

## KEY TO THE GENERA OF OHIO WOODY PLANTS BASED ON LEAF AND TWIG CHARACTERS.

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1. Foliage leaves with expanded blades, netted-veined. 8.
  1. Foliage leaves needle-shaped, narrowly linear, subulate, or scale-like; conifers, or in one case a dicotyl with delicate twigs and minute leaves. 2.
  1. Foliage leaves fan-shaped with dichotomous venation, a number on thick, wart-like, persistent dwarf branches. **Ginkgo.**
  2. With typical dwarf branches, persistent for more than 1 year. 3.
  2. With feather-like dwarf branches, deciduous each year, the linear leaves spreading into 2 ranks. **Taxodium.**
  2. With delicate spray-like twigs deciduous each year; leaves scale-like, minute; a dicotyl. **Tamarix.**
  2. Without dwarf branches. 4.
  3. Dwarf branches small, self-pruned, with 2-5 foliage leaves. **Pinus.**
  3. Dwarf branches thick, wart-like, persistent, with numerous deciduous leaves. **Larix.**
  4. Leaf buds scaly; leaves scattered. 5.
  4. Leaf buds not scaly, naked; leaves opposite or whorled. 7.
  5. Leaf scar on a sterigma, the twigs covered with scales representing the leaf bases. 6.
  5. Leaf scar on the bark; twigs without scales; leaves flat. **Abies.**
  6. Leaves flat, those on the upper side of the twig much shorter than the lateral ones; trees. **Tsuga.**
  6. Leaves flat all of about the same length; ours a shrub. **Taxus.**
  6. Leaves more or less 4-sided, spreading in all directions. **Picea.**
  7. Foliage leaves small, scale-like, appressed, opposite, 4-ranked, closely covering the twigs which are decidedly flattened and fan-like; leaves of two shapes, the dorsal and ventral broader and less acute than the lateral ones; scales of the carpellate cone not peltate. **Thuja.**
  7. Foliage leaves small, scale-like, appressed, opposite, 4-ranked, closely covering the slightly flattened twigs which are not very fan-like; leaves nearly or quite similar; scales of the carpellate cone peltate. **Chamaecyparis.**
  7. Foliage leaves of two types, scale-like and subulate, opposite or in threes; the scale-like leaves 4-ranked, appressed, causing the twigs to appear quadrangular, the subulate leaves spreading; one or both types of leaves on a plant; carpellate cone developing into a bluish-black berry-like fruit. **Juniperus.**
- 8—
8. Leaves alternate. 9.
  8. Leaves opposite or whorled. 110.
  9. Leaves simple. 10.
  9. Leaves compound. 93.
  10. Leaves pinnately veined or with a simple midrib. 11.
  10. Leaves palmately veined or at least with 2 or more prominent side ribs coming from near the base of the blade. 74.
  11. Leaves not revolute-margined when fully expanded. 12.
  11. Leaves decidedly revolute-margined, evergreen, thus appearing on wood of the previous season. 90.
  12. Leaves truncate or broadly emarginate; with complete stipular rings at the nodes. **Liriodendron.**
  12. Leaves entire. 13.

