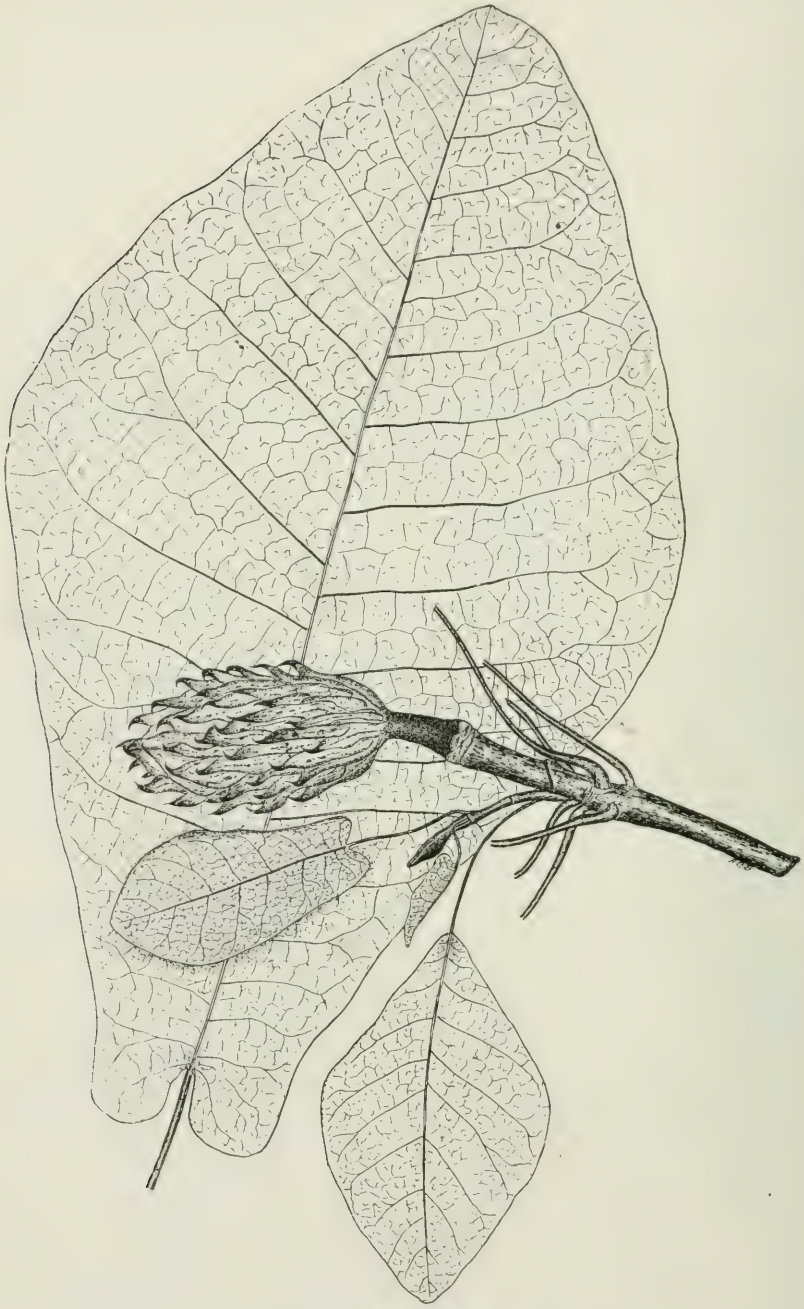
Wood.—Light, soft, close-grained, not strong, light brown, with white sapwood.

Range.—Southern Pennsylvania to Georgia, west to northern Mississippi and Arkansas.

Distribution in West Virginia.—Found on swamp borders or along streams in the following counties: Boone, Braxton, Fayette, Kanawha, Logan, McDowell, Mingo, Nicholas, Randolph, Raleigh, Upshur, Webster, Wyoming.

Habitat.—Prefers rich soil of streams and swamps.

Notes.—The Umbrella Magnolia is chiefly valuable as an ornamental tree. It is especially attractive in autumn when the bright, rose-colored fruits are mature.



MOUNTAIN MAGNOLIA

MOUNTAIN MAGNOLIA

Magnolia Fraseri, Walt.

Form.—Height, 30-50 feet, diameter 12-18 inches; trunk straight or inclining, undivided for half its length, or separating near the ground into several stems.

Leaves.—Alternate, simple, oblong-obovate or spatulate, eared at the base, bluntly pointed at the apex, glabrous 10-24 inches long, often crowded in whorls.

Flowers.—May; perfect, solitary, 8-10 inches in diameter, creamy white, sweet-scented.

Fruit.—Matures in early autumn; an oblong cone-like aggregate of fleshy, rose-colored follicles, with sharp-pointed tips; seeds obovoid, compressed, 5/8 inch long.

Bark.—Smooth, or on old trunks roughened by irregular excrescences or scales, dark brown.

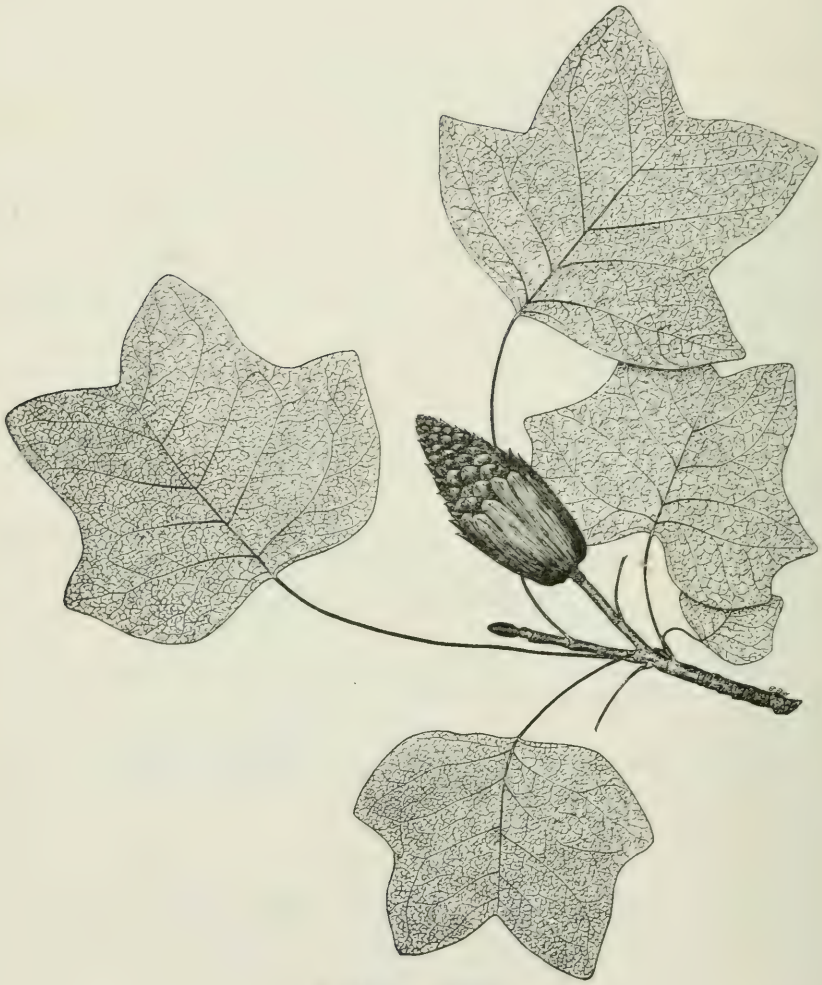
Wood.—Light, soft, not strong, close-grained, brown with light sapwood.

Range.—West Virginia to northern Georgia and Alabama, west to northern Mississippi and eastern Tennessee.

Distribution in West Virginia.—Infrequent, found scattered through the mountainous parts of Clay, Nicholas, Pocahontas, Randolph, Upshur and Webster counties; growing at 3,500 feet elevation on the head of Cherry River.

Habitat.—Borders of streams and rich mountain-sides.

Notes.—Like the Umbrella Tree this species is of little value for forestry purposes, but is highly ornamental. Its chief distinguishing mark in summer is the leaf base which is prominently eared.



TULIP TREE

TULIP TREE

Liriodendron tulipifera, L.

Form.—Height 80-150 feet; diameter 3-10 feet; trunk long, clear and straight; crown open, conical, of slender branches.

Leaves.—Alternate, simple, 5-6 inches long, and about as broad, usually with four lobes, two at the truncate apex and one on each side, smooth, bright green above, paler beneath; petioles angled, slender, 5-6 inches long.

Flowers.—May-June; solitary, terminal, perfect, tulip-shaped 1½-2 inches long, greenish yellow with orange spots; petals 6, in two rows; sepals greenish, early falling.

Fruit.—Matures in early autumn; oblong, cone-like, composed of numerous brown flat pointed carpels, each bearing a 1-2-seeded nutlet at its base.

Bark.—Rough on old trunks, with prominent parallel connected ridges, and deep fissures, light grayish-brown.

Wood.—Light, soft, not strong, easily worked, light yellow with creamy white sapwood.

Range.—Rhode Island and Michigan, south to Florida and Arkansas, not of commercial size at the extremes of its range.

Distribution in West Virginia.—Found throughout the State below the Spruce belt, rare on the Potomac waters.

Habitat.—Prefers rich, moist soil of stream valleys and coves, but adapts itself to less favorable situations.

Notes.—This tree, commonly known as Yellow Poplar, is of first importance for forestry purposes; it reproduces readily from the seed, is a rapid grower, and its wood is easily worked and desirable for many purposes.

COMMON PAWPAW

COMMON PAWPAW

Asimina triloba, Dual.

Form.—Height 10-50 feet, diameter 8-12 inches; trunk usually straight and slender, bearing a broad or restricted crown of straight branches.

Leaves.—Alternate, simple, thin, obovate-lanceolate, pointed, 4-12 inches long, margin entire, smooth except when young, dark green above, paler beneath.

Flowers.—April-May, with the leaves; scattered along the twigs, perfect, 1-1½ inches wide, dark reddish purple, borne on stout hairy stalks.

Fruit.—Matures in early autumn; short, cylindric, resembling a banana, 3-5 inches long, with a thin, greenish-yellow skin, enclosing a yellow pulpy edible mass through which is scattered several brown shiny seeds.

Bark.—Rather smooth, brown, often blotched, thin and close.

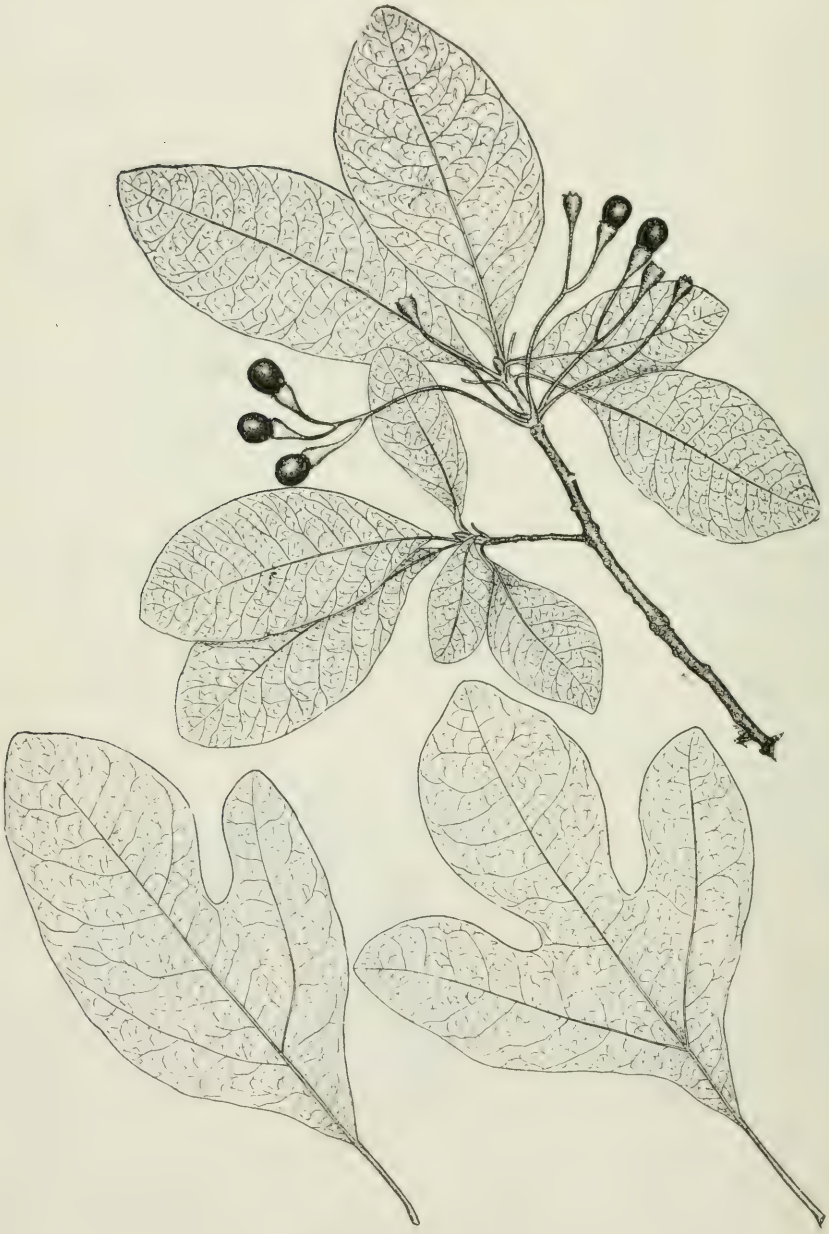
Wood.—Light, soft, coarse-grained, brown with yellowish sapwood.

Range.—Western New York and central New Jersey, south to Florida and west to Texas, Kansas and Michigan.

Distribution in West Virginia.—Scattered groups throughout the State, except in the Spruce belt, and in the higher adjacent sections. Common along the Ohio and Potomac river valleys.

Habitat.—Prefers moist soils along streams, but grows well on loamy slopes.

Notes.—The Pawpaw or Custard Apple is not important as a forest tree but is interesting and attractive on account of its peculiar fruits. It is very tolerant of shade and is suitable for underplanting where production of wood is not the object.



SASSAFRAS

SASSAFRAS

Sassafras variifolium, (Salis.) Kuntze.

Form.—Height 40-50 feet, diameter 1-3 feet; trunk usually short, stout, and bearing an open crown of contorted branches.

Leaves.—Alternate, simple, ovate in outline, entire, or 2-5 lobed, 4-6 inches long, smooth, dark green above, paler beneath.

Flowers.—May, with the leaves; dioecious; both sexes about ½ inch long, greenish yellow, in few-flowered, drooping racemes.

Fruit.—Matures in early autumn; a dark blue, berry-like drupe, one-third inch long, borne on a bright red thickened stalk with persistent calyx.

Bark.—Rough, with shallow fissures and flat-topped connected ridges, light brown.

Wood.—Soft, weak, brittle, durable in the soil, aromatic, dull orange-brown with thin lighter sapwood.

Range.—Massachusetts to Florida, and west to Texas, Kansas and Michigan.

Distribution in West Virginia.—A common tree distributed throughout the State except at high elevations.

Habitat.—Prefers sandy loam. Common in thin soil of worn out fields and along fence rows.

Notes.—This species is commonly considered a weed among trees. The wood is very durable when in contact with the ground but is not often used. The fruits are eagerly eaten by birds and the aromatic bark is used for flavoring candy and medicine.

WITCH HAZEL

WITCH HAZEL

Hamamelis virginiana, L.

Form.—Height 15-25 feet, diameter 4-10 inches; trunk short, often inclined, bearing an irregular crown.

Leaves.—Alternate, simple, oval, 4-6 inches long, rounded at the apex, wavy-toothed, somewhat downy when young.

Flowers.—October and November; perfect; with 4 slender, strap-shaped yellow petals, clustered at the leaf axils.

Fruit.—Ripens in autumn from flowers of the previous year; a two-celled, woody, nut-like pod, ½ inch long, containing black shining seeds which are propelled a distance of several feet when the pods burst open.

Bark.—Smooth or scaly, thin, light brown and blotched.

Wood.—Heavy, hard, close-grained, light brown.

Range.—Ontario to Florida, west to Texas and Minnesota.

Distribution in West Virginia.—Found throughout the State.

Habitat.—Prefers moist rocky soils but thrives in a variety of situations.

Notes.—This small abundant tree is interesting in that it blossoms in the fall at the same time its fruit is maturing. It is not important for forestry uses, and is seldom planted for any purpose.

SWEET GUM

SWEET GUM

Liquidambar styraciflua, L.

Form.—Height 50-100 feet, diameter, 2-4 feet; trunk usually tall and straight with narrow crown, except when grown in the open.

Leaves.—Alternate, simple, 3-5 inches long, irregularly star-shaped, with five unequal pointed lobes, broader than long, margins of lobes serrate, bright shining green above, paler beneath, petioles long and round.

Flowers.—April-May; usually monoecious; the staminate green, borne in terminal racemes; the pistillate in heads on long axillary stalks.

Fruit.—A long-stalked spherical head, 1-1½ inches in diameter, composed of numerous capsules, covered with curved, blunt, spine-like appendages.

Bark.—On old trunks gray with deep furrows and scaly ridges. Corky bark is often present on limbs and twigs.

Wood.—Heavy, hard, strong, close-grained, reddish-brown with whitish sapwood.

