A CATALOGUE

OF THE

FOREST TREES OF NORTH AMERICA, EXCLUSIVE OF MEXICO,

WITH

REMARKS UPON THEIR SYNONYMY, BIBLIOGRAPHICAL HISTORY, DISTRIBUTION, ECONOMIC VALUE, AND USES.

FOREST TREES OF NORTH AMERICA.

Species which grow from the ground with a single stem, either wholly or over a large portion of the area of their distribution, are admitted as trees into the following catalogue, without reference to the height or size they may attain.

The line which divides trees from shrubs is entirely arbitrary, and is often unsatisfactory in application. A separation of this nature, however, based upon habit rather than upon size, is perhaps less objectionable, all things considered, than any other, and serves at least to keep this catalogue within reasonable limits.

The word "compact", used in the description of various woods mentioned in the catalogue, indicates that they show no tendency to check or open in drying, and does not refer to their structure.

CATALOGUE OF FOREST TREES.

MAGNOLIACEÆ.

1.—Magnolia grandiflora, Linnæus,

Spec. 2 ed. 755.—Marshall, Arbustum, 84.—Am. Gewach. t. 185, 186.—Walter, Fl. Caroliniana, 158.—Gærtner, Fruct. i, 343, t. 70.—B. S. Barton, Coll. i, 13; ii, 20.—Aiton, Hort. Kew. ii, 251; 2 ed. iii, 329.—Bartram, Travels, 2 ed. 82.—Lamarck, Dict. iii, 672; Ill. iii, 35, t. 490.—Mœnch, Meth. 274.—Willdenow, Spec. ii, 1255; Enum. i, 579.—Michaux, Fl. Bor.-Am. i, 327.—Nouveau Duhamel, ii, 219, t. 65.—Desfontaines, Hist. Arb. ii, 5.—Robin, Voyages, iii, 265.—Andrews, Bot. Rep. viii, t. 518.—Titford, Hort. Bot. Am. 76.—Michaux f. Hist. Arb. Am. iii, 71, t. 1; N. American Sylva, 3 ed. ii, 8, t. 51.—Pursh, Fl. Am. Sept. ii, 380.—Nuttall, Genera, ii, 18; Sylva, i, 81; 2 ed. i, 96.—De Candolle, Syst. i, 450; Prodr. i, 80.—Hayne, Dend. Fl. 116.—Elliott, Sk. ii, 36.—Loddiges, Bot. Cab. t. 814.—Sprengel, Syst. ii, 642.—Audubon, Birds, t. 5, 32.—Rafinesque, Med. Bot. ii, 32.—Don, Miller's Dict. i, 82.—Eaton, Manual, 6 ed. 218.—Croom in Am. Jour. Sci. 1 ser. xxvi, 314.—Loudon, Arboretum, i, 261 & t.—Hooker, Jour. Bot. i, 188.—Eaton & Wright, Bot. 312.—Torrey & Gray, Fl. N. America, i, 42.—Spach, Hist. Veg. vii, 470.—Dietrich, Syn. iii, 308.—Seringe, Fl. Jard. iii, 225.—Darby, Bot. S. States, 210.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 13.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 66.—Wood, Cl. Book, 214; Bot. & Fl. 24.—Porcher, Resources S. Forests, 38.—Baillon, Hist. Pl. i, 133, f. 165-169.—Koch, Dendrologie, i, 367.—Young, Bot. Texas, 148.—Vasey, Cat. Forest Trees, 6.

M. Virginiana, var. *β. fœtida*, Linnæus, Spec. 1 ed. 536, in part.

M. grandiflora, var. *elliptica* and *obovata*, Pursh, Fl. Am. Sept. ii, 380.

M. grandiflora, var. *lanceolata*, Pursh, Fl. Am. Sept. ii, 380.—Bot. Mag. t. 1952.—Eaton, Manual, 6 ed. 218.

BIG LAUREL. BULL BAY.

Cape Fear river, North Carolina, south near the coast to Mosquito inlet, and Tampa bay, Florida; basin of the Mississippi river south of latitude 32° 30′, extending westward to southwestern Arkansas, and along the Texas coast to the valley of the Brazos river.

One of the most magnificent trees of the Atlantic forest, evergreen, 18 to 27 meters in height, with a trunk 0.60 to 1.20 meter in diameter; reaching its greatest development on the "bluff" formations along the eastern bank of the Mississippi river from Vicksburg to Natchez, and of western Louisiana.

Wood heavy, hard, not strong, close-grained, compact, easily worked, satiny; medullary rays very numerous, thin; color, creamy white or often light brown, the heavier sap-wood nearly white; specific gravity, 0.6360; ash, 0.53; little used except as fuel; suitable for interior finish, fine cabinet work, etc.

2.—Magnolia glauca, Linnæus,

Spec. 2 ed. 755.—Kalm, Travels, English ed. i, 204.—Schœpf, Mat. Med. Am. 91.—Marshall, Arbustum, 83.—Wangenheim, Amer. 60, t. 19, f. 46.—Walter, Fl. Caroliniana, 158.—B. S. Barton, Coll. i, 13; ii, 20.—Lamarck, Dict. iii, 674.—Aiton, Hort. Kew. ii, 251; 2 ed. iii, 329.—Mœnch, Meth. 274.—Willdenow, Spec. ii, 1256; Enum. i, 579.—Schkuhr, Handb. ii, 1441, t. 148.—Michaux, Fl. Bor.-Am. i, 327.—Nouveau Duhamel, ii, 223, t. 66.—Desfontaines, Hist. Arb. ii, 5.—Titford, Hort. Bot. Am. 76.—Bonpland, Pl. Malm. 103, t. 42.—Michaux f. Hist. Arb. Am. iii, 77, t. 2; N. American Sylva, 3 ed. ii, 12, t. 52.—Pursh, Fl. Am. Sept. ii, 381.—Eaton, Manual, 6 ed. 218.—Bigelow, Med. Bot. ii, 67, t. 27; Fl. Boston. 3 ed. 244.—Nuttall, Genera, ii, 18.—Barton, Prodr. Fl. Philadelph. 59; Med. Bot. i, 77, t. 7; Compend. Fl. Philadelph. ii, 17.—Loddiges, Bot. Cab. t. 215.—De Candolle, Syst. i, 452; Prodr. i, 80.—Hayne, Dend. Fl. 116.—Elliott, Sk. ii, 37.—Bot. Mag. t. 2164.—Sprengel, Syst. 642.—Torrey, Compend. Fl. N. States, 221; Fl. N. York, i, 17, t. 5.—Audubon, Birds, t. 118.—Rafinesque, Med. Bot. ii, 34.—Don, Miller's Dict. i, 82.—Eaton, Manual, 6 ed. 218.—Hooker, Jour. Bot. i, 188.—Beck, Bot. 15.—Sertum Botanicum, v & t.—Reichenbach, Fl. Exot. v, 37, t. 342.—Lindley, Fl. Med. 23.—Eaton & Wright, Bot. 312.—Torrey & Gray, Fl. N. America, i, 42.—Spach, Hist. Veg. vii, 473.—Dietrich, Syn. iii, 308.—Griffith, Med. Bot. 96, f. 56.—Loudon, Arboretum, i, 267 & t.—Emerson, Trees Massachusetts, 527; 2 ed. ii, 603 & t.—Seringe, Fl. Jard. iii, 226.—Gray, Genera, i, 61, t. 23; Manual N. States, 5 ed. 49.—Schnizlein, Icon. t. 176.—Darlington, Fl. Cestrica, 3 ed. 8.—Darby, Bot. S. States, 211.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 13.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 66.—Lesquereux in Owen's 2d Rep. Arkansas, 374.—Wood, Cl. Book, 214; Bot. & Fl. 24.—Porcher, Resources S. Forests, 36.—Koch, Dendrologie, i, 369.—Young, Bot. Texas, 148.—Vasey, Cat. Forest Trees, 6.

M. Virginiana, var. *a. glauca*, Linnæus, Spec. 1 ed. 535.

M. fragrans, Salisbury, Prodr. 379.—Rafinesque, Fl. Ludoviciana, 91; Med. Bot. ii, 32.

M. longifolia, Sweet, Hort. Brit. 11.—Don, Miller's Dict. i, 83.—Dietrich, Syn. iii, 308.

M. glauca, var. *latifolia*, Aiton, Hort. Kew. 2 ed. iii, 350.—Pursh, Fl. Am. Sept. ii, 381.—Eaton, Manual, 6 ed. 218.

M. glauca, var. *longifolia*, Aiton, Hort. Kew. 2 ed. iii, 330.—Pursh, Fl. Am. Sept. ii, 381.—Rafinesque, Fl. Ludoviciana, 91.—Hayne, Dend. Fl. 116.—Eaton, Manual, 6 ed. 218.

SWEET BAY. WHITE BAY. BEAVER TREE. WHITE LAUREL. SWAMP LAUREL.

Cape Ann, Massachusetts; New Jersey southward, generally near the coast, to bay Biscayne and Tampa bay, Florida; basin of the Mississippi river south of latitude 35°, extending west to southwestern Arkansas and the valley of the Trinity river, Texas.

A tree 15 to 22 meters in height, with a trunk sometimes 1.20 meter in diameter, or toward its northern limits reduced to a low shrub; swamps or low wet woods, reaching its greatest development on the rich hummocks of the interior of the Florida peninsula and along the low sandy banks of pine-barren streams of the Gulf states.

Wood light, soft, not strong, close-grained, compact; medullary rays very numerous, thin; color, light brown tinged with red, the sap-wood nearly white; specific gravity, 0.5035; ash, 0.47; in the Gulf states sometimes used in the manufacture of broom handles and small woodenware.

The dried bark, especially of the root, of this species and of *M. acuminata* and *M. Umbrella* is included in the American *Materia Medica*, furnishing an aromatic tonic and stimulant used in intermittent and remittent fevers; a tincture made by macerating the fresh fruit or bark in brandy is a popular remedy for rheumatism (*U. S. Dispensatory*, 14 ed. 567.—*Nat. Dispensatory*, 2 ed. 891).

3.—Magnolia acuminata, Linnæus,

Spec. 2. ed. 756.—Marshall, Arbustum, 83.—Walter, Fl. Caroliniana, 159.—B. S. Barton, Coll. i, 13.—Aiton, Hort. Kew. ii, 251; 2 ed. iii, 331.—Lamarck, Dict. iii, 674.—Willdenow, Spec. ii, 1257; Enum. i, 579.—Michaux, Fl. Bor.-Am. i, 329.—Nouveau Duhamel, ii, 222.—Desfontaines, Hist. Arb. ii, 5.—Michaux f. Hist. Arb. Am. iii, 82, t. 3; N. American Sylva, 3 ed. ii, 15, t. 53.—Pursh, Fl. Am. Sept. ii, 381.—De Candolle, Syst. i, 453; Prodr. i, 80.—Loddiges, Bot. Cab. t. 418.—Nuttall, Genera, ii, 18.—Bot. Mag. t. 2427.—Hayne, Dend. Fl. 117.—Elliott, Sk. ii, 37.—Rafinesque, Med. Bot. ii, 32.—Guimpel, Otto & Hayne, Abb. Holz. 18, t. 17.—Sprengel, Syst. ii, 642.—Torrey, Compend. Fl. N. States, 221; Fl. N. York, i, 28.—Rafinesque, Med. Bot. ii, 34.—Beck, Bot. 15.—Sertum Botanicum, v. & t.—Don, Miller's Dict. i, 83.—Reichenbach, Fl. Exot. t. 251.—Eaton, Manual, 6 ed. 218.—Loudon, Arboretum, i, 273 & t.—Eaton & Wright, Bot. 312.—Torrey & Gray, Fl. N. America, i, 43.—Dietrich, Syn. iii, 308.—Griffith, Med. Bot. 98.—Darlington, Fl. Cestrica, 3. ed. 9.—Darby, Bot. S. States, 211.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 14.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 67.—Wood, Cl. Book, 214; Bot. & Fl. 24.—Porcher, Resources S. Forests, 38.—Baillon, Hist. Pl. i, 140.—Gray, Manual N. States, 5. ed. 49.—Koch, Dendrologie, i, 371.—Young, Bot. Texas, 149.—Vasey, Cat. Forest Trees, 6.—Nat. Dispensatory, 2 ed. 891.—Ridgway in Proc. U. S. Nat. Mus. 1882, 58.

M. Virginiana, var. *e.* Linnæus, Spec. 1 ed. 536.

M. DeCandollii, Savi, Bibl. Ital. i, 224 & t.

Tulipastrum Americanum, Spach, Hist. Veg. vii, 483.

CUCUMBER TREE. MOUNTAIN MAGNOLIA.

Western New York to southern Illinois, southward along the Alleghany mountains, and scattered through eastern and middle Kentucky and Tennessee, usually on Carboniferous deposits, to southern Alabama (Stockton, *Mohr*) and northeastern Mississippi; Arkansas, Crowley's ridge, and in the southern and southwestern part of the state (Texarkana, *Harvey*, and in Polk, Howard, Cross, and Pike counties).

A large tree, 20 to 30 meters in height, with a trunk 0.60 to 1.20 meter in diameter; rich woods, reaching its greatest development on the slopes of the southern Alleghany mountains.

Wood durable, light, soft, not strong, close-grained, compact, satiny; medullary rays numerous, thin; color, yellow-brown, the sap-wood lighter, often nearly white; specific gravity, 0.4690; ash, 0.29; used for pump-logs, water-troughs, flooring, cabinet-making, etc.