12. Leaves serrate, dentate, crenate, pinnatifid, or variously lobed. 31.
13. With stipular rings at each leaf node; leaves large. **Magnolia.**
13. Base of petiole covering the axillary bud and twigs with peculiar rings but not at the leaf nodes. **Dorca.**
13. Not with stipular rings; base of petiole not covering the axillary bud. 14.
14. Leaves evergreen, some on wood of the previous season. 15.
14. No leaves on wood of the previous season. 18.
15. Leaves glabrous; erect shrubs or small trees. 16.
15. Leaves hirsute or pubescent; low trailing or spreading shrubs. 17.
16. Leaves green on both sides, thick, coriaceous, oblong to oblanceolate, 5-10 in. long; winter buds very scaly. **Rhododendron.**
16. Leaves green on both sides, or glaucous beneath, coriaceous, 2-5 in. long; oval or oval-lanceolate, winter buds naked. **Kalmia.**
17. Leaves oval or nearly orbicular, hirsute beneath; twigs hirsute; prostrate shrubs. **Epigaea.**
17. Leaves spatulate, minutely pubescent, with hairs on the margins; trailing or spreading shrubs. **Arctostaphylos.**
18. With thorns; either small trees with milky sap or low vine-like shrubs. 19.
18. Without thorns. 20.
19. Trees or erect shrubs with prominent thorns; leaves with milky sap, the base obtuse, truncate, or cordate. **Toxylon.**
19. Climbing shrubs with axillary thorns; leaves not milky, narrowed into short petioles. **Lycium.**
20. Pith with prominent diaphragms but solid; vascular bundles in base of petiole 3-7. 21.
20. Pith not diaphragmed but sometimes with cavities. 22.
21. Leaves 2-ranked; bark with fetid odor; vascular bundles in base of petiole 5-7. **Asimina.**
21. Leaves not 2-ranked; vascular bundles in base of petiole 3. **Nyssa.**
22. Leaves resin-dotted, waxy-dotted or punctate. 23.
22. Leaves not dotted or punctate. 24.
23. Shrubs or small trees; leaves oblong-lanceolate, spatulate, or oblanceolate, short pointed, narrowed at the base. **Myrica.**
23. Shrubs with obovate or elliptic leaves narrowed at the base; bark spicy aromatic; axillary buds superposed. **Benzoin.**
23. Low shrubs; leaves ovate-lanceolate, wedge-shaped at the tip. **Gaylussacia.**
24. Pith prominently 5-angled; leaves with deciduous stipules and with bristle tips; trees. **Quercus.**
24. Pith cylindrical or nearly so; leaves downy with prominent deciduous stipules. **Cydonia.**
24. Pith cylindrical or nearly so; no stipules or stipular scars, if with minute stipules then glabrous. 25.
25. Leaves with the upper 2 lateral veins more or less parallel with the midrib. **Cornus.**
25. Leaves pinnately veined to the tip. 26.
26. Bark when cut very resinous, fragrant; pith large, usually brown. **Cotinus.**
26. Bark not resinous. 27.
27. Trees, sometimes with cavities in the pith; leaves oval or ovate, acute or acuminate, the petioles loosely jointed with the twigs. **Diospyros.**
27. Pith not with cavities; shrubs. 28.
28. Leaves with long petioles; twigs not clustered and the leaf internodes rather uniform, with minute stipules. **Ilicioides.**

28. Leaves with short petioles or nearly sessile; or if with rather prominent petioles then the twigs clustered and the internodes very unequal. 29.
29. Internodes very unequal, the leaves crowded at the tip of the twig and the twigs clustered. **Azalea.**
29. Internodes rather uniform, the leaves not crowded at the tip and the twigs not clustered. 30.
30. Older twigs finely white speckled or granulated and blistered; corolla cylindric subglobose or urceolate. **Vaccinium.**
30. Twigs not white speckled or granulated, prominently self-pruned; corolla open-campanulate. **Polycodium.**
30. Twigs with decurrent ridges from the sides of the petiole base; leaves lanceolate; petiole jointed. **Lycium.**
- 31—
31. Lateral veins from the midrib straight and parallel or nearly so; some or all lateral veins usually ending in the serrations, teeth or lobes. 32.
31. Lateral veins not straight and parallel 43.
32. Leaves not 2-ranked. 33.
32. Leaves quite regularly 2-ranked, that is with the third leaf over the first. 36.
33. Pith 3-angled, buds stalked. **Alnus.**
33. Pith 5-angled, buds not stalked. 34.
33. Pith cylindrical or nearly so. 35.
34. Leaves or their lobes bristle-tipped, or if not bristle-tipped then the teeth or lobes not sharply acuminate; buds clustered at the tip of the twig; nut in a cup-like involucre of numerous scales. **Quercus.**
34. Leaves with sharply acuminate teeth; buds not clustered at the tip; nuts with a prickly or spiny involucre. **Castanea.**
35. Usually with prominent and typical lateral thorns; carpels of the pome bony. **Crataegus.**
35. Without thorns but sometimes with thorn-like stunted branches; leaves irregularly dentate, serrate, or crenate-dentate; sometimes lobed; pome fleshy without grit cells; carpels papery or leathery. **Malus.**
35. Without thorns; leaves serrate or serrate-dentate; pome berry-like, carpels not bony. **Amelanchier.**
36. Leaves decidedly inequilateral at the base. 37.
36. Leaves not inequilateral or only very slightly so. 38.
37. Leaves doubly serrate; axillary buds sessile. **Ulmus.**
37. Leaves repand dentate; axillary buds prominently stalked. **Hamamelis.**
38. Lateral veins ending in the large dentations or serrations which are always simple (a vein for each). 39.
38. Leaves doubly serrate or sometimes simply serrate, the lateral veins ending in the main serrations or teeth but not in the smaller ones, or the veins not ending in the serrations. 40.
39. Leaves ovate or ovate-oblong, short acuminate; teeth not with slender points; bark smooth, light-gray. **Fagus.**
39. Leaves oblong-lanceolate, acuminate, with slender often inwardly curved points on the serrations; bark rough. **Castanea.**
40. Lateral veins not ending in the serrations or teeth. **Amelanchier.**
40. Lateral veins ending in some of the serrations, teeth or lobes. 41.
41. Bark smooth, the trunk and larger branches with fluted or projecting ridges; leaves acute or acuminate, sharply doubly serrate. **Carpinus.**
41. Trunk and larger branches not with fluted or projecting ridges. 42.