Range.—Southern Connecticut to Florida, west to Missouri and Texas.

Distribution in West Virginia.—Found locally along the Great Kanawha, New, Gauley, Elk, Tug Fork, and for short distances up several of the tributaries of these rivers.

Habitat.—Prefers deep rich soils along streams.

Notes.—Sweet Gum cannot be classed as a valuable forest tree in West Virginia, though in other states its wood is extensively used for boxes, interior finish, etc. It is very desirable for planting in parks or on lawns and is especially attractive when the leaves change color in the fall.

SYCAMORE

SYCAMORE

Platanus occidentalis, L.

Form.—Height 100-150 feet, diameter 4-10 feet; trunk massive, usually short, often inclined; crown open, irregular, of large limbs and irregular branches.

Leaves.—Alternate, simple, broadly oval, 4-10 inches long, 3-5-sinuate lobed, the short lobes sharp-pointed, bright green above, pale and somewhat pubescent or woolly beneath.

Flowers.—May; monoecious; the staminate dark red on short axillary stalks, the pistillate greenish on long, slender terminal stalks.

Fruit.—October, persisting through the winter, in brown heads about 1 inch in diameter and suspended on long slender stalks. The chaffy achenes which compose the head are about ¾ of an inch long.

Bark.—Covered with broad curling scales which are shed off exposing the smooth greenish-white surface beneath.

Wood.—Heavy, hard, difficult to split, reddish-brown with light sapwood.

Range.—Maine to Florida, west to Texas and Minnesota.

Distribution in West Virginia.—Common throughout the State along streams below 3,000 feet elevation.

Habitat.—Moist soil of stream borders.

Notes.—The wood of Sycamore is considered valuable for interior finish, furniture, crates and tobacco boxes. Its growth should be encouraged whenever possible both as a forest and shade tree.

AMERICAN CRAB APPLE

AMERICAN CRAB APPLE

Pyrus coronaria, L.

Form.—Height 15-25 feet, diameter 10-14 inches; trunk short and usually armed with many stubby, thorn-like branches; crown narrow when in a thicket but broad and flat-topped in the open.

Leaves.—Alternate, simple, ovate, or elliptic, 3-4 inches long; sharp-pointed apex, rounded base, serrate, smooth, dark green above, paler beneath.

Flowers.—May, with the nearly full-grown leaves; perfect, rosy-white, 1½-2 inches across, arranged in umbel-like cymes; very fragrant.

Fruit.—Matures in autumn; a depressed globose pome, 1-1½ inches in diameter, yellowish green, fragrant, flesh firm and bitter.

Bark.—Roughened with flat, scaly ridges; brownish-gray or reddish.

Wood.—Heavy, hard, light reddish brown.

Range.—Southern Canada to Alabama, west to Louisiana, Missouri and Michigan.

Distribution in West Virginia.—Common in most sections. Rare in Boone, Logan, Mingo and other southwestern counties. Abundant in the hilly regions of the central and northern parts of the State.

Habitat.—Prefers a moist soil and is usually found in thickets in open woods and neglected fields.

Notes.—The Crab Apple is best known on account of its fragrant blossoms. The wood is sometimes used for tool handles, turned articles, and engravings.

MOUNTAIN ASH

MOUNTAIN ASH

Pyrus americana (Marsh.) D. C.

Form.—Height 20-30 feet, diameter 8-12 inches; trunk short, supporting a round-topped crown.

Leaves.—Alternate, compound, 6-9 inches long; leaflets 9-17, 2-3 inches long, nearly sessile, except the terminal one, lanceolate, taper-pointed, sharply serrate above the entire base; glabrous, dark green above, paler beneath.

Flowers.—Appear in May; perfect, in flat cymes 3-4 inches across, white.

Fruit.—Matures in autumn, persistent on the tree through the winter; a round berry-like pome, ¼ inch in diameter, bright red, acid, in large flat-topped clusters.

Bark.—Smooth or slightly roughened, light gray.

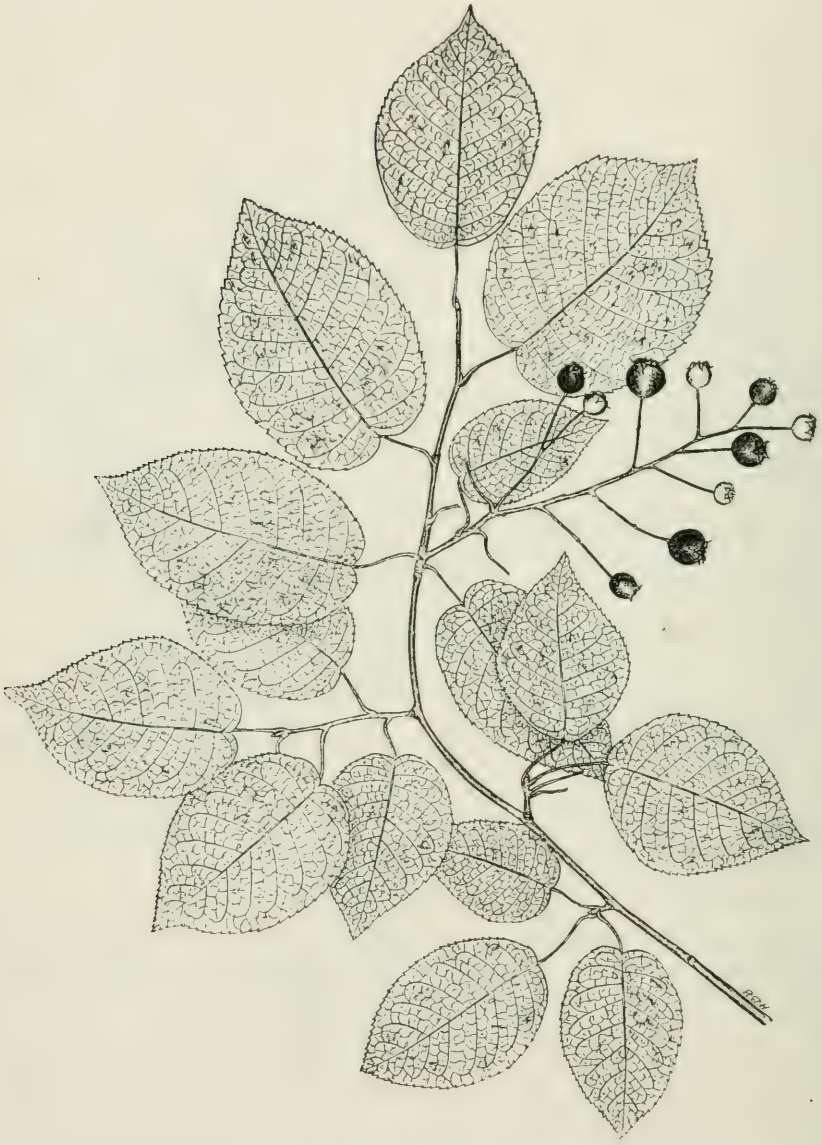
Wood.—Light, close-grained, soft, weak, light brown with lighter sapwood.

Range.—Newfoundland west to Manitoba and Iowa, south along the mountains to North Carolina.

Distribution in West Virginia.—Confined to high swamps and mountains. Observed in the following counties: Pendleton, Pocahontas, Preston, Randolph and Tucker.

Habitat.—Moist soil of swamps and rocky slopes.

Notes.—This tree has no commercial value, being rare and of small size. Its form, foliage, flowers and bright persistent fruits make it a desirable tree for ornamental planting.



SHAD BUSH

SHAD BUSH

Amelanchier canadensis, (L.) Medic.

Form.—Height 10-40 feet, diameter 4-16 inches; trunk short; crown shallow and usually narrow, with numerous slender branches.

Leaves.—Alternate, simple, 3-4 inches long, ovate to ovate-oblong, finely serrate, smooth when old, dark green above, paler beneath.

Flowers.—April; perfect, white, borne in drooping racemes.

Fruit.—June-August; a berry-like, globular pome, one-third-½ inch long, borne in racemes, red to purple, sweet and edible.

Bark.—Smooth, or somewhat rough, with narrow scaly ridges on old trees.

Wood.—Heavy, hard, strong, close-grained, warps and checks easily, dark reddish-brown with thick whitish sapwood.

Range.—Newfoundland and Ontario, south to Florida and west to Louisiana and Kansas.

Distribution in West Virginia.—Common in nearly all parts of the State.

Habitat.—Dry, light soils of upland woods and hillsides. Grows in a variety of soils and exposures.

Notes.—Service tree and Juneberry are two other names of this tree. The wood is rarely used for any purpose.

At least two shrubby species of Amelanchier are native to West Virginia.

COCKSPUR THORN

COCKSPUR THORN

Crataegus crus-galli, L.

Form.—Height 10-25 feet, diameter 6-12 inches; trunk short; crown broad and flat-topped.

Leaves.—Alternate, simple, ovate-obovate, 1-3 inches long, sharply serrate except toward the base, long tapering at the base, rounded or blunt-pointed at the apex, thick, dark green and glossy above, paler beneath.

Flowers.—June; perfect; white, two-thirds of an inch across, aranged in many-flowered corymbs; stamens 10; styles 1-3.

Fruit.—Matures in autumn; an ovoid or sub-globose pome two-fifths-½ inch long, greenish to dull red, containing usually 2 bony nutlets which are 2-3-grooved on the back.

Bark.—Grayish brown, roughened on old trees by small scales.

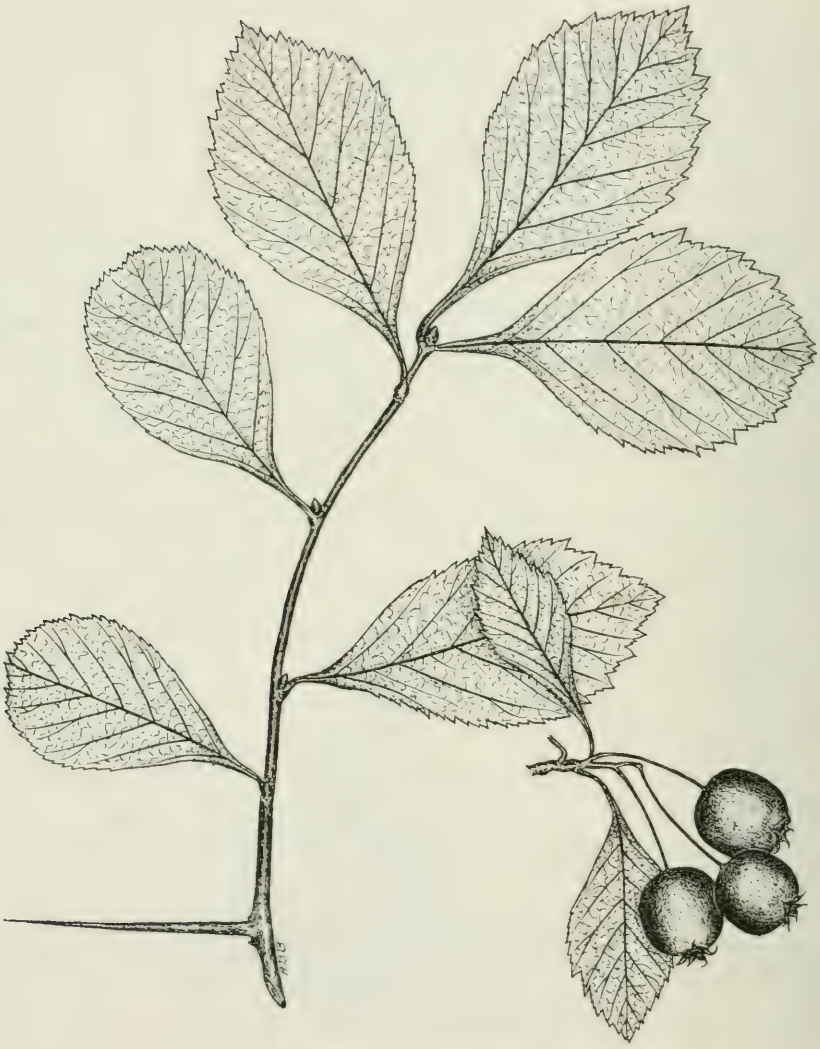
Wood.—Hard, heavy, close-grained, reddish brown with thick light-colored sapwood.

Range.—Southern Canada to northern Georgia, west to Missouri and Michigan.

Distribution in West Virginia.—A common thorn throughout the State.

Habitat.—Borders of woods and abandoned fields on many kinds of soils.

Notes.—As indicated by the name, this species is armed with long, curved thorns. The taper-based, serrate, glossy leaves and the dull red-green fruits will help the student in identifying this common tree.



DOTTED THORN

DOTTED THORN

Crataegus punctata, Jacq.

Form.—Height 10-35 feet, diameter 8-14 inches; trunk thick and short; crown very broad and flat-topped.

Leaves.—Alternate, simple, oblanceolate-obovate, 1½-3 inches long, tapering at the base, rounded or blunt-pointed at apex, irregularly serrate or sometimes lobed, dull grayish-green and strongly impressed-veined above.

Flowers.—May-June; perfect; white, about ¾ of an inch across, in corymbs with tomentose stalks; stamens usually about 20.

Fruit.—Ripens in autumn; an ovoid pome, ½-1 inch thick, red (var. *rubra,* Ait.) or yellow, (var. *aurea,* Ait.) nutlets usually 3-4 with 2-5 ridges on the back.

Bark.—Gray, with thin scales on old trunks.

Wood.—Heavy, hard, close-grained.

Range.—Minnesota and western New England, southward along the mountains to Georgia.

Distribution in West Virginia.—A common tree, especially at high elevations. Found growing on Spruce Knob, Pendleton County, at altitude 4,860 feet. Forming almost pure stands on Bickle Knob, Randolph County, near Durbin, Pocahontas County, in Canaan Valley, Tucker County, and at many places along the Alleghanies.

Habitat.—Prefers rich sandy soil of stream borders and mountain flats.

Notes.—The large red or yellow fruits of this thorn help in the identification of the species and give it a very attractive appearance in the fall. The fruits are eaten by the Ruffed Grouse and other birds, and are sometimes used for making jelly. The spines are straight and from 1½ to 2¾ inches long.

BLACK CHERRY

BLACK CHERRY

Prunus serotina, Ehrh.

Form.—Height 60-100 feet, diameter 2-5 feet; trunk when in close stands tall and straight, bearing a rather open irregularly-oblong crown.

Leaves.—Alternate, simple, lanceolate-oblong, taper-pointed, 2-5 inches long, thickish, serrate-crenate, with incurved teeth, smooth, dark green above, paler beneath.

Flowers.—May-June; perfect; ¼ inch wide, white arranged in drooping many-flowered racemes.

Fruit.—Matures in late summer and persists for two or three months; a nearly black drupe, in drooping clusters, one-third-½ inch thick, with purplish juicy slightly bitter edible flesh.

Bark.—On old trunks roughened by thick, blackish, irregular plates; inner bark aromatic, bitter.

Wood.—Light, strong, close-grained, light reddish brown, with thin yellowish sapwood.

Range.—Nova Scotia to Florida, west to Dakota and Arizona.

Distribution in West Virginia.—A common timber tree in the more mountainous parts of the State; once plentiful on rich soils of upland flats and stream valleys of Tucker, Randolph, Barbour, Webster, Nicholas, Pocahontas, Greenbrier, and Monroe counties. Smaller and less common in most other sections.

Habitat.—Thrives best in rich, loose soils of slopes and mountain flats.

Notes.—This tree, which is usually called Wild Cherry, produces excellent lumber for furniture, and interior finish. It can be distinguished from the Choke Cherry, which it most closely resembles, by its larger size, longer narrower leaves, and rougher bark. Wild cherry trees large enough for lumber are now becoming scarce.

CHOKE CHERRY

CHOKE CHERRY

Prunus virginiana, L.

Form.—Height 15-30 feet, diameter 6-12 inches: trunk usually short with a rounded crown.

Leaves.—Alternate, simple, 2-4 inches long, oval, oblong, or obovate, abruptly pointed, very sharply serrate, with slender teeth, glabrous, dull dark green above, paler beneath.

Flowers.—May-June; perfect; about ½ inch broad, white, arranged in a drooping, many-flowered raceme 3-6 inches long.

Fruit.—Ripens in late summer: a globular, dark crimson drupe, borne on short pedicels in drooping clusters, astringent.

Bark.—Smooth, dark gray, somewhat roughened on old trunks by shallow fissures. Inner bark has a disagreeable odor.

Wood.—Heavy, hard, close-grained, light-brown; sapwood light colored.

Range.—Newfoundland to Manitoba, south to Georgia and Texas.

Distribution in West Virginia.—Rare in most sections. Scattered trees grow at high elevations along the Alleghanies. Most common and of largest size on the borders of swamps from Cranesville, Preston County, southward to Canaan Valley, Tucker County.

Habitat.—Prefers damp soils of swamp borders, streams and thickets.

Notes.—The Choke Cherry is in no sense a timber tree but is attractive when growing wild or planted.

WILD RED CHERRY

WILD RED CHERRY

Prunus pennsylvanica, L. f.

Form.—Height 20-35 feet, diameter 8-12 inches; trunk straight, short, tapering, with upright branches forming a narrow crown.

Leaves.—Alternate, simple, 3-5 inches long, oblong-lanceolate, pointed, finely and sharply serrate, glabrous, thin, bright green above, paler beneath.

