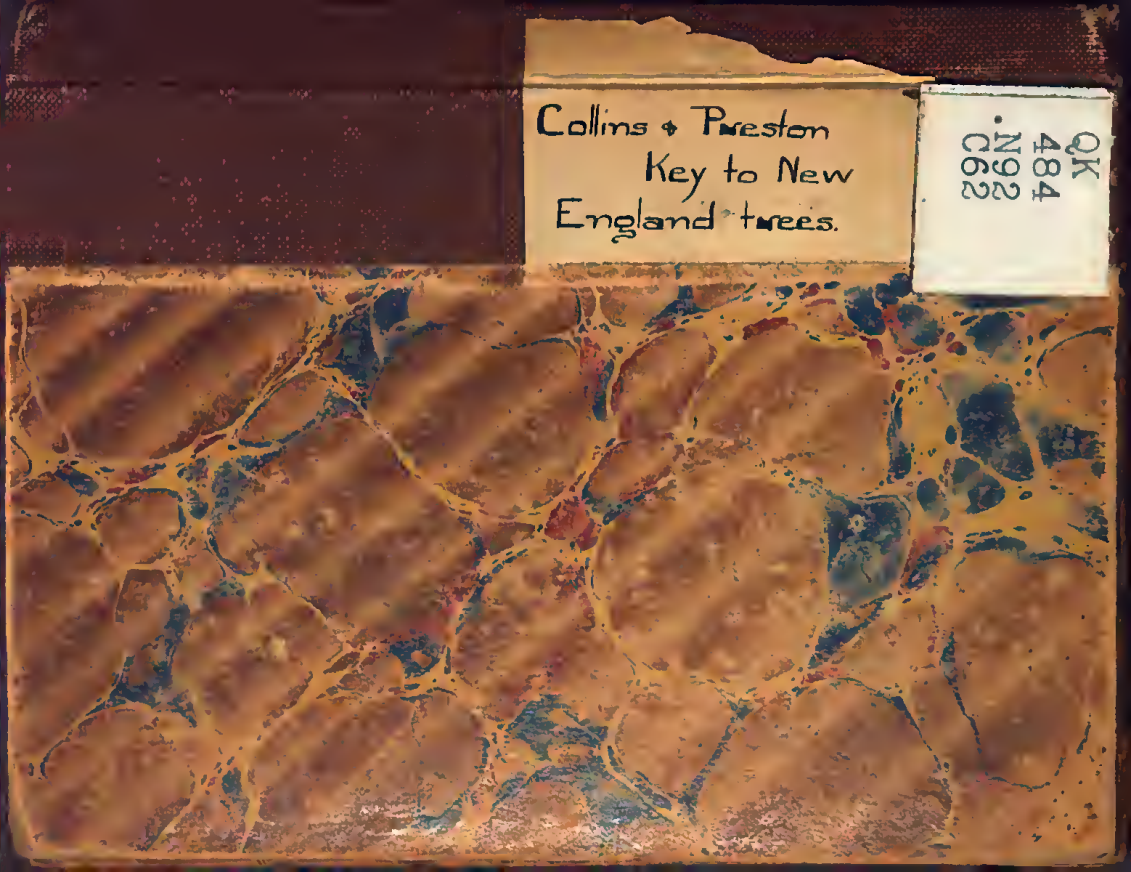
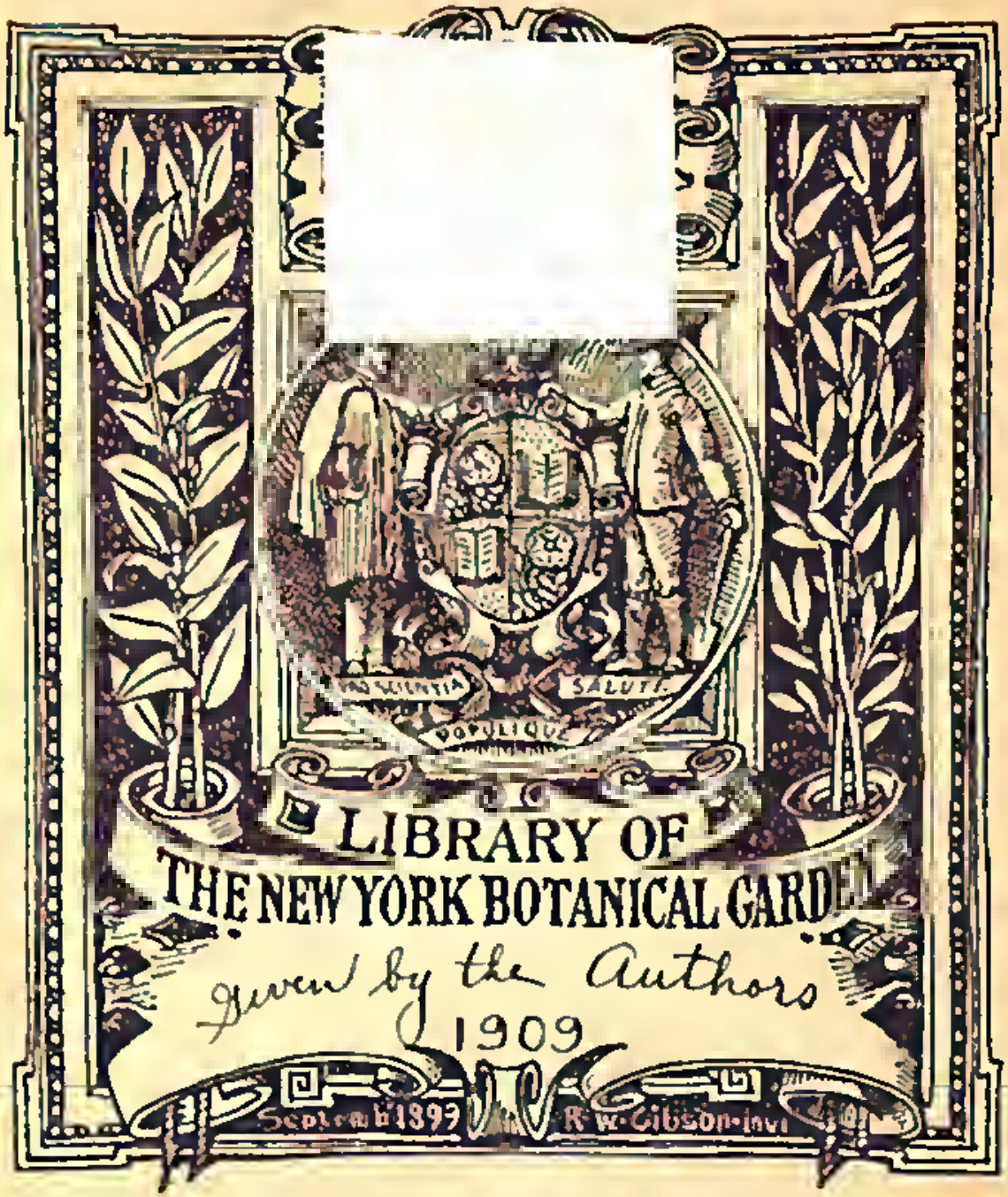
Collins & Preston
Key to New
England trees.

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KEY

TO

NEW ENGLAND TREES

WILD AND COMMONLY CULTIVATED

BY

J. FRANKLIN COLLINS

ASSISTANT PROFESSOR OF BOTANY IN BROWN UNIVERSITY

AND

HOWARD W. PRESTON

WITH THE COMPLIMENTS OF

THE AUTHORS.

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PREFACE

This key is intended to be used as a guide in determining the names of the wild and commonly cultivated trees of New England, also a few which are known to occur in Northern New Jersey and Eastern New York (particularly Long Island), but not yet in New England. It is based primarily on leaf characters. Those desiring more detailed information than is here given are referred, for native trees, to the 7th edition of Gray's Manual and to Sargent's Manual of the Trees of North America for a technical description, and to the following works for a more popular treatment: Dame & Brooks' Handbook of the Trees of New England; Keeler's Our Native Trees; Roger's The Tree Book; Hough's Handbook of the Trees of the Northern States and Canada. Several cultivated trees included in this key are not described in any of these works. Detailed information in regard to these may usually be found in Bailey's Cyclopædia of American Horticulture or in works treating of the trees of Western America or Europe.

After determining the name of a tree carefully note its salient characteristics, especially those distinguishing it from its near relatives. If this is done conscientiously and systematically most of our common trees may soon be recognized at sight. The main object of this key is merely to guide the student through the preliminary stages of this knowledge. A true knowledge of trees must be derived primarily from accurate and abundant study of the *trees* themselves.

Wherever possible technical terms have been avoided. The few used, and a number of semi-technical ones, are defined in the glossary following the key.

To those who have had little or no experience in determining plants by means of botanical keys the following suggestions will be helpful.

Take the key with you into the field or wood.

Before attempting to use the key, look over the tree and select typical (or average) leaves and twigs. Only these should be considered. In most cases these need not be detached, and they should not be when there is any suspicion that objection

might be raised to such a procedure, as would be the case with street trees, park trees, and cultivated trees in general. If fruit characters are needed for identification and no fruit can be found on the tree, search the ground directly beneath for old fruits. If any are found, they may, under normal conditions, be regarded as having dropped from the tree, unless the fruit is easily blown by the wind, or the ground is sloping and other trees grow higher up the slope where fruits might easily roll down.

In using the key begin with No. 1 and read the two lines preceded by this number, deciding which one of the two applies to the tree under consideration. If the leaves of our tree are flattened (as most leaves are) we next pass to No. 2, as indicated by the figure 2 following this line, and read the three lines numbered 2, deciding which one of these three applies to our tree, passing again to the number indicated after the line selected. This simple process is repeated until we reach one or more common names in **full faced** type. If a number is found after this name (as in No. 5) it means that the name is that of a genus including two or more species. In order to decide which species, we pass to the number indicated and proceed as before. To illustrate this, suppose we reach No. 5 in the key, deciding that we have a Pine, we next turn to No. 75 in order to find *which* Pine. Preceding No. 75 will be found a few briefly stated characteristics of the Pine genus. A similar characterization will be found preceding the other genera containing more than one species. Finally we arrive at a point where no number is indicated after the line chosen. The common name (or names) will here be found in **full faced** type, and the scientific name in *italics*. If more than one common name appears the first is usually preferred, the subsequent ones being either less distinctive, less common, or merely local in some parts of New England.