4.—Magnolia cordata, Michaux,

Fl. Bor.-Am. i, 328.—Aiton, Hort. Kew. 2 ed. iii, 331.—Poiret, Suppl. iii, 547.—Michaux f. Hist. Arb. Am. iii, 87, t. 4; N. American Sylva, 3 ed. ii, 18, t. 54.—Pursh, Fl. Am. Sept. ii, 382.—Lindley, Bot. Reg. iv, t. 325.—Nuttall, Genera, ii, 18.—De Candolle, Syst. i, 455; Prodr. i, 80.—Hayne, Dend. Fl. 118.—Elliott, Sk. ii, 38.—Loddiges, Bot. Cab. t. 474.—Sprengel, Syst. ii, 642.—Rafinesque, Med. Bot. ii, 32.—Eaton, Manual, 6 ed. 218.—Sertum Botanicum, v & t.—Don, Miller's Dict. i, 83.—Reichenbach, Fl. Exot. t. 250.—Loudon, Arboretum, i, 275 & t.—Eaton & Wright, Bot. 312.—Torrey & Gray, Fl. N. America, i, 43.—Dietrich, Syn. iii, 308.—Darby, Bot. S. States, 211.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 14.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 68.—Wood, Cl. Book, 214; Bot. & Fl. 25.—Koch, Dendrologie, i, 371.—Vasey, Cat. Forest Trees, 6.

Tulipastrum Americanum, var. *subcordatum*, Spach, Hist. Veg. vii, 483.

CUCUMBER TREE.

Southern Alleghany Mountain region, near Augusta, Georgia (*Michaux, Elliott*), head of Sipsey creek, "valley of Davidson creek", Winston county, Alabama (*Mohr*).

A tree 22 to 24 meters in height, with a trunk sometimes 0.60 meter in diameter; low, rich woods; very rare and local.

Wood light, soft, not strong, close-grained, compact; medullary rays very numerous, thin; color, light brown streaked with yellow, the sap-wood light yellow; specific gravity, 0.4139; ash, 0.32.

5.—Magnolia macrophylla, Michaux,

Fl. Bor.-Am. i, 327.—Nouveau Duhamel, ii, 221.—Desfontaines, Hist. Arb. ii, 5.—Aiton, Hort. Kew. 2 ed. iii, 331.—Poiret, Suppl. iii, 573.—Michaux f. Hist. Arb. Am. iii, 99, t. 7; N. American Sylva, ii, 26, t. 57.—Bonpland, Pl. Malm. 84, t. 33.—Pursh, Fl. Am. Sept. ii, 381.—Nuttall, Genera, ii, 18; Sylva, i, 83; 2 ed. i, 99.—De Candolle, Syst. i, 454; Prodr. i, 80.—Bot. Mag. t. 2189.—Hayne, Dend. Fl. 117.—Elliott, Sk. ii, 40.—Sprengel, Syst. ii, 642.—Rafinesque, Med. Bot. ii, 31, t. 62.—Eaton, Manual, 6 ed. 218.—Sertum Botanicum, v & t.—Don, Miller's Dict. i, 83.—Croom in Am. Jour. Sci. 1 ser. xxv, 76.—Reichenbach, Fl. Exot. ii, 44, t. 139.—Loudon, Arboretum, i, 271 & t.—Eaton & Wright, Bot. 312.—Torrey & Gray, Fl. N. America, i, 43.—Spach, Hist. Veg. vii, 479.—Dietrich, Syn. iii, 308.—Griffith, Med. Bot. 98, f. 57.—Darby, Bot. S. States, 211.—Cooper in Smithsonian Rep. 1858, 250.—Seringe, Fl. Jard. iii, 230.—Chapman, Fl. S. States, 14.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 67.—Wood, Cl. Book, 214; Bot. & Fl. 25.—Gray, Manual N. States, 5 ed. 49.—Koch, Dendrologie, i, 374.—Vasey, Cat. Forest Trees, 6.

LARGE-LEAVED CUCUMBER TREE.

North Carolina, eastern base of the Alleghany mountains (Iredell and Lincoln counties); southeastern Kentucky southward to middle and western Florida and southern Alabama, extending west to the valley of Pearl river, Louisiana; central Arkansas (Garland, Montgomery, Hot Springs, and Sebastian counties).

A tree 6 to 18 meters in height, with a trunk rarely 0.60 meter in diameter; rich woods, reaching its greatest development in the limestone valleys of northern Alabama; rare and local.

Wood light, hard, not strong, close-grained, compact, satiny; medullary rays numerous, thin; color, brown, the sap-wood light yellow; specific gravity, 0.5309; ash, 0.35.

6.—Magnolia Umbrella, Lamarck,

Dict. iii, 673.—Nouveau Duhamel, ii, 221.—De Candolle, Prodr. i, 80.—Loiseleur, Herb. Amat. iii, t. 198.—Sprengel, Syst. ii, 642.—Don, Miller's Dict. i, 83.—Torrey & Gray, Fl. N. America, i, 43.—Spach, Hist. Veg. vii, 475.—Dietrich, Syn. iii, 308.—Seringe, Fl. Jard. iii, 227.—Gray, Genera, i, 62, t. 24; Proc. Linnæan Soc. ii, 106, f. 1-18; Manual N. States, 5 ed. 49.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 13.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 67.—Wood, Cl. Book, 214; Bot. & Fl. 25.—Porcher, Resources S. Forests, 38.—Vasey, Cat. Forest Trees, 6.

M. Virginiana, var. *tripetala*, Linnæus, Spec. 1 ed. 536.

M. tripetala, Linnæus, Spec. 2 ed. 756.—Marshall, Arbustum, 84.—Walter, Fl. Caroliniana, 159.—B. S. Barton, Coll. i, 14.—Aiton, Hort. Kew. ii, 252; 2 ed. iii, 331.—Willdenow, Spec. ii, 1258; Enum. i, 579.—Michaux, Fl. Bor.-Am. i, 327.—Desfontaines, Hist. Arb. ii, 5.—De Candolle, Syst. i, 452.—Michaux f. Hist. Arb. Am. iii, 90, t. 5; N. American Sylva, 3 ed. ii, 20, t. 5.—Pursh, Fl. Am. Sept. ii, 381.—Nuttall, Genera, ii, 18; Sylva, i, 84; 2 ed. i, 100.—Guimpel, Otto & Hayne, Abb. Holz. 20, t. 18.—Hayne, Dend. Fl. 116.—Elliott, Sk. ii, 38.—Torrey, Compend. Fl. N. States, 221.—Rafinesque, Med. Bot. ii, 32.—Eaton, Manual, 6 ed. 218.—Eaton & Wright, Bot. 312.—Griffith, Med. Bot. 98.—Loudon, Arboretum, i, 269, t. 5.—Darby, Bot. S. States, 211.—Koch, Dendrologie, i, 370.—Nat. Dispensatory, 2 ed. 891.

UMBRELLA TREE. ELK WOOD.

Southeastern Pennsylvania, southward along the Alleghany mountains to central Alabama (Prattville, *Mohr*) and northeastern Mississippi, westward through Kentucky and Tennessee; in central (Hot Springs) and southwestern Arkansas (Fulton, valley of the Red river, *Harvey*).

A small tree, rarely exceeding 12 meters in height, with a trunk 0.10 to 0.40 meter in diameter; rich, shady hillsides; most common and reaching its greatest development along the western slope of the southern Alleghany mountains.

Wood light, soft, not strong, close-grained, compact; medullary rays very numerous, thin; color, brown, the heavier sap-wood nearly white; specific gravity, 0.4487; ash, 0.20.

7.—Magnolia Fraseri, Walter,

Fl. Caroliniana, i, 59 & t.—Torrey & Gray, Fl. N. America, i, 43.—Walpers, Rep. i, 70.—Dietrich, Syn. iii, 308.—Chapman, Fl. S. States, 14.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 68.—Wood, Cl. Book, 214; Bot. & Fl. 25.—Gray, Manual N. States, 5 ed. 49.—Koch, Dendrologie, i, 372.—Vasey, Cat. Forest Trees, 6.

M. auriculata, Lamarck, Dict. iii, 673.—Bartram, Travels, 2 ed. 337.—Willdenow, Spec. ii, 1258; Enum. i, 579.—Michaux, Fl. Bor.-Am. i, 328.—Nouveau Duhamel, ii, 222.—Desfontaines, Hist. Arb. ii, 5.—Michaux f. Hist. Arb. Am. iii, 94, t. 6; N. American Sylva, 3 ed. ii, 23, t. 56.—Andrews, Bot. Rep. ix, t. 573.—Bot. Mag. t. 1206.—Cubières, Mem. Mag. & t.—Aiton, Hort. Kew. 2 ed. iii, 332.—Pursh, Fl. Am. Sept. ii, 382.—Nuttall, Genera, ii, 18; Sylva, i, 84; 2 ed. i, 98.—De Candolle, Syst. i, 454; Prodr. i, 80.—Hayne, Dend. Fl. 117.—Elliott, Sk. ii, 39.—Sprengel, Syst. ii, 642.—Audubon, Birds, t. 38.—Don, Miller's Dict. i, 83.—Eaton, Manual, 6 ed. 218.—Hooker, Jour. Bot. i, 188.—Spach, Hist. Veg. vii, 477.—Loudon, Arboretum, i, 276 & t.—Seringe, Fl. Jard. iii, 229.

M. pyramidata, Bartram, Travels, 2 ed. 338.—Pursh, Fl. Am. Sept. ii, 382.—De Candolle, Syst. i, 454; Prodr. i, 80.—Hayne, Dend. Fl. 117.—Lindley, Bot. Reg. v, t. 407.—Loddiges, Bot. Cab. t. 1092.—Rafinesque, Med. Bot. ii, 32.—Don, Miller's Dict. i, 83.—Eaton, Manual, 6 ed. 221.—Loudon, Arboretum, i, 277 & t.—Seringe, Fl. Jard. iii, 230.—Darby, Bot. S. States, 211.

M. auricularis, Salisbury, Parad. Lond. i, t. 43.—Kerner, Hort. t. 360.

LONG-LEAVED CUCUMBER TREE.

Alleghany mountains, from Virginia southward to the Chattahoochee region of western Florida, and southern Alabama (Clark county, *Mohr*), extending west to the valley of Pearl river, Mississippi.

A small tree, 8 to 12 meters in height, with a trunk 0.15 to 0.20 meter in diameter; rich woods.

Wood light, soft, not strong, close-grained, compact; medullary rays very numerous, thin; color, brown, the sap-wood nearly white; specific gravity, 0.5003; ash, 0.28.

8.—Liriodendron Tulipifera, Linnæus,

Spec. 1 ed. i, 535.—Kalm, Travels, English ed. i, 202.—Marshall, Arbustum, 78.—Wangenheim, Amer. 32, t. 13, f. 32.—Walter, Fl. Caroliniana, 158.—Schmidt, Arb. i, 48.—B. S. Barton, Coll. i, 14, 45.—Aiton, Hort. Kew. ii, 250; 2 ed. iii, 329.—Gærtner, Fruct. ii, t. 178.—Bot. Mag. t. 275.—Mœnch, Meth. 222.—Abbot, Insects Georgia, ii, t. 102.—Schkuhr, Handb. ii, 93, t. 147.—Trew, Icon. t. 10.—Willdenow, Spec. ii, 1254; Enum. i, 579.—Michaux, Fl. Bor.-Am. i, 326.—Nouveau Duhamel, iii, 62, t. 18.—Desfontaines, Hist. Arb. ii, 15.—Poiret in Lamarck, Dict. viii, 137; Ill. iii, 36, t. 491.—St. Hilaire, Pl. France, iii, t. 377.—Titford, Hort. Bot. Am. 76.—Michaux f. Hist. Arb. Am. iii, 202, t. 5; N. American Sylva, 3 ed. ii, 35, t. 61.—Eaton, Manual, 63; 6 ed. 208.—Nuttall, Genera, ii, 18; Sylva, i, 84; 2 ed. i, 100.—Barton, Prodr. Fl. Philadelph. 59; Med. Bot. i, 91, t. 8; Compend. Fl. Philadelph. ii, 18.—De Candolle, Syst. i, 462; Prodr. i, 82.—Bigelow, Med. Bot. ii, 107, t. 31.—Hayne, Dend. Fl. 115.—Elliott, Sk. ii, 40.—Torrey, Compend. Fl. N. States, 221; Fl. N. York, i, 28.—Rafinesque, Med. Bot. ii, 239.—Guimpel, Otto & Hayne, Abb. Holz. 34, t. 29.—Cobbett, Woodlands, No. 516.—Sprengel, Syst. ii, 642.—Audubon, Birds, t. 12.—Don, Miller's Dict. i, 86.—Beck, Bot. 15.—Lindley, Fl. Med. 23.—Spach, Hist. Veg. vi, 488.—Loudon, Arboretum, i, 284 & t.—Eaton & Wright, Bot. 302.—Penn. Cycl. xxv, 341.—Torrey & Gray, Fl. N. America, i, 44.—Dietrich, Syn. iii, 309.—Griffith, Med. Bot. 98, f. 58.—Emerson, Trees Massachusetts, 529; 2 ed. ii, 605 & t.—Seringe, Fl. Jard. iii, 240.—Gray, Genera, i, 64, t. 25; Manual N. States, 5 ed. 50.—Darlington, Fl. Cestrica, 3 ed. 9.—Darby, Bot. S. States, 212.—Agardh, Theor. & Syst. Pl. t. 11, f. 2.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 14.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 77.—Lemaire, Ill. Hort. 15, t. 571.—Wood, Cl. Book, 215; Bot. & Fl. 25.—Porcher, Resources S. Forests, 39.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 183.—Baillon, Hist. Pl. i, 143, f. 175–178.—Koch, Dendrologie, i, 380.—Guibourt, Hist. Drogues, 7 ed. iii, 746.—Ridgway in Am. Nat. vi, 663; Proc. U. S. Nat. Mus. 1882, 59.—Vasey, Cat. Forest Trees, 6.—Eichler, Sit. Bot. Brand. xxii, 83, f. 1–3.—Bell in Geological Rep. Canada, 1879-'80, 53c.

Tulipifera Liriodendron, Miller, Dict. No. 1.

L. procera, Salisbury, Prodr. 379.

TULIP TREE. YELLOW POPLAR. WHITE WOOD.

Southwestern Vermont, through western New England, southward to northern Florida (latitude 30°); west through New York, Ontario, and Michigan to lake Michigan, south of latitude 43° 30′, thence south to latitude 31° in the Gulf states east of the Mississippi river; through southern Illinois and southeastern Missouri to Crowley's ridge, northeastern Arkansas.