42. Bark of trunk and larger branches separating into papery or leathery sheets; trees or shrubs with glabrous, pubescent, or glandular-warty twigs. **Betula.**
42. Bark of trunk scaly, fine furrowed; twigs pubescent; carpellate catkin in fruit appearing like that of the hop. **Ostrya.**
42. Bark of trunk and larger branches smooth or rough, not scaly and fine furrowed and not separating into papery or leathery sheets; twigs coarsely glandular pubescent or nearly glabrous; fruit a large nut in a leafy or partly coriaceous cup or involucre. **Corylus.**

—43—

43. Leaves 2-ranked. 44.
43. Leaves not 2-ranked. 45.
44. Bark of trunk and larger branches separating into papery or leathery sheets; leaves doubly serrate, the lateral veins ending in the main serrations, teeth or lobes. **Betula.**
44. Bark not in papery or leathery sheets; leaves not doubly serrate, the lateral veins not ending directly in the serrations or teeth. **Amelanchier.**
44. Bark not in papery or leathery sheets; leaves doubly serrate ending in the main serrations or lobes. **Corylus.**
45. Leaves with spine-tipped teeth or lobes, or some of the leaves reduced to simple or branched spines. 46.
45. Leaves not with spines. 47.
46. Leaves evergreen, with spine-tipped lobes; trees. **Ilex.**
46. Leaves reduced to simple or branched spines, some leaves without spines and deciduous each year; shrubs. **Berberis.**
47. Pith solid but with prominent diaphragms, cylindrical; vascular bundles 3 in the base of the petiole; trees. **Nyssa.**
47. Pith not both diaphragmed and solid. 48.
48. Leaves with 1 or more disc-like, wart-like, or tooth-like glands on the petiole or at the base of the blade, or with tooth-like glands on top of the midrib. 49.
48. Leaves not with distinct glands on the top of the petiole or midrib, or at the base of the blade, but they may be glandular-hairy or glandular-dotted. 53.
49. Pith 5-angled, leaves usually more or less deltoid with gland-tipped teeth. **Populus.**
49. Pith cylindrical or nearly so. 50.
50. With typical lateral thorns. **Crataegus.**
50. Not with typical lateral thorns, but some may have thorn-like stunted branches. 51.
51. With tooth-like glands along the top of the midrib; shrubs. **Aronia.**
51. Glands tooth-like, mostly at the base of the midrib; leaves glabrous when mature, with long petioles; fruit a pome. **Pyrus.**
51. Glands only on the petiole or near the base of the blade. 52.
52. Glands tooth-like or rounded, or the leaf with gland-tipped teeth, but not with 2-4 large disc-like glands at the base on the edges of the blade; terminal bud absent when the twig is mature; twigs with brittle zones; fruit a capsule, in catkins. **Salix.**
52. Twigs green, red, or red and green; nectar glands disc-like, usually 2-4 near the base at the edge of the blade; terminal bud present; twigs without brittle zones; fruit a velvety drupe. **Amygdalus.**
52. Glands various; twigs not red and green, some with cleavage planes in basal joints but not with brittle zones; terminal bud present or absent, fruit a smooth drupe. **Prunus.**