Where conflicting opinions exist in regard to specific limitations those laid down in the 7th edition of Gray's Manual have usually been adopted, particularly in cases of such groups as have undergone recent revision (e. g. Thorns, Alders, Birches).

The authors will be glad at any time to receive suggestions and correction from those who use this key, with a view of perfecting and improving it in the near future.

KEY TO GENERA AND SPECIES

1 Leaves distinctly flattened—2
1 Leaves needle-like, not distinctly flattened—4

2 Leaves awl-shaped—3
2 Leaves short and closely overlapping (scale-like)—6
2 Leaves narrowed at base, or else with a distinct leaf-stalk—8

3 Leaves three at a node, all alike, whitened above, green beneath, spiny pointed—**Common Juniper, Dwarf Juniper,** *Juniperus communis* L.
3 Leaves of two kinds, one similar to the above, the other (usually on older trees) consisting of short overlapping scale-like leaves, arranged in four longitudinal rows—**Red Cedar, Savin,** *Juniperus virginiana* L.

4 Leaves in well marked clusters on the side of the branch—5
4 Leaves not in definite clusters—**Spruce,** 84

5 Leaves five or less in a cluster—**Pine,** 75
5 Leaves seven or more in a cluster—**Larch,** 83

6 Young leafy shoots prominently flattened or 2-edged at lateral margins—**Arbor Vitæ, Cedar, White Cedar,** *Thuja occidentalis* L.
6 Young leafy shoots not prominently flattened—7

7 Leaves of two kinds; (*a*) awl-shaped and spiny pointed, less than half an inch long, more common on young trees, but generally present also on some parts of older trees; (*b*) small and scale-like, smallest shoots conspicuously 4-angled. Fruit a bluish white berry-like cone about ¼ inch or less thick. Trees of drier situations—dry sandy fields and hillsides—rarely in low wet ground. Widely distributed east of the 100th meridian—**Red Cedar, Savin,** *Juniperus virginiana* L.

7 Leaves of one kind only; small and scale-like, some of the leaves commonly with a minute swelling or gland on the back. Smallest shoots not conspicuously 4-angled nor flattened. Fruit a small dry brownish cone about ¼ inch thick, with shield-shaped scales. Trees of moist situations—swamps, bogs, etc.—rarely in dry soil. Common from N. H. to Miss. within 100 miles of the coast—**Coast White Cedar, Cedar,** *Chamaecyparis thyoides* (L.) BSP.

8 Leaves less than ⅛ inch wide—9
8 Leaves more than ⅛ inch wide—12

9 Leaves white above, green beneath, spiny pointed—**Common Juniper, Dwarf Juniper,** *Juniperus communis* L.
9 Leaves not whitened above—10

10 Leaves about ½ inch long, with a distinct short leaf-stalk—**Hemlock, Hemlock Spruce,** *Tsuga canadensis* (L.) Carr.
10 Leaves usually ¾ inch or more long, narrowed at base but without a distinct leaf-stalk—11

11 Mature leaves prominently whitened beneath. Cones upright—**Balsam Fir, Balsam, Firtree, Balm of Gilead Fir,** *Abies balsamea* (L.) Mill.
11 Mature leaves not prominently whitened beneath. Cones hanging or pendulous, with leaf-like toothed appendages projecting beyond the scales. Cult.—**Douglas Spruce, Red Fir, Douglas Fir,** *Pseudotsuga taxifolia* Britt.

12 Leaves simple, with a single blade—13
12 Leaves compound, with 3 or more wholly separate blades (leaflets)—61

13 With 3 or more main veins of nearly equal prominence starting from the base of the blade—14
13 With only one prominent vein—21
13 With many fine radiating veins, all of equal prominence. Leaves fan-shaped. Cult.—**Maiden-hair Tree, Ginkgo,** *Ginkgo biloba* L.

14 With one leaf at a node (i. e. leaves alternate)—17
14 With two or more leaves at a node (i. e. leaves opposite or whorled)—15

15 Leaf margins strongly indented in 2 or 4 places, these indentations variable but usually reaching at least a third of the distance to the base of the blade. Fruit with a flat wing—**Maple,** 174

15 Leaves usually with only one indentation and this at the base (i. e. leaves heart-shaped), occasionally some leaves with one or two angles or shallow indentations on the sides. No small marginal teeth—16

16 Fruit 12 to 18 inches long, cylindrical—**Catalpa,** 194

16 Fruit globular or top-shaped. Cult.—**Paulownia,** *Paulownia tomentosa* (Thunb.) Steud.

17 Prominent veins at the base of the blade 5 or more—18

17 Prominent veins at the base of the blade 3 (rarely 5)—19

18 Leaves strongly star-shaped. Southern N. E.—**Sweet Gum, Red Gum, Alligator-wood, Liquidambar,** *Liquidambar Styraciflua* L.

18 Leaves symmetrically heart-shaped, margins entire. Cult.—**Redbud, Judas-tree,** *Cercis canadensis* L.

18 Leaves unsymmetrically heart-shaped, margins toothed—**Linden,** 186

19 Leaves broader than long, with strong angles or shallow indentations—**Buttonwood, Buttonball-tree, Plane-tree,** *Platanus occidentalis* L.

19 Leaves longer than wide—20

20 Leaf length not twice the width. Juice milky—**Mulberry,** 140

20 Leaf length not twice the width. Juice not milky. Base of blade unsymmetrical—**Linden,** 186

20 Leaf length more than twice the width. Juice not milky—**Hackberry, Sugarberry, Nettle-tree, One-berry,** *Celtis occidentalis* L.

21 Margins either wavy, toothed, incised, or lobed—33

21 Margins entire, without any of the above characters—22

22 Twigs and bark aromatic when bruised. Usually some of the leaves variously lobed—**Sassafras,** *Sassafras variifolium* (Salisb.) Ktze.

22 Twigs and bark not aromatic. None of the leaves lobed—23

23 Leaves thick, smooth and evergreen—24

23 Leaves thin or else hairy beneath, dropping at the end of season—25

24 Leaves 2 to 5 inches long—**Mountain Laurel, Calico Bush, Spoonwood,** *Kalmia latifolia* L.

24 Leaves 4 to 12 inches long. Margins of old leaves somewhat recurved—**Great Laurel, Rhododendron, Rose Bay,** *Rhododendron maximum* L.

25 Side veins curving nearly to the apex of the leaf—**Cornel,** 189

25 Side veins not curving nearly to the apex of the leaf—26

26 Branches with at least a few spines or thorns (usually many). Cult.—**Osage Orange,** *Maclura pomifera* (Raf.) Schneider.

26 Branches without spines or thorns—27

27 Leaves opposite or whorled—28

27 Leaves alternate—29

28 Leaves mostly 3 at a node (whorled), rounded or pointed at the base—**Button Bush,** *Cephalanthus occidentalis* L.

28 Leaves opposite, with an abrupt or slightly heart-shaped base. Cult.—**Lilac,** *Syringa vulgaris* L.

28 Leaves opposite, blade broadest at the middle or above. Cult.—**Fringe-tree, White Fringe,** *Chionanthus virginica* L.

29 Leaves 7 inches or more long—**Magnolia,** 141

29 Leaves less than 7 inches long—30

30 Terminal bud ½ inch or more long—**Magnolia,** 141

30 Terminal bud less than ¼ inch long—31

31 Leaf length averaging less than twice the width, woolly-hairy beneath. Cult.—**Quince,** 144

31 Leaf length averaging less than twice the width, smooth. Cult.—**Sumac,** 170

31 Leaf length averaging twice the width or more, apex more or less pointed—32

32 Leaves somewhat rounded at base, pointed at apex. Fruit a globular berry, 1 inch or more thick. Occasionally cult.—**Persimmon, Date Plum,** *Diospyros virginiana* L.

32 Leaves more or less pointed at both ends. Fruit elongated, fleshy or juicy, less than ½ inch long, with the seed inclosed in a hard stone—**Black Gum, Sour Gum, Tupelo,** *Nyssa sylvatica* Marsh.

32 Leaves pointed at both ends. Fruit a nut (acorn) with its base set in a woody cup composed of closely overlapping small scales—**Oak,** 123

33 Margin with no deep indentations (i. e. not more than ⅓ of the distance to the midrib)—34
33 Margin indented half way or more to the midrib, often almost to the base (i. e. lobed or divided)—36

34 Margin wavy, with no distinct teeth nor bristle-tipped lobes, larger indentations of the margin not exceeding ⅓ of the distance to the midrib—35
34 Margin with distinct teeth or small notches, or with a few bristle-tipped lobes or angles—37

35 Base of blade unsymmetrical—**Witch Hazel,** *Hamamelis virginiana* L.
35 Base of blade nearly or quite symmetrical. Buds short, not ¼ inch long. Bark not smooth and gray—**Oak,** 123
35 Base of blade nearly or quite symmetrical. Buds ½ inch or more long, sharp pointed. Bark smooth and gray even on old trunks—**Beech,** 116

36 Margin both deeply cut (or indented) and toothed—59
36 Margin deeply notched or indented, but not toothed—57

37 Leaves thick, evergreen, with stiff and spiny teeth. Southern N. E.—**Holly, American Holly, White Holly,** *Ilex opaca* Ait.
37 Leaves thin—38

38 Leaves opposite or seemingly so—39
38 Leaves alternate—40

39 Branches without thorns or spines, side veins of blade not curving into the apex—**Arrow-wood,** 195
39 Branches commonly with a few spines or thorns, side veins of blade curving well up into the apex. Cult. and escaped —**Buckthorn,** *Rhamnus cathartica* L.