One of the largest and most valuable trees of the Atlantic forests, 30 to 60 meters in height, with a trunk 2 to 4 meters in diameter (*Ridgway*); rich woods and intervale lands, reaching its greatest development in the valley of the lower Wabash river and along the western slopes of the Alleghany mountains in Tennessee and North Carolina.

Wood light, soft, not strong, brittle, very close straight-grained, compact, easily worked; medullary rays numerous, not prominent; color, light yellow or brown, the thin sap-wood nearly white; specific gravity, 0.4230; ash, 0.23; largely manufactured into lumber and used for construction, interior finish, shingles, in boat-building, and especially in the manufacture of wooden pumps, woodenware, etc.; varieties varying slightly in color and density are recognized by lumbermen.

Liriodendrin, a stimulant tonic, with diaphoretic properties, is obtained by macerating the inner bark, especially of the root (*Jour. Philadelphia Col. Phar.* iii. 5.—*U. S. Dispensatory*, 14 ed. 556.—*Nat. Dispensatory*, 2 ed. 871).

ANONACEÆ.

9.—Asimina triloba, Dunal,

Mon. Anon. 83.—De Candolle, Syst. i, 479; Prodr. i, 87.—Elliott, Sk. ii, 42.—Guimpel, Otto & Hayne, Abb. Holz. 66, t. 53.—Hayne, Dend. Fl. 118.—Sprengel, Syst. ii, 639.—Torrey, Compend. Fl. N. States, 222; Ann. Lyc. N. York, ii, 165.—Beck, Bot. 16.—Don, Miller's Dict. i, 91.—Nuttall in Jour. Philadelphia Acad. vii, 11.—Dietrich, Syn. iii, 304.—Loudon, Arboretum, i, 293, f. 39.—Gray, Genera, i, 69, t. 26, 27; Manual N. States, 5 ed. 50.—Parry in Owen's Rep. 609.—Darlington, Fl. Cestrica, 3 ed. 9.—Darby, Bot. S. States, 212.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 15.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 94.—Lesquereux in Owen's 2d Rep. Arkansas, 347.—Maout & Decaisne, Bot. English ed. 199 & figs.—Bot. Mag. t. 5854.—Wood, Cl. Book, 215; Bot. & Fl. 26.—Porcher, Resources S. Forests, 41.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 183.—Koch, Dendrologie, ii, 383.—Young, Bot. Texas, 149.—Vasey, Cat. Forest Trees, 6.—Ridgway in Proc. U. S. Nat. Mus. 1882, 60.—Burgess in Coulter's Bot. Gazette, vii, 95.

Anona triloba, Linnæus, Spec. 1 ed. 537.—Marshall, Arbustum, 10.—Lamarck, Dict. ii, 125.—Walter, Fl. Caroliniana, 158.—B. S. Barton, Coll. i, 29.—Aiton, Hort. Kew. ii, 254; 2 ed. iii, 335.—Willdenow, Spec. ii, 1267; Enum. i, 580.—Nouveau Duhamel, ii, 83, t. 25.—Desfontaines, Hist. Arb. ii, 21.—Michaux f. Hist. Arb. Am. iii, 161, t. 9; N. American Sylva, 3 ed. ii, 33, t. 60.—Barton, Prodr. Fl. Philadelph. 59.—Schkuhr, Handb. ii, 95, t. 149.

Anona pendula, Salisbury, Prodr. 380.

Orchidocarpum arietinum, Michaux, Fl. Bor.-Am. i, 329.

Porcelia triloba, Persoon, Syn. ii, 95.—Pursh, Fl. Am. Sept. ii, 383.—Rafinesque, Fl. Ludoviciana, 92.—Barton, Compend. Fl. Philadelph. ii, 18.—Nuttall, Genera, ii, 19.—Poiret, Suppl. iv, 529.—Eaton, Manual, 6 ed. 278.—Audubon, Birds, t. 2, 162.—Eaton & Wright, Bot. 371.

Uvaria triloba, Torrey & Gray, Fl. N. America, i, 45.—Torrey, Fl. N. York, i, 30.—Caruel in Ann. Mus. Firenze, 1864, 9, t. 1, f. 1-7.—Baillon, Adansonia, viii, 333; Hist. Pl. i, 193, f. 220-228.

A. campaniflora, Spach, Hist. Veg. vii, 529.

PAPAW. CUSTARD APPLE.

Western New York (Lockport and in Monroe county); Ontario (Queenstown heights); eastern and central Pennsylvania, west to southern Michigan, southern Iowa, and eastern Kansas (Manhattan), south to middle Florida and the valley of the Sabine river, Texas.

A small tree, sometimes 12 meters in height, with a trunk rarely exceeding 0.30 meter in diameter, or often reduced to a slender shrub; rich, rather low woods, reaching its greatest development in the lower Wabash valley and in the valley of the White river, Arkansas.

Wood very light, very soft and weak, coarse-grained, spongy; layers of annual growth clearly marked by several rows of large open ducts; color, light yellow shaded with green, the sap-wood lighter; specific gravity, 0.3969; ash, 0.21.

10.—Anona laurifolia, Dunal,

Mon. Anon. 65.—De Candolle, Syst. i, 468; Prodr. i, 84.—Sprengel, Syst. ii, 641.—Lindley, Bot. Reg. xvi, t. 1328.—Schnizlein, Icon. t. 174, f. 9.—Grisebach, Fl. British West Indies, 4.—Cooper in Smithsonian Rep. 1860, 439.—Chapman, Fl. S. States, Suppl. 603.

A. glabra, Chapman in Coulter's Bot. Gazette, iii, 2 [not Linnæus].

A. species, Vasey, Cat. Forest Trees, 6.

POND APPLE.

Semi-tropical Florida, cape Malabar to bay Biscayne, on the west coast, Pease creek to the Caloosa river, and through the West Indies.

A small tree, sometimes 9 meters in height, with a trunk 0.30 meter in diameter, or toward its northern limit and on the west coast often reduced to a stout, wide-spreading shrub; common and reaching its greatest development within the United States on the low islands and shores of the Everglades in the neighborhood of bay Biscayne.

Wood light, soft, not strong, rather close-grained, compact, containing many scattered open ducts; color, light brown streaked with yellow, sap-wood lighter; specific gravity, 0.5053; ash, 4.86.

The large fruit (0.14 to 0.28 meter long) scarcely edible.

CAPPARIDACEÆ.

11.—Capparis Jamaicensis, Jacquin,

Stirp. Am. 160, t. 101.—Aiton, Hort. Kew. 2 ed. iii, 285.—De Candolle, Prodr. i, 252.—Descourtilz, Fl. Med. Antilles, v. t. 273.—Macfadyen, Fl. Jamaica, 39.—Grisebach, Fl. British West Indies, 18.—Chapman, Fl. S. States, 32.—Porcher, Resources S. Forests, 75.—Eichler in Martius, Fl. Brasil. xiii, 270, t. 64, f. 11.—Vasey, Cat. Forest Trees, 6.

C. Breynia, Linnæus, Spec. 2 ed. 721, in part.—Aiton, Hort. Kew. 2 ed. iii, 285.—De Candolle, Prodr. i, 252, in part.—Swartz, Obs. 210 [not Jacquin].—Macfadyen, Fl. Jamaica, 39.

C. cynophyllophora, Linnæus, Spec. 1 ed. 504 [not subsequent ed. *fide* Eichler, *l. c.*].—Aiton, Hort. Kew. 2 ed. iii, 285.—Macfadyen, Fl. Jamaica, 39.

C. siliquosa, Linnæus, Spec. 2 ed. 721.

C. torulosa, Swartz, Prodr. 81.—De Candolle, Prodr. i, 252.—Grisebach, Fl. British West Indies, 18.

C. uncinata, Loddiges, Cat. [not Wallich].

C. emarginata, Richard, Fl. Cuba, 78, t. 9.—Walpers, Rep. i, 201.

Semi-tropical Florida, cape Canaveral to the southern keys; in the West Indies and southward to Brazil.

A small tree, sometimes 6 meters in height, with a trunk 0.15 meter in diameter, or reduced to a low shrub; common and reaching its greatest development within the United States on Upper Metacombe and Umbrella Keys.

Wood heavy, hard, close-grained, compact, satiny, containing many evenly-distributed large open ducts; medullary rays numerous, obscure; color, yellow tinged with red, the sap-wood lighter; specific gravity, 0.6971; ash, 4.76.

CANELLACEÆ.

12.—Canella alba, Murray;

Linnæus, Syst. 14 ed. iv, 443.—Swartz, Obs. 190; Trans. Linnæan Soc. i, 96, t. 8.—Willdenow, Spec. ii, 851; Enum. i, 496.—Aiton, Hort. Kew. 2 ed. iii, 144.—Titford, Hort. Bot. Am. Suppl. 3, t. 10, f. 4.—De Candolle, Prodr. i, 563.—Hayne, Arzn. 9, t. 5.—Stevenson & Churchill, Med. Bot. ii, t. 66.—Woodville, Med. Bot. 3 ed. iv, 694, t. 237.—Lindley, Med. Bot. 116.—Carson, Med. Bot. i, 24, t. 16.—Griffith, Med. Bot. 181, f. 98.—Miers in Ann. Nat. Hist. 3 ser. i, 348; Contrib. i, 116.—Grisebach, Fl. British West Indies, 109.—Chapman, Fl. S. States, 93.—Guibourt, Hist. Drogues, 7 ed. iii, 621, f. 767.—Vasey, Cat. Forest Trees, 7.—Bentley & Trimen, Med. Pl. i, 26, t. 26.

C. Winterana, Gærtner, Fruct. i, 377, t. 77.

Wintera Canella, Linnæus, Spec. 2 ed. 636.—Poiret in Lamarck, Dict. viii, 799, t. 399.

C. laurifolia, Loddiges, Cat.—Sweet, Hort. Brit. 65.—Don, Miller's Dict. i, 680.

WHITE WOOD. CINNAMON BARK. WILD CINNAMON.

Semi-tropical Florida, on the southern keys (Elliott's Key, Key Largo to Jew Fish Key); through the West Indies.

A small tree, often 10 meters in height, with a trunk 0.22 meter in diameter; not rare.

Wood very heavy, exceedingly hard, strong, close-grained, compact; medullary rays numerous, thin; color, dark reddish-brown, the sap-wood light brown or yellow; specific gravity, 0.9893; ash, 1.75.

The pale inner bark appears in the *Pharmacopœa* under the name of *Cortex canellæ albæ*, furnishing an aromatic stimulant and tonic, occasionally employed in cases of debility of the digestive organs, or as an adjunct to more active remedies (*Miers, l. c.—Flückiger & Hanbury, Pharmacographia*, 68.—*U. S. Dispensatory*, 14 ed. 210.—*Nat. Dispensatory*, 2 ed. 337).

GUTTIFERÆ.

13.—Clusia flava, Linnæus,

Spec. 2 ed. 1495.—Willdenow, Spec. iv, 977; Enum. ii, 1043.—Aiton, Hort. Kew. 2 ed. v, 444.—Titford, Hort. Bot. Am. 105.—De Candolle, Prodr. i, 559.—Macfadyen, Fl. Jamaica, 134.—Nuttall, Sylva, ii, 111, t. 77; 2 ed. ii, 58, t. 77.—Grisebach, Fl. British West Indies, 407.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 43.—Planchon & Triana in Ann. Sci. Nat. 4 ser. xiii, 352.—Walpers, Ann. vii, 340.—Vasey, Cat. Forest Trees, 7.

C. rosea, Torrey & Gray, Fl. N. America, i, 168.

Jamaica and other West Indian islands; Key West (*Blodgett*) prior to 1840. Not detected by later explorers (*Palmer*, *Garber*, *Chapman*, *Curtiss*) of the botany of semi-tropical Florida, and probably not now growing spontaneously within the limits of the United States.

Wood not examined.

TERNSTRŒMIACEÆ.

14.—Gordonia Lasianthus, Linnæus,

Mant. i, 570.—Ellis, Phil. Trans. 60, 518, t. 11; Letters, t. 2.—L'Heritier, Stirp. Nov. 156.—Cavanilles, Diss. ii, 307, t. 161.—Walter, Fl. Caroliniana, 177.—Aiton, Hort. Kew. ii, 231; 2 ed. iv, 234.—Lamarck, Dict. ii, 770; Ill. iii, 146, t. 594, f. 1.—Swartz, Obs. 271.—Willdenow, Spec. iii, 840.—Michaux, Fl. Bor.-Am. ii, 43.—Bot. Mag. t. 668.—Nouveau Duhamel, ii, 236, t. 68.—Desfontaines, Hist. Arb. i, 484.—Persoon, Syn. ii, 259.—Michaux f. Hist. Arb. Am. iii, 131, t. 1; N. American Sylva, 3 ed. ii, 29, t. 58.—Pursh, Fl. Am. Sept. i, 451.—Nuttall, Genera, ii, 84.—De Candolle, Prodr. i, 528.—Elliott, Sk. ii, 171.—Sprengel, Syst. iii, 125.—Don, Miller's Dict. i, 573, f. 99.—Audubon, Birds, t. 168.—Reichenbach, Fl. Exot. t. 151.—Spach, Hist. Veg. iv, 79.—Loudon, Arboretum, i, 379, f. 93.—Torrey & Gray, Fl. N. America, i, 223.—Eaton, Manual, 6 ed. 161.—Eaton & Wright, Bot. 258.—Browne, Trees of America, 52.—Dietrich, Syn. iv, 862.—Gray, Genera, ii, 103, t. 140, 141; Manual N. States, 5 ed. 104.—Choisy, Mem. Ternst. & Camel. 51.—Darby, Bot. S. States, 256.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 60.—Curtis in Rep. Geological Surv. N. Carolina 1860, iii, 80.—Maout & Decaisne, English ed. 274 & figs.—Wood, Cl. Book, 274; Bot. & Fl. 65.—Baillon, Hist. Pl. iv, 230, f. 254, 255.—Vasey, Cat. Forest Trees, 7.