Flowers.—May, with the leaves; perfect; about ½ inch wide, white on slender pedicels in 4-5-flowered umbels.

Fruit.—Ripens in July and persists until autumn; a globular drupe, about ¼ inch in diameter, bright red, thick-skinned, sour.

Bark.—Smooth, or somewhat roughened by loose, papery plates, reddish brown.

Wood.—Light, soft, close-grained, light brown with thin yellowish sapwood.

Range.—Labrador to British Columbia and southward to North Carolina and Colorado.

Distribution in West Virginia.—Common in West Virginia along the mountains, especially in areas from which other timber has been destroyed by fire.

Habitat.—Sandy soils of burned-over mountain-sides and flats, and along streams at lower elevations.

Notes.—Fire Cherry and Bird Cherry are two common names of this tree, the first denoting its habitat and the second the attractiveness of its fruit to birds. This species performs its principal service in covering otherwise bare, fire-burned areas to which the seeds have been carried and dropped by birds.

WILD PLUM

WILD PLUM

Prunus americana, Marsh.

Form.—Height 10-25 feet, diameter 6-12 inches; trunk short supporting a wide-spreading crown of horizontal and drooping branches.

Leaves.—Alternate, simple 2-4 inches long, narrowly obovate, long taper-pointed at apex, sharply and doubly serrate, firm, dark green and rough above, paler and hairy below.

Flowers.—May, with the leaves; perfect; 1 inch wide, white, arranged in 2-5-flowered umbels.

Fruit.—Ripens in early autumn; a globose, red drupe about 1 inch in diameter, the flesh sweet and edible; stone flattened.

Bark.—Grayish-brown and rough on old trunks with thin, flat plates.

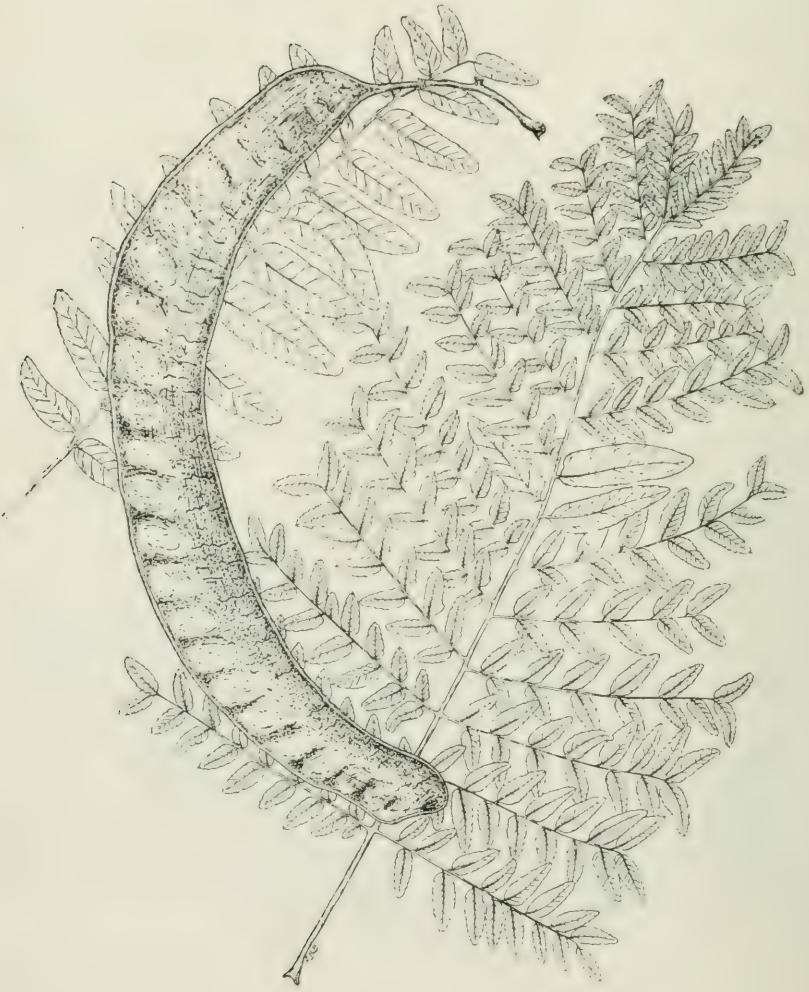
Wood.—Hard, heavy, strong, close-grained,red-brown, with thin light sapwood.

Range.—New York to Florida, west to Texas and Montana.

Distribution in West Virginia.—Scattered throughout the State but nowhere common except in small areas.

Habitat.—Grows principally on swamp borders and along streams.

Notes.—The Wild Plum is found growing in dense thickets in some of our upland swamps where it produces large crops of fruit. The tree is of little importance commercially but is sometimes used as a stock upon which domestic plums are grafted.



HONEY LOCUST

HONEY LOCUST

Gleditsia triacanthos, L.

Form.—Height 40-50 feet, diameter 1-2 feet; trunk usually short and armed with branched thorns; crown broad, round-topped.

Leaves.—Alternate, singly or doubly compound, 7-8 inches long, the single compound leaves having 18-28 leaflets; the double compound leaves 8-14 divisions each, with 18-20 leaflets; leaflets lanceolate-oblong, somewhat serrate.

Flowers.—May-June; polygamous; small, greenish.

Fruit.—A flattened and twisted pod, 10-18 inches long, containing oval brownish seeds.

Bark.—Sometimes smooth but often roughened on old trunks, by shallow fissures and thick ridges with projecting edges, and by branched thorns.

Wood.—Hard, heavy, strong, durable in contact with the soil, bright reddish brown heartwood, whitish sapwood.

Range.—Ontario to Florida, west to Kansas and Texas.

Distribution in West Virginia.—Not common in any part of West Virginia, but found in scattered stands throughout the State, except at high elevations. Rare in Upshur and other high hilly counties west of the Alleghanies, and also in the Eastern Panhandle.

Habitat.—Thrives best in fertile soil of river bottoms, but grows well in other situations.

Notes.—The wood of Honey Locust is used principally for fencing, wheel hubs, and general construction; but the tree is too rare and not of sufficient size to give it any commercial importance.

RED BUD

RED BUD

Cercis canadensis, L.

Form.—Height 15-25 feet, diameter 6-10 inches; trunk usually inclined and short; crown broad, open and shallow.

Leaves.—Alternate, simple, rounded, 3-5 inches long, with heart-shaped base, and blunt apex; smooth, entire, bright pale green above, paler beneath.

Flowers.—April, before the leaves; perfect; in form like the sweet pea, red-purple, arranged in umbel-like clusters along the branches of the last or preceding years.

Fruit.—A flattened, many-seeded pod, the upper suture with a winged margin.

Bark.—Thin, with shallow fissures and scaly reddish brown ridges.

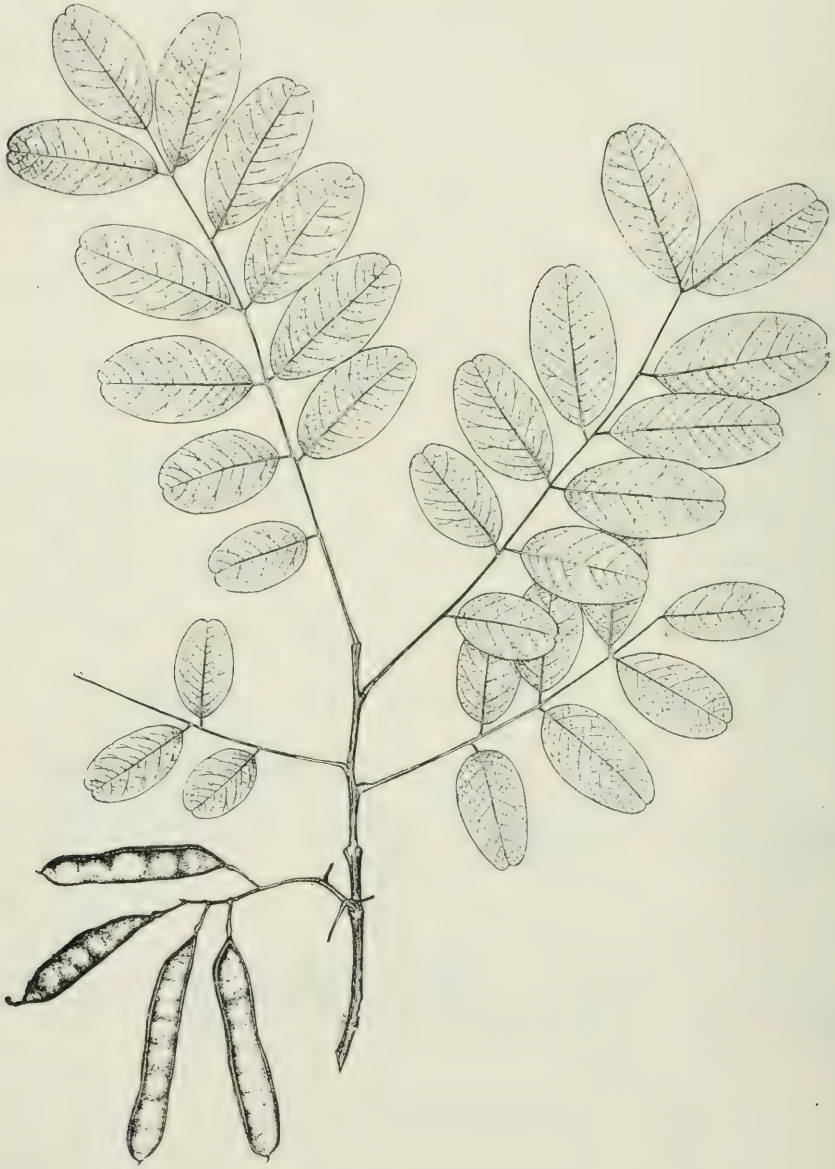
Wood.—Heavy, hard, not strong, reddish brown with thick whitish sapwood.

Range.—Ontario to Florida, west to Minnesota and Kansas.

Distribution in West Virginia.—Common in most parts of the State, forming thickets along borders of woods and streams. Rare in the higher counties.

Habitat.—Rich moist soil of abandoned fields, open woods and stream banks.

Notes.—This tree is chiefly ornamental. Its profuse purplish flowers give it attractiveness early in the spring, when the Service and Flowering Dogwood are in bloom.



COMMON LOCUST

COMMON LOCUST

Robinia Pseudo-Acacia, L.

Form.—Height 50-75 feet, diameter 2-3 feet; trunk when grown in the forest often tall and free from limbs; crown loose and more or less irregular.

Leaves.—Alternate, compound, odd-pinnate, 8-14 inches long; leaflets 7-21, ovate or oblong, 1-2 inches long, entire, very thin, smooth, dull green above, paler beneath; stipules thorny or spine-like.

Flowers.—May, after the leaves; perfect, pea-shaped, white, very fragrant, borne on slender pedicels in loose drooping racemes 4-5 inches long.

Fruit.—A flat pod 3-4 inches long, containing 4-8 small brown seeds.

Bark.—Deeply furrowed into firm, prominent ridges, reddish-brown.

Wood.—Heavy, very hard and strong, close-grained, very durable in contact with the soil, brownish with thin yellow sapwood.

Range.—Pennsylvania to Georgia west to Iowa and Kansas. Naturalized over a large area in America and extensively cultivated in Europe.

Distribution in West Virginia.—Common throughout West Virginia, but most abundant and healthiest in high limestone areas.

Habitat.—Prefers rich limestone soil, but adapts itself to other soils and to almost all exposures and elevations.

Notes.—Black Locust, Yellow Locust, and False Acacia are other names of this tree. According to Sargent's "Manual of the Trees of North America" locust trees are "most abundant and of largest size on the western slopes of the Alleghanies of West Virginia." It is a rapid grower, its wood is unsurpassed for many purposes and, as a legume, it adds fertility to the soil wherever it grows.

HOP TREE

HOP TREE

Ptelea trifoliata, L.

Form.—A shrub occasionally attaining the size and form of a small tree.

Leaves.—Alternate, compound, 3-foliate, the leaflets entire, ovate, pointed, downy when young.

Flowers.—June; polygamous; small, greenish-white, arranged in compound terminal cymes.

Fruit.—A 2-celled, 2-seeded, nearly circular samara, winged all around, in drooping cymes; bitter, used as a substitute for hops.

Bark.—Smooth, light brownish-gray.

Range.—Long Island to Minnesota and southward.

Distribution in West Virginia.—Rare, collected in Summers and Morgan counties.

Habitat.—Prefers sandy soils of river banks.

Notes.—This small, shrubby tree is useful only for ornamental planting for which purpose it will be found very interesting and attractive.

STAGHORN SUMACH

STAGHORN SUMACH

Rhus typhina, L.

Form.—A shrub or small tree sometimes reaching a height of 15-20 feet and a diameter of 8-10 inches; trunk short, bearing a broad crown of ascending branches.

Leaves.—Alternate, compound, 16-24 inches long, and with 11-31 leaflets; leaflets oblong, 2-5 inches long, nearly sessile, oblanceolate, pointed, serrate, when mature dark green and smooth above, pale beneath.

Flowers.—May-June; polygamous, arranged in compact oblong yellowish-green panicles.

Fruit.—Matures in late summer and persists through the winter; numerous dry drupes aggregate in a compact pyramidal panicle, 5-8 inches long; drupes thickly studded with red acid hairs, not poisonous.

Bark.—On old trunks somewhat roughened by loose brown scales. Twigs and leaf stalks are densely velvety-hairy.

Wood.—Soft, light, coarse-grained, orange-colored, showing plainly the annual growths.

Range.—New Brunswick to Minnesota, south to Georgia and Alabama.

Distribution in West Virginia.—Common throughout the State and reaching higher altitudes than some of the other sumachs.

Habitat.—Fertile dry upland soil, preferring abandoned fields, borders of woods and fence rows.

Notes.—The wood of this species is sometimes used for sugar spiles and for the manufacture of napkin rings, cups, etc. The leaves are rich in tannin; the wood has little commercial value. Its beautiful foliage and red fruit spikes give it value for ornamental planting.

DWARF SUMACH

DWARF SUMACH

Rhus copallina, L.

Form.—A shrub or small tree often attaining in West Virginia a height of 15-20 feet and a diameter of 3-5 inches; trunk straight or angular, supporting a loose irregular crown.

Leaves.—Alternate, compound, 6-12 inches long, with petioles wing-margined between the 9-21 oblong or ovate lanceolate, nearly entire leaflets which are smooth and shining above and pubescent beneath.

Flowers.—July; polygamous; in terminal compact panicles.

Fruit.—Matures in late summer; small dry drupes in compact erect panicles, red, turning dark later in the year, the panicles finally drooping; not poisonous.

Bark.—Roughened on old trunk by brown papery scales or elevated brown projections.

Wood.—Soft, coarse-grained, light brown, richly striped with yellow and black.

Range.—Maine to Florida, west to Texas and Nebraska.

Distribution in West Virginia.—Common in most sections of the State except at high elevations.

Habitat.—Dry hillsides and ridges, frequenting abandoned fields.

Notes.—This sumach, like others of the genus, is chiefly valuable for landscape work, being especially ornamental in its autumnal foliage. The wood is sometimes used in the manufacture of small wooden novelties.

POISON SUMACH

POISON SUMACH

Rhus vernix, L.

Form.—A shrub or small tree sometimes reaching a height of 10-15 feet; trunk usually branching near the ground and separating into a loose irregular head.

Leaves.—Alternate, compound, leaflets 7-13, oblong-obovate, entire, poisonous.

Flowers.—June-July; polygamous; small, yellowish-green, arranged in long drooping panicles.

Fruit.—Small, nearly spherical, glossy, dull white drupes in long, loose, drooping, axillary panicles; ripening in early autumn and persisting into the winter.

Bark.—Thin, streaked, smooth, covered with numerous raised lenticels.

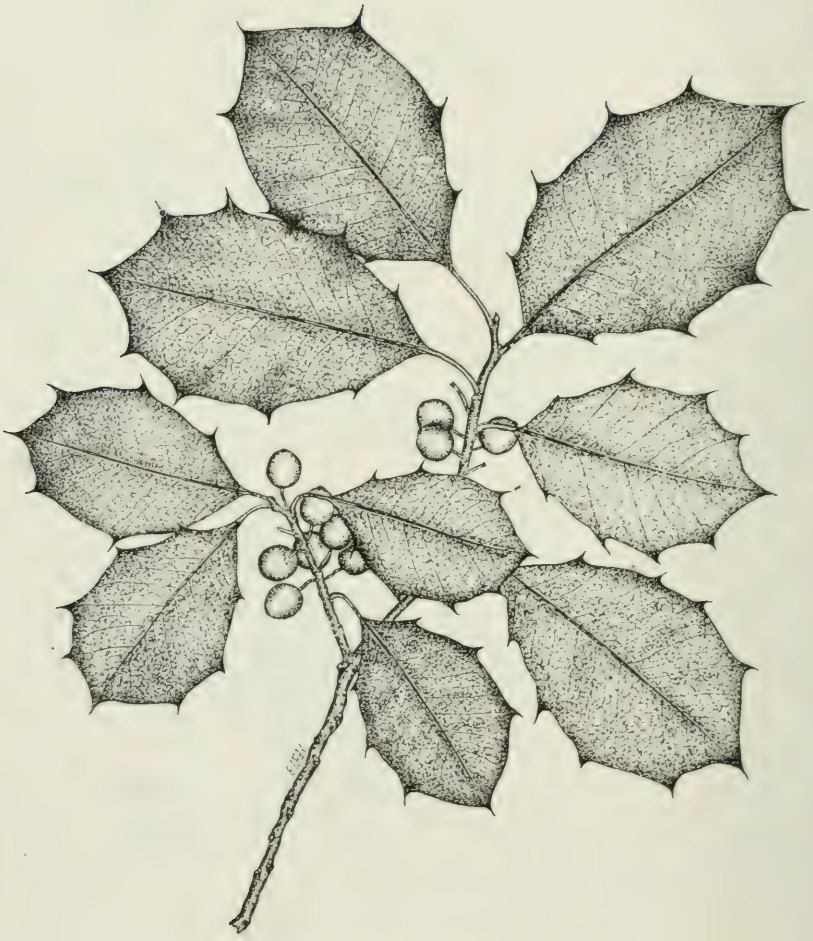
Wood.—Soft, brittle, light yellow.