40 Branches with thorns—41
40 Branches without thorns—42

41 Thorns on the side of leafy branches—**Thorn,** 147
41 Thorns commonly formed by the pointed ends of branches. Fruit usually with 5 thin-walled seed compartments—**Apple, Pear** (in semi-wild state)—145

41 Thorns commonly formed by the pointed ends of branches. Fruit with a single seed inclosed in a hard stone—**Plum,** 163

42 Side veins nearly straight, usually unbranched—43
42 Side veins curving or prominently forking—52

43 Leaf base unsymmetrical and margins doubly toothed. Fruit flat, with a broad wing surrounding the single seed—**Elm,** 137
43 Leaf base symmetrical or nearly so—44

44 Margins with coarse teeth or angles, less than 6 per inch—45
44 Margins with small teeth, more than 6 per inch—47

45 Fruit a nut; one to several nuts completely inclosed in a prickly bur until mature. Each side vein of the leaf blade terminating in a marginal tooth—46
45 Fruit a nut with its base set in a scaly cup. Leaf margins commonly with a few large angular teeth or shallow angular lobes, each tipped with a short bristle—**Oak,** 123

46 Nut triangular in section. Bark of trunk smooth, firm, and light gray—**Beech,** 119
46 Nut not triangular in section. Bark of older trunks furrowed—**Chestnut,** 122

47 Bark chalky white, or whitish—**Birch,** 108
47 Bark not chalky white, nor whitish—48

48 Small twigs aromatic when bruised—**Birch,** 108
48 Small twigs not aromatic when bruised—49

49 Leaves taper-pointed—50
49 Leaves not taper-pointed—51

50 Bark of trunk brownish, with somewhat shredded flakes or scales—**Hop Hornbeam, Ironwood, Leverwood, Hornbeam, Hardhack,** *Ostrya virginiana* (Mill.) K. Koch.
50 Bark of trunk close and gray, with no tendency to become furrowed or scaly—**American Hornbeam, Blue Beech, Water Beech, Hornbeam, Ironwood,** *Carpinus caroliniana* Walt.

51 Leaves with base broadly wedge-shaped, or abrupt, and entire. Pointed at apex. Twigs reddish. Bark of old trunks red or brown, forming scales with upturned papery margins—**Birch,** 109

51 Leaves usually rounded at one or both ends. Bark without papery-margined scales—**Alder,** 116

52 Blade nearly as wide as long, with an unsymmetrical base—**Linden,** 186

52 Blade usually longer than wide, base symmetrical—53

53 Fruit fleshy or juicy, commonly globular, not splitting open at maturity. Wood commonly rather heavy and hard—54

53 Fruit neither globular, fleshy, nor juicy; splitting open at maturity. Seeds with long cottony hairs. Wood soft and light. Twigs commonly brittle—56

Note:—The Hop Hornbeam may be sought here if the side veins of the blade are more curved than usual.

54 Fruit with a single central stone which incloses a single seed—**Cherry, Plum, Peach,** 163

54 Fruit with the seeds in thin walled compartments—55

55 Fruit less than ½ inch thick—**Juneberry,** 146

55 Fruit ¾ to 2 inches or more thick—**Apple, Pear,** 144

56 Leaf-stalk less than ⅓ the length of the blade, or else the width of the blade less than ½ the length—**Willow,** 90

56 Leaf-stalk more than ⅓ the length of the blade, or else the blade nearly as wide as long—**Poplar,** 95

57 Leaves abruptly cut off or indented at the broad apex. Southern N. E. Cult.—**Tulip Tree, White Wood, Yellow Poplar,** *Liriodendron Tulipifera* L.

57 Leaves pointed or rounded at apex, not indented—58

58 Twigs bright or shining green, bark spicy aromatic when bruised—**Sassafras,** *Sassafras variifolium* (Salisb.) Ktze.

58 Twigs not spicy aromatic—**Oak,** 123

Note:—The Fern-leaved Beech (occasionally planted), with smooth gray bark, long pointed buds, and deeply divided leaves, may be sought here.

59 Branches thorny. Cult. and escaped—**English Hawthorn,** 147

59 Branches not thorny—60

60 Bark whitish and papery. Cult.—**Cut-leaved Weeping Birch,** 111

60 Bark not whitish and papery—**Oak**, 123

Note:—The Fern-leaved Beech (occasionally planted), with smooth gray bark, long pointed buds, and deeply divided leaves, may be sought here.

61 Leaflets all attached at one point (i.e. leaves palmately compound), with no stalk to any of the leaflets—62

61 Leaflets scattered along both sides of the common axis (i.e. leaves pinnately compound), if composed of only 3 leaflets then the terminal one with a distinct stalk—63

62 Leaflets 3. Generally a shrub. Long Island—**Hop Tree, Wafer Ash,** *Ptelea trifoliata* L.

62 Leaflets 5 or more. Cult.—**Horse-chestnut, Buckeye,** 183

63 Leaves with an odd leaflet at the tip—66

63 Leaves usually with a pair of leaflets at the tip—64

64 With thorns on the branches or trunk. Cult.—**Honey Locust, Three-thorned Acacia, Honey Shucks, Honey,** *Gleditsia triacanthos* L.

64 Without thorns—65

65 Leaves once compound. Cult. and escaped—**Tree of Heaven, Ailanthus,** *Ailanthus glandulosa* Desf.

65 Leaves twice compound, at least part of leaf. Cult.—**Kentucky Coffee-tree,** *Gymnocladus dioica* (L.) Koch.

66 Leaves only once compound—67

66 Leaves twice compound, at least part of leaf. Cult.—**Kentucky Coffee-tree,** *Gymnocladus dioica* (L.) Koch.

67 Leaves opposite—68

67 Leaves alternate—69

68 Wing of fruit unsymmetrical, thickened at one edge. Leaflets usually 3 or 5—**Box Elder, Ash-leaved Maple,** 174

68 Wing of fruit symmetrical, not thickened at one edge. Leaflets usually 7 or 9—**Ash,** 190

69 Margins of leaflets more or less regularly toothed, at least above the middle—72

69 Margins of leaflets without teeth, at least none above the middle—70

70 Leaflets commonly with one or more irregular teeth or notches near the base. Fruit nearly 2 inches long, very thin, with one seed near the middle. Cult. and escaped —**Tree of Heaven, Ailanthus, Chinese Sumach,** *Ailanthus glandulosa* Desf.

70 Leaflets without the basal teeth. Fruit flat, usually at least 2 inches long, several seeded—71

70 Leaflets without the basal teeth. Fruit globular, ¼ inch or less thick—**Sumach,** 170

71 Leaflets opposite. Bark deeply furrowed—**Locust,** 169

71 Leaflets alternate. Bark smooth and gray. Cult.—**Yellow Wood,** *Cladrastis lutea* (Mx.f.) Koch.

72 Juice milky. Pith occupying more than half the diameter of the youngest twigs—**Sumach,** 170

72 Juice not milky. Pith not occupying half the diameter of the youngest twigs—73

73 Fruit fleshy, red, globular; less than ½ inch thick; in flat-topped clusters. Leaflets commonly more than 11. Bark of trunk usually smoothish—**Mountain Ash,** 145

73 Fruit a dry nut ½ inch or more thick. Leaflets either less than 11, or else the bark of the trunk prominently furrowed—74

74 Exterior husk of fruit not splitting away at maturity. Nut roughened with jagged points or ridges. Leaflets usually 9 to 17—**Walnut,** 103

74 Exterior husk splitting vertically into 4 parts at maturity. Nut smooth. Leaflets usually 5 to 9—**Hickory,** 104

Pine—Leaves 2 to 5 in a cluster. Fruit a cone, composed of woody closely crowded and overlapping scales attached to all sides of a common axis.

75 Leaves 5 in a cluster. Cones long, scales thin at tips—76

75 Leaves 3 in a cluster. Cone scales thickened at tips—77

75 Leaves 2 in a cluster. Cone scales thickened at tips—78

76 Cones 4 to 6 inches long—**White Pine, Soft Pine,** *Pinus Strobus* L.

76 Cones 6 to 10 inches long. Occasionally cult.—**Himalayan White Pine, Bhoton White Pine,** *Pinus excelsa* Wall.

77 Each cone scale with a short stout rigid prickle at the tip. Southwestern Me. south and west—**Pitch Pine, Hard Pine,** *Pinus rigida* Mill.

77 Each cone scale with a small weak prickle at the tip. N. J.—**Yellow Pine, Shortleaf Pine,** *Pinus echinata* Mill.

78 Leaves 1 to 4 inches long—79

78 Leaves 4 to 6 inches long—81

79 Cones spreading at about right angles to the branches. Each scale with a stout prickle at the tip. Leaves 1½ to 3 inches long. Long Island—**Jersey Pine, Scrub Pine,** *Pinus virginiana* Mill.

79 Cones pointing forward. Scales generally without prickles. Leaves ¾ to 1½ inches long. Northern N. E.—**Northern Scrub Pine, Gray Pine, Scrub Pine,** *Pinus Banksiana* Lamb.

79 Cones pointing backward—80

80 Each scale with a weak prickle at the tip. Leaves 3 to 5 inches long. N. J.—**Yellow Pine, Short-leaf Pine,** *Pinus echinata* Mill.

80 Scales without prickles. Leaves 2 to 4 inches long. Cult.—**Scotch Pine, "Scotch Fir,"** *Pinus sylvestris* L.

81 Cones pointing ontward at about right angles to the branches—82

81 Cones 1½ to 2 inches long, pointing backward. N. J.—**Yellow Pine, Shortleaf Pine,** *Pinus echinata* Mill.

82 Cones about 2 inches long. Young branches orange-colored. Leaves shining, slender, flexible. Northward—**Red Pine, Norway Pine,** *Pinus resinosa* Ait.

82 Cones 2½ to 3 inches long. Young branches grayish brown. Leaves dull, rigid. Cult.—**Austrian Pine,** *Pinus Laricio* var. *austriaca* Endl.

LARCH—Leaves many in a cluster, falling from the tree in the autumn. Fruit a cone, as in Pine.

83 Leaves 1 inch or less in length. Cones ½ to ¾ inch long; scales few. Northward, rare in southern N. E.—**American Larch, Tamarack, Hackmatack," Juniper,"** *Larix laricina* (Du Roi) Koch.