Hypericum Lasianthus, Linnæus, Spec. 1 ed. 783.—Hill, Veg. Syst. xv, t. 1, f. 3.

G. pyramidalis, Salisbury, Prodr. Stirp. 386.

LOBLOLLY BAY. TAN BAY.

Southern Virginia, south near the coast to cape Malabar, and cape Romano, Florida, west along the Gulf coast to the valley of the Mississippi river.

A tree 15 to 24 meters in height, with a trunk often 0.45 to 0.50 meter in diameter; low, sandy swamps.

Wood light, soft, not strong, close-grained, compact, not durable; medullary rays numerous, thin; color, light red, the sap-wood lighter; specific gravity, 0.4728; ash, 0.76; somewhat employed in cabinet-making.

The bark, rich in tannin, was once occasionally used, locally, in tanning leather (*Bartram, Travels*, 2 ed. 160).

15.—Gordonia pubescens, L'Heritier,

Stirp. Nov. 156.—Lamarck, Dict. ii, 770.—Cavanilles, Diss. ii, 308, t. 162.—Aiton, Hort. Kew. ii, 231; 2 ed. iv, 234.—Willdenow, Spec. iii, 841.—Michaux, Fl. Bor.-Am. ii, 43.—Ventenat, Jard. Malm. t. 1 (Schrader, Neues Jour. Bot. 1806, 121).—Nouveau Duhamel, ii, 237.—Kœnig & Sims, Ann. Bot. i, 171.—Desfontaines, Hist. Arb. i, 484.—Persoon, Syn. ii, 259.—Michaux f. Hist. Arb. Am. iii, 135, t. 2; N. American Sylva, 3 ed. ii, 31, t. 59.—Pursh, Fl. Am. Sept. ii, 451.—Nuttall, Genera, ii, 84.—Loiseleur, Herb. Amat. iv, t. 236.—Elliott, Sk. ii, 171.—De Candolle, Prodr. i, 528.—Sprengel, Syst. iii, 125.—Don, Miller's Dict. i, 573.—Eaton, Manual, 6 ed. 161.—Audubon, Birds, t. 185.—Spach, Hist. Veg. iv, 80.—Loudon, Arboretum, i, 380, f. 94.—Torrey & Gray, Fl. N. America, i, 223.—Eaton & Wright, Bot. 258.—Browne, Trees of America, 54.—Dietrich, Syn. iv, 862.—Gray, Genera, ii, 102, t. 141, f. 11-14, t. 142.—Choisy, Mem. Ternst. & Camel. 51.—Darby, Bot. S. States, 257.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 60.—Wood, Cl. Book, 274; Bot. & Fl. 65.—Vasey, Cat. Forest Trees, 7.—Goodale & Sprague, Wild Flowers, 193, t. 47.

Franklinia Altamaha, Marshall, Arbustum, 49.—Bartram, Travels, 2 ed. 16, 465.—Rafinesque, Atlant. Jour. 79 & f.

G. Franklini, L'Heritier, Stirp. Nov. 156.—Willdenow, Spec. iii, 841.—Nouveau Duhamel, ii, 237.—Desfontaines, Hist. Arb. i, 484.—Persoon, Syn. ii, 259.—Poiret, Suppl. ii, 816.

Michauxia sessilis, Salisbury, Prodr. Stirp. 386.

Lacathea florida, Salisbury, Parad. Lond. t. 56.—Colla, Hort. Ripul. Appx. i, 134.

FRANKLINIA.

Near Fort Barrington, on the Altamaha river, Georgia (*J. & W. Bartram, Dr. Moses Marshall*).

Careful explorations of Bartram's original locality by later botanists, especially by Mr. H. W. Ravenel, have failed to rediscover this species, which is, however, still preserved in cultivation through the original plants introduced by the Bartrams. "Florida" given as a locality by Torrey & Gray, *l. c.*, on the authority of *Herb. Schweinitz*, and followed by Chapman, *l. c.*, is probably an error (*Ravenel in Am. Naturalist*, xvi, 235).

STERCULIACEÆ.

16.—Fremontia Californica, Torrey,

Smithsonian Contrib. vi, 5, t. 2, f. 2; Proc. Am. Assoc. iv, 191; Pacific R. R. Rep. iv, 15, 71.—Newberry in Pacific R. R. Rep. vi, 68.—Walpers, Ann. iv, 319.—Gray in Jour. Boston Soc. Nat. Hist. vii, 146.—Bentham & Hooker, Genera, i, 212, 982.—Bot. Mag. t. 5591.—Lemaire, Ill. Hort. xiii, t. 496.—Belge Hort. xvii, 236, t. 13.—Carrière in Rev. Hort. 1867, 91 & t.—Koch, Dendrologie, i, 483.—Masters in London Gard. Chronicle, 1869, 610.—Seemann, Jour. Bot. vii, 297.—London Garden, 1873, 54 & t.—Planchon in Fl. des Serres, xxii, 175.—Brewer & Watson, Bot. California, i, 88; ii, 437.—Rothrock in Wheeler's Rep. vi, 41, 357.

Cheiranthodendron Californicum, Baillon, Hist. Pl. iv, 70.

SLIPPERY ELM.

California, valley of Pitt river, southward along the western foot-hills of the Sierra Nevada, and in the Santa Lucia mountains southward through the Coast ranges to the San Jacinto mountains; rare at the north, most common and reaching its greatest development on the southern sierras and the San Gabriel and San Bernardino ranges.

A small tree, 6 to 10 meters in height, the short trunk often 0.30 to 0.45 meter in diameter, or more often a tall, much branched shrub; dry, gravelly soil.

Wood heavy, hard, very close-grained, compact, satiny, containing many groups of small ducts parallel to the thin, conspicuous medullary rays, layers of annual growth obscure; color, dark brown tinged with red, the thick sap-wood lighter; specific gravity, 0.7142; ash, 1.69.

The mucilaginous inner bark used locally in poultices.

TILIACEÆ.

17.—Tilia Americana, Linnæus,

Spec. 1 ed. 514.—Marshall, Arbustum, 153.—Wangenheim, Amer. 55.—Aiton, Hort. Kew. ii, 229; 2 ed. iii, 299.—Willdenow, Spec. ii, 1162; Enum. i, 565.—Desfontaines, Hist. Arb. ii, 37.—Persoon, Syn. ii, 66.—Michaux f. Hist. Arb. Am. iii, 311, t. 1; N. American Sylva, 3 ed. iii, 81, t. 131.—Barton, Prodr. Fl. Philadelph. 58; Compend. Fl. Philadelph. ii, 6.—Eaton, Manual, 59.—James in Long's Exped. i, 69.—Watson, Dend. Brit. ii, 134, t. 134.—Torrey, Compend. Fl. N. States, 214; Fl. N. York, i, 116.—Loudon, Arboretum i, 373 & t.—Torrey & Gray, Fl. N. America, i, 239.—Bigelow, Fl. Boston. 3 ed. 227.—Emerson, Trees Massachusetts, 511; 2 ed. ii, 584 & t.—Browne, Trees of America, 47.—Gray, Genera, ii, 96, t. 136; Manual N. States, 5 ed. 103; Hall's Pl. Texas, 5.—Darlington, Fl. Cestrica, 3 ed. 38.—Darby, Bot. S. States, 262.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 59.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 79.—Lesquereux in Owen's 2d Rep. Arkansas, 352.—Wood, Cl. Book, 272; Bot. & Fl. 64.—Porcher, Resources S. Forests, 103.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 186.—Walpers, Ann. vii, 449.—Koch, Dendrologie, i, 480.—Young, Bot. Texas, 188.—Vasey, Cat. Forest Trees, 7.—Macoun in Geological Rep. Canada, 1875–'76, 191.—Sears in Bull. Essex Inst. xiii, 174.—Bell in Geological Rep. Canada, 1879–'80, 51c.—Ridgway in Proc. U. S. Nat. Mus. 1882, 61.

T. nigra, Borkhausen, Handb. d. Forstbot. ii, 1219.

T. glabra, Ventenat in Mem. Acad. Sci. iv, 9, t. 2.—Nouveau Duhamel, i, 228.—Poiret in Lamarck, Dict. vii, 681.—Pursh, Fl. Am. Sept. ii, 362.—Nuttall, Genera, ii, 3.—De Candolle, Prodr. i, 513.—Hayne, Dend. Fl. 112.—Elliott, Sk. ii, 2.—Guimpel, Otto & Hayne, Abb. Holz. 55, t. 45.—Hooker, Fl. Bor.-Am. i, 108.—Don, Miller's Dict. i, 553.—Eaton, Manual, 6 ed. 365.—Beck, Bot. 59.—Darlington, Fl. Cestrica, 2 ed. 312.—Eaton & Wright, Bot. 452.—Dietrich, Syn. iii, 237.—Richardson, Arctic Exped. 422.

T. latifolia, Salisbury, Prodr. 367.

T. Canadensis, Michaux, Fl. Bor.-Am. 306.—Persoon, Syn. ii, 66.—Poiret in Lamarck, Dict. vii, 683.

T. neglecta, Spach, Ann. Sci. Nat. 2 ser. ii, 340, t. 15; Hist. Veg. iv, 27, 29.—Walpers, Rep. i, 359.

LIME TREE. BASS WOOD. AMERICAN LINDEN. LIN. BEE TREE.

Northern New Brunswick, westward in British America to about the one hundred and second meridian, southward to Virginia and along the Alleghany mountains to Georgia and southern Alabama; extending west in the United States to eastern Dakota, eastern Nebraska, eastern Kansas, the Indian territory, and southwest to the valley of the San Antonio river, Texas.

A large tree, 20 to 24 meters in height, with a trunk 0.90 to 1.20 meter in diameter, or, exceptionally, 30 to 45 meters in height, with a trunk 0.92 to 1.84 meter in diameter (valley of the lower Wabash river, *Ridgway*); common in all northern forests, and always an indication of rich soil; toward its western and southwestern limits only along river bottoms.

Wood light, soft, not strong, very close-grained, compact, easily worked; medullary rays numerous, rather obscure; color, light brown, or often slightly tinged with red, the sap-wood hardly distinguishable; specific gravity, 0.4525; ash, 0.55; largely used in the manufacture of woodenware and cheap furniture, for the panels and bodies of carriages, the inner soles of shoes, in turnery, and the manufacture of paper-pulp (the quickly-discolored sap renders it unfit for making white paper).

The inner bark, macerated, is sometimes manufactured into coarse cordage and matting; the flowers, rich in honey, highly prized by apiarists.

Aqua tiliæ, an infusion of the flowers, buds, and leaves of the different species of *Tilia*, is used in Europe as a domestic remedy in cases of indigestion, nervousness, etc. (*Nat. Dispensatory*, 2 ed. 1429).

Var. pubescens, Loudon,

Arboretum, i, 374 & t.—Browne, Trees of America, 48.—Gray, Manual N. States, 5 ed. 103; Hall's Pl. Texas, 5.

T. Caroliniana, Miller, Dict. No. 4.—Wangenheim, Amer. 56.—Marshall, Arbustum, 154.

T. Americana, Walter, Fl. Caroliniana, 153 [not Linnæus].

T. pubescens, Aiton, Hort. Kew. ii, 229; 2 ed. iii, 299.—Willdenow, Spec. ii, 1162; Enum. i, 566.—Ventenat in Mem. Acad. Sci. iv, 10, t. 3.—Nouveau Duhamel, i, 228, t. 51.—Persoon, Syn. ii, 66.—Desfontaines, Hist. Arb. ii, 37.—Michaux f. Hist. Arb. Am. iii, 317, t. 3; N. American Sylva, 3 ed. iii, 85, t. 133.—Pursh, Fl. Am. Sept. ii, 363.—De Candolle, Prodr. i, 513.—Hayne, Dend. Fl. 112.—Elliott, Sk. ii, 3.—Watson, Dend. Brit. ii, t. 135.—Torrey, Comp. Fl. N. States, 215.—Don, Miller's Dict. i, 553.—Eaton, Manual, 6 ed. 365.—Beck, Bot. 59.—Eaton & Wright, Bot. 452.—Penn. Cycl. xxiv, 447.—Dietrich, Syn. iii, 237.—Darby, Bot. S. States, 262.—Chapman, Fl. S. States, 59.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 79.—Walpers, Ann. vii, 449.—Koch, Dendrologie, i, 479.—Vasey, Cat. Forest Trees, 7.

T. laxiflora, Michaux, Fl. Bor.-Am. i, 306.—Poiret in Lamarck, Dict. vii, 683.—Persoon, Syn. ii, 66.—Willdenow, Enum. Suppl. 38.—De Candolle, Prodr. i, 513.—Hayne, Dend. Fl. 113.—Torrey, Compend. Fl. N. States, 215.—Don, Miller's Dict. i, 553.—Eaton, Manual, 6 ed. 365.—Beck, Bot. 59.—Spach, Ann. Sci. Nat. 2 ser. ii, 343, t. 15; Hist. Veg. iv, 32.—Browne, Trees of America, 48.—Dietrich, Syn. iii, 237.

T. grata, Salisbury, Prodr. 367.

T. pubescens, var. *leptophylla*, Pursh, Fl. Am. Sept. ii, 63.

? *T. stenopetala*, Rafinesque, Fl. Ludoviciana, 92.—Robin, Voyages, iii, 484.

T. truncata, Spach, Ann. Sci. Nat. 2 ser. ii, 342; Hist. Veg. iv, 30.—Dietrich, Syn. iii, 237.

T. Americana, var. *Walteri*, Wood, Cl. Book, 272; Bot. & Fl. 64.

North Carolina to the Chattahoochee region of western Florida, usually near the coast; Houston, Texas (*E. Hall*).

A small tree, rarely exceeding 15 meters in height, with a trunk 0.30 meter in diameter; swamps or low ground; rare, or often confounded with the typical *T. Americana*.

Wood lighter, but not otherwise distinguishable from that of *T. Americana*; specific gravity 0.4074; ash, 0.65.