—53—

53. Leaves with peltate scales, or resin dotted, not pinnatifid. 54.  
 53. Leaves not with peltate scales, but the twigs may be resin-dotted. 55.  
 54. Leaves evergreen, oblong or oblanceolate, densely covered with scurfy peltate scales. **Chamaedaphne.**  
 54. Leaves deciduous; oblanceolate or wedge-lanceolate, resin-dotted and peltate scaly. **Myrica.**  
 55. Pith decidedly 5-angled; leaves not fragrant; trees or shrubs. **Quercus.**  
 55. Pith cylindrical or nearly so. 56.  
 56. Leaves long linear-lanceolate or long linear-oblong; deeply pinnatifid, fragrant; twigs resin-dotted. **Comptonia.**  
 56. Leaves not at the same time linear-lanceolate, deeply pinnatifid, and fragrant; twigs not resin-dotted. 57.  
 57. Climbing partly herbaceous plants with lobed leaves. **Solanum.**  
 57. Leaves not lobed unless the plants are tall shrubs or trees. 58.  
 58. With lateral thorns and sometimes with thorns at the ends of slender branches. 59.  
 58. Not with thorns. 61.  
 59. Leaves coriaceous, evergreen, hence on wood of the previous season. **Cotoneaster.**  
 59. Leaves deciduous, not evergreen. 60.  
 60. With typical lateral thorns but without terminal thorns; pome with bony carpels. **Crataegus.**  
 60. With thorns at the ends of long slender branches and also with lateral thorns; pome very hard, with leathery carpels. **Cydonia.**  
 60. With thorn-like stunted branches; leaves sharply and regularly serrate or nearly entire, long petioled, glabrous when mature; pome with grit cells. **Pyrus.**  
 60. With thorn-like stunted branches; leaves irregularly toothed or serrate, sometimes lobed; pome without grit cells. **Malus.**  
 61. Slender creeping evergreen shrubs with fragrant aromatic leaves. **Gaultheria.**  
 61. Not creeping; leaves not aromatic. 62.  
 62. Woody twiners; vascular bundle in base of petiole 1. **Celastrus.**  
 62. Not twining or climbing. 63.  
 63. With stipules or stipular scars. 64.  
 63. Without stipules or stipular scars. 70.  
 64. Outer bud scales of winter buds more than 1. 65.  
 64. Outer bud scale 1; twigs with brittle zones, hence easily detached and leaving peculiar self-pruning scars; terminal bud of ripe branches absent; bundle scars or vascular bundles in base of petiole. 3. **Salix.**  
 65. Leaves usually more or less heart-shaped at the base; regularly and sharply serrate or serrate-dentate; fruit a small berry-like pome. **Amelanchier.**  
 65. Leaves acute or rounded at the base or if heart-shaped then irregularly toothed or serrate-dentate or the leaf with long petiole and acute or acuminate at the apex. 66.  
 66. Axillary buds usually superposed; leaves not mucronate or bristle-tipped or if so then also abruptly acuminate; fruit a berry-like drupe. **Ilex.**  
 66. Axillary buds not superposed. 67.  
 67. Leaves distinctly mucronate or bristle-tipped, glabrous, elliptic or obovate; fruit a berry-like drupe. **Illicioides.**  
 67. Leaves not mucronate or bristle-tipped or if so then also abruptly acuminate. 68.