83 Leaves 1 inch or more in length. Cones about 1 inch long, with many scales. Cult.—**European Larch,** *Larix decidua* Mill.

SPRUCE—Leaves attached to all sides of the twigs, 4-sided or 4-angled, commonly pointing in all directions. Fruit a cone, as in Pine.

84 Young twigs hairy—85
84 Young twigs smooth or nearly so—87

85 Mature cones less than 3 inches long—86
85 Mature cones more than 3 inches long. Cult.—**Norway Spruce,** *Picea Abies* (L.) Karst.

86 Leaves ½ to ¾ inch long. Cones 1¼ to 2 inches long, rarely remaining attached to the branch more than one year. Tree reaching 40 feet or more in height, usually growing on uplands, rarely in wet places—**Red Spruce, Yellow Spruce,** *Picea rubra* (Du Roi) Dietr.
86 Leaves ¼ to ½ inch long. Cones ½ to 1½ inches long, persisting for many years. Tree of swamps or low lands, rarely on uplands, usually less than 30 feet high and occasionally fruiting when only 3 or 4 feet high—**Black Spruce, Swamp Spruce, Bog Spruce,** *Picea mariana* (Mill.) BSP.

87 Leaves pointed, often sharply—88
87 Leaves blunt, less than ½ inch long, thick, dark shining green. Cult.—**Oriental Spruce,** *Picea orientalis* Carr.

88 Foliage bluish-green or silvery—89
88 Foliage green. Cones 4 to 7 inches long. Cult.—**Norway Spruce,** *Picea Abies* (L.) Karst.

89 Cones 2½ to 4 inches long. Cone scales distinctly longer than broad, with a ragged blunt apex. Cult.—**Colorado Blue Spruce, Silver Spruce,** *Picea Menziesii* Engelm.
89 Cones 1½ to 2 inches long. Cone scales roundish, not ragged. Foliage usually with an unpleasant odor. Northern N. E.—**White Spruce, Single Spruce, Skunk Spruce, Cat Spruce,** *Picea canadensis* (Mill.) BSP.

WILLOW—Leaves narrow, except in Bay-leaved Willow. Flowers in catkins. Stamens 2 to 8. Bracts not fringed. Fruit a small elongated dry pod. Seeds small, with long hairs. Many hybrids. Only the Black Willow is native.

90 Length of blade not more than 3 times the width. Teeth blunt and glandular, 15 to 20 per inch of margin. Leaf-stalk with glands above. Stamens 3 to 5 or more—**Bay-leaved Willow,** *Salix pentandra* L.

90 Length of blade at least 4 times the width—91

91 Stipules usually persistent. No glands on the leaf-stalk. Teeth 15 to 30 per inch of margin. Stamens 3 to 5 or more—**Black Willow, Swamp Willow,** *Salix nigra* Marsh.

91 Stipules usually not persistent. Leaf-stalk generally with glands. Stamens 2—92

92 Marginal teeth of leaves averaging 10 to 15 per inch—93

92 Marginal teeth of leaves averaging 15 to 30 per inch, blunt —94

93 Length of leaf blade about 4 times the width. Marginal teeth blunt. Very variable—**Crack Willow,** *Salix fragilis* L.

93 Length of leaf blade about 8 times the width. Lower surface pale. Marginal teeth sharp. Branches pendulous—**Weeping Willow, Napoleon's Willow,** *Salix babylonica* L.

94 Mature leaves silky hairy on both surfaces. Twigs greenish —**White Willow,** *Salix alba* L.

94 Mature leaves smooth. Twigs yellow or reddish—**Yellow Willow,** *Salix alba* var. *vitellina* (L.) Koch.

94 Mature leaves smooth and bluish green. Twigs olive-green—**Blue Willow,** *Salix alba* var. *caerulea* (Sm.) Koch.

POPLAR—Leaves wide. Flowers in catkins. Stamens 8 or more. Bracts fringed. Fruit as in Willow.

95 Leaf margins irregularly lobed or toothed. Lower surface white-cottony even when old. Cult. and escaped. Very variable—**White Poplar, Abele, Silver Poplar,** *Populus alba* L.

95 Leaf margins regularly toothed, or but slightly irregular—96

96 Teeth 5 or less per inch of margin—Large-toothed Aspen, Large-toothed Poplar, Poplar, Popple, *Populus grandidentata* Mx.

96 Teeth 6 or more per inch of margin—97

97 Leaf-stalk prominently flattened contrary to the blade—98

97 Leaf-stalk not flattened, or but very slightly—101

98 Blade rounded or broadly egg-shaped, usually pointed—American Aspen, Quaking Asp, Trembling Poplar, Trembling, *Populus tremuloides* Mx.

98 Blade triangular, triangularly egg-shaped, or rhombic—99

99 Crown of the tree very narrow and spiry. Branches closely ascending. Leaves commonly broader than long. Cult.—Lombardy Poplar, *Populus nigra* var. *italica* Du Roi.

99 Crown of the tree not spiry—100

100 Young twigs smooth. Western N. E. and cult.—Carolina Poplar, Cottonwood, Necklace Poplar, Cotton-tree, *Populus deltoides* Marsh.

100 Young twigs hairy. Occasionally cult.—Black Poplar, *Populus nigra* L.

101 Length of blade about twice the width. Northern and western N. E.—Balsam Poplar, Tacamahac, Rough-barked Poplar, *Populus balsamifera* L.

101 Length of blade scarcely greater than the width—102

102 Apex of the blade blunt or rounded. Coun.—Downy Poplar, Swamp Cottonwood, River Cottonwood, *Populus heterophylla* L.

102 Apex of the blade tapering to a very sharp point. Cult. and escaped—Balm of Gilead, Balsam, *Populus candicans* Ait.

Walnut—Leaves compound. Leaflets averaging 11 to 23. Fruit enclosed in a husk which does not split open at maturity. Nut roughened with sharp points or ridges.

103 Leaflets 11 to 17, sticky-hairy, as are also the leaf-stalks and young fruits. Fruit oblong—Butternut, White Walnut, Oilnut, *Juglans cinerea* L.

103 Leaflets 15 to 23, not sticky. Fruit globular. Western N. E. Also cult.—**Black Walnut, Walnut,** *Juglans nigra* L.

Hickory—Leaves compound. Leaflets 5 to 11. Fruit husk regularly splitting into 4 parts at maturity. Nut smooth.

104 Leaflets averaging 5 to 7—105
104 Leaflets averaging 7 to 11—107

105 Leaflets usually 5, lowest pair much smaller. Husk of fruit more than ⅛ inch thick. Kernel of seed sweet. Bark of old trunks separating into loose plates. Western Me. south and west—**Shag-bark Hickory, Shell-bark Hickory,** *Carya ovata* (Mill.) K. Koch.
105 Leaflets 5 or 7. Husk of fruit less than ⅛ inch thick—106

106 Fruit an inch or more long, oblong. Kernel of seed bitter. Bark in close rough scaly ridges. Southern N. E. —**Pignut, Brown Hickory,** *Carya glabra* (Mill.) Spach.
106 Fruit less than an inch in length, globular. Kernel sweetish. Bark rough and somewhat shaggy. Southern N. E.—**Small-fruited Hickory, Small Pignut, Little Shag-bark Hickory,** *Carya microcarpa* Nutt.

107 Leaflets glandular-hairy, at least beneath, with a resinous fragrance when crushed. Fruit husk more than ⅛ inch thick. Shell of nut thick. Kernel of seed sweet. Southern N. E.—**Mockernut, White-heart Hickory, Bullnut,** *Carya alba* (L.) K. Koch.
107 Leaflets finely hairy only when young. Fruit husk less than ⅛ inch thick. Shell of nut thin. Kernel of seed bitter. Southwestern Me. south and west—**Bitternut, Swamp Hickory,** *Carya cordiformis* (Wang.) K. Koch.

Birch—Leaves simple, alternate. Fruit clusters cone-like. Nuts small, winged.

108 Bark red, pink, cinnamon, brown, or darker, not separable into thin papery layers on old trunks—109
108 Bark white, yellow, silvery, or bronze, usually more or less separable into thin papery layers—110

109 Small twigs aromatic when bruised or broken—**Black Birch, Sweet Birch, Cherry Birch,** *Betula lenta* L.
109 Small twigs not aromatic when bruised. Southern N. E.—**River Birch, Red Birch,** *Betula nigra* L.

110 Small twigs aromatic when bruised—**Yellow Birch, Silver Birch,** *Betula lutea* Mx. f.
110 Small twigs not aromatic when bruised—111

111 Leaves deeply cut, often into narrow divisions. Cult.—**Cut-leaved Birch,** *Betula alba* var. *dalecarlica* L.
111 Leaves not deeply cut, distinctly triangular, usually with a tapering apex—**Gray Birch, White Birch, Poverty Birch, Oldfield Birch,** *Betula populifolia* Marsh.
111 Leaves neither deeply cut nor triangular—112

112 Young branches perfectly smooth. Northern N. E.—**White Birch, Blue Birch,** *Betula pendula* Roth.
112 Young branches minutely hairy—113

113 Branches pendulous.* Cult.—**Weeping Birch,** *Betula alba* var. *pendula* Hort.
113 Branches not pendulous—114

114 Leaves rounded or slightly wedge-shaped at base—115
114 Leaves broadly egg-shaped, heart-shaped at base. Northern N. E.—**Cordate-leaved Birch,** *Betula alba* var. *cordifolia* (Regel) Fernald.

115 Leaves 1¼ to 2½ inches long. Cult.—**European Paper Birch,** *Betula alba* L.
115 Leaves 2½ to 3½ inches long. **American Canoe Birch, Paper Birch, Canoe Birch, White Birch,** *Betula alba* var. *papyrifera* (Marsh.) Spach.

ALDER—Shrubby, or occasionally tree-like. Flowers in catkins. Fruit clusters cone-like.

116 Leaves broadest at the middle or below—117
116 Leaves broadest above the middle—118

*_Betula alba_ var. _glutinosa_ (Wallr.) Traut., with pendulous branches, is local near Mt. Katahdin, Me.