Range.—Ontario to Florida, west to Louisiana and Minnesota.

Distribution in West Virginia.—Rare, found in swamps at Cowen, Webster County and near Elkins, Randolph County.

Habitat.—Thrives best in swamps but may be found on moist slopes.

Notes.—Poison Dogwood, Poison Elder, and Poison Oak are other names of this species. This is one of our most poisonous plants and should be avoided except by those who are immune. It has no commercial importance.



AMERICAN HOLLY

AMERICAN HOLLY

Ilex opaca, Ait.

Form.—Height 15-30 feet, diameter 1-2 feet; trunk short; branches slender, spreading and ascending, forming a conic crown.

Leaves.—Alternate, simple, evergreen, leathery, glabrous, oval, margins wavy with scattered spiny teeth, dark green above, pale green beneath.

Flowers.—May to June; dioecious, or polygamo-dioecious, the staminate 2-9 on a common stalk, the pistillate usually solitary; small, white.

Fruit.—Matures in late summer and persists through the following fall and winter; a bright red berry-like drupe about the size of a pea, smooth, shining, containing a 4-ribbed, brown nutlet.

Bark.—Smooth, or slightly rough with age, grayish or grayish-brown.

Wood.—Hard, tough, close-grained, chalky-white in color.

Range.—Maine to Florida, west to Texas and Missouri.

Distribution in West Virginia.—Observed in the following counties: Boone, Braxton, Fayette, Logan, Mingo, McDowell, Nicholas, Randolph, Upshur, Webster and Wyoming. Rare east of the mountains and sparsely scattered in other counties along the Ohio River.

Habitat.—Prefers moist soil near rivers or rich loamy and rocky ground.

Notes.—Holly wood is very valuable for inlaid work, cabinet making, interior finish, and piano keys, but the trees in West Virginia are usually small, and afford little timber. During the holidays the evergreen foliage with bright red fruits are much sought after. The tree is slow-growing but is otherwise very desirable for ornamental planting.

MOUNTAIN HOLLY

MOUNTAIN HOLLY

Ilex monticola, Gray.

Form.—Height 15-25 feet, diameter 2-8 inches; a shrub or small tree with short trunk and slender ascending branches.

Leaves.—Alternate, simple, deciduous, 4-5 inches long, ovate or lance-oblong, taper-pointed, thin-membranaceous, smooth, sharply serrate.

Flowers.—May-June; polygamo-dioecious; staminate and pistillate flowers on very short pedicels, white, clustered, about one-third of an inch across.

Fruit.—Ripens in early autumn; globose, about two-fifths of an inch in diameter, bright scarlet, containing 4-6 striate nutlets ridged on the back.

Bark.—Thin, somewhat rough and warty on old trees, light brownish-gray.

Wood.—Hard, close-grained, nearly white.

Range.—New York, southward along the Alleghanies.

Distribution in West Virginia.—Not common except locally. Found principally at high altitudes. Common near Davis, Tucker County, and in various parts of Randolph and Pocahontas counties.

Habitat.—Upland sandy flats, cool mountainsides, and swamp borders.

Notes.—This small tree is not important except for ornamental use. Its bright foliage and fruits recommend it for this purpose. The species may easily be confused with Winterberry (*Ilex verticillata,* (L.) Gray) which often grows with it. The nutlets of the latter, however, are smooth and smaller, its flowers are shorter-stalked and its leaves somewhat downy beneath.

STRIPED MAPLE

STRIPED MAPLE

Acer pennsylvanicum, L.

Form.—Height 10-25 feet, diameter 6-12 inches; trunk medium short; crown irregular, usually broad.

Leaves.—Opposite, simple, 5-6 inches long, nearly as broad, 3-lobed above the middle with short, pointed lobes, sharply and doubly serrate, rounded or cordate at base, rather smooth above and rusty pubescent beneath.

Flowers.—May-June; usually monoecious, yellow, bell-shaped, in long, drooping, terminal racemes.

Fruit.—Matures in autumn; paired samaras in long racemose drooping clusters, wing ¾ inch long, widely divergent, marked on one side of each nutlet by a small cavity.

Bark.—Smooth, thin, greenish or reddish-brown, marked longitudinally by pale stripes.

Wood.—Light, soft, close-grained, pinkish brown, with thick sapwood.

Range.—Novia Scotia south along the mountains to Georgia, west to Minnesota.

Distribution in West Virginia.—Common in shaded ravines and rich slopes in the mountainous parts of the State, especially in Webster, Randolph, Upshur, Pocahontas and Nicholas counties.

Habitat.—Thrives best in rich soil of rocky or sandy woods.

Notes.—This small maple is also called Moosewood and Goosefoot Maple, the latter name referring to the goosefoot shape of the leaf. It is not a commercially valuable species, but always attracts attention whether growing in its shady mountain habitat or on the lawn.

MOUNTAIN MAPLE

MOUNTAIN MAPLE

Acer spicatum, Lam.

Form.—A small tree or shrub sometimes reaching a height of 20-25 feet and a diameter of 6-10 inches.

Leaves.—Opposite, simple, 4-5 inches long, 3-lobed, coarsely serrate, the lobes taper-pointed, glabrous and dark green above, somewhat downy beneath, petioles long and slender.

Flowers.—May-June; polygamo-monoecious; small, yellow-green, arranged in upright, dense, somewhat compound racemes.

Fruit.—Early autumn; small, paired samaras, red, turning brown and drooping when mature, in racemose clusters.

Bark.—Nearly smooth, light brown, thin; twigs reddish, slightly hairy.

Wood.—Light, soft, close-grained, light brown, with thick sapwood.

Range.—Newfoundland and Labrador, south to Georgia and west to Minnesota.

Distribution in West Virginia.—Common in mountainous sections and sometimes occurring at low elevations adjacent to the mountains. Found growing from elevation 850 feet, in Monongalia County, to elevation 4,800 feet, in Pendleton County.

Habitat.—Damp mountain forests, along streams and on rocky slopes; thrives in the shade of other trees.

Notes.—The Mountain Maple is often seen fruiting when only 4 or 5 feet high, but it frequently reaches tree size in favorable locations. The wood is not found on the market. This species is one of the most ornamental of the maples and should be planted more generally. The erect flower spikes, small red fruits, reddish twigs, and coarse-toothed leaves are characters that distinguish it from other maples.

SUGAR MAPLE

SUGAR MAPLE

Acer saccharum, Marsh.

Form.—Height 60-100 feet, diameter 3-5 feet; trunk of trees in close stands long, clear and straight; crown conical or round-topped, with many ascending and horizontal branches.

Leaves.—Opposite, simple, 3-5 inches long, 5-lobed with rounded sinuses and sparingly sinuate-toothed margins; smooth and dark green above, paler and somewhat downy on the veins beneath.

Flowers.—April-May; polygamo-monoecious or dioecious; both kinds of flowers on thread-like, hairy pedicels in drooping corymbs; greenish yellow.

Fruit.—Matures in early autumn; clustered groups of paired samaras, glabrous, with slightly diverging wings about 1 inch long.

Bark.—Deeply fissured and with prominent dark gray, flaky ridges.

Wood.—Heavy, hard, strong, close-grained, durable, light brown to reddish.

Range.—Newfoundland to Florida and Texas.

Distribution in West Virginia.—Found in nearly all parts of the State; most abundant on upland flats and in rich coves along the Alleghanies from Preston County through Tucker, Barbour, Randolph, Pocahontas, Greenbrier and Monroe; common in the high hilly sections lying west of the mountains, rare in the Eastern Panhandle.

Habitat.—Moist, rich soils of river valleys, coves, and high flats and rocky loams of hillsides.

Notes.—The Sugar, or Rock Maple is one of our best known and most valuable trees. Its timber is becoming more highly prized as other species are disappearing. Interior finish, furniture, shoe-lasts and cross-ties are among the common uses of this wood. It is the principal species from which maple syrup and sugar are made, and one of the very best trees for ornamental planting.

BLACK SUGAR MAPLE

BLACK SUGAR MAPLE

Acer saccharum nigrum, (Michx. f.) Britt.

Form.—Height 75-90 feet, diameter 2-3½ feet; trunk and crown as in sugar maple.

Leaves.—Opposite, simple, 5-6 inches long, wider than long, 3-5-lobed, the lower lobes often reduced to a shallow rounded tooth, thick and firm, green and usually downy beneath.

Flowers.—May, with the leaves; monoecious, arranged in umbel-like corymbs, yellow, on slender, hairy pedicels.

Fruit.—Matures in autumn; paired samaras clustered on drooping pedicels, wings slightly diverging.

Bark.—Usually very dark gray, furrowed deeply.

Wood.—Hard, heavy, strong, close-grained, light yellow or brownish, with thin, lighter sapwood.

Range.—Quebec and western New Hampshire, southward and westward.

Distribution in West Virginia.—Less common than sugar maple, but often growing with it on low ground. Observed in the following counties: Lewis, Monongalia, Randolph, Tyler, Upshur, Webster and Wetzel.

Habitat.—Moist soil of river bottoms and slopes.

Notes.—This tree, which is classed as a sub-species of the common sugar maple, can scarcely be distinguished from the latter, except by the leaves which are thicker, usually dropping, less deeply lobed and slightly hairy beneath.

SILVER MAPLE

SILVER MAPLE

Acer saccharinum, L.

Form.—Height 60-100 feet, diameter 2-4 feet; trunk usually short and soon divided into several large, ascending branches which subdivide and form a large open, rounded, or vase-shaped crown.

Leaves.—Opposite, simple, 3-6 inches long, deeply 5-lobed, the lobes cut and toothed, sinuses deep, light green above, silvery-white beneath, downy when young, petioles long and slender.

Flowers.—March-April; polygamo-monoecious or dioecious, yellow-green in crowded umbels.

Fruit.—Matures in May; large paired samaras, with wings 1-2 inches long.

Bark.—On old trunks roughened by shallow fissures and flat-topped ridges with thin, loose scales.

Wood.—Medium hard, brittle, close-grained, not durable, light brown, with thick whitish sapwood.

Range.—New Brunswick to Florida, and west to Indian Territory.

Distribution in West Virginia.—Common along the following streams: Potomac River and its larger tributaries, Great Kanawha, New, Elk, Little Coal, Big Sandy, Little Kanawha, Monongahela, and Ohio rivers.

Habitat.—Confined to river banks and swamp borders.

Notes.—This species, also known as White Maple, River Maple, and Soft Maple, is one of the less valuable of the genus. Its lumber is used principally for flooring, cheap furniture and paper pulp. Silver Maple is extensively planted along streets and in parks. It grows rapidly, often becoming too large, and has a less perfect crown than some of the other maples.

RED MAPLE

RED MAPLE

Acer rubrum, L.

Form.—Height 60-100 feet, diameter 1-3½ feet; trunk usually more or less inclined or twisted; crown rather narrow and rounded.

Leaves.—Opposite, simple, 3-4 inches long, about as broad, lobes 3-5, coarsely toothed, green and glabrous above, whitish beneath.

Flowers.—March-April; polygamo-monoecious, or dioecious; in few-flowered clusters on shoots of the previous year; petals linear-oblong, red or orange.

Fruit.—May-June; paired samaras, small, smooth, wings about 1 inch long on long, drooping pedicels.

Bark.—Thick, roughened by shaggy ridges, gray. The smooth bark of young trees and limbs of large trees are silvery gray.

Wood.—Heavy, medium soft, close-grained, light brown, with whitish sapwood.

Range.—Southern Canada to Florida and Texas.

Distribution in West Virginia.—Occurs in all parts of the State. Not common east of the Alleghanies.

Habitat.—Thrives best in swamps or on stream borders, but is found also on hillsides and ridges.

Notes.—The Red Maple is especially noticeable early in spring on account of the red flowers and fruits, and in autumn when the leaves turn bright scarlet. The wood is used for cheap furniture, turnery, and paper pulp. It cannot be recommended highly for forestry purposes.

BOX ELDER

BOX ELDER

Acer negundo, L.

Form.—Height 40-60 feet, diameter 1-2½ feet; trunk usually short dividing into several large, spreading branches, forming an unequal, open crown.

Leaves.—Opposite, compound, the 3-5 leaflets 2-4 inches long, ovate, pointed, coarse-toothed above the middle, or sometimes slightly 3-lobed.

Flowers.—April; dioecious; small, yellow-green, the staminate on slender drooping pedicels, the pistillate in narrow drooping racemes.

Fruit.—Matures in late summer and persists into the winter; paired samaras hanging in racemose clusters.

Bark.—Somewhat roughened by narrow, close ridges, gray-brown; twigs greenish.

Wood.—Light, soft, close-grained, not strong, creamy-white with scarcely lighter colored sapwood.

Range.—Ontario and Vermont to Florida, Texas and Mexico.

Distribution in West Virginia.—Common locally along streams at lower elevations. Plentiful in some sections of the following counties: Boone, Braxton, Doddridge, Fayette, Jefferson, Lewis, Monongalia, and Tyler.

Habitat.—Deep moist soils of stream banks and swamp borders.

Notes.—Box Elder grows naturally along streams but thrives when planted in drier soils. It is not important as a timber tree, nor very desirable for ornamental uses. This tree is sometimes called Ash-leaved Maple.

FETID BUCKEYE

FETID BUCKEYE

Aesculus glabra, Willd.

Form.—Height 30-60 feet, diameter 12-20 inches; trunk short supporting a deep, round-topped crown.

Leaves.—Opposite, digitately compound, leaflets usually 5, 3-6 inches long, oval, tapered at base, sharp-pointed, irregularly and finely toothed, pale green above, paler beneath, smooth, when old. The foliage is ill-smelling when bruised.

Flowers.—April-May; polygamo-monoecious or perfect; most of the flowers with imperfect pistils; borne in downy terminal panicles 5-6 inches long; corolla yellow.

Fruit.—Matures in October; a leathery round or pear-shaped prickly pod or capsule about 1 inch in diameter, containing a large, shining, brown nut.

Bark.—Roughened by even, scaly, broken gray ridges.

Wood.—Light, soft, weak, pale yellow.

Range.—Pennsylvania to Alabama and west to Iowa and Oklahoma.

Distribution in West Virginia.—Common along the Ohio River at Wheeling. Reported from Wirt, Gilmer and Monongalia counties and from points along the Ohio River north of Wheeling.

Habitat.—Moist soils of river banks and ravines.

Notes.—The Fetid or Ohio Buckeye is an unimportant tree of stream borders, confined in its distribution here principally to the western part of the State. It can easily be distinguished when in fruit from the common species, next described, by its prickly pods. This tree is sometimes planted on lawns but is less desirable than its European relative the Horse Chestnut (*Aesculus hippocastanum*).

SWEET BUCKEYE

SWEET BUCKEYE

Aesculus octandra, Marsh.

Form.—Height 50-80 feet, diameter 1-2½ feet; trunk usually short; crown conical or round-topped.

Leaves.—Opposite, digitately compound, leaflets 5-7, oval, 4-10 inches long, long-pointed, finely toothed, smooth and dark green above, somewhat hairy and yellowish-green beneath.

Flowers.—April-May; polygamo-monoecious or perfect, borne in terminal panicles 4-12 inches long; corolla yellow, with included stamens.

Fruit.—October; a large smooth irregularly rounded or pear-shaped pod or capsule, 1-2 inches thick, 3-celled but usually bearing only one large irregularly rounded, glossy, brown nut, which is somewhat poisonous.

Bark.—Evenly furrowed, the gray-brown ridges breaking up into irregular scales.