18.—Tilia heterophylla, Ventenat,

Mem. Acad. Sci. iv, 16, t. 5.—Nouveau Duhamel, i, 229.—Poiret in Lamarck, Dict. vii, 683.—Pursh, Fl. Am. Sept. ii, 363.—Nuttall, Genera, ii, 3; Sylva, i, 90, t. 23; 2 ed. i, 107, t. 23.—De Candolle, Prodr. i, 513.—Don, Miller's Dict. i, 553.—Eaton, Manual, 6 ed. 365.—Spach in Ann. Sci. Nat. 2 ser. ii, 345; Hist. Veg. iv, 34.—Torrey & Gray, Fl. N. America, i, 239.—Eaton & Wright, Bot. 452.—Penn. Cycl. xxiv, 447.—Walpers, Rep. i, 359.—Dietrich, Syn. iii, 237.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 60.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 79.—Wood, Cl. Book, 272; Bot. & Fl. 64.—Gray, Manual N. States, 5 ed. 103.—Vasey, Cat. Forest Trees, 7.—Nat. Dispensatory, 2 ed. 1429.—Ridgway in Proc. U. S. Nat. Mus. 1882, 61.

T. alba, Michaux f. Hist. Arb. Am. iii, 315, t. 2; N. American Sylva, 3 ed. iii, 84, t. 132 [not Waldstein & Kitaibel].—Eaton & Wright, Bot. 452.—Darby, Bot. S. States, 262.

T. laxiflora, Pursh, Fl. Am. Sept. ii, 363 [not Michaux].—Elliott, Sk. ii, 2.

T. Americana, var. *heterophylla*, Loudon, Arboretum, i, 375 & t.

T. heterophylla, var. *alba*, Wood, Cl. Book, 272; Bot. & Fl. 64.

WHITE BASS WOOD. WAHOO.

Mountains of Pennsylvania, southward along the Alleghany mountains to northern Alabama and Florida (valley of the Apalachicola river, opposite Chattahoochee, *Mohr*), west to middle Tennessee and Kentucky, southern Indiana, and southern and central Illinois (valley of the Illinois river).

A tree 15 to 20 meters in height, with a trunk 0.60 to 1.20 meter in diameter; rich woods and river bottoms, often on limestone; most common and reaching its greatest development along the western slopes of the southern Alleghany mountains and in middle Tennessee.

Wood light, soft, not strong, close-grained, compact, easily worked; medullary rays numerous, obscure; color, light brown, the sap-wood hardly distinguishable; specific gravity, 0.4253; ash, 0.62; generally confounded with that of *Tilia Americana*, and used for similar purposes.

MALPIGHIACEÆ.

19.—Byrsonima lucida, HBK.

Nov. Gen. & Spec. v, 147.—De Candolle, Prodr. i, 580.—Jussieu, Mon. Malpig. ii, 40.—Walpers, Rep. v, 168.—Richard, Fl. Cuba, 115, t. 28[a].—Grisebach, Fl. British West Indies, 115.—Chapman, Fl. S. States, 82.

Malpighia lucida, Swartz, Fl. Ind. Occ. ii, 852.

TALLOWBERRY. GLAMBERRY.

Semi-tropical Florida, on the southern keys (Boca Chica, No-Name Key, etc.); through the West Indies.

A small tree, sometimes 6 to 8 meters in height, with a trunk 0.15 to 0.25 meter in diameter, or often branching from the ground, and frutescent in habit.

Wood light, soft, weak, close-grained, compact; medullary rays numerous, thin; color, light red, the sap-wood a little lighter; specific gravity, 0.5888; ash, 2.46.

Fruit edible.

ZYGOPHYLLACEÆ.

20.—Guaiacum sanctum, Linnæus,

Spec. 1 ed. 382.—De Candolle, Prodr. i, 707.—Nuttall, Sylva, iii, 16, t. 86; 2 ed. ii, 86, t. 86.—Gray, Genera, ii, 123, t. 148.—Schnizlein, Icon. t. 253, f. 21.—Cooper in Smithsonian Rep. 1858, 264.—Grisebach, Fl. British West Indies, 134.—Chapman, Fl. S. States, 64.—Wood, Bot. & Fl. 67.—Vasey, Cat. Forest Trees, 7.

G. verticale, Richard, Fl. Cuba, 321.

LIGNUM-VITÆ.

Semi-tropical Florida, Upper Metacombe and Lignum-Vitæ Keys, common; Lower Metacombe and Umbrella Keys, rare; in the Bahamas, St. Domingo, Cuba, Porto Rico, etc.

A low, gnarled tree, not exceeding, within the limits of the United States, 8 meters in height, with a trunk sometimes 0.30 meter in diameter.

Wood exceedingly heavy, very hard, strong, brittle, close-grained, compact, difficult to work, splitting irregularly, containing many evenly-distributed resinous ducts; medullary rays numerous, obscure; color, rich yellow-brown, varying in older specimens to almost black, the sap-wood light yellow; specific gravity, 1.1432; ash, 0.82; used in turnery and for the sheaves of ships' blocks, for which it is preferred to other woods.

Lignum Guaiaci, *Guaiacum wood*, the heart of this and the allied *G. officinale*, Linnæus, formerly largely used in the treatment of syphilis, is now only retained in the *Materia Medica* as an ingredient in the compound decoction of sarsaparilla.

Guaiac, the resinous gum obtained from these species, is a stimulating diaphoretic and alterative, or in large doses cathartic, and is still employed in cases of chronic rheumatism, gout, etc. (*Flückiger & Hanbury*, *Pharmacographia*, 92.—*U. S. Dispensatory*, 14 ed. 456.—*Nat. Dispensatory*, 2 ed. 696.—*Guibourt*, *Hist. Drogues*, 7 ed. iii, 551.—*Berg*, *Pharm. Anat. Atl.* 53, t. 27).

21.—Porliera angustifolia, Gray,

Smithsonian Contrib. iii, 28.—Torrey, Bot. Mex. Boundary Survey, 42.

Guaiacum angustifolium, Engelmann, Wislizenus' Rep. 29.—Gray in Jour. Boston Soc. Nat. Hist. vi, 158; Genera, ii, 123, t. 149.—Walpers, Ann. iii, 840.—Watson in Proc. Am. Acad. xvii, 334.

Western Texas, valley of the Colorado river to the Rio Grande (Austin, Matagorda bay, New Braunfels, San Antonio, Brownsville, Fort McIntosh), extending west to the Rio Pecos (*Havard*); in northern Mexico.

A small tree, 8 to 10 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or toward its eastern, northern, and western limits reduced to a low shrub; reaching its greatest development in the United States on the calcareous hillsides bordering the valley of the Guadalupe river.

Wood exceedingly heavy, very hard, close-grained, compact, the open ducts smaller and less regularly distributed than in *Guaiacum*; medullary rays very thin, numerous; color, rich dark brown, turning green with exposure, the sap-wood bright yellow; specific gravity, 1.1101; ash, 0.51; probably possessing medicinal properties similar to those of lignum-vitæ.

RUTACEÆ.

22.—Xanthoxylum Americanum, Miller,

Dict. No. 2.—Du Roi, Obs. Bot. 57.—Wangenheim, Amer. 116.—Torrey & Gray, Fl. N. America, i, 214.—Torrey in Nicollet's Rep. 147.—Emerson, Trees Massachusetts, 509; 2 ed. ii, 581.—Gray, Genera, ii, 148, t. 156; Pacific R. R. Rep. xii², 41; Manual N. States, 5 ed. 110.—Richardson, Arctic Exped. 423.—Parry in Owen's Rep. 610.—Darby, Bot. S. States, 253.—Cooper in Smithsonian Rep. 1858, 250.—Wood, Cl. Book, 282; Bot. & Fl. 70.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 187.—Koch, Dendrologie, i, 563.—Vasey, Cat. Forest Trees, 8.

X. Clava-Herculis, Lamarck, Dict. ii, 38; Ill. t. 811, f. 3 [not Linnæus].—Aiton, Hort. Kew. iii, 399.—Mœnch, Meth. 340.

X. fraxinifolium, Marshall, Arbustum, 167.—B. S. Barton, Coll. i, 52; ii, 38.

X. fraxineum, Willdenow, Spec. iv, 757; Enum. 1013; Berl. Baumz. 413.—Persoon, Syn. ii, 615.—Desfontaines, Hist. Arb. ii, 343.—Aiton, Hort. Kew. 2 ed. v, 383.—Pursh, Fl. Am. Sept. i, 210.—Nuttall, Genera, ii, 236.—Nouveau Duhamel, vii, 3, t. 2.—Hayne, Dend. Fl. 197.—Bigelow, Med. Bot. iii, 156, t. 59; Fl. Boston. 3 ed. 405.—De Candolle, Prodr. i, 726.—Sprengel, Syst. i, 945.—Torrey, Compend. Fl. N. States, 373.—Rafinesque, Med. Bot. ii, 113, f. 96.—Don, Miller's Dict. i, 802.—Eaton, Manual, 6 ed. 399.—Beck, Bot. 70.—Spach, Hist. Veg. ii, 364.—Lindley, Fl. Med. 216.—Loudon, Arboretum, i, 488, f. 158 & t.—Dietrich, Syn. ii, 1000.—Hooker, Fl. Bor.-Am. i, 118.—Eaton & Wright, Bot. 482.—Nees, Pl. Wied. 5.—Griffith, Med. Bot. 195, f. 103.—Browne, Trees of America, 150.—Agardh, Theor. & Syst. Pl. t. 19, f. 9.—Schnizlein, Icon. t. 250, f. 1–14.—Maout & Decaisne, Bot. English ed. 324 & figs.—Baillon, Hist. Pl. iv, 398, f. 433–438.

X. mite, Willdenow, Enum. 1013.—Poiret, Suppl. v, 622.—De Candolle, Prodr. i, 727.—Don, Miller's Dict. i, 802.—Loudon, Arboretum, i, 489.

X. ramiflorum, Michaux, Fl. Bor.-Am. ii, 235.

X. tricarpum, Hooker, Fl. Bor.-Am. i, 118 [not Michaux].

Thylax fraxineum, Rafinesque, Med. Bot. ii, 114.

PRICKLY ASH. TOOTHACHE TREE.

Eastern Massachusetts, west to northern Minnesota, eastern Nebraska, and eastern Kansas, south to the mountains of Virginia and northern Missouri.

A small tree, not often 7 meters in height, with a trunk 0.15 to 0.20 meter in diameter; or, reduced to a shrub, 1.50 to 1.80 meter in height; common and reaching its greatest development in the region of the great lakes; rocky hillsides, or more often along streams and rich river bottoms.

Wood light, soft, coarse-grained; medullary rays numerous, thin; color, light brown, the sap-wood lighter; specific gravity, 0.5654; ash, 0.57.

The bark of *Xanthoxylum*, an active stimulant, is used in decoction to produce diaphoresis in cases of rheumatism, syphilis, etc., and as a popular remedy for toothache (*U. S. Dispensatory*, 14 ed. 940.—*Bentley in London Pharm. Jour.* 2 ser. v, 399.—*Guibourt, Hist. Drogues*, 7 ed. iii, 562.—*Nat. Dispensatory*, 2 ed. 1535).

23.—Xanthoxylum Clava-Herculis, Linnæus,

Spec. 1 ed. 270, in part.—B. S. Barton, Coll. i, 25, 52; ii, 38.—Willdenow, Spec. iv, 754, in part.—Aiton, Hort. Kew. 2 ed. v, 382.—Elliott, Sk. ii, 690.—Planchon & Triana in Ann. Sci. Nat. 5 ser. xiv, 312.

X. fraxinifolium, Walter, Fl. Caroliniana, 243 [not Marshall].

Fagara fraxinifolia, Lamarck, Ill. i, 334.

X. Carolinianum, Lamarck, Dict. ii, 39; Ill. 403, t. 811, f. 1.—Torrey & Gray, Fl. N. America, i, 214.—Engelmann & Gray in Jour. Boston Soc. Nat. Hist. v, 213.—Gray, Genera, ii, 148, t. 156, f. 13, 14; Manual N. States, 5 ed. 110; Hall's Pl. Texas, 5.—Scheele in Rœmer, Texas, 432.—Nuttall, Sylva, iii, 8, t. 83; 2 ed. ii, 78, t. 83.—Darby, Bot. S. States, 253.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 66.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 103.—Wood, Cl. Book, 282; Bot. & Fl. 70.—Young, Bot. Texas, 194.—Vasey, Cat. Forest Trees, 8.

X. aromaticum, Willdenow, Spec. iv, 755 (excl. syn.).—Jacquin f. Eclogæ, i, 103, t. 70.

X. tricarpum, Michaux, Fl. Bor.-Am. ii, 235.—Poiret, Suppl. ii, 294.—Aiton, Hort. Kew. 2 ed. v, 383.—Pursh, Fl. Am. Sept. i, 210.—De Candolle, Prodr. i, 726.—Elliott, Sk. ii, 690.—A. de Jussieu in Mem. Mus. xii, t. 25, f. 38.—Sprengel, Syst. i, 945.—Don, Miller's Dict. i, 803.—Spach, Hist. Veg. ii, 365.—Loudon, Arboretum, i, 488.—Eaton, Manual, 6 ed. 399.—Eaton & Wright, Bot. 482.—Dietrich, Syn. ii, 1000.

Kampmania fraxinifolia, Rafinesque, Med. Rep. v, 354.

Pseudopetalon glandulosum, Rafinesque, Fl. Ludoviciana, 108; Med. Bot. ii, 114.

Pseudopetalon tricarpum, Rafinesque, Fl. Ludoviciana, 108; Med. Bot. ii, 114.

X. Catesbianum, Rafinesque, Med. Bot. ii, 114.

TOOTHACHE TREE. PRICKLY ASH. SEA ASH. PEPPER WOOD. WILD ORANGE.

Southern Virginia, southward near the coast to bay Biscayne and Tampa bay, Florida, westward through the Gulf states to northwestern Louisiana, southern Arkansas (south of the Arkansas river), and the valley of the Brazos river, Texas.