117 Leaves densely soft-hairy beneath. Branchlets hairy. Northern N. E.—**Downy Green Alder,** *Alnus mollis* Fernald.

117 Leaves somewhat hairy or rusty beneath, dark green above, with impressed veins—**Speckled Alder, Hoary Alder,** *Alnus incana* (L.) Muench.

118 Leaves sticky. Margins coarsely toothed. Cult. and escaped—**European Black Alder,** *Alnus vulgaris* Hill.

118 Leaves not sticky. Margins with very small teeth—**Smooth Alder,** *Alnus rugosa* (Du Roi) Spreng.

Beech—Leaves simple, alternate. Bark light gray, without any suggestion of furrows or ridges.

119 Leaves deeply cut into slender divisions. Cult.—**Fern-leaved Beech,** *Fagus sylvatica* var. *heterophilla* Loud.

119 Leaves not deeply cut—120

120 Leaves purple, red, or even darker. Cult.—**Purple-leaved Beech,** *Fagus sylvatica* var. *purpurea* Ait.

120 Leaves green—121

121 Side veins 9 to 14 pairs, each vein ending in a distinct marginal tooth. Leaves 2½ to 5 inches long, width about half the length—**American Beech, Beech, Red Beech, White Beech,** *Fagus grandifolia* Ehrh.

Note:—The American Beech normally has yellowish or grayish fruit with elongated prickles, while the variety *caroliniana*, from New Jersey southward, has a dull red fruit and short prickles.

121 Side veins 5 to 9 pairs, each vein ending either in or between small teeth, the latter often entirely absent and the margin merely wavy. Leaves 2 to 4 inches long, width ¾ the length. Cult.—**European Beech,** *Fagus sylvatica* L.

Note:—The *Weeping Beech* is a variety of the European Beech with drooping or pendulous branches.

Chestnut—Leaves long, with a bristly tooth at the tip of each side vein. Fruit a bur, 2 inches or more thick, usually containing 1 to 3 pointed nuts.

122 Nut ¾ inch or less in width. Southwestern Me. south and west—American Chestnut, Chestnut, *Castanea dentata* (Marsh.) Borkh.

122 Nut more than ⅞ inch in width. Only in cult.—European Chestnut, *Castanea sativa* Mill.

Note:—The *Chinquapin* is native from New Jersey southward. It has burs less than 2 inches thick, almost always inclosing a single nut, and hairy under surfaces to the leaves. Certain *Japanese Chestnuts* are sometimes cultivated in New England; these can usually be recognized by the very large bur, sometimes 3 or more inches thick, the very small but prominently bristle-tipped teeth of the leaf margin, and the usually rounded base of the blade.

Oak—Leaves simple, alternate. Fruit a nut (acorn) surrounded at the base by a cup composed of closely overlapping scales.

123 Leaves entire, without lobes or marginal teeth. Local at one station in eastern Mass.—Laurel Oak, Shingle Oak, *Quercus imbricaria* Mx.

123 Leaves either lobed or toothed, or both—124

124 Lobes or marginal teeth ending in a bristle—125

124 Lobes or marginal teeth not ending in a bristle—130

125 Lower surface of mature leaves smooth or nearly so—126

125 Lower surface of mature leaves hairy—129

126 Cup covering about ½ the acorn—127

126 Cup shallow and broad, covering considerably less than ½ the acorn—128

127 Inner (or upper) thin scales of the cup finely hairy and loosely overlapping. Buds pointed and hairy. Inner bark yellowish-orange, very bitter—Black Oak, Yellow-bark Oak, Yellow Oak, *Quercus velutina* Lam.

127 Inner (or upper) thin scales of the cup smooth or essentially so, and closely overlapping. Buds blunt and smooth. Inner bark reddish, not bitter—Scarlet Oak, *Quercus coccinea* Muench.

128 Acorn small, less than ¾ inch long. Mass. southward—Pin Oak, *Quercus palustris* Muench.

128 Acorn large, more than ¾ inch long—**Red Oak,** *Quercus rubra* L.

129 Blade not six times as long as the leaf-stalk. Leaves generally angularly lobed, broadest near the middle, grayish white-hairy beneath—**Scrub Oak, Bear Oak, Barren Oak,** *Quercus ilicifolia* Wang.

129 Blade more than six times as long as the leaf-stalk. Leaves greatly broadened at the apex, usually without any pronounced lobes, rusty-hairy beneath. Long Island—**Black Jack Oak, Jack Oak,** *Quercus marilandica* Muench.

130 Lower surface of mature leaves smooth, or nearly so—131

130 Lower surface of mature leaves hairy—133

131 Leaf-margins with many coarse rounded teeth which do not reach more than ¼ to the midrib—**Chestnut Oak, Rock Chestnut Oak,** *Quercus Prinus* L.

131 Leaf-margins lobed—132

132 Base of blade pointed—**White Oak,** *Quercus alba* L.

132 Base of blade ear-shaped (auriculate). Cult.—**English Oak,** *Quercus Robar* L.

Note:—A less common variety of the English Oak (var. *sessiliflora)* occasionally has a tapering base to the blade, when it closely resembles the leaf of the White Oak. It may generally be separated from the latter by the rather firm prominently furrowed dark bark, the bark of the White Oak being light gray, with a decided tendency to become flaky or scaly rather than prominently furrowed.

133 Deepest marginal indentations usually not reaching more than ⅓ to the midrib—134

133 Deepest marginal indentation usually reaching ½ or more to the midrib, at least in most of the leaves—136

134 Fruit-stalk much longer than the leaf-stalk—**Swamp White Oak, Swamp Oak,** *Quercus bicolor* Willd.

134 Fruit-stalk shorter than the leaf-stalk—135

135 Leaf-margins with coarse rounded teeth—**Chestnut Oak, Rock Chestnut Oak,** *Quercus Prinus* L.

135 Leaf-margins with coarse sharp teeth. Western N. E.—**Yellow Oak, Chinquapin Oak, Chestnut Oak,** *Quercus Muhlenbergii* Engelm.

136 Scales of the cup (at least the inner ones) with long points or awns. Cup usually covering more than half the acorn —**Bur Oak, Mossy-cup Oak, Over-cup Oak,** *Quercus macrocarpa* Mx.

136 Scales of the cup not awned. Cup usually covering less than half the acorn. Southern N. E.—**Post Oak, Box White Oak,** *Quercus stellata* Wang.

ELM—Leaves simple, alternate, with straight side veins, doubly-toothed margins, and unsymmetrical base. Fruit strongly flattened, notched at apex, the notch usually closed above, and with a broad thin wing surrounding the single seed.

137 Notch at the apex of the fruit not reaching half way to the seed bearing portion—138

137 Notch at the apex of the fruit reaching more than half way to the seed bearing portion—139

138 Mature fruit ¾ to 1 inch long, surfaces and margins without hairs. Occasionally cult.—**Wych Elm, Scotch Elm,** *Ulmus montana* With.

138 Mature fruit about ¾ inch long, seed portion hairy, otherwise smooth. Leaf surfaces roughened like fine sandpaper —**Slippery Elm, Red Elm,** *Ulmus fulva* Mx.

138 Mature fruit ½ to ¾ inch long, slightly hairy all over, and densely hairy-fringed along the margins. Northwestern N. E.—**Cork-Elm, Rock Elm, Northern Cork Elm,** *Ulmus racemosa* Thomas.

139 Mature fruit usually not over ½ inch long, surfaces smooth, margins hairy-fringed. Tree with gradually spreading long branches and drooping branchlets—**American Elm, White Elm, Elm,** *Ulmus americana* L.

139 Mature fruit usually more than ½ inch long, surfaces and margins without hairs. Main trunk more or less continuous into the crown. Branches usually short, horizontal, and irregular. Cult.—**English Elm,** *Ulmus campestris* L.

MULBERRY—Leaves alternate, broad, often lobed. Fruit in general appearance suggesting a blackberry (except perhaps in color), though technically quite different.

140 Leaves smooth, usually shining. Fruit whitish or pinkish. Cult.—**White Mulberry** *Morus alba* L.

140 Leaves rough, usually downy-hairy beneath. Fruit dark purple or nearly black. Western N. E. Cult.—**Red Mulberry, Black Mulberry,** *Morus rubra* L.

Magnolia—Leaves commonly very large (except in Sweet Bay) and margins without teeth. Flowers large and conspicuous. Fruit cone-like. Seeds hanging from the mature fruit by slender threads.

141 Flowers appearing before the leaves in early spring. Cultivated for ornament only. Small trees or large shrubs. Various **Chinese** and **Japanese Magnolias.**

141 Flowers not appearing until the leaves have expanded. Native in eastern U. S. and cult.—142

142 Leaves 1 to 2 feet long, pointed at both ends, crowded at the ends of the branches in umbrella-like clusters. Flowers 3 to 5 inches long—**Umbrella Tree,** *Magnolia tripetala* L.

142 Leaves not crowded at the ends, but scattered along the sides of the branches—143

143 Leaves 3 to 6 inches long, blunt at tip, whitish beneath. Flowers globular, fragrant, white, 2 inches long. Usually a shrub. Eastern Mass.—**Sweet Bay, Sweet Magnolia,** *Magnolia virginiana* L.

143 Leaves 6 to 10 inches long, pointed at tip, not conspicuously whitened beneath. Flowers shaped like a narrow bell, greenish yellow, 2 inches long—**Cucumber Tree,** *Magnolia acuminata* L.

143 Leaves 1 to 3 feet long, somewhat clustered, heart-shaped at base, whitened and hairy beneath. Flowers broad bell-shaped, white (with purple spots at base), about 6 inches long—**Great-leaved Magnolia, Great-leaved Umbrella Tree,** *Magnolia macrophylla* Mx.

Apple, Pear, Quince—Leaves simple. Fruit fleshy, containing 5 thin-walled compartments with about 2 seeds in each.

144 Leaves woolly beneath, margins entire. Fruit globular, pressed inward or flattened at both ends. Cult.—**Quince,** *Pyrus Cydonia* L.