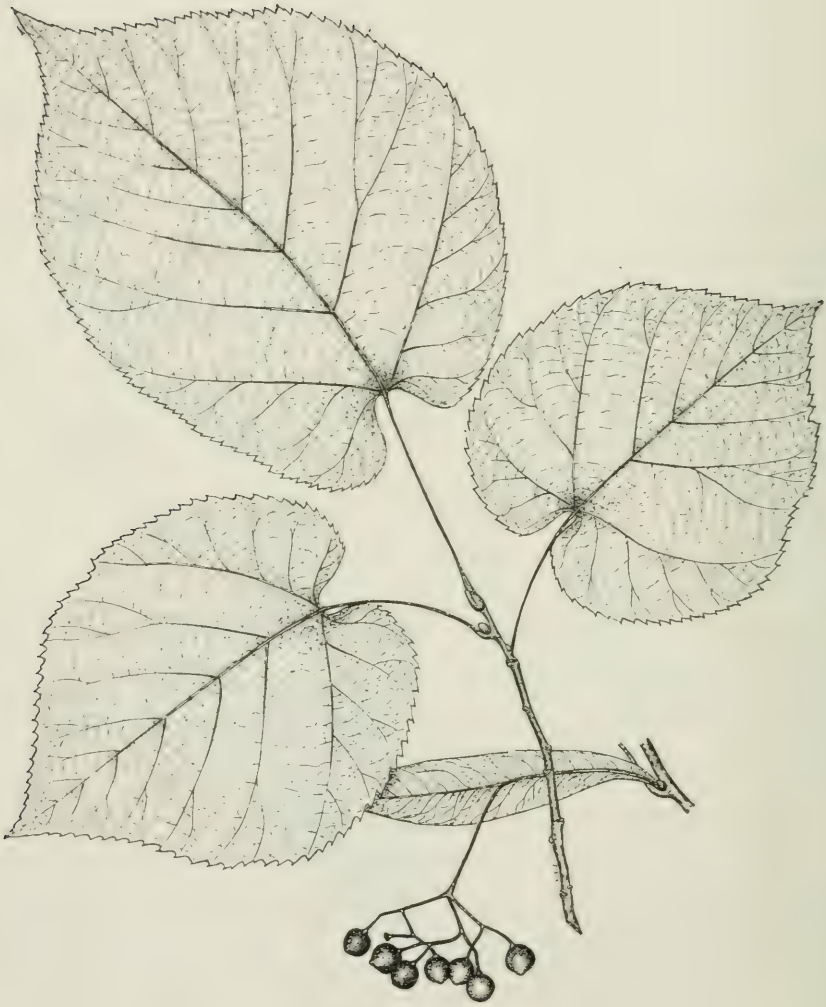
Wood.—Light, soft, yellowish, or nearly white.

Range.—Pennsylvania to Georgia, west to Oklahoma and Texas.

Distribution in West Virginia.—Common locally. Found in the following counties: Barbour, Boone, Braxton, Calhoun, Doddridge, Fayette, Kanawha, Lewis, Logan, Marshall, Mingo, Monongalia, Monroe, Pocahontas, Putnam, Ritchie, Summers, Tyler, Upshur (rare), Webster (rare), and Wyoming.

Habitat.—Rich soil, preferring river valleys.

Notes.—The wood of Sweet Buckeye is not important commercially, but is used to some extent for veneer, cooperage, candy boxes, paper pulp, etc. The tree is a rapid grower and is sometimes planted with satisfactory results on lawns and in parks. Variety *hybrida* (D. C.) Sarg. with calyx and corolla tinged with purple has been found at Weston and other points in the State.



BASSWOOD

BASSWOOD

Tilia americana, L.

Form.—Height 60-100 feet, diameter 2½-4 feet; trunk straight and free from limbs to a considerable height; crown dense, ovoid or round-topped.

Leaves.—Alternate, simple, 5-6 inches long, obliquely heart-shaped, coarsely serrate, thick and firm, dark-green and shining above, pale green and almost glabrous beneath.

Flowers.—June; perfect; yellowish-white, fragrant, 5-20, in drooping cymes, the peduncle or flower stalk attached for half its length to a flat narrow greenish bract.

Fruit.—October; a woody, globose, nut-like drupe, about the size of a pea and borne in drooping clusters.

Bark.—On old trunks deeply furrowed and with broad, scaly, light brown ridges.

Wood.—Light, soft, close-grained, tough, light brownish-red, with thick scarcely lighter sapwood.

Range.—Manitoba to Georgia, and Texas.

Distribution in West Virginia.—Common, especially in the mountainous and high hilly parts of the State, though occurring less frequently than the following species.

Habitat.—Rich, well-drained soil of bottoms and slopes.

Notes.—The wood of this species is used for paper pulp, wooden ware, furniture, kegs, buckets, barrel heads, boxes, etc. It is one of our valuable forest trees and should be encouraged to grow wherever it is possible. Linden, Lynn, Beetree, and Lime Tree are others of its common names. Its smooth leaves furnish the best distinguishing characteristic.

WHITE BASSWOOD

WHITE BASSWOOD

Tilia heterophylla, Vent.

Form.—Height 60-90 feet, diameter 2-3 feet; trunk long, straight, and slightly tapering; crown dense and rounded.

Leaves.—Alternate, simple, oblong, ovate to orbicular-ovate, 5-8 inches long, firm, apex pointed, truncate or heart-shaped and usually very unequal at base, upper surface bright green, under surface silvery, whitened with a fine down.

Flowers.—June-July; perfect; regular, fragrant, yellow-white; 5-15 in drooping cymose clusters; peduncle attached for half its length to a thin, oblong, greenish bract.

Fruit.—A spherical, woody, nut-like drupe about the size of a pea, borne singly or in clusters on a common stalk attached to the bract.

Bark.—Deeply furrowed, grayish-brown.

Wood.—Similar to and used for the same purposes as that of the preceding species.

Range.—New York to Florida, west to Alabama and Illinois.

Distribution in West Virginia.—A common tree in Upshur, Randolph, Tucker, Hampshire, Hardy, Grant, Braxton, Lewis, Webster, Nicholas, Roane, Fayette, Kanawha, Gilmer, Monongalia, Marshall, and in several other counties. It is more abundant than the foregoing species of *Tilia.*

Habitat.—With other hardwoods in rich soil of mountains and high hills.

Notes.—The White Basswood is a valuable forest tree in West Virginia, though the commercial size is now becoming rare in most sections. It is a rapid grower and is easily propagated. This tree is highly recommended for timber and for ornamental use. The most noticeable difference between this species and the foregoing is found in the leaf surface.

HERCULES CLUB

HERCULES CLUB

Aralia spinosa, L.

Form.—A small tree or shrub sometimes attaining a height of 20-30 feet and a diameter of 6-8 inches. The trunk is usually without branches for two-thirds of its length. Branches horizontal, stout, and stubby. The trunk and branches are armed with large prickles.

Leaves.—Alternate, compound or doubly compound, often 3 feet long and 2-2½ feet across; leaflets ovate, pointed, serrate; pale beneath.

Flowers.—June-August; polygamous; cream white, arranged in large, spreading panicles made up of numerous small umbels.

Fruit.—Matures in autumn; an ovoid black berry about ¼ inch long each terminated with a black persistent style.

Bark.—Smooth, except on old trunks which are roughened by shallow furrows; brown outside, yellow inside, covered with stout prickles.

Wood.—Soft, brittle, weak, brown with yellow streaks.

Range.—New York to Missouri and southward.

Distribution in West Virginia.—Common locally west of the Alleghanies.

Habitat.—Often associated with grape vines in thickets on burnt hillsides, and in rich soil of bottom lands and swamp borders.

Notes.—Hercules Club or Angelica-tree is often erroneously called Prickly Ash. It has no commercial importance except as an ornament. Whether in bloom or in fruit the tree is very attractive and should be seen more often on the lawn. The fruit is eagerly eaten by birds.

FLOWERING DOGWOOD

FLOWERING DOGWOOD

Cornus florida, L.

Form.—Height 15-35 feet, diameter 4-12 inches; trunk short, not often straight; crown broad and round-topped.

Leaves.—Opposite, simple, ovate, 3-5 inches long, tapered to an acute apex, wedge-shaped at the base, wavy or entire on margin, bright green above, paler beneath, smooth; midrib and primary veins prominent.

Flowers.—May; perfect; greenish, small, arranged in a dense cluster and surrounded by a showy, white (or rarely pinkish), 4-bracted corolla-like involucre. The white involucre and the cluster of small flowers which it surrounds are frequently mistaken for a single flower.

Fruit.—Ripens in September or October; a scarlet ovoid drupe with a grooved stone, borne solitary or in clusters of 2-5 on a stalk. Undeveloped pistillate flowers often persist at base of fruit.

Bark.—On old trunks broken into quadrangular scales, reddish-brown to blackish.

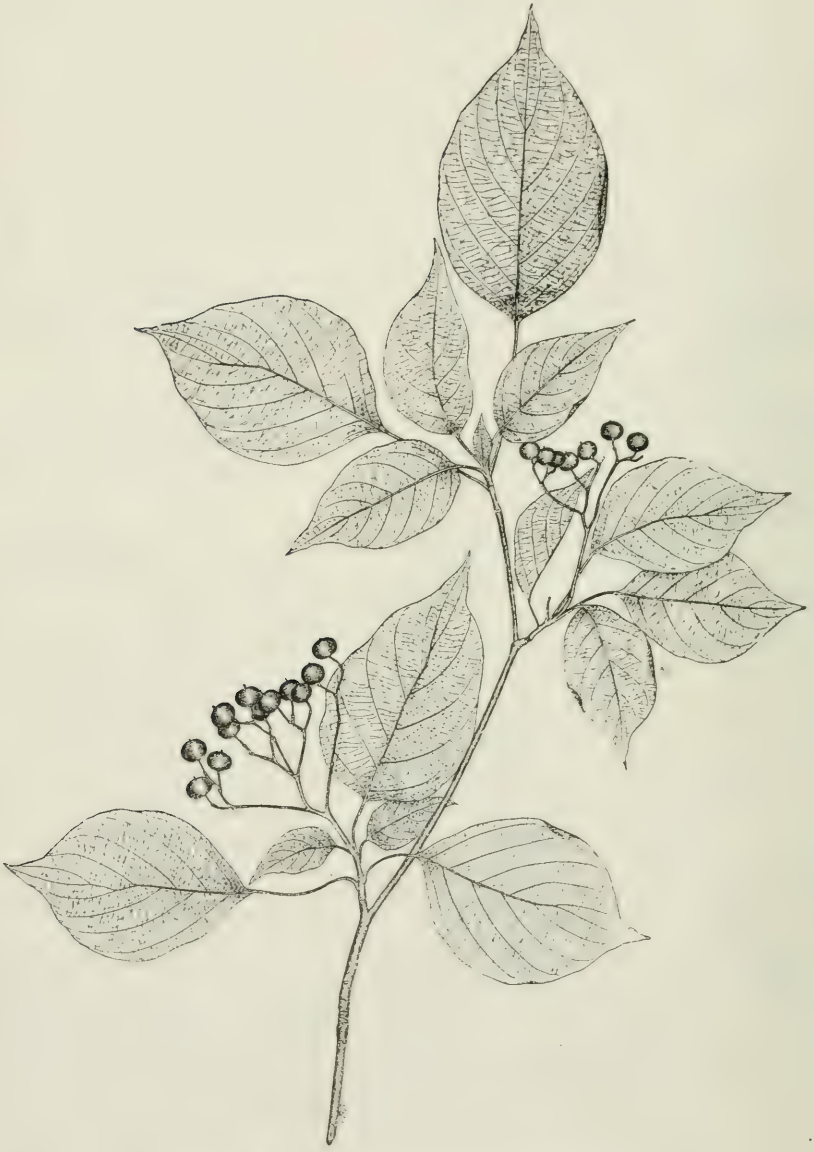
Wood.—Hard, heavy, strong, tough, pale red-brown or pinkish, with lighter sapwood.

Range.—Ontario, Michigan and Massachusetts to Florida, west to Texas and Missouri.

Distribution in West Virginia.—Common in all parts of the State.

Habitat.—Prefers moist, well-drained soils of slopes and bottoms.

Notes.—This well-known tree is prized for its wood which is used for many purposes about the farm and is also manufactured into shuttles, wedges, golf-stick heads, engravers' blocks, brush blocks, tool handles and for turnery. As an ornamental tree it beautifies the native woods or the lawn by its clusters of white-bracted flowers, and later in the season by its scarlet fruits.



ALTERNATE-LEAVED DOGWOOD

ALTERNATE-LEAVED DOGWOOD

Cornus alternifolia, L.

Form.—A small tree or shrub sometimes 20-30 feet high with a diameter of 6-8 inches; trunk short; crown broad, flat-topped and rather dense.

Leaves.—Alternate, or sometimes opposite, clustered at the ends of the limbs, ovate, taper-pointed, acute at base, entire, whitish and minutely pubescent beneath.

Flowers.—April-May; cream-colored, small, borne in broad open cymes.

Fruit.—Matures in autumn; a deep blue spherical drupe, about one-third inch in diameter, on reddish stalks, in cymose clusters.

Bark.—Smooth or slightly roughened by longitudinal fissures on old trunks. The smooth bark of branches is greenish.

Wood.—Hard, heavy, tough, close-grained, brown tinged with red.

Range.—Nova Scotia to Alabama, west to Minnesota.

Distribution in West Virginia.—Found principally along the Alleghanies and westward. Not common in the eastern part of the State.

Habitat.—Prefers stream borders, cool ravines, and moist rich soils of hillsides.

Notes.—No uses are reported for the wood of the Alternate-leaved Dogwood. Whether in bloom or in fruit the tree is very attractive in appearance.

BLACK GUM

BLACK GUM

Nyssa sylvatica, Marsh.

Form.—Height 40-100 feet, diameter 2-4 feet; trunk usually long, clear and straight when in close stands; crown cylindrical or rounded, of numerous horizontal and ascending slender branches.

Leaves.—Alternate, simple, 2-5 inches long, oval-obovate; acuminate, entire, firm, dark green and shining above, paler beneath, often hairy when young.

Flowers.—April-May; polygamo-dioecious; greenish, the staminate borne in many-flowered small heads on slender pedicels, the pistillate sessile in several-flowered clusters.

Fruit.—Matures in autumn; an ovoid, blue-black, fleshy drupe, about ½ inch long and borne on long stalks in clusters of 1-3.

Bark.—Deeply furrowed, on old trunks, the ridges broken into rectangular or hexagonal blocks; light brown to gray-black.

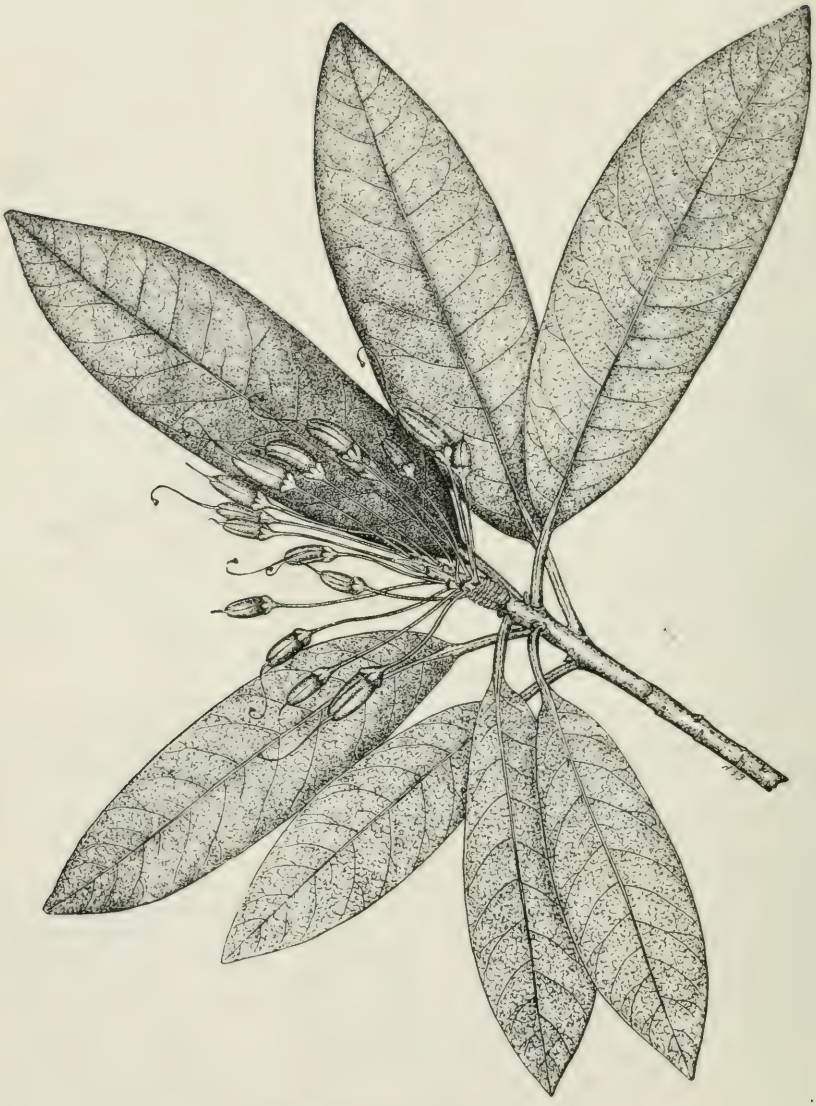
Wood.—Heavy, soft, strong, tough, difficult to split, not durable in the soil, light yellow, with thick whitish sapwood.

Range.—Maine and Ontario to Florida and Texas.

Distribution in West Virginia.—A common tree throughout the State. Least common at high elevations and east of the Alleghanies.

Habitat.—Thrives best on low ground and borders of swamps, but is common on dry slopes and ridges.

Notes.—Black Gum, also called Tupelo, Pepperidge, and Sour Gum, is one of the less valuable of our forest trees, but its tough, light wood is gaining in value and is used extensively for wheel hubs, boxes, broom handles, wagon beds, ladders, ironing boards, rolling pins, excelsior, baskets, and berry crates.



GREAT LAUREL

GREAT LAUREL

Rhododendron maximum, L.