A small tree, rarely 12 to 14 meters in height, with a trunk 0.30 meter in diameter, of very rapid growth; usually along streams and low, rich river bottoms, reaching its greatest development in southern Arkansas, Louisiana, and eastern Texas.

A form with trifoliate leaves is—

X. macrophyllum, Nuttall, Sylva, iii, 10; 2 ed. ii, 80.—Lesquereux in Owen's 2d Rep. Arkansas, 353.

X. Clava-Herculis, var. Watson in Proc. Am. Acad. xvii, 335.

Wood light, hard, not strong, soft, coarse-grained, not durable, containing many scattered open ducts; medullary rays numerous, thin; color, light brown, the sap-wood lighter; specific gravity, 0.5056; ash, 0.82.

X. Clava-Herculis probably possesses similar medicinal properties to those of the last species (*Nat. Dispensatory* 2 ed. 1535).

Var. fruticosum, Gray,

Smithsonian Contrib. iii, 30.—Torrey & Gray in Pacific R. R. Rep. ii, 161.—Torrey, Bot. Mex. Boundary Survey, 43.—Chapman, Fl. S. States, 66?—Wood, Bot. & Fl. 71.

X. hirsutum, Buckley in Proc. Philadelphia Acad. 1861, 450; 1870, 136 (see Gray in same, 1862, 162).—Young, Bot. Texas, 195.

Western Texas, Corpus Christi (*Buckley*), mouth of the Colorado river (*Mohr*), near Austin, and west to Devil's river and Eagle pass; Florida (?) (*Chapman l. c.*).

A low shrub, or on the Texas coast a small tree, 6 to 8 meters in height, with a trunk 0.20 to 0.30 meter in diameter.

Wood light, soft, close-grained, compact; medullary rays numerous, thin; color, light brown, the sap-wood yellow; specific gravity, 0.5967; ash, 0.76.

24.—Xanthoxylum Caribæum, Lamarck,

Dict. ii, 40.—Gærtner, Fruct. i, 333, t. 68, f. 8.—Descourtilz, Fl. Med. Antilles, ii, 58.—Planchon & Triana in Ann. Sci. Nat. 5 ser. xiv, 315.—Guibourt, Hist. Drogues, 7 ed. iii, 562.

X. Clava-Herculis, Linnæus, Spec. 1 ed. 270, in part.—De Candolle, Prodr. i, 727.—Macfadyen, Fl. Jamaica, 194.—Grisebach, Fl. British West Indies, 138.

X. lanceolatum, Poiret, Suppl. ii, 293.—De Candolle, Prodr. i, 727.

X. Floridanum, Nuttall, Sylva, iii, 14, t. 85; 2 ed. ii, 85, t. 85.—Chapman, Fl. S. States, 66.—Wood, Bot. & Fl. 70.—Young, Bot. Texas, 194.—Vasey, Cat. Forest Trees, 8.

SATIN WOOD.

Semi-tropical Florida, south Bahia Honda and Boca Chica Keys; in the West Indies.

A small tree, 6 to 10 meters in height, with a trunk 0.30 to 0.40 meter in diameter.

Wood very heavy, exceedingly hard, not strong, brittle, fine-grained, compact, satiny, susceptible of a beautiful polish; medullary rays numerous, thin, conspicuous; color, light orange, the sap-wood lighter; specific gravity, 0.9002; ash, 2.02.

25.—Xanthoxylum Pterota, HBK.

Nov. Gen. & Spec. vi, 3.—Kunth, Syn. iii, 325.—De Candolle, Prodr. i, 725.—Torrey & Gray, Fl. N. America, i, 680.—Macfadyen, Fl. Jamaica, 190.—Nuttall, Sylva, iii, 11, t. 84; 2 ed. ii, 81, t. 84.—Seemann, Bot. Herald, 275.—Torrey, Bot. Mex. Boundary Survey, 43.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 66.—Young, Bot. Texas, 195.—Planchon & Triana in Ann. Sci. Nat. 5 ser. xiv, 311.—Engler in Martius, Fl. Brasil. xii², 154.—Vasey, Cat. Forest Trees, 8.—Hemsley, Bot. Am.-Cent. i, 169.—Watson in Proc. Am. Acad. xvii, 335.

Fagara Pterota, Linnæus, Amœn, v, 393, in part.—Lamarck, Dict. ii, 444; Ill. i, 335, t. 84.—Willdenow, Spec. i, 666.—Aiton, Hort. Kew. 2 ed. i, 263.—Titford, Hort. Bot. Am. 40.—Turpin, Dict. Sci. Nat. xvi, 107, t. 127.

Fagara lentiscifolia, Willdenow, Enum. i, 166.—Grisebach, Fl. British West Indies, 137.

WILD LIME.

Semi-tropical Florida, Mosquito inlet to the southern keys, on the west coast from about latitude 29° to cape Sable; southwestern Texas, and southward through Mexico to Brazil.

A small tree, sometimes 8 meters in height, with a trunk rarely exceeding 0.15 meter in diameter, or often reduced to a slender shrub; in Florida common, and reaching its greatest development on the keys of the west coast; in Texas not common, but widely distributed as a small shrub, or on the shores of Matagorda bay, west of the Nueces river, and in the valley of the Rio Grande a low tree.

Wood heavy, hard, close-grained, compact; medullary rays thin, numerous; color, brown tinged with red, the sap-wood yellow; specific gravity, 0.7444; ash, 0.78.

26.—Ptelia trifoliata, Linnæus,

Spec. 1 ed. 118.—Medicus, Bot. Beobacht. 215.—Marshall, Arbustum, 115.—Walter, Fl. Caroliniana, 88.—Aiton, Hort. Kew. i, 162; 2 ed. i, 264.—Lamarck, Ill. i, 336, t. 84.—Mœnch, Meth. 55.—Willdenow, Spec. i, 670; Enum. i, 116.—Nouveau Duhamel, i, 252, t. 57.—Michaux, Fl. Bor. Am. i, 99.—Schkuhr, Handb. 83, t. 83.—Poiret in Lamarck, Dict. v, 706.—Persoon, Syn. i, 145.—Desfontaines, Hist. Arb. ii, 343.—Robin, Voyages, iii, 509.—Pursh, Fl. Am. Sept. i, 107.—Nuttall, Genera, i, 104.—Guimpel, Otto & Hayne, Abb. Holz. 94, t. 74.—Hayne, Dend. Fl. 8.—Elliott, Sk. i, 201.—Rœmer & Schultes, Syst. iii, 291.—Torrey, Fl. U. S. 189; Compend. Fl. N. States, 86.—Fl. N. York, i, 133; Pacific R. R. Rep. iv, 73; Bot. Mex. Boundary Survey, 43.—De Candolle, Prodr. ii, 82.—Sprengel, Syst. i, 441.—Turpin, Dict. Sci. Nat. xliv, 2, t. 128.—A. de Jussieu in Mem. Mus. xii, t. 26, f. 42.—Beck in Am. Jour. Sci. 1 ser. x, 264; Bot. 71.—Don, Miller's Dict. i, 806.—Spach, Hist. Veg. ii, 369.—Hooker, Jour. Bot. i, 202.—Lindley, Fl. Med. 215.—Loudon, Arboretum, i, 489 & t.—Eaton, Manual, 6 ed. 288.—Torrey & Gray, Fl. N. America, i, 215.—Eaton & Wright, Bot. 379.—Dietrich, Syn. i, 497.—Browne, Trees of America, 153.—Scheele in Rœmer, Texas, 432.—Gray, Genera, ii, 150, t. 157; Manual N. States, 5 ed. 110.—Richardson, Arctic Exped. 423.—Parry in Owen's Rep. 610.—Agardh, Theor. & Syst. Pl. t. 19, f. 7, 8.—Cooper in Smithsonian Rep. 1858, 250.—Darby, Bot. S. States, 254.—Chapman, Fl. S. States, 66.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 107.—Lesquereux in Owen's 2d Rep. Arkansas, 353.—Wood, Cl. Book, 283; Bot. & Fl. 71.—Schnizlein, Icon. t. 250, f. 15-26.—Young, Bot. Texas, 195.—Baillon, Hist. Pl. iv, 395, f. 445, 446.—Koch, Dendrologie, i, 566.—Vasey, Cat. Forest Trees, 8.—Hemsley, Bot. Am.-Cent. i, 171.—Burgess in Coulter's Bot. Gazette, vii, 95.

Amyris elemifera, Linnæus, Spec. 2 ed. 295.—St. Hilaire, Fam. Nat. i, 253.

P. viticifolia, Salisbury, Prodr. 68.

HOP TREE. SHRUBBY TREFOIL. WAFER ASH.

Ontario and New York (banks of the Niagara river), Pennsylvania southward to northern Florida, west to Minnesota and the headwaters of the Canadian river; through western Texas to the valley of the Mimbres river, New Mexico (*Bigelow*), and southward into northern Mexico.

A small tree, sometimes 4 to 6 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or more often reduced to a slender shrub; shady, rocky hillsides.

A variety with more or less pubescent leaves, not rare on the south Atlantic coast, and the common form of western Texas, is—

var. **mollis**, Torrey & Gray, Fl. N. America, i, 680.—Engelmann & Gray in Jour. Boston Soc. Nat. Hist. v, 213.—Torrey in Marcey's Rep. 282.—Gray in Smithsonian Contrib. iii, 31; Hall's Pl. Texas, 5.—Wood, Bot. & Fl. 71.—Watson in Proc. Am. Acad. xvii, 335.

P. mollis, Curtis in Am. Jour. Sci. 2 ser. vii, 406; Rep. Geological Surv. N. Carolina, 1860, iii, 107.—Walpers, Ann. ii, 259.—Chapman, Fl. S. States, 67.—Young, Bot. Texas, 196.

Wood heavy, hard, close-grained, compact, satiny, the annual growths clearly marked by two or three rows of open ducts; medullary rays few, thin; color, yellow-brown, the sap-wood hardly distinguishable; specific gravity, 0.8319; ash, 0.30.

The bark of the root possesses tonic properties and is employed by herbalists in the form of tinctures and fluid extracts in cases of dyspepsia, debility, etc. (*Am. Jour. Pharm.* 1862, 198; 1867, 337.—*U. S. Dispensatory*, 14 ed. 1740.—*Nat. Dispensatory*, 2 ed. 1179); the bitter fruit is occasionally used domestically as a substitute for hops.

27.—Canotia holocantha, Torrey,

Pacific R. R. Rep. iv, 68.—Gray in Ives' Rep. 15; Proc. Am. Acad. xii, 159.—Baillon, Adansonia, x, 18; Hist. Veg. vi, 7, 42.—Brewer & Watson, Bot. California, i, 190.—Rothrock in Wheeler's Rep. 24, 81, t. 1.—Maximowicz in Act. Hort. St. Petersburg v, 256.—Rusby in Bull. Torrey Bot. Club, ix, 106.

Arizona, White Mountain region, valley of the Gila river (*Rothrock*), valley of Bill Williams Fork (*Bigelow*).

A small tree, 6 to 8 meters in height, with a trunk sometimes 0.30 meter in diameter, or often a large shrub; dry, rocky *mesas*. Wood heavy, hard, close-grained, compact; medullary rays numerous, not prominent; color light brown, the sap-wood lighter; specific gravity, 0.6885; ash, 5.33.

SIMARUBEÆ.

28.—Simaruba glauca, De Candolle,

Diss. in Ann. Mus. xvii, 323; Prodr. i, 733.—Humboldt, Bonpland & Kunth, Nov. Gen. et Spec. vi, 16.—Descourtilz, Fl. Med. Antilles, i, 66, t. 14.—Planchon in London Jour. Bot. v, 567.—Gray, Genera, ii, 152.—Nuttall, Sylva, iii, 20, t. 87; 2 ed. ii, 88, t. 87.—Cooper in Smithsonian Rep. 1858, 264.—Grisebach, Fl. British West Indies, 139.—Chapman, Fl. S. States, 67.—Wood, Bot. & Fl. 72.—Planchon & Triana in Ann. Sci. Nat. 5 ser. xv, 357.—Engler in Martius, Fl. Brasil. xii², 223.—Vasey, Cat. Forest Trees, 8.—Hemsley, Bot. Am.-Cent. i, 173.

Quassia Simaruba, Linnæus, Suppl. 234.—Wright, Trans. Edinburgh Soc. ii, 73, t. 1, 2; Bot. & Med. Account of *Q. Simaruba*.—Gærtner, Fruct. i, 340, t. 70.—Lamarck, Ill. ii, 478, t. 343, f. 2.—Willdenow, Spec. ii, 568.—Aiton, Hort. Kew. 2 ed. iii, 42.—Descourtilz, Fl. Med. Antilles, i, 23, t. 5.

Quassia dioica, Bergius, Mat. Med. 355.

S. amara, Aublet, Guian. t. 331.—Hayne, Arzn. iv, t. 15.—Schnizlein, Icon. t. 249, f. 1-6.

S. medicinalis, Endlicher, Medz. Pf. 525.—Berg, Handb. i, 373.—Berg & Schmidt, Off. Gew. ii, t. 13.

PARADISE TREE.

Semi-tropical Florida, cape Canaveral to the southern keys; through the West Indies to Brazil.

A tree sometimes 15 meters in height, with a trunk 0.60 meter in diameter; within the United States not common, and reaching its greatest development on the shores of bay Biscayne.

Wood light, soft, not strong, coarse-grained, containing many large scattered open ducts; medullary rays few, thin; color, light brown, the sap-wood a little darker; specific gravity, 0.4136; ash, 0.93.

The bark of this species has been occasionally used as a substitute for that of *S. officinalis, DC.* as an aromatic, bitter tonic (*U. S. Dispensatory*, 14 ed. 838.—*Nat. Dispensatory*, 2 ed. 1294).

BURSERACEÆ.