144 Leaves woolly or velvety-hairy beneath, margins toothed. Fruit globular, pressed inward at both ends. Cult.—**Apple,** *Pyrus Malus* L.

144 Leaves not woolly nor velvety-hairy beneath, margins toothed. Fruit narrowed at stem end (base), broad and pressed inward at the opposite end. Cult.—**Pear,** *Pyrus communis* L.

Mountain Ash—Leaves compound. Fruit red, fleshy, with a core like an Apple or Pear.

145 Fruit about ¼ inch thick, in flat topped clusters. Leaflets smooth, lance-shaped, taper-pointed. Northern and western N. E.—**American Mountain Ash, Round-wood,** *Pyrus americana* (Marsh.) DC.

145 Fruit about ⅓ inch thick, in flat topped clusters. Leaflets smooth, oblong, abruptly pointed. Northern N. E.—**Western Mountain Ash, Elder-leaved Mountain Ash,** *Pyrus sitchensis* (Roem.) Piper.

145 Fruit about ½ inch thick, in convex clusters. Leaflets oblong, usually blunt, lower surface and leaf-stalks hairy. Cult. and escaped—**European Mountain Ash, European Rowan Tree,** *Pyrus Aucuparia* (L.) Ehrh.

Juneberry—Leaves simple. Fruit fleshy, rarely more than ⅜ inch thick, containing 10 one-seeded compartments at maturity.

146 Mature leaves smooth,* usually rounded or heart-shaped at base and pointed at tip. Petals white, ½ inch or more long—**Shad Bush, Service Berry,** *Amelanchier canadensis* (L.) Medic.

146 Mature leaves usually rounded at both ends or with an abrupt bristle-like tip, commonly more or less hairy until old. Petals white, less than ½ inch long—**Dwarf Juneberry,** *Amelanchier oblongifolia* (T. & G.) Roem.

*A variety of the Shad Bush (var. *Botryapium*), from southwestern Maine southward and westward, usually has the leaves hairy when mature.

THORN—Leaves simple. Fruit fleshy, globular, rarely more than ¾ inch thick. Seeds 1 to 5, each inclosed in a bony seed-like stone. Many species are recognized. Mostly thorny shrubs, but the following occasionally become small trees. Mature fruit is generally essential for identification.

147 Leaves deeply cut into several sparingly toothed segments. Fruit with one stone. Cult. and escaped—**English Hawthorn,** *Crataegus Oxyacantha* L.

147 Leaves not deeply cut, indentations reaching less than half way to the midrib. Fruit with 2 or more stones—148

148 Stones 2 or 3, each with 2 prominent depressions on inner side. Leaves leathery, shining above—*Crataegus macracantha* Lodd.

148 Stones without deep depressions on the inner side—149

149 Flowers and fruits generally 3 to 7 in a cluster. Leaf-stalks with glands. Southern N. E.—**Scarlet Thorn, Scarlet Haw, Red Haw, White Thorn,** *Crataegus coccinea* L.

149 Flowers generally more than 7 in a cluster—150

150 Leaves broadest above the middle—**Cock-spur Thorn, Red Haw, Newcastle Thorn, Thorn Plum,** *Crataegus Crus-galli* L.

150 Leaves broadest at the middle or below—151

151 Mature leaves smooth—152

151 Mature leaves hairy, at least along the veins beneath—156

152 Leaves broadest at the middle. Vt.—*Crataegus Oakesiana* Eggleston.

152 Leaves broadest toward the base—153

153 Fruit firm when ripe. Leaves bluish green. Western N. E.—*Crataegus pruinosa* (Wendl.) C. Koch.

153 Fruit soft when ripe—154

154 Calyx lobes finely toothed. Stones usually 4 or 5—155

154 Calyx lobes not toothed. Stones usually 3 or 4—*Crataegus macrosperma* Ashe.

155 Upper surface of mature leaves smooth. Western N. E. —*Crataegus coccinioides* var. *dilatata* (Sarg.) Eggleston.

155 Upper surface of mature leaves rough. Conn.—*Crataegus pedicillata* Sarg.

156 Leaves broadest at the middle—157
156 Leaves broadest toward the base—158

157 Leaves broadly egg-shaped or round. Fruit less than ½ inch thick. Stones ¼ inch long—*Crataegus rotundifolia* Moench.
157 Leaves narrowly egg-shaped. Fruit more than ½ inch thick. Stones ⅜ inch long. Mt. Desert Island, Me., and vicinity—*Crataegus Jonesae* Sarg.

158 Mature leaves smooth above or nearly so—159
158 Mature leaves hairy or woolly, or roughened, above—161

159 Leaves longer than broad—160
159 Leaves about as long as broad. Western N. E.—*Crataegus Pringlei* Sarg.

160 Flower and fruit stalks very hairy—*Crataegus anomala* Sarg.
160 Flower and fruit stalks nearly smooth—*Crataegus Holmesiana* Ashe.

161 Fruit pear-shaped or somewhat elongated, ripening in Sept. and Oct.—162
161 Fruit globular, ripening in Aug. Southern N. E.—*Crataegus Arnoldiana* Sarg,

162 Leaves thickish or somewhat leathery. Northwestern Vt.—*Crataegus Champlainensis* Sarg.
162 Leaves thin. Mass. northward—*Crataegus submollis* Sarg.

Cherry, Plum, Peach—Leaves simple. Fruit fleshy or juicy, with a stony seed-like interior which incloses a single seed.

163 Flower and fruit stalks numerous, about ¼ inch long, arising from a common much elongated axis. Fruit about ¼ inch thick—164
163 Flower and fruit stalks apparently arising from a common point, or else from an axis hardly longer than the long individual fruit and flower stalks—165

164 Marginal teeth of the leaves very sharply pointed—**Choke Cherry,** *Prunus virginiana* L.

164 Marginal teeth of the leaves blunt, incurved, or glandular —**Black Cherry, Wild Black Cherry, Rum Cherry,** *Prunus serotina* Ehrh.

165 Flower and fruit stalks very short, ¼ inch or less. Leaves narrow. Fruit velvety-hairy, 1 inch or more thick, stone corrugated. Cult.—**Peach,** *Prunus Persica* (L.) Stokes.

165 Flower and fruit stalks conspicuous, or elongated. Fruit smooth, stone not corrugated—166

166 Teeth of leaves sharply pointed. Fruit red, about ¼ inch thick—**Wild Red Cherry, Pin Cherry, Pigeon Cherry, Bird Cherry, Fire Cherry,** *Prunus pennsylvanica* L. f.

166 Teeth of leaves sharply pointed. Fruit reddish, ¾ to 1 inch thick. Conn.—**Wild Plum, Yellow Plum,** *Prunus americana* Marsh.

166 Teeth of leaves blunt or glandular-tipped—167

167 Margins of calyx lobes finely glandular-toothed. Mature fruit smooth, orange-red or yellowish, about 1 inch long—**Canada Plum, Red Plum, Horse Plum, Wild Plum,** *Prunus nigra* Ait.

167 Margin of calyx lobes entire or nearly so—168

168 Flower-producing buds developing both flowers and leaves. Inner scales at the base of the flower stalks longer than the outer, spreading. Fruit sweet. Cult. and escaped—**Sweet Cherry,** *Prunus Avium* L.

168 Flower-producing buds developing only flowers. Inner scales at the base of the flower stalks about like the outer, not spreading. Fruit acid, red. Cult. and escaped—**Sour Cherry,** *Prunus Cerasus* L.

Locust—Leaves pinnately compound. Fruit flat, similar to a bean or pea pod, with 2 or more seeds. Cult. and escaped.

169 Young twigs sticky.—**Clammy Locust, Rose Acacia,** *Robinia viscosa* Vent.

169 Young twigs not sticky—**Common Locust, Black Locust, Yellow Locust, White Locust,** *Robinia Pseudo-Acacia* L.

SUMACH—Leaves alternate, pinnately compound (except in Smoke Tree). Juice sticky as it dries, commonly milky white. Fruit globular, less than ¼ inch thick, commonly covered with red hairs. Usually shrubs, the following occasionally small trees.

170 Leaves simple. Cult.—**Smoke Tree, Venetian Sumach,** *Rhus Cotinus* L.

170 Leaves compound—171

171 Leaflets toothed—172

171 Leaflets not toothed—173

172 Young twigs velvety-hairy. Fruit red—**Staghorn Sumach,** *Rhus typhina* L.

172 Young twigs not hairy. Fruit red—**Smooth Sumach,** *Rhus glabra* L.

173 Leaf axis between the leaflets prominently winged. Fruit red.—**Dwarf Sumach,** *Rhus copallina* L.

173 Leaf axis between the leaflets not winged. Fruit whitish. Very poisonous. Usually growing in swamps—**Poison Sumach, Poison Elder, Poison Dogwood, Dogwood, Swamp Sumach, Poison Ash,** *Rhus Vernix* L.

Note:—Many persons are poisoned by merely handling the Poison Sumach. The poisonous principle is of an oily nature and is found in every part of the plant. A good preventative against severe poisoning is to wash the parts of the body that have come in contact with the plant with strong alcohol (or strong soap suds) immediately after such contact; the sooner this is done the more effective will be the remedy. The Poison Ivy or Poison Oak *(Rhus Toxicodendron* L.) climbs by means of numerous dark brown roots, or trails over the ground and fences, never becoming a tree. It is a near relative of the Poison Sumach and like that plant poisons many persons who handle it. It may be recognized by its compound leaves of three leaflets, the terminal one stalked, the margins with a few large teeth or none, and the milky juice. Flowers, fruits, poisonous properties, and remedies as in Poison Sumach. Few persons are ever poisoned, even slightly, by handling any other than these two plants.

MAPLE—Leaves opposite, palmately veined when simple. Fruit with a long unsymmetrical flat wing.

174 Leaves simple—175
174 Leaves compound. Western N. E. Cult. and escaped —**Box Elder, Ash-leaved Maple,** *Acer Negundo* L.