Form.—A shrub or small tree sometimes reaching a height of 20-25 feet; trunk short and usually twisted and bent, with contorted branches forming a flat irregular top.

Leaves.—Alternate, simple, evergreen, mostly clustered at the ends of branches, elliptical-oblong, 4-10 inches long, very thick, acute apex, narrowed base, entire, smooth, dark green above, light green beneath.

Flowers.—June; perfect; pale rose to white, upper petals marked with yellow-green dots, flowers arranged in umbel-like heads 4-5 inches in diameter.

Fruit.—Matures in late summer and persists through the winter; a reddish-brown, 5-celled, many-seeded capsule, about ½ inch long, terminated by a long persistent style.

Bark.—Roughened by thin, flaky scales, dark red-brown.

Wood.—Hard, strong, brittle, close-grained, light brown with lighter sapwood.

Range.—Nova Scotia and Lake Erie south along the mountains to Georgia.

Distribution in West Virginia.—Common locally throughout the State, most abundant in the mountainous sections.

Habitat.—Rich soil of stream banks, rocky mountainsides and flats.

Notes.—The wood of Rhododendron is only occasionally used for tool handles, engraving blocks, and other small articles, and is excellent for fuel. On account of its small size the tree is not commercially important. It is one of the most beautiful of our native species and has been appropriately selected as the State flower.

MOUNTAIN LAUREL

MOUNTAIN LAUREL

Kalmia latifolia, L.

Form.—A shrub or small tree occasionally attaining a height of 15-25 feet; trunk stout, usually forked and bearing stiff, divergent branches which form an irregular, compact, rounded head.

Leaves.—Alternate, simple, evergreen, oblong or ovate-lanceolate, 3-4 inches long, acute at both ends, entire, green above and below, persistent for two seasons.

Flowers.—May-June; perfect, pink or white, in many-flowered terminal corymbs.

Fruit.—Matures in early autumn; a globose, 5-valved, many-seeded capsule, covered with viscid hairs and with persistent style and calyx.

Bark.—Roughened by narrow, thin scales which peel off, exposing brownish inner bark.

Wood.—Heavy, hard, strong, rather brittle, reddish-brown with lighter sapwood.

Range.—New Brunswick, south to Florida and west to Arkansas.

Distribution in West Virginia.—Found locally in all parts of the State.

Habitat.—Growing usually in thickets, sometimes with Great Laurel, on high mountain flats and rocky slopes. Common on thin hillsides.

Notes.—Mountain Laurel does not grow large enough to be of much importance as a wood producer. Occasionally small articles, such as bucket handles, penholders, pipes, etc. are made from it. Its rich evergreen foliage and its copious pink and white flowers are scarcely less attractive than those of *Rhododendron Maximum*.

SOURWOOD

SOURWOOD

Oxydendrum arboreum, (L.) D. C.

Form.—Height 30-60 feet, diameter 12-18 inches; trunk medium long and slender; crown narrow and round-topped.

Leaves.—Alternate, simple, oblong-lanceolate, pointed, serrate, smooth and shining, 5-7 inches long.

Flowers.—July; perfect; small, white, in long, one-sided racemes clustered in an open, terminal panicle.

Fruit.—Matures in early autumn; a 5-valved capsule, often persistent into the winter.

Bark.—Thick, roughened by fissures and broken, grayish ridges.

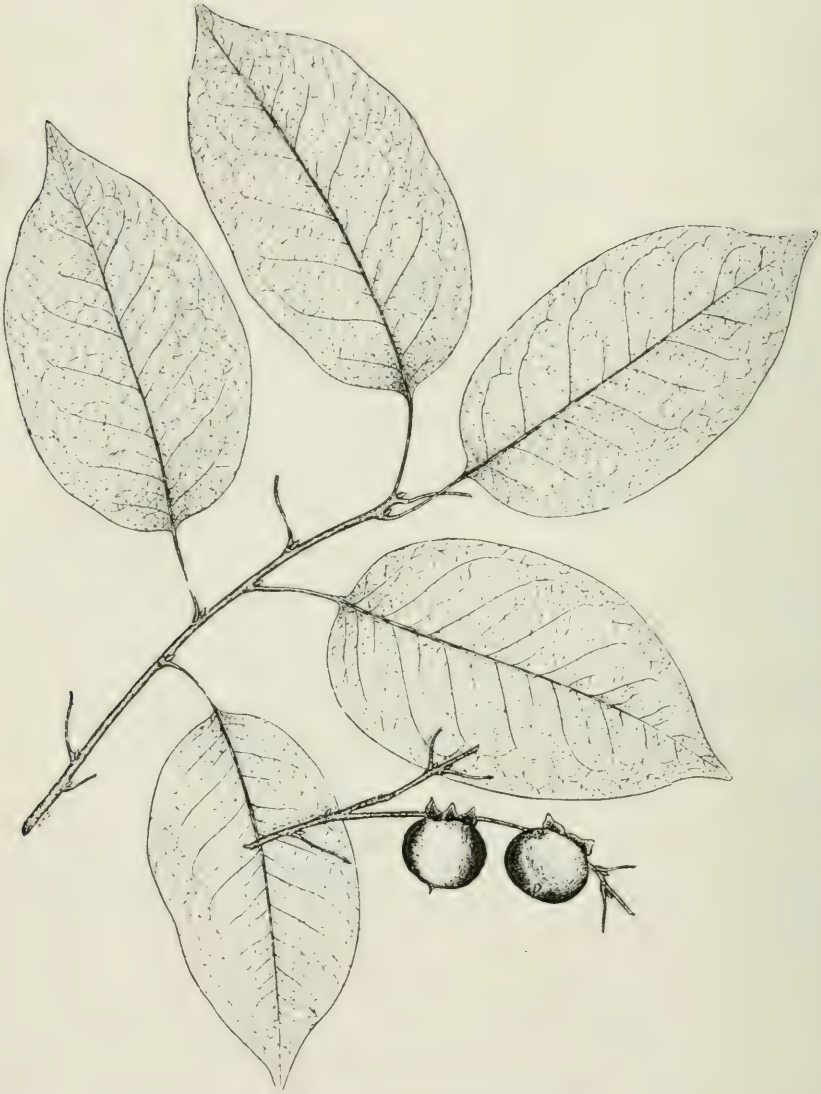
Wood.—Hard, heavy, close-grained reddish-brown with lighter sapwood.

Range.—Pennsylvania and Indiana southward mostly along the mountains to Florida and Louisiana.

Distribution in West Virginia.—Found in all sections west of the Alleghanies, rare in the eastern part of the State.

Habitat.—Light, well-drained soils of hillsides and bottoms.

Notes.—Sour-wood, or Sour Gum, although quite common in most parts of West Virginia, is not often used except for unimportant domestic purposes. The tree is very ornamental when in bloom but is infrequently planted.



COMMON PERSIMMON

COMMON PERSIMMON

Diospyros virginiana, L.

Form.—Height 25-50 feet, diameter 8-14 inches; trunk usually short; crown broad and rounded when not too much crowded.

Leaves.—Alternate, simple, ovate-oblong, 4-6 inches long, smooth, entire, dark-green and shining above, often somewhat hairy beneath.

Flowers.—May-June; polygamous, white or pale yellow; the staminate in 2-3-flowered cymes; the pistillate solitary and borne on short stalks.

Fruit.—Matures after frost in autumn; a spherical yellowish, plum-like berry, containing from 1-8 large seeds, and with large, persistent calyx; astringent when green, sweet and edible when fully ripe.

Bark.—Rough on old trunks, with dark gray ridges which are broken into somewhat rectangular sections.

Wood.—Hard, heavy, close-grained, taking a high polish, brown to black with yellowish sapwood, sometimes streaked with black.

Range.—Connecticut to Florida and west to Texas and Iowa.

Distribution in West Virginia.—Not abundant but common locally in scattered clumps throughout the State, most common east of the Alleghanies. Not found at high elevations.

Habitat.—Thrives best in light sandy soils of bottoms and hillsides.

Notes.—This tree is not important as a wood-producer on account of its small size and scattered distribution. It is well known because of its peculiar fruit.

OPOSSUM WOOD

OPOSSUM WOOD

Halesia carolina, L.

Form.—A small tree, reaching a height in this State of 30-50 feet with a diameter up to 10 or 12 inches. Farther south it reaches a much larger size.

Leaves.—Alternate, simple, 4-6 inches long, oblong-ovate, finely serrate, smooth above when old, slightly pubescent beneath.

Flowers.—Early spring with the leaves; perfect, white, about 1 inch long, bell-shaped, drooping on slender pedicels in crowded fascicles or short racemes.

Fruit.—Matures in autumn and persistent into the winter; a 4-celled, 4-winged, dry, drupaceous fruit, 1½-2 inches long, 1 inch wide; greenish turning brown when mature.

Bark.—Somewhat roughened by shallow fissures and narrow ridges.

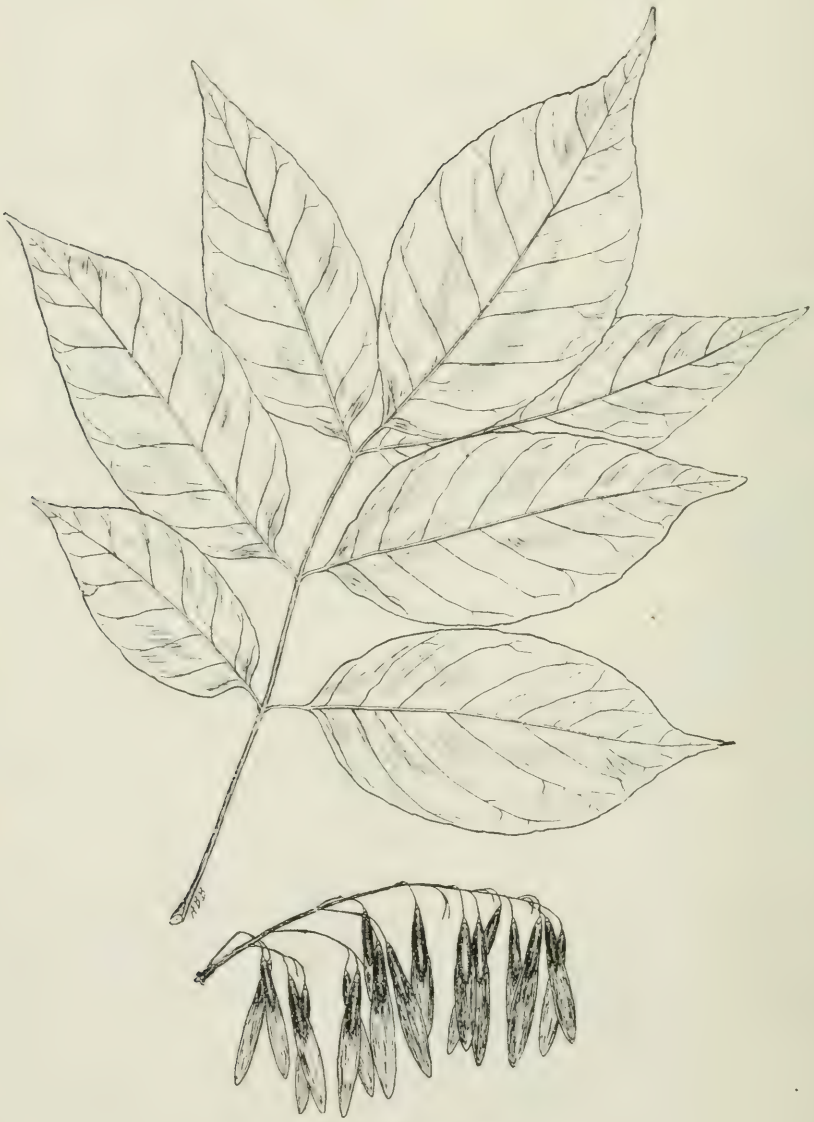
Wood.—Light, soft, close-grained, light brown, with thick lighter colored sapwood.

Range.—Southern West Virginia to Florida, west to Texas, Arkansas and Illinois.

Distribution in West Virginia.—Common along the Great Kanawha and New rivers from the eastern part of Kanawha County through Fayette and Summers counties.

Habitat.—Rich slopes and banks of streams.

Notes.—The Opossum Wood has two other common names, Snowdrop, and Silver-bell Tree, both names referring to the white bell-shaped flowers. The tree is of no commercial importance here, but is very attractive when planted as an ornament. Variety *monticola*, with longer leaves and fruit, also occurs with this species.



WHITE ASH

WHITE ASH

Fraxinus americana, L.

Form.—Height 50-100 feet, diameter 2-4 feet; trunk usually long and free from branches for many feet; crown pyramidal and open.

Leaves.—Opposite, pinnately compound, 8-12 inches long; the 7-9 leaflets 3-5 inches long, ovate or lance-oblong, pointed, nearly or quite entire, glabrous, dark green above, pale and either smooth or pubescent beneath.

Flowers.—May; dioecious; the staminate in dense red-purple clusters; the pistillate in loose panicles.

Fruit.—Matures in early autumn, and persists into the winter; samaras 1-2 inches long in drooping paniculate clusters.

Bark.—Furrowed deeply, the ridges firm, narrow, flattened, brownish-gray.

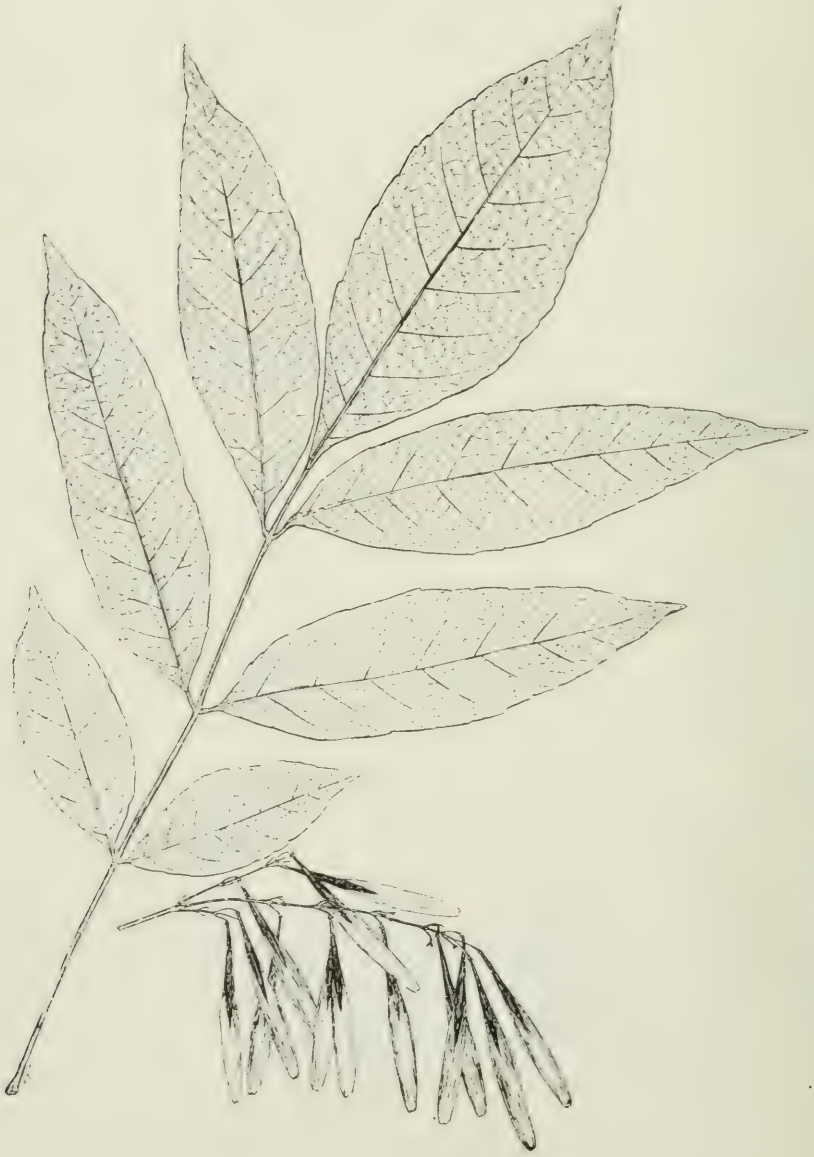
Wood.—Heavy, hard, strong, close-grained, tough and elastic, brown with thick sapwood.

Range.—Nova Scotia to Minnesota, southward to Florida and Texas.

Distribution in West Virginia.—Common throughout the State.

Habitat.—Grows in many situations, but prefers rich moist loamy soil.

Notes.—The White Ash is one of our valuable timber trees, producing wood which is manufactured into agricultural implements, wagons, furniture, tool handles, and interior finish. It is by far the most common Ash but is nowhere abundant.



RED ASH

RED ASH

Fraxinus pennsylvanica, Marsh.

Form.—Height 30-65 feet, diameter 1-3 feet; trunk straight and clear with many upright branches which form a compact, broad, irregular crown.

Leaves.—Opposite, pinnately compound, 10-12 inches long, with 7-9 leaflets 3-5 inches long, oblong-lanceolate, taper-pointed, almost entire, pale or more or less pubescent.

Flowers.—May; dioecious; in downy panicles on shoots of the previous season.

Fruit.—Matures in early autumn and is persistent for several months; samaras 1-2 inches long, borne copiously in drooping clusters.

Bark.—Twigs usually pubescent, on old trunks rough with scaly dark gray-brown ridges.