68. Leaves with gland-tipped serrations; terminal bud absent on ripe twigs or if present then the lateral veins prominent and nearly parallel and curving upward at the margin of the leaf; fruit a berry-like drupe. **Rhamnus.**
68. Leaves not with gland-tipped serrations, or if so then not as above; terminal bud present; fruit a pome. 69.
69. Leaves sharply and regularly serrate, glabrous when mature, petioles long; pome with grit cells. **Pyrus.**
69. Leaves irregularly dentate or serrate, or more or less lobed; pome without grit cells. **Malus.**
70. Internodes very unequal; shrubs; fruit a capsule. **Azalea.**
70. Internodes not very unequal. 71.
71. Leaves sour, with prominent scattered hairs on the midrib beneath; trees; fruit a capsule. **Oxydendrum.**
71. Leaves not sour, nor as described above; shrubs. 72.
72. Petiole slender, often one-half as long as the blade or longer; prominently mucronate or bristle-tipped; fruit a drupe. **Ilicioides.**
72. Leaves short-petioled or sessile. 73.
73. Older twigs finely white speckled or granulated and blistered. **Vaccinium.**
73. Twigs not white speckled or granulated, often with decurrent ridges. **Spiraea.**
- 74—
74. Plants with tendrils. 75.
74. Without tendrils. 77.
75. Monocotyls, with scattered vascular bundles and a pair of tendrils on the petiole. **Smilax.**
75. Dicotyls with pith, a ring of wood, and true bark; tendrils opposite some of the leaves. 76.
76. Older branches with woody partitions at the leaf nodes; bark brown, shreddy. **Vitis.**
76. Branches without woody partitions; bark smooth, grayish-brown, not shreddy. **Ampelopsis.**
77. Base of petiole covering the axillary bud; twigs with stipular rings. **Platanus.**
77. Axillary bud partly hidden; stems twining; no stipular rings. **Menispermum.**
77. Axillary buds usually evident; stems not twining and twigs without stipular rings. 78.
78. Leaves 2-ranked. 79.
78. Leaves not 2-ranked. 84.
79. Leaves entire, round-heart-shaped. **Cercis.**
79. Leaves serrate, dentate, or lobed. 80.
80. Pith usually in transverse plates; leaves ovate-lanceolate, inequilateral, taper-pointed. **Celtis.**
80. Pith solid, not diaphragmed. 81.
81. With milky sap. 82.
81. Without milky sap. 83.
82. Twigs gray or brown, glabrous or nearly so; leaves pubescent or glabrous beneath. **Morus.**
82. Twigs grayish-green, downy; leaves tomentose beneath. **Broussonetia.**
83. Leaves not inequilateral; vascular bundles in base of petiole 3. **Betula.**
83. Leaves inequilateral at the base; vascular bundles in base of petiole several, scattered. **Tilia.**
84. Leaves more or less star-shaped, with 3-7 long pointed serrate lobes, strongly aromatic when crushed; pith 5-angled. **Liquidambar.**

84. Leaves entire or three-lobed, bark spicy-aromatic; internodes very unequal. **Sassafras.**
84. Leaves crenate, serrate, dentate, or lobed, not star-shaped and not spicy-aromatic. 85.
85. Pith 5-angled; trees usually with resinous buds; leaves usually broad based. **Populus.**
85. Pith cylindrical or nearly so. 86.
86. With prominent typical thorns; trees or erect shrubs. **Crataegus.**
86. Without thorns but often with prickles or bristles; low shrubs. 87.
87. Leaves lanceolate or ovate-lanceolate with gland-tipped serrations or dentations; low erect shrubs. **Ceanothus.**
87. Leaves broad and more or less lobed. 88.
88. Petioles and twigs densely brown-bristly, leaves 4-8 in. broad, angled or lobed. **Rubus.**
88. Twigs not bristly, if the petioles are bristly then the leaves much smaller. 89.
89. Bundle scars or vascular bundles in base of petiole widely separate; petiole not decurrent at the middle or if so then the petiole with long hairs or distinctly pubescent; plants often prickly; fruit a berry. **Ribes.**
89. Bundle scars or vascular bundles in base of petiole closely crowded or nearly confluent; petioles strongly decurrent at the sides and middle; glabrous or only minutely pubescent; plant not prickly; fruit a capsule. **Opulaster.**
- 90—
90. Leaves glabrous. 91.
90. Leaves pubescent or woolly at least below. 92.
91. Leaves  $\frac{1}{4}$ – $\frac{1}{2}$  in. long, bitter. **Oxycoccus.**
91. Leaves 1–2 $\frac{1}{2}$  in. long, acid. **Andromeda.**
92. Leaves with a fragrant odor, densely tomentose beneath; erect, resinous shrubs. **Ledum.**
92. Leaves 2-ranked, small, oval or ovate, hairy; creeping shrubs. **Chiogenes.**
- 93—
93. With tendrils; leaves digitate. **Parthenocissus.**
93. Without tendrils; leaves trifoliate or pinnate. 94.
94. Pith diaphragmed, with cavities; large trees with pinnate leaves. **Juglans.**
94. Pith not diaphragmed. 95.
95. Leaves trifoliate or odd-pinnate. 96.
95. Leaves evenly pinnate or bipinnate; axillary buds superposed. 109.
95. Leaves odd-bipinnate, serrate; twigs and leaves usually prickly. **Aralia.**
96. Leaves with spine-tipped teeth, evergreen. **Berberis.**
96. Leaves not with spine-tipped teeth; but some may be prickly. 97.
97. Lobes or teeth at the base of the leaflets with prominent green glands beneath; leaves pinnate, very large with disagreeable odor. **Ailanthus.**
97. Lobes or teeth if present without green glands. 98.
98. With stipular spines a pair for each leaf; leaflets entire. 99.
98. Without stipular spines, but some may have thorns or prickles. 100.
99. Leaflets oval or ovate, not pointed, usually mucronate, not punctate. **Robinia.**
99. Leaflets ovate, pointed, glandular-punctate. **Xanthoxylum.**
100. Base of petiole covering the axillary buds; not prickly. 101.
100. Base of petiole not covering the axillary buds. 103.
101. Leaves 3-foliate, leaflets crenulate, glandular punctate; bark with disagreeable odor; axillary buds superposed. **Ptelea.**