175 Juice milky. Cult.—**Norway Maple,** *Acer platanoides* L.
175 Juice not milky—176

176 Flower and fruit stalks arising from a common much elongated axis—177
176 Flower and fruit stalks apparently arising from a common point—179

177 Flower and fruit clusters erect or nodding, but not pendulous. Common northward but rare in southern N. E. —**Mountain Maple,** *Acer spicatum* Lam.
177 Flower and fruit clusters drooping or pendulous—178

178 Bark of small branches light green, striped with either whitish or dark lines. Leaves smooth, usually with 3 shallow taper-pointed lobes. Common in northern N. E. but rare southward—**Striped Maple, Moosewood, Striped Dogwood,** *Acer pennsylvanicum* L.
178 Bark of small branches not striped. Leaves usually 5-lobed and downy-hairy beneath. Cult.—**Sycamore Maple, European Sycamore,** *Acer Pseudo-Platanus* L.

179 Flowers in rather close clusters, not drooping, appearing before the leaves in early spring—180
179 Flowers in drooping clusters, on long slender hairy stalks—182

180 Leaves deeply 5-lobed. Petals none—**White Maple, Silver Maple, Soft Maple,** *Acer saccharinum* L.
180 Leaves not cut half way to the base. Petals present—181

181 Leaves 3 to 6 inches long, middle lobe oblong at base. Quite variable—**Red Maple, Swamp Maple, Soft Maple,** *Acer rubrum* L.
181 Leaves 2 to 4 inches long, middle lobe broadly triangular. Merely a form of the Red Maple. Mass. southward— **Three-toothed Red Maple,** *Acer rubrum* var. *tridens* Wood.

182 Lower surface of leaf pale and smoothish—**Rock Maple, Sugar Maple, Hard Maple, Sugar-tree,** *Acer saccharum* Marsh.

182 Lower surface of leaf green and hairy. A form of Rock Maple. Western N. E.—**Black Rock Maple,** *Acer saccharum* var. *nigrum* (Mx. f.) Britton.

Horse-chestnut, Buckeye—Leaves opposite, palmately compound. Several species of Buckeye from farther west are occasionally planted. These all differ from the common Horse-chestnut in having 4 petals instead of 5.

183 Fruit prickly—184

183 Fruit smooth. Petals 4—185

184 Petals 5, white, spreading. Leaflets usually 7. Cult.—**Common Horse-chestnut,** *Aesculus Hippocastanum* L.

184 Petals 4, yellow, erect. Leaflets usually 5. Margins toothed, with tufts of hairs in the notches—**Fetid Buckeye, Ohio Buckeye,** *Aesculus glabra* Willd.

185 Petals yellow—**Sweet Buckeye, Yellow Buckeye,** *Aesculus octandra* Marsh.

185 Petals and calyx red or purple—**Purple Buckeye,** *Aesculus octandra* var. *hybrida* (DC.) Sarg.

185 Petals and calyx bright red. Usually a shrub—**Red Buckeye,** *Aesculus Pavia* L.

Linden, Basswood—Leaves broad or round egg-shaped with an unsymmetrical base. Flower and fruit clusters long-stalked, attached near the middle of a large elongated leaf-like bract. Fruit globular, woody, less than ½ inch thick.

186 Stamens attached to a petal-like body situated in front of the real petal—187

186 Stamens not attached to a petal-like body. A street tree of southern N. E.—**European Linden, Lime-tree,** *Tilia vulgaris* Hayne.

187 Fruit ribbed. Leaves white-downy beneath. Cult.—**Silver Linden,** *Tilia tomentosa* Muench.

187 Fruit not ribbed. Native in U. S.—188

188 Mature leaves smooth, or essentially so, on both surfaces—**American Linden, Basswood, Whitewood, Linn, Beetree, Wickup,** *Tilia americana* L.

188 Mature leaves beneath, and the twigs, reddish hairy. Leaves 2 to 3 inches long. Conn.—**Southern Basswood,** *Tilia Michauxii* Nutt.

188 Mature leaves 4 to 8 inches long, silvery-white and woolly beneath. Southern N. Y.—**White Basswood,** *Tilia heterophylla* Vent.

Cornel, Dogwood—Leaves simple, with veins curving well up towards the apex. Flowers 4-parted. Fruit pulpy, globular, containing a single 2-seeded, 2-celled stone.

189 Leaves opposite. Small close clusters of greenish flowers surrounded by 4 large conspicuous white petal-like bracts. Fruit oblong, red, about ½ inch long—**Flowering Dogwood, Boxwood, Dogwood, Flowering Cornel,** *Cornus florida* L.

189 Leaves alternate. Flowers in large loose clusters (3 or more inches wide), with no petal-like bracts. Fruit globular, blue, usually less than ½ inch thick—**Alternate-leaved Cornel, Blue Dogwood, Green Osier, Dogwood,** *Cornus alternifolia* L. f.

Ash—Leaves opposite, pinnately compound. Fruit with a long symmetrical flat wing.

190 Side leaflets without individual stalks—191

190 Side leaflets with short individual stalks—192

191 Leaflets green on both surfaces but somewhat darker above. Leaf axis (rhachis) usually with thick reddish-brown wool at the base of the leaflets. Crushed leaves with the odor of Elder. A small tree growing in cold swamps or wet places throughout N. E.—**Black Ash, Hoop Ash, Basket Ash, Brown Ash, Swamp Ash,** *Fraxinus nigra* Marsh.

191 Leaflets green above, pale beneath. Leaf axis (rhachis) usually without reddish wool. Cult.—**European Ash,** *Fraxinus excelsior* L.

192 Young twigs and leaf-stalks velvety hairy—**Red Ash, Brown Ash, River Ash, Bastard Ash,** *Fraxinus pennsylvanica* Marsh.

192 Young twigs smooth—193

193 Lower surface of the leaflets paler than the upper and occasionally hairy—**White Ash,** *Fraxinus americana* L.

193 Lower surface of leaflets bright green and smooth—**Green Ash,** *Fraxinus pennsylvanica* var. *lanceolata* (Borkh.) Sarg.

Catalpa—Leaves broad, egg-shaped or heart-shaped. Flowers white. Fruit a cylindrical pod generally a foot or more long.

194 Flowers usually at least 2 inches broad, not prominently spotted. Bark thick and rough. Cult.—**Hardy Catalpa, Cigar Tree, Western Catalpa, Indian Bean,** *Catalpa speciosa* Warder.

194 Flowers usually less than 2 inches broad, thickly spotted with yellow and purple. Bark thin and usually smooth. Cult.—**Common Catalpa, Indian Bean, Bean Tree, Cigar Tree, Smoking Bean,** *Catalpa bignonioides* Walt.

Arrow-wood—Leaves simple, opposite, toothed. Fruit small and pulpy, containing a single stony seed. Most species shrubby, but two occasionally small trees.

195 Leaves with a prominent tapering point—**Sweet Viburnum, Sheepberry, Nannyberry, Nanny Plum, Wild Raisin,** *Viburnum Lentago* L.

195 Leaves without a tapering point. Conn.—**Black Haw, Nannyberry,** *Viburnum prunifolium* L.

GLOSSARY

Acute. An angle less than a right angle.

Alternate. With one leaf at a node.

Angled. With more or less conspicuous angles or corners.

Apex. That portion of an organ (e.g. leaf) opposite the base.

Auriculate. With two basal lobes somewhat like the lower part of the human ear.

Awl-shaped (leaf). Slender and slightly tapering from the base to a usually sharp apex.

Awn. A long stiff hair or hair-like point.

Base. That portion of an organ lying next to its stalk or supporting structure.

Berry. A juicy or fleshy fruit in which the seeds are not inclosed in definite compartments.

Blade. The flattened portion of the ordinary leaf.

Blunt. An angle greater than a right angle.

Bract. A modified leaf of a flower or fruit cluster.

Branchlet. A small (young) branch.

Bristle. A stiff hair-like structure.

Bud. A rudimentary branch, usually covered with overlapping scales. A bud may produce leaves only (leaf bud), flowers only (flower bud), or both leaves and flowers (mixed bud).

Calyx. The outer (usually green) part of a flower.

Catkin. An elongated scaly cluster of flowers, as in Willows, Poplars, etc.

Compound (leaf). Composed of two or more blades (leaflets).

Cone. The characteristic fruit of the Pine Family. It consists of many usually woody and closely crowded overlapping scales attached to a common axis. The seeds are borne on the upper sides of the scales.

Crown (of a tree). The general mass of branches and leaves.

Divided. Cut almost to the center or base into nearly separate segments or divisions.

Doubly-toothed. With small teeth along the margins of larger teeth.

Egg-shaped (leaf). Shaped like an egg; width about ⅔ the length and the broadest part below the middle.

Entire. Margin without teeth of any sort.

Escape. A name applied to a plant originally cultivated but now growing like a wild plant.

Evergreen. With green leaves in winter as well as in summer.

Fan-shaped. Shaped like a fan or the sector of a circle.

Fleshy. Of the general consistency of an apple.

Forking. Splitting into two nearly equal structures, as branches or veins.

Fruit. That part of a plant which produces or contains the seeds.

Furrowed. With longitudinal grooves alternating with ridges.

Gland. A name commonly applied to a small protuberance.

Heart-shaped (leaf). A broad leaf indented (often deeply) at the base, while the apex is commonly pointed. Also applied to the base only.

Husk. An outer covering, usually somewhat woody or fibrous.

Incised. With deeply and sharply cut notches.

Internode. The portion of the stem between two nodes.

Juicy. Containing much watery sap or juice (e. g. an orange or cherry).

Lance-shaped. Very narrowly egg-shaped, with the length two or three times the width.

Lateral bud. A bud situated on the side of a branch.

Leaflet. A separate blade of a compound leaf.

Leaf-stalk. The well marked slender support of a leaf blade. Sometimes absent.

Lobed. With marginal indentations running $\frac{1}{3}$ or $\frac{2}{3}$ of the distance to the center or base, the segments usually somewhat rounded.

Longitudinal. Lengthwise.

Midrib. The central vein of a leaf.

Milky. With an opaque, usually white, juice.

Needle-like (leaf). Long and slender, neither definitely flattened nor regularly tapering; may be long as in Pine, or short as in Spruce.