29.—Bursera gummifera, Jacquin,

Am. Pict. t. 65.—Linnæus, Spec. 2 ed. 741.—Lamarck, Ill. ii, 392, t. 256.—Willdenow, Spec. iv, 1119.—Aiton, Hort. Kew. 2 ed. v, 481.—Titford, Hort. Bot. Am. 107.—De Candolle, Prodr. ii, 78.—Descourtilz, Fl. Med. Antilles, ii, t. 97.—Spach, Hist. Veg. ii, 239.—Macfadyen, Fl. Jamaica, 229.—Nuttall, Sylva, ii, 117, t. 79; 2 ed. ii, 64, t. 79.—Richard, Fl. Cuba, 390.—Browne, Trees of America, 189.—Grisebach, Fl. British West Indies, 173.—Cooper in Smithsonian Rep. 1858, 264; 1860, 440.—Chapman, Fl. S. States, 68.—Wood, Bot. & Fl. 72.—Planchon & Triana in Ann. Sci. Nat. 5 ser. xv, 302.—Vasey, Cat. Forest Trees, 8.—Hemsley, Bot. Am.-Cent. i, 177.—Engler in De Candolle, Suites, iv, 39.

B. acuminata, Willdenow, Spec. iv, 1120.—De Candolle, Prodr. ii, 78.

Elaphrium integerrimum, Tulasne in Ann. Sci. Nat. 3 ser. vi, 369. (*Fide* Engler, *l. c.*)

GUM ELEMI. GUMBO LIMBO. WEST-INDIAN BIRCH.

Semi-tropical Florida, cape Canaveral to the southern keys, west coast Caloosa river and Caximbas bay; through the West Indies.

A tree often 18 meters in height, with a trunk 0.50 to 0.70 meter in diameter; one of the largest and most common trees of southern Florida, of very rapid growth and decay.

Wood very light, exceedingly soft and weak, spongy, containing many scattered open ducts; medullary rays numerous, thin; color, light brown or gray, quickly discoloring with decay; specific gravity, 0.3003; ash, 2.04; used in making live-fences, pieces of the trunk when planted in the coral rock of the keys throwing out roots and growing rapidly.

The aromatic resin obtained from this species was formerly somewhat used in various forms, under the name of *Caranna*, as a remedy for gout (*Watts, Chem. Dict.* i, 749.—*Guibourt, Hist. Drogues*, 7 ed. iii, 525, f. 749); and in the West Indies is manufactured into a valuable varnish. An infusion of the leaves is occasionally used as a domestic substitute for tea.

30.—Amyris sylvatica, Jacquin,

Am. Pict. t. 108.—Willdenow, Spec. ii, 333.—Aiton, Hort. Kew. 2 ed. ii, 351.—De Candolle, Prodr. ii, 81.—Dietrich, Syn. ii, 1271.—Macfadyen, Fl. Jamaica, 231.—Richard, Fl. Cuba, 393.—Grisebach, Fl. British West Indies, 174.—Planchon & Triana in Ann. Sci. Nat. 5 ser. xv, 321.—Vasey, Cat. Forest Trees, 8.

Toxicodendron arborescens, Miller, Dict. No. 9.

A. dyatripa, Sprengel, Neue Entdeck. iii, 48.—De Candolle, Prodr. ii, 81.

Rhus arborescens, De Candolle, Prodr. ii, 73.

A. Plumieri, De Candolle, Prodr. ii, 81.

A. Floridana, Nuttall in Am. Jour. Sci. v, 294; Sylva ii, 114, t. 78; 2 ed. ii, 61, t. 78.—De Candolle, Prodr. ii, 81.—Torrey & Gray, Fl. N. America, i, 221.—Eaton, Manual, 6 ed. 16.—Eaton & Wright, Bot. 123.—Loudon, Arboretum, ii, 561.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 68.—Wood, Bot. & Fl. 72.—Vasey, Cat. Forest Trees, 8.

A. cymosa, Reichenbach in Sieb. Pl. Trin. No. 29?.

A. maritima, Richard, Fl. Cuba, 392 [not Jacquin].

TORCH WOOD.

Semi-tropical Florida, Mosquito inlet to the southern keys; in the West Indies.

A small tree sometimes 7 meters in height, with a trunk 0.20 to 0.25 meter in diameter; common.

Wood very heavy, exceedingly hard and strong, close-grained, compact, resinous, exceedingly durable, susceptible of a beautiful polish; medullary rays obscure; color, light orange, the sap-wood lighter; specific gravity, 1.0459; ash, 0.59.

MELIACEÆ.

31.—Swietenia Mahogoni, Linnæus,

Spec. 2 ed. 548.—Jacquin, Stirp. Am. t. 127.—Cavanilles, Diss. ii, 365, t. 209.—Gærtner, Fruct. ii, 89, t. 96.—Lamarck, Dict. iii, 678.—Willdenow, Spec. ii, 557.—Aiton, Hort. Kew. 2 ed. ii, 338.—Titford, Hort. Bot. Am. 64.—Descourtilz, Fl. Med. Antilles, ii, 125, t., 99.—De Candolle, Prodr. i, 625.—Turpin in Dict. Sci. Nat. Atlas, t. 170.—Tussac, Fl. Antilles, iv, t. 23.—Hayne, Arzn. i, t. 19.—Hooker, Bot. Misc. i, 21, t. 16, 17.—A. de Jussieu in Mem. Mus. xix, 248, t. 11.—Don, Miller's Dict. i, 687, f. 116.—Woodville, Med. Bot. 3 ed. iii, 620, t. 220.—Spach, Hist. Veg. iii, 164, t. 21.—Lindley, Fl. Med. 155.—Macfadyen, Fl. Jamaica, 175.—Torrey & Gray, Fl. N. America, i, 242.—Eaton, Manual, 6 ed. 360.—Eaton & Wright, Bot. 447.—Walpers, Rep. i, 436.—Nuttall, Sylva, ii, 98, t. 75; 2 ed. ii, 46, t. 75.—Richard, Fl. Cuba, 304.—Schnizlein, Icon. t. 226, f. 1.—Cooper in Smithsonian Rep. 1858, 264.—Darby, Bot. S. States, 263.—Chapman, Fl. S. States, 62.—Grisebach, Fl. British West Indies, 131.—Wood, Bot. & Fl. 66.—Baillon, Hist. Pl. v, 478, f. 472–476.—Guibourt, Hist. Drogues, 7 ed. iii, 596.—Tippel & Bollevar, Ausland. Cult. Pfl., Atlas, i, t. 2, f. 1.—C. De Candolle, Suites, i, 723.—Hemsley, Bot. Am.-Cent. i, 183.

S. Senegalensis, Desrousseaux in Lamarck, Dict. iii, 678.

Cedrus Mahogoni, Miller, Dict. No. 2.

MAHOGANY. MADEIRA.

Semi-tropical Florida, on the southern keys (Key Largo, Elliott's Key); through the West Indies, and in Central America.

A large tree, on the Florida keys rarely exceeding 15 meters in height, with a trunk sometimes 0.90 meter in diameter.

Wood heavy, exceedingly hard, very strong, brittle, very close-grained, compact, very durable, susceptible of a high polish; medullary rays numerous, obscure; color, rich reddish-brown, turning darker with age, the thin sap-wood yellow; specific gravity, 0.7282; ash, 1.09; varying greatly in quality in different regions; largely used and preferred to all other woods for cabinet-making of all sorts, interior finish, etc.; formerly somewhat employed in ship-building.

OLACINEÆ.

32.—Ximenia Americana, Linnæus,

Spec. 1 ed. Appx. 1193.—Bartram, Travels, 2 ed. 112.—Lamarck, Ill. ii, 435, t. 297.—Willdenow, Spec. ii, 338.—Aiton, Hort. Kew. 2 ed. ii, 352.—De Candolle, Prodr. i, 533.—Nuttall, Sylva, i, 124, t. 36; 2 ed. i, 138, t. 36.—Schnizlein, Icon. t. 223, f. 1-9, 30, 31.—Cambessedes in St. Hilaire, Fl. Brasil. i, 341.—Wight & Walker-Arnott, Prodr. Fl. Penins. Or. i, 89.—Walpers, Rep. i, 377; Ann. vi, 565.—Richard, Fl. Cuba, 304.—Cooper in Smithsonian Rep. 1858, 264.—Grisebach, Fl. British West Indies, 310.—Baillon, Adansonia, ii, t. 9, f. 5, 6.—Chapman, Fl. S. States, 61.—Engler in Martius, Fl. Brasil. xii, 9, t. 2, f. 1.—Vasey, Cat. Forest Trees, 8.—Hemsley, Bot. Am.-Cent. i, 185.

Heymassoli spinosa, Aublet, Guian. i, 324, t. 125.—Lamarck, Ill. ii, 435.

X. multiflora, Jacquin, Stirp. Am. 106, t. 177, f. 31.—Lamarck, Ill. ii, 435, t. 297, f. 1, 2.—Spach, Hist. Veg. xiii, 264.

X. montana, Macfadyen, Fl. Jamaica, i, 121.

WILD LIME. TALLOW NUT. HOG PLUM. MOUNTAIN PLUM.

Florida, east coast from the Saint John's river to the southern keys, west coast Caloosa river to Caximbas bay; through the West Indies to Brazil, and on the coast of the Indian peninsula (introduced?, *A. De Candolle, Geog. Bot.* ii, 1027).

A small, low, wide-spreading tree, rarely exceeding 4 meters in height, with a trunk 0.15 meter in diameter, or in pine-barren soil and toward its northern limits reduced to a low shrub; common and reaching its greatest development in Florida on the west coast.

Wood very heavy, tough, hard, close-grained, compact, containing numerous regularly-distributed open ducts; medullary rays few, thin; color, brown, tinged with red, the sap-wood lighter; specific gravity, 0.9196; ash, 0.73.

Hydrocyanic acid has been obtained from the edible plum-shaped fruit (*Flückiger & Hanbury, Pharmacographia*, 222).

ILICINEÆ.

33.—Ilex opaca, Aiton,

Hort. Kew. i, 169; 2 ed. i, 277.—Willdenow, Spec. i, 708; Enum. 172; Berl. Baumz. 190.—Nouveau Duhamel, i, 8.—Michaux, Fl. Bor.-Am. ii, 228.—Persoon, Syn. i, 151.—Poiret, Suppl. iii, 65.—Michaux f. Hist. Arb. Am. ii, 191, t. 11; N. American Sylva, 3 ed. ii, 122, t. 84.—Barton, Prodr. Fl. Philadelph. 95; Compend. Fl. Philadelph. 94.—Pursh, Fl. Am. Sept. i, 117.—Rafinesque, Fl. Ludoviciana, 111; Med. Bot. ii, 7, t. 53.—Nuttall, Genera, i, 109.—Rœmer & Schultes, Syst. iii, 487.—Link, Enum. 147.—James, Cat. 176; Long's Exped. ii, 294.—Hayne, Dend. Fl. 10.—Torrey in Ann. Lyc. N. York, ii, 173; Fl. U. S. 194; Compend. Fl. N. States, 87; Fl. N. York, ii, 2.—Elliott, Sk. ii, 679.—De Candolle, Prodr. ii, 14.—Sprengel, Syst. i, 495.—Watson, Dend. Brit. i, t. 3.—Beck, Bot. 230.—Eaton, Manual, 6 ed. 186.—Loudon, Arboretum, ii, 516 & t.—Hooker, Fl. Bor.-Am. i, 121; Jour. Bot. i, 201.—Eaton & Wright, Bot. 282.—Bigelow, Fl. Boston. 3 ed. 64.—Don, Miller's Dict. ii, 17.—Spach, Hist. Veg. ii, 427.—Dietrich, Syn. i, 554.—Griffith, Med. Bot. 432.—Emerson, Trees Massachusetts, 341; 2 ed. ii, 385 & t.—Browne, Trees of America, 167.—Darby, Bot. S. States, 426.—Darlington, Fl. Cestrica, 3 ed. 17.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 269.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 58.—Lesquereux in Owen's 2d Rep. Arkansas, 373.—Wood, Cl. Book, 496; Bot. & Fl. 207.—Gray, Manual N. States, 5 ed. 306.—Young, Bot. Texas, 372.—Vasey, Cat. Forest Trees, 8.—Maximowicz in Mem. Acad. St. Petersburg, xxix, No. 3, 29.—Mellichamp in Bull. Torrey Bot. Club, viii, 113.

I. aquifolium, Marshall, Arbustum, 63 [not Linnæus].—Walter, Fl. Caroliniana, 241.

I. Canadensis, Marshall, Arbustum, 64.

I. laxiflora, Lamarck, Dict. iii, 147; Ill. i, 355.—Pursh, Fl. Am. Sept. i, 117.—Rœmer & Schultes, Syst. iii, 494; Mant. 334.—De Candolle, Prodr. ii, 14.—Sprengel, Syst. i, 495.—Don, Miller's Dict. ii, 17.—Spach, Hist. Veg. ii, 427.—Dietrich, Syn. i, 555.—Loudon, Arboretum, ii, 517.—Eaton, Manual, 6 ed. 186.—Eaton & Wright, Bot. 282.

I. quercifolia, Meerburgh, Icon. ii, t. 5.

Ageria opaca, Rafinesque, Sylva Telluriana, 47.

AMERICAN HOLLY.

Quincy, Massachusetts, southward, near the coast, to Mosquito inlet and Charlotte harbor, Florida, valley of the Mississippi river, southern Indiana southward to the gulf of Mexico, and southwest through Missouri, Arkansas, and eastern Texas to the valley of the Colorado river.

An evergreen tree, sometimes 15 meters in height, with a trunk 0.30 to 1.20 meter in diameter, or toward its northern limits reduced to a shrub; generally in low, rather moist soil; most common and reaching its greatest development in the rich bottoms of southern Arkansas and eastern Texas.

Wood light, soft, not strong, tough, rather hard, close-grained, very compact, easily worked; medullary rays numerous, inconspicuous; color, nearly white, turning to light brown with exposure, the sap-wood still lighter; specific gravity, 0.5818; ash, 0.76; used and admirably adapted for cabinet work, interior finish, and turnery of the highest class.