101. Leaves 3-foliolate, fragrant; axillary buds not superposed; bark resinous or milky. **Rhus.**
101. Leaves pinnate, not punctate. 102.
102. Leaflets serrate; pith very large; bark resinous or milky. **Rhus.**
102. Leaflets entire; pith small, bark not resinous or milky; trees. **Cladrastis.**
103. Leaflets entire or if occasionally few-toothed then the rachis prominently winged. 104.
103. Leaflets serrate or dentate, the rachis not winged. 105.
104. Stipules large, membranous and sheathing; leaflets 3-5, long silky. **Dasiphora.**
104. Stipules small, not sheathing; leaflets prominently mucronate, bark with strong odor. **Amorpha.**
104. Stipules none, bark with a resinous or milky sap, often poisonous. **Rhus.**
105. With bristles or prickles; shrubs. 106.
105. Without bristles or prickles; leaves pinnate. 107.
105. Without bristles or prickles; leaves trifoliolate, poisonous. **Rhus.**
106. Leaves usually pinnate, the leaflets usually of about the same type, if 3-foliolate then the petiole separates close to the bark leaving a definite leaf scar; fruit an achene, a number inclosed in the fleshy perigynous disc. **Rosa.**
106. Leaves simple and lobed, or 3-7-foliolate; if pinnate then the terminal leaflet usually larger or broader than the others, petiole base persistent; fruit an aggregate of drupelets. **Rubus.**
107. Pith cylindrical or nearly so; leaves with stipules; vascular bundles in base of petiole 3-5. 108.
107. Pith 5-angled; stipules none, base of petiole with numerous vascular bundles, scattered or in 3 areas. **Hicoria.**
108. Trees; leaflets obtuse or acute at the apex. **Sorbus.**
108. Shrubs; leaflets long acuminate. **Sorbaria.**
109. Pith small; base of petiole covering the axillary buds; usually with prominent thorns. **Gleditsia.**
109. Pith very large, base of petiole not covering the axillary buds; without thorns. **Gymnocladus.**
- 110—
110. Leaves simple. 116.
110. Leaves compound with tendrils. **Bignonia.**
110. Leaves compound, with 3 or more leaflets, petioles and petiolules coiling; climbing vines. **Clematis.**
110. Leaves compound without tendrils. 111.
111. Leaves digitate with 5 or more leaflets. **Aesculus.**
111. Leaves trifoliolate or pinnate. 112.
112. With numerous pit-like glands on top of the petiole near its base; vines climbing by rootlets. **Tecoma.**
112. No glands on the top of the petiole; shrubs or trees. 113.
113. Base of petiole covering the axillary buds; leaflets dentate, lobed, or nearly entire. **Acer.**
113. Base of petiole not covering the axillary buds. 114.
114. Leaves trifoliolate, serrate; bark with strong odor. **Staphylea.**
114. Leaflets 5-11. 115.
115. Leaves often with gland-tipped stipels; pith large; shrubs. **Sambucus.**
115. Leaves without stipels; pith small; trees. **Fraxinus.**
- 116—
116. Leaves pinnately veined. 123.
116. Leaves palmately veined or at least with 2 prominent side ribs from the base. 117.
117. Leaves entire or if somewhat 3-lobed with entire margin. 118.