Wood.—Heavy, hard, strong, brittle, light brown, with thick, yellow-streaked sapwood.

Range.—Vermont and Minnesota south to Florida and Texas.

Distribution in West Virginia.—Collected along New River, Fayette County; reported from Randolph, Upshur, Wood and Mason counties.

Habitat.—Prefers moist soils of river bottoms and borders of swamps.

Notes.—Red Ash is occasionally found along some of the streams of the State but does not grow in sufficient quantities to be of any commercial importance. It can usually be distinguished from the White Ash by its pubescent twigs and petioles, and its somewhat different fruits. A variety of this species, *lanceolata,* is also to be found in some places along the streams.

BLACK ASH

BLACK ASH

Fraxinus nigra, Marsh.

Form.—Height 60-90 feet, diameter 1-2 feet; trunk rather slender, and straight, bearing a narrow-ovoid or rounded crown of upright branches.

Leaves.—Opposite, pinnately compound, 12-16 inches long; leaflets 7-11, 3-5 inches long, sessile, except the terminal one, oblong to oblong-lanceolate, taper-pointed, serrate, glabrous.

Flowers.—May; polygamo-dioecious; borne in loose drooping panicles.

Fruit.—Matures in early autumn; samaras 1-1½ inches long, in open drooping clusters.

Bark.—Soft, ash-gray, and scaly on old trunks, not deeply fissured. The outside corky bark is easily rubbed off with the hand.

Wood.—Heavy, coarse-grained, weak, rather soft, brown with thin lighter sapwood.

Range.—Newfoundland and Manitoba south to Virginia and Arkansas.

Distribution in West Virginia.—Not common. Found in Fayette, Preston and Tucker counties. Reported from Randolph, Webster, Monongalia, Summers, and Wirt counties.

Habitat.—Low river bottoms and swamps.

Notes.—This tree is only occasionally found in West Virginia and cannot be considered as an important species. When in leaf it is easily distinguished from the other Ashes by the leaflets which are sessile on the main petiole.

FRINGE TREE

FRINGE TREE

Chionanthus virginica, L.

Form.—A small, slender tree sometimes reaching a height of 20-30 feet; trunk short, bearing numerous stout ascending branches which form a deep, narrow crown.

Leaves.—Opposite, simple, ovate, 4-8 inches long, entire, acute at apex, glabrous.

Flowers.—May-June; complete or polygamous; white, fragrant, borne in loose and drooping graceful panicles 4-6 inches long.

Fruit.—Purple berry-like ovoid drupes, ½-¾ of an inch long, borne in drooping clusters.

Bark.—Smooth, or somewhat scaly, thin, and reddish-brown.

Wood.—Heavy, hard, close-grained, brown with thick lighter-colored sapwood.

Range.—New Jersey and southern Pennsylvania to Florida and Texas.

Distribution in West Virginia.—Found principally in the southern and eastern parts of the State but nowhere common.

Habitat.—Rich, moist soil of stream banks and swamp borders.

Notes.—The Fringe-tree is valuable only as an ornament for which its fringe-like flower clusters and dark purple fruits give it a decided value.

SWEET VIBURNUM

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Viburnum lentago, L.

Form.—A shrub or small tree sometimes 15-25 feet high; trunk short and crown round-topped.

Leaves.—Opposite, simple 2½ inches long, ovate, long, abruptly taper-pointed, finely and sharply serrate; petioles winged.

Flowers.—May-June; perfect; small, white, in large many-flowered cymes which are usually 3-5 inches broad.

Fruit.—Black, ovoid, or ellipsoid drupe, which is sweet and juicy and contains a flat, oval, stone; borne on reddish stalks in often drooping clusters.

Bark.—On old trunks roughened by thin scales; reddish-brown.

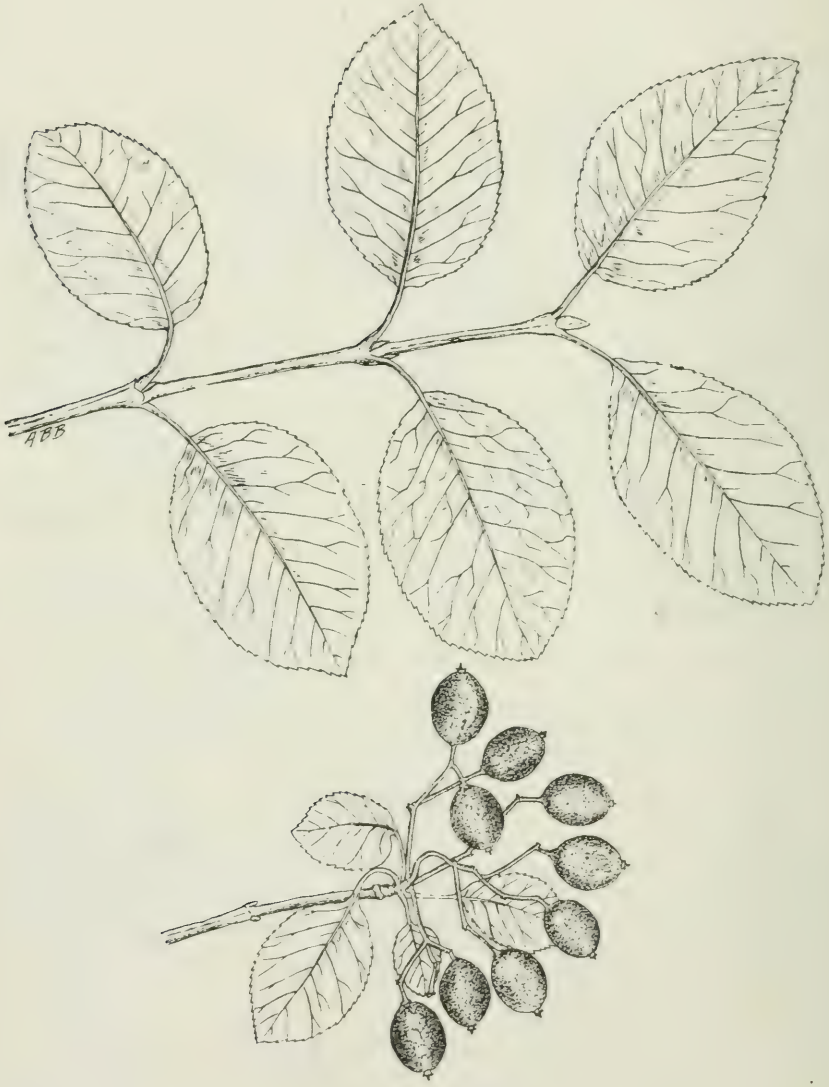
Wood.—Heavy, hard, yellow-brown, with a disagreeable odor.

Range.—Quebec and Manitoba southward to Georgia and Missouri.

Distribution in West Virginia.—Found in Tucker and Grant counties and reported from Randolph County.

Habitat.—Banks of streams and in swamps.

Notes.—This Viburnum can be most easily distinguished by its leaves which are very finely serrate and are abruptly tapered into long slender points. Its flowers, fruit and foliage make it very desirable as an ornamental tree. Sheep-berry and Nanny-berry are also common names by which the species is known.



BLACK HAW

BLACK HAW

Viburnum prunifolium, L.

Form.—A small tree or shrub reaching a height of 20-30 feet in favorable locations.

Leaves.—Opposite, simple, oval, obtuse or slightly pointed, 1-3 inches long, finely and sharply serrate, glabrous.

Flowers.—May; perfect; small, white, borne in large terminal cymes.

Fruit.—Dark blue, fleshy, sweet, persistent drupes with large flat stones; borne on reddish stalks in few-fruited clusters.

Bark.—Roughened by plate-like scales, reddish-brown.

Wood.—Similar to that of Sweet Viburnum.

Range.—Connecticut and Michigan south to Georgia and Arkansas.

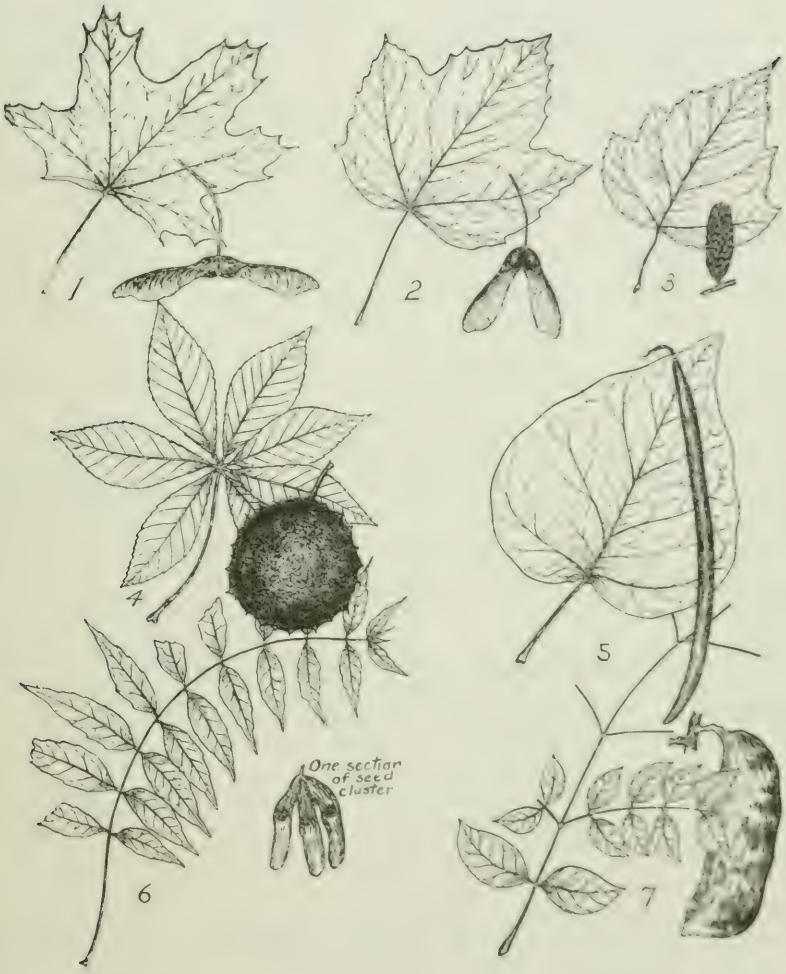
Distribution in West Virginia.—Common locally throughout the State.

Habitat.—Prefers dry, rocky hillsides and low ridges, growing in thickets along fences.

Notes.—As a wood-producer this tree has no value. The bark of its roots has a medicinal value and it deserves to be planted extensively for ornamental purposes.

TREES FOUND IN WEST VIRGINIA BUT NOT NATIVE

1. Red Pine
2. Scotch Pine
3. Bald Cypress
4. European Larch
5. Norway Spruce
6. White Willow
7. Osage Orange



1. Norway Maple
2. Sycamore Maple
3. Gray Birch
4. Horse Chestnut
5. Catalpa
6. Tree of Heaven
7. Kentucky Coffee Tree

WEST VIRGINIA NATIVE SHRUBS AND SHRUBBY VINES

Taxus canadensis, Marsh. American Yew. Ground Hemlock. A rare red-berried evergreen. Randolph: Glady; Pocahontas: Cranberry Glades and Winterburn; Grant: Greenland Gap; Preston: Cranesville; Raleigh: Piney River.

Salix cordata, Muhl. Heart-leaved Willow. Monongalia: Aaron's Run, near Morgantown.

Salix humilis, Marsh. Prairie Willow. Webster: near Upper Glade; Preston: near Terra Alta. (Millspaugh's Flora).

Salix sericea, Marsh. Silky Willow. Monongalia: Decker's Creek.

Myrica asplenifolia, L. Sweet Fern. Hampshire: Cacapon Creek. Rare. Morgan: Cacapon Mountain.

Corylus americana, Walt. Hazelnut. A common shrub.

Corylus rostrata, Ait. Beaked Hazelnut. Pocahontas: Cranberry Mountain; Mercer: Bluestone River; Hampshire: Little Cacapon.

Alnus rugosa, (DuRoi) Spreng. Smooth Alder. Abundant along streams.

Alnus alnobetula, (Ehrh.) K.K. Mountain Alder. Greenbrier: Columbia Sulphur Springs; Fayette: near Nuttallburg; Pocahontas: at Traveler's Repose; Randolph: along Cheat River. (Millspaugh's Flora.)

Alnus incana, (L.) Moench. Hoary Alder (?). Rare. Pocahontas: Cranberry Glades.

Pyrularia pubera, Michx. Oil-nut. Buffalo-nut. "Colic-nut." Common in many sections.

Phoradendron flavescens, (Pursh) Nutt. American Mistletoe. Evergreen parasite. On trees along southern rivers.

Aristolochia macrophylla, Pam. Pine Vine. Dutchman's Pipe. Woody vine. Frequent in rich mountain forests.

Zanthorhiza apiifolia, L'Her. Shrub Yellow-root. Small shrub on banks of streams. Upshur: near Buckhannon; Webster: on Gauley River near Bolair.

Berberis canadensis, Mill. American Barberry. Southern part of the State. Mercer: near Spanishburg.

Calycanthus floridus, L. Sweet-scented shrub. Randolph, Webster, Nicholas, Fayette, and Summers counties. (Millspaugh's Flora.)

Calycanthus fertilis, Walt. Sweet Shrub. McDowell: back of R. R. water tank near Welsh. (Millspaugh's Flora.)

Benzoin aestivale, (L.) Nees. Spice-bush. Benjamin-bush. Abundant shrub.

Hydrangea arborescens, L. Wild Hydrangea. Abundant throughout the State.

Ribes Cynosbati, L. Prickly Gooseberry. Common in rocky woods.

Ribes rotundifolium, Michx. Eastern Wild Gooseberry. Pendleton: Spruce Mountain.

Ribes prostratum, L'Her. Fetid Currant. Pendleton: Spruce Knob; Hampshire: Ice Mountain.

Ribes floridum, L'Her. Wild Black Currant. Randolph, Grant, Preston, Fayette, and Ohio counties. (Millspaugh's Flora.)

Physocarpus opulifolius, (L.) Maxim. Nine-bark. Common shrub along streams.

Spiraea salicifolia, L. Meadow-sweet. Pocahontas: Cranberry Glades; Randolph: Elkins.

Spiraea tomentosa, L. Hard-hack. Steeple-bush. Infrequent. Randolph: Elkins; Pocahontas: Seebert.

Spiraea corymbosa, Raf. Birch-leaved Meadow-sweet. Webster: near Upper Glade. Hardy: near Moorefield. (Millspaugh's Flora)

Spiraea virginiana, Britt. West Virginia Meadow Sweet. Monongalia: along the Monongahela River, near Morgantown. (Millspaugh's Flora)

Pyrus melanocarpa, (Michx.) Wild. Black Chokeberry. Frequent, in many sections.

Pyrus arbutifolia, (L.) L.f. Chokeberry. Webster, Preston, Nicholas, Fayette, and Upshur counties. (Millspaugh's Flora)

Amelanchier oligocarpa, (Michx.) Roem. Oblong-fruited Juneberry. Rare. Pocahontas: Cranberry Glades; Tucker: Canaan Valley.

Robinia hispida, L. Rose Acacia. Monongalia, Preston, and Summers counties. (Millspaugh's Flora)

Rhus glabra, L. Smooth Sumach. Common throughout the State.

Rhus canadensis, Marsh. Fragrant Sumach. Infrequent. Hampshire: Little Cacapon.

Rhus Toxicodendron var. **radicans**, L. Torr. Poison Ivy. Poison Oak. Abundant throughout the State.

Ilex verticillata, Gray. Black Alder. Winterberry. Abundant in low grounds along rivers and in glades.

Ilex longipes, Chapm. Long-stemmed Holly. Randolph: near Cheat Bridge. Collected Sept. 1915, by C. S. Sargent.

Nemopanthus mucronata, (L.) Trel. Wild or Mountain Holly. Rare. Pendleton: Spruce Knob; Preston: Cranesville; Pocahontas: Head of Greenbrier River.

Evonymus atropurpureus, Jacq. Burning Bush. Wahoo. Boone: near Madison; Monongalia: near Morgantown; Upshur: near Buckhannon.

Evonymus americanus, L. Strawberry Bush. A common shrub.

Evonymus obovatus, Nutt. Marshall: Cameron and Board Tree. (Millspaugh's Flora)

Celastrus scandens, L. Waxwork. Climbing Bitter-sweet. Frequent along streams and on dry hills.

Staphylea triloba, L. American Bladder Nut. Not common. Monongalia: near Morgantown; Wayne: near Wayne; Greenbrier: near Ronceverte.

Rhamnus lanceolata, Pursh. Lance-leaved Buckthorn. Rare. Hampshire: Little Cacapon.

Rhamnus alnifolia, L'Her. Dwarf Alder. Rare. Pocahontas: head of east Fork of Greenbrier River.

Rhamnus caroliniana, Walt. Indian Cherry. McDowell: Tug Fork. (Millspaugh's Flora)

Ceanothus americanus, L. New Jersey Tea. Common on dry gravelly ground.

Vitis labrusca, L. Northern Fox Grape. Infrequent. Upshur: French Creek; Monroe: Sinks Grove.

Vitis aestivalis, Michx. Summer Grape. Frost Grape. Abundant in most sections.

Vitis cordifolia, Michx. Chicken Grape. Pigeon Grape. A common species.