Node. The point on, or line around, a stem from which one or more leaves arise. Often not specially marked otherwise than that a leaf or leaf-scar is found there.

Notch. An angular indentation.

Nut. A hard or bony fruit like that of the walnut, oak, chestnut.

Nutlet. A small nut or a small hard seed-like part of a fruit.

Oblong. Two or three times longer than broad, with the sides nearly parallel.

Once compound (leaf). With the leaflets attached to the primary axis of the leaf.

Opposite (leaves). With two leaves at the same node.

Palmate, Palmately compound. With several leaflets starting from a common point at the tip of the leaf-stalk.

Palmately veined. With several veins radiating from a common point at the tip of the leaf-stalk.

Papery (bark). Splitting into thin papery films.

Petal. One of the parts of a flower, situated between the stamens and the calyx. The petals are usually the most conspicuous parts of the ordinary flower, generally being brightly colored.

Pinnate, Pinnately compound. With several leaflets starting from different points along two sides of a common axis.

Pinnately veined. With numerous side veins branching somewhat regularly from both sides of a midrib.

Pistil. The central organ, or one of the central organs, of a flower, in which the ovules (immature seeds) are produced.

Pith. The much softer central portion of a branch or branchlet.

Pod. A dry fruit which splits open at maturity.

Pointed. With a definite point (blunt or acute).

Prickly. With small sharp-pointed hairs or spines.

Recurved. Curving backward or downward.

Rhombic. Of the general shape of a rhomb.

Rib. A ridge or thickened line.

Rounded (apex or base). Regularly curving, without notch or point.

Scale. A degenerate leaf. In a cone one of the somewhat flattened, usually woody, structures attached to the main axis.

Scale-like (leaf). A small and short leaf, the apex of which usually overlaps the base of the one next above it, like the scales on a fish.

Scaly (bark). With flattish raised areas, especially when the edges are somewhat separated from the bark beneath.

Shield-shaped. A somewhat circular or angular structure with its supporting stalk attached to one of the flat surfaces, instead of to the edge.

Shoot. A stem and its leaves collectively considered.

Shreddy. With the edges of the scales or plates appearing as if frayed into shreds.

Side veins. Veins branching from a midrib.

Simple (leaf). With only one blade.

Smooth. Neither rough nor hairy.

Spine. A sharp and slender stiff point.

Spiny. Having spines.

Stamens. The slender, usually stalked, structures surrounding the pistil of a flower.

Stipules. Two small leaf-like bodies at the base of a leaf-stalk. Not alway present.

Symmetrical. Even-sided; one side like the other.

Taper-pointed. With a somewhat elongated point, especially when the margins below it are concave.

Teeth. Small projections along the margin.

Terminal bud. A bud situated at the end of a stem or branch.

Thorn. A stiff woody sharp-pointed structure.

Toothed. Having small projections along the margin like the teeth of a saw.

Top-shaped. A somewhat globular structure which tapers regularly to a narrow base, like an inverted geometrical cone.

Triangular. Of the general shape of a triangle.

Trunk. The main stem of a tree.

Twice compound. With leaflets attached to the secondary axes of the leaf (i.e. the main axis divides before it bears leaflets).

Twig. A young shoot.

Unsymmetrical. With the two sides unlike.

Vein. One of the ribs or thickened lines in a leaf blade.

Wavy. Alternately concave and convex along the margin.

Wedge-shaped (leaf). Tapering regularly from a broad apex to a pointed base. A wedge-shaped base is pointed (often bluntly), with the margins straight or nearly so, like the sides of a wedge.

Whorled. With three or more leaves around the stem at the same node.

Wing. Any thin flat appendage.

Woolly. Covered with tangled or loosely matted hairs.

A LIST OF NEW ENGLAND TREES ARRANGED BY FAMILIES

Native New England trees in **bold face.** American trees not native in New England in *italics.* Foreign trees in roman. Small trees (especially those more commonly occurring only as bushes or shrubs in New England) are indicated by an asterisk (*).

Pine Family

1 **White Pine**
2 Himalayan White Pine
3 **Pitch Pine**
4 *Jersey Pine*
5 **Northern Scrub Pine**
6 **Red Pine**
7 Austrian Pine
8 Scotch Pine
9 *Yellow Pine*
10 **American Larch**
11 European Larch
12 *Douglas Spruce*
13 *Colorado Blue Spruce*
14 **White Spruce**
15 **Red Spruce**
16 **Black Spruce**
17 Norway Spruce
18 Oriental Spruce
19 **Balsam Fir**
20 **Hemlock**
21 **Coast White Cedar**
22 **Arbor Vitae**
23 **Common Juniper***
24 **Red Cedar**
25 Maiden-hair Tree, Ginkgo

Willow Family

26 **Black Willow**
27 **Bay-leaved Willow***
28 **Crack Willow**
29 **White Willow**
30 **Yellow Willow**
31 **Blue Willow**
32 **Weeping Willow**
33 White Poplar, Abele
34 **American Aspen**
35 **Large-toothed Aspen**
36 **Downy Poplar**
37 **Balsam Poplar**
38 **Balm of Gilead**
39 **Carolina Poplar, Cottonwood**
40 **Black Poplar**
41 **Lombardy Poplar**

Walnut Family

42 **Butternut, White Walnut**
43 **Black Walnut**
44 **Shell-bark Hickory**
45 **Mockernut**
46 **Small-fruited Hickory**
47 **Pignut**
48 **Bitternut**

BIRCH FAMILY

49 Hop Hornbeam
50 American Hornbeam*
51 Black Birch
52 Yellow Birch
53 River Birch, Red Birch
54 Gray Birch
55 White Birch, Blue Birch
56 European Paper Birch
57 Weeping Birch
58 Cut-leaved Birch
59 American Canoe Birch
60 Cordate-leaved Birch
61 Downy Green Alder*
62 Speckled Alder*
63 Smooth Alder*
64 European Black Alder

BEECH FAMILY

65 American Beech
66 European Beech
67 Purple-leaved Beech
68 Fern-leaved Beech
69 Weeping Beech
70 American Chestnut
71 European Chestnut
72 White Oak
73 English Oak
74 Post Oak
75 Bur Oak, Mossy-cup Oak
76 Swamp White Oak
77 Yellow Oak
78 Chestnut Oak
79 Red Oak
80 Pin Oak
81 Scarlet Oak
82 Black Oak
83 Scrub Oak*
84 *Black Jack Oak**
85 *Laurel Oak*

NETTLE FAMILY

86 Slippery Elm
87 English Elm
88 Wych Elm, Scotch Elm
89 American Elm
90 Cork Elm, Rock Elm
91 Hackberry
92 *Osage Orange*
93 Red Mulberry
94 White Mulberry

MAGNOLIA FAMILY

95 Sweet Bay*
96 *Cucumber Tree*
97 *Great-leaved Magnolia*
98 *Umbrella Tree**
99 Tulip Tree

LAUREL FAMILY

100 Sassafras

WITCH HAZEL FAMILY

101 Witch Hazel*
102 Sweet Gum

PLANE TREE FAMILY

103 Buttonwood

ROSE FAMILY

104 Pear
105 Apple
106 Quince*
107 American Mountain Ash
108 Western Mountain Ash
109 European Mountain Ash
110 Shad Bush
111 Dwarf Juneberry*
112 English Hawthorn*
113 Cock-spur Thorn*
114 Scarlet Thorn*
115 Thorn (C. Oakesiana)*
116 Thorn (C. rotundifolia)*
117 Thorn (C. Jonesæ)*
118 Thorn (C. macrosperma)*
119 Thorn (C. pruinosa)*
120 Thorn (C. Holmesiana)*
121 Thorn (C. anomala)*
122 Thorn (C. coccinioides var.)*
123 Thorn (C. Pringlei)*
124 Thorn (C. pedicillata)*
125 Thorn (C. Arnoldiana)*
126 Thorn (C. submollis)*
127 Thorn (C. Champlainensis)*
128 Thorn (C. macracantha)*
129 Black Cherry
130 Choke Cherry*
131 Wild Red Cherry
132 Sweet Cherry
133 Sour Cherry
134 Canada Plum*
135 Wild Plum
136 Peach*

PULSE FAMILY

137 *Kentucky Coffee Tree*
138 *Honey Locust*
139 *Redbud**
140 *Yellow Wood*
141 *Common Locust*
142 *Clammy Locust**

RUE FAMILY

143 *Hop Tree**

QUASSIA FAMILY

144 Tree of Heaven

CASHEW FAMILY

145 Staghorn Sumach*
146 Smooth Sumach*
147 Dwarf Sumach*
148 Poison Sumach*
149 Smoke Tree*

HOLLY FAMILY

150 American Holly

MAPLE FAMILY

151 Striped Maple*
152 Mountain Maple*
153 Rock Maple, Sugar Maple
154 Black Rock Maple
155 White Maple
156 Red Maple
157 Three-toothed Red Maple
158 Norway Maple
159 Sycamore Maple
160 Box Elder

SOAPBERRY FAMILY

161 Common Horse-chestnut
162 *Fetid Buckeye*
163 *Sweet Buckeye*
164 *Purple Buckeye*
165 *Red Buckeye**

BUCKTHORN FAMILY

166 Buckthorn*

LINDEN FAMILY

167 American Basswood
168 European Linden
169 Silver Linden
170 Southern Basswood
171 *White Basswood*

DOGWOOD FAMILY

172 Flowering Dogwood
173 Alternate-leaved Dogwood*
174 Black Gum

HEATH FAMILY

175 Great Laurel*
176 Mountain Laurel*

EBONY FAMILY

177 Persimmon

OLIVE FAMILY

178 White Ash
179 Red Ash
180 Green Ash
181 Black Ash
182 European Ash
183 Lilac*
184 *Fringe Tree**

FIGWORT FAMILY

185 Paulownia

BIGNONIA FAMILY

186 *Hardy Catalpa*
187 *Common Catalpa*

MADDER FAMILY

188 Buttonbush*

HONEYSUCKLE FAMILY

189 Sweet Viburnum*
190 Black Haw*