117. Leaves serrate, crenate, dentate or variously lobed. 120.  
 118. Evergreen shrubs parasitic on trees; leaves small. **Phoradendron.**  
 118. Trees with large leaves. 119.  
 119. Pith diaphragmed, or with large cavities; petioles usually hollow; axillary buds superposed. **Paulownia.**  
 119. Pith and petioles solid; axillary buds not superposed. **Catalpa.**  
 120. Leaves more or less lobed. 121.  
 120. Leaves not lobed. 122.  
 121. Leaves without stipules, or if with stipules then large trees with very large-toothed or angled but not serrate leaves; fruit a 2-winged samara. **Acer.**  
 121. Leaves with stipules, some with glands on the petiole or if not then always serrate-dentate; shrubs; fruit a drupe. **Viburnum.**  
 122. Stipules none; axillary buds minute, covered; fruit a capsule. **Philadelphus.**  
 122. Stipules or stipular scars present; fruit a drupe. **Rhamnus.**  
 —123—  
 123. Leaves serrate, dentate, crenate, or variously lobed. 124.  
 123. Leaves entire. 132.  
 124. Twigs with a prominent pubescent ridge decurrent from the middle of the line connecting the petiole bases. **Diervilla.**  
 124. No pubescent decurrent ridge from the middle of the connecting line, but the ends of the petiole bases may be decurrent. 125.  
 125. Leaves evergreen, on wood of the previous season, obovate or obicular; creeping shrubs without stipules. **Linnaea.**  
 125. Leaves not evergreen. 126.  
 126. Bark of ripe twigs green, bundle scar or vascular bundle in base of petiole 1; pith rhombic. **Euonymus.**  
 126. Bark of ripe twigs gray, brown, or red; pith cylindrical or nearly so. 127.  
 127. Stipules or stipular scars present. 128.  
 127. Stipules none. 129.  
 128. Lateral veins 3 or 4 pairs, the outer more or less parallel with the midrib; usually with terminal thorns. **Rhamnus.**  
 128. Lateral veins 5 or more pairs, the outer not parallel with the midrib but spreading; without thorns. **Viburnum.**  
 129. Petioles of the lower leaves as long or nearly as long as the large blades. 130.  
 129. Petioles short. 131.  
 130. Leaves dentate, outer bark separating readily from the green inner bark. **Hydrangea.**  
 130. Leaves serrate or serrate-dentate, outer bark not spreading readily. **Viburnum.**  
 131. Low shrubs; leaves normally entire, occasionally irregularly toothed or somewhat lobed, usually of the ovate or oval type. **Symphoricarpos.**  
 131. Erect shrubs, leaves serrate or dentate; axillary buds minute covered by the petiole base; twigs minutely angled or striate. **Philadelphus.**  
 131. Erect shrubs or small trees; leaves dentate or serrate; axillary buds evident, not covered by the petiole base. **Viburnum.**  
 132. Twigs and leaves white- or brown-scurfy or stellate-pubescent. **Lepargyreae.**  
 132. Not scurfy or stellate-pubescent. 133.  
 133. Leaves pellucid-punctate or black-dotted; low shrubs. 134.  
 133. Leaves not pellucid-punctate or black-dotted. 135.  
 134. Creeping shrubs; leaves 2-glandular at the base. **Ascyrum.**  
 134. Erect shrubs; leaves not 2-glandular at the base. **Hypericum.**

135. Leaves coriaceous, evergreen, hence on wood of the previous season, not perfoliate. **Kalmia.**
135. Leaves deciduous each year. 136.
136. Leaves with the two outer lateral veins more or less parallel with the midrib; fruit a drupe. **Cornus.**
136. Leaves pinnately veined to the tip, the outer lateral veins usually spreading. 137.
137. With stipules between the large acuminate leaves. **Cephalanthus.**
137. Without stipules. 138.
138. Upper leaves perfoliate. **Lonicera.**
138. Leaves not perfoliate. 139.
139. Petioles meeting around the stem or connected by a distinct ridge; spreading shrubs or woody climbers. 140.
139. Petioles not meeting, not connected by a ridge; erect shrubs or small trees. 141.
140. Leaves of the ovate, oval or orbiculate type, not heart-shaped at the base; stem never twining; bundle scar 1 or appearing as 1. **Symphoricarpos.**
140. Leaves of the lanceolate, ovate-lanceolate, or oblong type, often heart-shaped at the base; stems sometimes twining; bundle scars distinctly 3. **Lonicera.**
141. Leaves lanceolate or ovate-lanceolate, 1-3 in. long; fruit a globose berry. **Ligustrum.**
141. Leaves oval or oblong, narrowed at the base, 3-6 in. long, fruit an oblong drupe. **Chionanthus.**
141. Leaves ovate, or ovate-lanceolate, usually cordate or truncate at the base, 3-7 in. long; fruit a capsule. **Syringa.**
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