Vitis vulpina, L. Randolph, Summers, and Jefferson counties. (Millspaugh's Flora)

Vitis bicolor, LeConte. Winter Grape. Webster: Hacker Valley. (Millspaugh's Flora)

Vitis rupestris, Sch. Sand Grape. Fayette: near Nuttallburg. (Millspaugh's Flora)

Vitis rotundifolia, Michx. Muscadine. Randolph, Fayette, and Summers counties. (Millspaugh's Flora)

Hypericum prolificum, L. Shrubby St. John's wort. Plentiful in glady regions.

Hypericum densiflorum, Pursh. St. John's wort. Glades.

Dirca palustris, L. Leatherwood. Wicopy. Infrequent. Webster: near Webster Springs; Randolph: Tygarts Valley River near Valley Head; Pocahontas: on Greenbrier River.

Cornus canadensis, L. Dwarf Cornel. Bunchberry. A small shrubby plant. Rare. Pendleton: summit Spruce Knob; Randolph: near Osceola; Hampshire: Ice Mountain.

Cornus Amomum, Mil. Silky Cornel. Kinnikinnik. Frequent along streams.

Cornus paniculata, L'Her. Panicled Dogwood. Rare. Grant: on Abram Creek; Preston: Reedsville.

Cornus circinata, L'Her. Round-leaved Dogwood. Upshur: near Lorentz. (Millspaugh's Flora)

Cornus stolonifera, Michx. Red Osier. Ohio: near Wheeling. (Millspaugh's Flora)

Clethera acuminata, Michx. White Alder. Fayette: near Nuttallburg. (Millspaugh's Flora)

Rhododendron catawbiense, Michx. Lilac-colored Laurel. Mountain Rose Bay. Pendleton, Fayette, Greenbrier, and Summers counties.

Rhododendron viscosum, (L) Torr. Clammy Azalea. White Swamp Honeysuckle. Frequent along mountain streams.

Rhododendron canescens, (Michx.) G. Don. Mountain Azalea. Rare. Pendleton: summit Spruce Knob.

Rhododendron nudiflorum, (L.) Torr. Purple Azalea. Pinxter Flower. Abundant in many sections.

Rhododendron calendulaceum, (Michx.) Torr. Flame Azalea. Common in many sections.

Menziesia pilosa, (Michx.) Pers. Alleghany Menziesia. Not common. Pendleton: Spruce Knob; Randolph: Point Mountain.

Kalmia angustifolia, L. Sheep Laurel. Calhoun, Upshur, Nicholas, Randolph, and Hardy counties. (Millspaugh's Flora)

Andromeda glaucophylla, Link. (?) Bog Rosemary. Rare. Pocahontas: Cranberry Glades. Plants not in bloom or fruit when collected.

Andromeda floribunda. Pursh. Mountain Fetter-bush. Infrequent. Pocahontas: Greenbank; Greenbrier: near Neola.

Lyonia lingustrina, (L.) DC. Male Berry. Not common. Upshur: near Buckhannon; Webster: near Cowen.

Gaylussacia dumosa, (And.) T. & G. Dwarf Huckleberry. Kanawha: near Charleston; Hardy: near Moorefield. (Millspaugh's Flora)

Gaylussacia frondosa, (L.) T. & G. Dangleberry. Fayette: near Hawk's Nest; Webster: Upper Glade. (Millspaugh's Flora)

Gaylussacia baccata, (Wang.) C. Koch. Black Huckleberry. "Buckberry". Abundant on dry ground.

Vaccinium Pennsylvanicum, var. **nigrum,** Wood. Low Black Blueberry. Common in many localities. Pendleton: Spruce Mountain; Monongalia: near Morgantown.

Vaccinium canadense, Kalm. Sour-Top. Velvet-Leaf. Blueberry. Rare. Tucker: Canaan Valley; Preston: Cranesville.

Vaccinium vacillans, Kalm. Late Low Blueberry. An abundant species.

Vaccinium corymbosum, L. High or Swamp Blueberry. Common in some localities.

Vaccinium erythrocarpum, Michx. Southern Mountain Cranberry. Rare. Pendleton: summit Spruce Knob; Randolph: Shavers Mountain.

Vaccinium Oxycoccos, L. Small Cranberry. In glades. Pocahontas and Tucker.

Vaccinium macrocarpon, Ait. Large or American Cranberry. In glades. Pocahontas and Webster.

Cephalanthus occidentalis, L. Button Bush. Found in Greenbrier, Hampshire, Jefferson, Monongalia, and Wetzel. Doubtless occurs in many other sections.

Diervilla Lonicera, Mill. Bush Honeysuckle. Rare. Pendleton: Spruce Mountain.

Lonicera canadensis. Marsh. American Fly Honeysuckle. Rare. Pendleton: Spruce Knob.

Viburnum alnifolium, Marsh. Hobble-bush. Moosewood. "Hobble-rod." Abundant in mountain regions.

Viburnum Opulus var. **Americanum.** (Mill.) Ait. Cranberry-tree. High Bush Cranberry. Infrequent. Tucker: Canaan Valley.

Viburnum acerifolium, L. Dockmackie. Arrow-wood. A common shrub.

Viburnum dentatum, L. Arrow-wood. Infrequent. Pocahontas: Cranberry Glades; Randolph: near Elkins.

Viburnum cassinoides, L. Withe-rod. Wild Raisin. Not common. Webster: Gauley River; Pendleton: Big Run; Monongalia: Deckers Creek.

Viburnum nudum, L. Randolph: Middle Fork River. Webster: Upper Glade. (Millspaugh's Flora)

Viburnum pubescens, (Ait.) Pursh. Greenbrier: White Sulphur Springs.

Sambucus canadensis, L. Common Elder. Abundant throughout the State.

Sambucus racemosa, L. Red-berried Elder. Frequent in rocky woods.

GLOSSARY

Abortive ..... That which is brought forth prematurely; coming to naught before it is completed.

Achene ..... A small hard, dry, 1-celled, 1-seeded fruit which does not open by valves.

Acrid ..... Sharp or biting to the taste.

Acuminate ..... Decidedly tapering at the end.

Acute ..... Tapering at the end.

Aesthetic ..... Pertaining to the beautiful.

Alternate ..... Not opposite to each other, but scattered singly along the axis.

Ament ..... A peculiar, scaly, unisexual spike.

Anther ..... The enlarged terminal part of a stamen which bears the pollen.

Apex ..... The tip or end of a bud or leaf, i. e., the part opposite the base.

Apical ..... Pertaining to the tip, end, or apex.

Appressed ..... Lying tight or close against.

Arborescent ..... Tree-like in appearance, size and growth.

Aromatic ..... Fragrant; with a pleasing odor.

Astringent ..... Contracting; drawing together; binding.

Awl-Shaped ..... Tapering from the base to a slender or rigid point.

Axil ..... The upper angle formed by a leaf or branch with the stem.

Axillary ..... Situate in an axil.

Axis ..... The central line of an organ; a stem.

Basal ..... Pertaining to or situated at base.

Berry ..... A fruit which is fleshy or pulpy throughout.

Bloom ..... A powdery or somewhat waxy substance easily rubbed off.

Bract ..... A modified leaf subtending a flower or belonging to an inflorescence.

Calyx ..... The outer portion of a flower, usually green in color.

Cambium ..... A thin-walled formative tissue between the bark and wood

Capsule ..... A dry fruit composed of more than one carpel and splitting open at maturity.

Catkin ..... An ament or spike of unisexual flowers.

Ciliate ..... Fringed with hairs on the margin.

Complete ..... Said of flowers when all parts are present.

Compound ..... Composed of two or more similar parts united in a whole.

Compressed ..... Flattened, especially laterally.

Conical ..... Cone-shaped.

Conifers ..... A group of trees which usually produce their fruit in the form of a cone.

Coniferous ..... Cone-bearing.

Contorted ..... Twisted together or back upon itself.

Cordate ..... Heart-shaped.

Corolla ..... The inner portion of perianth, composed of petals. The bright colored part of most flowers.

Corymb ..... A flat-topped or convex flower cluster, blooming first at the edges.
Corrugated ..... Shaped into grooves, folds, or wrinkles.
Crenate ..... Having rounded teeth.
Crown ..... The upper mass of branches, also known as head.
Cyme ..... A flower cluster blooming from apex or middle first, usually somewhat flat.
Cymose ..... In a cyme; cyme-like.

Deciduous ..... Falling off, usually at the close of the season.
Decurrent ..... Extending down the stem below the insertion.
Defoliation ..... Removal of foliage.
Dehiscent ..... Splitting open.
Deltoid ..... Delta-like, triangular.
Dentate ..... Toothed, usually with the teeth directed outward.
Depressed ..... Flattened from above.
Digitately-compound ... With the members arising at the same point at the end or top of the support.
Dioecious ..... Unisexual, with the two kinds of flowers on different plants.
Disseminated ..... Scattered; thrown broadcast.
Divergent ..... Pointing away; extending out. Said of buds which point away from the twigs.
Downy ..... Covered with fine hairs.
Drupaceous ..... Resembling or constructed like a drupe.
Drupe ..... A fleshy fruit with a pit or stone.

Elongated ..... Long drawn out.
Emarginate ..... Having a shallow notch at the apex.
Entire ..... Margin smooth, not cut or roughened.
Epidermis ..... The outer layer or covering of plants.
Exotic ..... Of foreign origin.
Exudation ..... Oozing out of sap, resin, or milk.

Falcate ..... Scythe-shaped.
Fascicle ..... A cluster, usually dense.
Fetid ..... Ill-smelling.
Fibrous ..... Consisting of fibers; woven in texture.
Filament ..... The stalk bearing the anther.
Fissures ..... Grooves, furrows, or channels as in the bark.
Flora ..... The complete system of plants found in a given area.
Fluted ..... Grooved, corrugated, channeled.
Follicles ..... A dry fruit of one carpel, splitting on one side only.
Forestry ..... The rational treatment of woodlands for their products.

Fruit ..... The seed-bearing product of a plant of whatever form.
Fungus ..... A plant devoid of green color such as mushrooms and rots.
Genus ..... A group of related species, as the pines or the oaks.
Glabrous ..... Smooth, without hairs.
Glandular ..... Bearing glands, or gland-like.

Glaucous ..... Covered with a bluish or whitish waxy coating; a bloom.
Globose ..... Ball-like, or nearly so.
Globular ..... Ball-like.

Habitat ..... The home of a plant.
Head ..... A dense cluster of sessile flowers or the crown of a tree.
Heartwood ..... The dead, central, usually highly colored portion of the trunk.
Herbaceous ..... Herb-like, soft.

Imbricated ..... Overlapping like the slate on a roof.
Impressed ..... Hollowed or furrowed as if by pressure.
Incomplete ..... Said of flowers in which one of the outer parts is wanting.
Indigenous ..... Applied to plants that are native to a certain locality.
Inflorescence ..... The flowering part of a plant, and especially its arrangement.
Intolerant ..... Not shade enduring. Requiring sunlight.
Involucre ..... A circle of bracts surrounding a flower or cluster of flowers.
Irregular ..... Said of flowers showing inequality in the size, form, or union of similar parts.

Keeled ..... With a central ridge, like the keel of a boat.

Lanceolate ..... Shaped like a lance; several times longer than wide.
Lateral ..... Situated on the side, as the buds along the side of the twig
Leaflet ..... One of the small blades or divisions of a compound leaf.
Lenticel ..... A corky growth on young or sometimes older bark which admits air to the interior of the twig or branch.
Linear ..... Line-like, long and narrow, with parallel edges.
Lobed ..... Said of leaves that have the margins more or less cut or divided.

Midrib ..... The central or main rib or vein of a leaf.
Monoecious ..... Bearing stamens and pistils in separate flowers on the same plant.
Mucronate ..... Tipped with a short, sharp point.

Naval Stores ..... Refers to tar, turpentine, resin, etc.
Nerve ..... One of the lines or veins running through a leaf.
Node ..... A place on a twig where one or more leaves originate.
Nut ..... A dry, 1-seeded, indehiscent fruit with a hard covering.
Nutlet ..... A small nut.

Ob- ..... A prefix meaning inverted or reversed.
Oblique ..... Slanting, uneven.
Oblong ..... About twice as long as wide, the sides nearly parallel.
Obovate ..... Reversed egg shaped.
Obtuse ..... Blunt.

Odd-pinnate ..... With an odd or unpaired leaflet at the tip of the compound leaf.
Opposite ..... Said of leaves and buds directly across from each other.
Orbicular ..... Circular.
Ovary ..... The part of the pistil producing the seed.
Ovate ..... Egg-shaped in outline.
Ovoid ..... Egg-shaped or nearly so.

Palmate ..... Hand-shaped; radiately divided.
Panicle ..... A compound flower cluster, the lower branches of which are longest and bloom first.
Parasite ..... Growing upon and obtaining its nourishment from some other plant.
Pedicel ..... The stalk of a single flower.
Peduncle ..... The stalk of a flower cluster or of a solitary flower.
Pendulous ..... Hanging.
Perennial ..... Lasting for more than one year.
Perfect ..... A flower with both stamens and pistils.
Persistent ..... Remaining after blooming, fruiting, or maturing.
Petal ..... The part of a corolla, usually colored.
Petiole ..... The stalk of a leaf.
Pinna ..... A division, part, or leaflet of a pinnate leaf.
Pinnate ..... With leaflets on both sides of a stalk.
Pistil ..... The central part of the flower containing the prospective seed.
Pistillate ..... Bearing pistils but no stamens.
Pith ..... The soft, central part of a twig.
Pod ..... Any dry and dehiscent fruit.
Pollen ..... The dust-like substance found in the anthers of a flower.
Polygamous ..... With both perfect and imperfect, staminate or pistillate, flowers.
Pome ..... A fleshy fruit with a core, such as the apple.
Prickle ..... A sharp-pointed, needle-like outgrowth.
Psuedo- ..... A prefix meaning false, not true.
Pubescent ..... Hairy.
Pungent ..... Ending in a sharp point; acrid.
Pyramidal ..... Shaped like a pyramid with the broadest part near the base.

Raceme ..... A simple inflorescence of flowers borne on pedicels of equal length and arranged on a common, elongated axis.
Reflexed ..... Abruptly turned backward or downward.
Regular ..... Said of flowers which are uniform in shape or structure.
Rugose ..... Wrinkled.

Saccharine ..... Pertaining to or having the qualities of sugar.
Samara ..... An indehiscent winged fruit.

Sapwood ..... The recently formed, usually light wood, lying outside of the heartwood.

Scales ..... The small, modified leaves which protect the growing-point of a bud or the part of a cone which bears the seeds. The small flakes into which the outer bark of a tree divides.

Scurfy ..... Covered with small bran-like scales.

Sepal ..... One of the parts of the calyx.

Serrate ..... Having sharp teeth pointing forward.

Sessile ..... Seated; without a stalk.

Sheath ..... A tubular envelope or covering.

Shrub ..... A low woody growth which usually branches near the base.

Silky ..... Covered with soft, straight, fine hairs.

Simple ..... Consisting of one part, not compound.

Sinuate ..... Having a strongly wavy margin.

Sinus ..... The cleft or opening between two lobes.

Species ..... A group of like individuals as Red Oak, White Oak, etc.

Spike ..... An elongated axis bearing sessile flowers.

Spine ..... A sharp woody outgrowth.

Stamen ..... The part of a flower which bears the pollen.

Staminate ..... Said of flowers which bear only stamens. Sometimes spoken of as male.

Sterile ..... Barren; unproductive.

Stigma ..... The end of a pistil through which pollination takes place

Stipule ..... A leaf appendage at the base of the leaf-stalk.

Striate ..... Marked with fine elongated ridges or lines.

Strobile ..... A fruit marked by overlapping scales as in the Pine, Birches, etc.

Style ..... The pin-like portion of a pistil bearing the stigma.

Sub- ..... A prefix meaning under or nearly.

Sucker ..... A shoot arising from an underground bud.

Suture ..... A line of dehiscence.

Symmetrical ..... Regular as to the number of parts. Having the same number of parts in each circle.

Terete ..... Having a circular transverse section.

Terminal ..... Pertaining to buds located at the end of twigs

Thorn ..... A stiff, woody, sharp-pointed projection.

Tolerant ..... Applied to trees which endure certain factors, particularly shade.

Tomentum ..... A dense layer of hairs.

Tomentose ..... Densely pubescent; hairy.

Truncate ..... Ending abruptly as if cut off at the end.

Tubercle ..... A small tuber or tuber-like body.

Tufted ..... Growing in clusters.

Umbel ..... A flower-cluster with all the pedicels arising from the same point.

Valvate .....Said of buds in which the scales merely meet without overlapping.
Vegetative .....Said of buds which do not contain reproductive organs.
Veins .....Threads of fibro-vascular tissue in leaves or other organs.
Viscid .....Glutinous; sticky.

Whorl .....A group of three or more similar organs, as leaves or buds, arranged about the same place of attachment.
Whorled .....Borne in a whorl.

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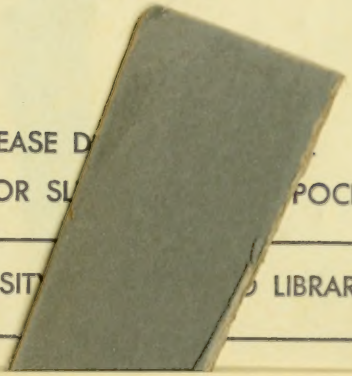

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