A bitter principle (*Ilicin*), common to other species of the genus, has been obtained from the fruit of this tree (*Am. Jour. Pharm.* xxviii, 314.—*U. S. Dispensatory*, 14 ed. 1670.—*Nat. Dispensatory*, 2 ed. 754).

34.—Ilex Dahoon, Walter,

Fl. Caroliniana, 241.—Michaux, Fl. Bor.-Am. ii, 228.—Pursh, Fl. Am. Sept. i, 117.—Nuttall, Genera, i, 109.—Rœmer & Schultes, Syst. iii, 489; Mant. 332.—De Candolle, Prodr. ii, 14.—Elliott, Sk. ii, 680.—Watson, Dend. Brit. ii, t. 114.—Sprengel, Syst. i, 495.—Audubon, Birds, t. 48.—Don, Miller's Dict. ii, 19.—Hooker, Jour. Bot. i, 202.—Eaton, Manual, 6 ed. 186.—Eaton & Wright, Bot. 282.—Spach, Hist. Veg. ii, 428.—Dietrich, Syn. i, 554.—Loudon, Arboretum, ii, 519.—Griffith, Med. Bot. 433.—Darby, Bot. S. States, 426.—Chapman, Fl. S. States, 269.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 58.—Wood, Bot. & Fl. 207.—Gray, Manual N. States, 5 ed. 306.—Vasey, Cat. Forest Trees, 8.—Maximowicz in Mem. Acad. St. Petersburg, xxix, No. 3, 29.—Nat. Dispensatory, 2 ed. 755.

I. Cassine, Linnæus, Spec. 125, in part.—Marshall, Arbustum, 64.—Aiton, Hort. Kew. i, 170, in part; 2 ed. i, 279.—Lamarck, Dict. iii, 147; Ill. i, 355.—Willdenow, Spec. i, 709; Enum. i, 172; Hort. Berol. i, t. 31.—Nouveau Duhamel, i, 9.—Persoon, Syn. 151.—Desfontaines, Hist. Arb. ii, 362.—Poiret, Suppl. iii, 65.—Pursh, Fl. Am. Sept. i, 117.—Rœmer & Schultes, Syst. iii, 490.—Hayne, Dend. Fl. 10.—De Candolle, Prodr. ii, 14.—Sprengel, Syst. i, 495.—Don, Miller's Dict. ii, 17.—Spach, Hist. Veg. ii, 428.—Dietrich, Syn. i, 544—Loudon, Arboretum, ii, 517, f. 184.—Eaton & Wright, Bot. 282.—Gœppert in Del. Sem. Vratisl. 1885 (*Linnæa*, xxvi, 746).

I. Cassine, var. *latifolia*, Aiton, Hort. Kew. 2 ed. i, 278.

I. cassinoides, Link, Enum. i, 148.—Rœmer & Schultes, Syst. iii; Mant. 332.

I. laurifolia, Nuttall in Am. Jour. Sci. 1 ser. v, 289.—Eaton, Manual, 6 ed. 186.—Eaton & Wright, Bot. 282.

Ageria palustris, Rafinesque, Sylva Telluriana, 47.

Ageria obovata, Rafinesque, Sylva Telluriana, 47.

Ageria heterophylla, Rafinesque, Sylva Telluriana, 48.

DAHOON. DAHOON HOLLY.

Southern Virginia, southward near the coast to Mosquito inlet and Tampa bay, Florida, west along the Gulf coast to the prairie region of western Louisiana.

A small tree, sometimes 8 meters in height, with a trunk from 0.20 to 0.30 meter in diameter; low, wet soil; not common, and running into numerous forms, of which the best marked are—

var. angustifolia, Torrey & Gray, Fl. N. America, *ined.*

I. Cassine, var. *angustifolia*, Willdenow, Spec. i, 709.—Aiton, Hort. Kew, 2 ed. i, 278.—Nouveau Duhamel, i, 9, t. 3.

I. angustifolia, Willdenow, Enum. i, 172.—Pursh, Fl. Am. Sept. i, 118.—Nuttall, Genera, i, 109.—Rœmer & Schultes, Syst. iii, 489.—De Candolle, Prodr. ii, 14.—Watson, Dend. Brit. i, t. 4.—Sprengel, Syst. i, 495.—Don, Miller's Dict. ii, 17.—Hooker, Jour. Bot. i, 201.—Spach, Hist. Veg. ii, 428.—Dietrich, Syn. i, 554.—Loudon, Arboretum, ii, 517, f. 185.

I. ligustrina, Elliott, Sk. ii, 708 [not Jacquin].—Spach, Hist. Veg. ii, 429.—Eaton, Manual, 6 ed. 187.—Eaton & Wright, Bot. 282.—Darby, Bot. S. States, 123.

? *I. Watsoniana*, Spach, Hist. Veg. ii, 429.

var. myrtifolia (only in low cypress swamps and ponds), Chapman, Fl. S. States, 269.—Nat. Dispensatory, 2 ed. 755.

I. myrtifolia, Walter, Fl. Caroliniana, 214.—Nouveau Duhamel, i, 10, t. 4.—Michaux, Fl. Bor.-Am. ii, 229.—Poiret, Suppl. iii, 65.—Willdenow, Enum. Suppl. 8.—Rœmer & Schultes, Syst. iii, 489.—Link, Enum. 148.—Spach, Hist. Veg. ii, 429.—Eaton, Manual, 6 ed. 187.—Eaton & Wright, Bot. 282.—Darby, Bot. S. States, 426.—Gray, Manual N. States, 5 ed. 306.—Maximowicz in Mem. Acad. St. Petersburg, xxix, No. 3, 26.

I. rosmarifolia, Lamarck, Ill. i, 356.—Persoon, Syn. i, 151.—Poiret, Suppl. iii, 65.

I. ligustrifolia, Don, Miller's Dict. ii, 19.—Eaton, Manual, 6 ed. 187.—Wood, Cl. Book, 497; Bot. & Fl. 207.

Wood light, soft, not strong, close-grained, compact; medullary rays numerous, thin; color, light brown, the sap-wood nearly white; specific gravity, 0.4806; ash, 0.91; that of var. *myrtifolia* heavier, nearly white; specific gravity, 0.5873; ash, 0.90.

35.—Ilex Cassine, Walter,

Fl. Caroliniana, 241.—Aiton, Hort. Kew. i, 170, in part.—James, Cat. 176; Long's Exped. ii, 294.—Hooker, Jour. Bot. i, 202.—Eaton, Manual, 6 ed. 186.—Chapman, Fl. S. States, 269.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 59.—Lesquereux in Owen's 2d Rep. Arkansas, 373.—Wood, Bot. & Fl. 208.—Gray, Manual N. States, 5 ed. 306.—Young, Bot. Texas, 373.—Maximowicz in Mem. Acad. St. Petersburg, xxix, No. 3, 22.

I. Cassine, β. Linnæus, Spec. 1 ed. 125.

Cassine Peragua, Linnæus, Mant. ii, 220.—Marshall, Arbustum, 26.—Plenck, Icon. t. 239.

Cassine Caroliniana, Lamarck, Dict. i, 652

I. vomitoria, Aiton, Hort. Kew. i, 170; 2 ed. i, 278.—Salisbury, Prodr. 70.—Willdenow, Spec. i, 709.—Enum. Suppl. 8.—B. S. Barton, Coll. i, 36, 56.—Nouveau Duhamel, i, 10.—Persoon, Syn. i, 151.—Desfontaines, Hist. Arb. ii, 362.—Titford, Hort. Bot. Am. 41.—Pursh, Fl. Am. Sept. i, 118.—Nuttall, Genera, i, 109.—Rœmer & Schultes, Syst. iii, 491; Mant. 333.—De Candolle, Prodr. ii, 14.—Sprengel, Syst. i, 495.—Torrey in Ann. Lyc. N. York, ii, 173.—Don, Miller's Dict. ii, 17.—Hooker, Jour. Bot. i, 202.—Spach, Hist. Veg. ii, 430.—Lindley, Fl. Med. 393.—Dietrich, Syn. i, 555.—Loudon, Arboretum, ii, 518, f. 186.—Eaton, Manual, 6 ed. 187.—Eaton & Wright, Bot. 282.—Griffith, Med. Bot. 433.—Browne, Trees of America, 169.—Guibourt, Hist. Drogues, 7 ed. iii, 544.

I. ligustrina, Jacquin, Coll. iv, 105; Icon. Rar. ii, 9, t. 310 [not Elliott].—Lamarck, Ill. i, 356.

I. Floridana, Lamarck, Ill. i, 356.

I. Cassena, Michaux, Fl. Bor.-Am. ii, 229.—Poiret, Suppl. iii, 65.—Rœmer & Schultes, Syst. iii, 490.—Elliott, Sk. ii, 681.—Darby, Bot. S. States 426.—Wood, Cl. Book, 497.

I. religiosa, Barton, Fl. Virginica, 66.

Cassine ramulosa, Rafinesque, Fl. Ludoviciana, 363.

Hierophyllus Cassine, Rafinesque, Med. Bot. ii, 8.

Emetila ramulosa, Rafinesque, Sylva Telluriana, 45.

Ageria Cassena, Rafinesque, Sylva Telluriana, 47.

Ageria geminata, Rafinesque, Sylva Telluriana, 48.

CASSENA. YAUPON. YOPON.

Southern Virginia, southward, near the coast, to the Saint John's river and Cedar Keys, Florida, west along the Gulf coast to southern Arkansas, and the valley of the Colorado river, Texas.

A small tree, 6 to 8 meters in height, with a trunk 0.10 to 0.15 meter in diameter, or more often a shrub, sending up many slender stems and forming dense thickets; sandy, moist soil, along ponds and streams, reaching its greatest development in the river bottoms of eastern Texas.

Wood heavy, hard, close-grained, liable to check in drying; medullary rays numerous, conspicuous; color, nearly white, becoming yellow with exposure, the sap-wood lighter; specific gravity, 0.7270; ash, 0.87.

The leaves possess powerful emetic properties, and were employed by the southern Indians, together perhaps with those of *I. Dahoon*, in the preparation of their "black drink" (*Am. Jour. Pharm.* xliv, 217.—*U. S. Dispensatory*, 14 ed. 1670.—*Nat. Dispensatory*, 2 ed. 754).

36.—Ilex decidua, Walter,

Fl. Caroliniana, 241.—Poiret, Suppl. iii, 65.—Chapman, Fl. S. States, 269.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 59.—Lesquereux in Owen's 2d Rep. Arkansas, 373.—Wood, Cl. Book, 497; Bot. & Fl. 208.—Gray, Manual N. States, 5 ed. 306.—Young, Bot. Texas, 373.—Vasey, Cat. Forest Trees, 8.—Maximowicz in Mem. Acad. St. Petersburg, xxix, No. 3, 30.—Watson in Proc. Am. Acad. xvii, 335.

I. prinoides, Aiton, Hort. Kew. i, 169; 2 ed. i, 278.—Lamarck, Ill. i, 355.—Willdenow, Spec. i, 709.—Nouveau Duhamel, i, 11.—Michaux, Fl. Bor.-Am., ii, 229.—Persoon, Syn. i, 151.—Desfontaines, Hist. Arb. ii, 362.—Pursh, Fl. Am. Sept. i, 118.—Nuttall, Genera, i, 109.—Rœmer & Schultes, Syst. iii, 488; Mant. 332.—Watson, Dend. Brit. i, t. 15.—Sprengel, Syst. i, 495.—Audubon, Birds, t. 89.—Eaton, Manual, 6 ed. 187.—Eaton & Wright, Bot. 282.—Darby, Bot. S. States, 426.

I. æstivalis, Lamarck, Dict. iii, 147; Ill. i, 356.

Prinos deciduus, De Candolle, Prodr. ii, 16.—Don, Miller's Dict. ii, 20.—Hooker, Jour. Bot. i, 202.—Loudon, Arboretum, ii, 520.

I. ambiguus, Elliott, Sk. ii, 705.

Southern Virginia, southward, through the middle districts, to western Florida, valley of the Mississippi river, southern Illinois southward to the Gulf of Mexico, and through southeastern Missouri, Arkansas, and eastern Texas to the valley of the Colorado river.

A small tree, 8 to 9 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or in the Atlantic states a tall, straggling shrub; low, wet woods along streams, reaching its greatest development in the Iron Mountain region of Missouri and in southern Arkansas.

Wood heavy, hard, close-grained, compact; medullary rays numerous, thin; color, creamy-white, the sap-wood lighter; specific gravity, 0.7420; ash, 0.70.

CYRILLACEÆ.

37.—Cyrilla racemiflora, Linnæus,

Mant. i, 50; Syst. 14 ed. 241.—Jacquin, Icon. Rar. t. 47; Coll. i, 162.—Walter, Fl. Caroliniana, 103.—Lamarck, Dict. ii, 245; Ill. ii, 144, t. 147, f. 2.—Nouveau Duhamel, i, 215, t. 46.—Desfontaines, Hist. Arb. i, 255.—Elliott, Sk. i, 294.—Eaton, Manual, 6 ed. 119.—Eaton & Wright, Bot. 218.—Torrey & Gray, Fl. N. America, i, 256.—Nuttall, Sylva, ii, 96, t. 74; 2 ed. ii, 43, t. 74.—Planchon in Hooker's Jour. Bot. v, 254.—Schnizlein, Icon. t. 240, f. 1-4, 6, 17, 19, 21.—Darby, Bot. S. States, 417.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 272.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 105.—Porcher, Resources S. Forests, 130.—Maout & Decaisne, Bot. English ed. 540 & f.—Baillon, Adansonia, i, 203, t. 4.—Wood, Cl. Book, 493; Bot. & Fl. 205.—Vasey, Cat. Forest Trees, 18.

Andromeda plumata, Bartram, Cat.—Marshall, Arbustum, 9.

C. Caroliniana, Michaux, Fl. Bor.-Am. i, 158.—Gærtner, f. Fruct. Suppl. 147, t. 209, f. 8.—Persoon, Syn. i, 175.—Pursh, Fl. Am. Sept. i, 170.—Nuttall, Genera, i, 145.—Poiret, Suppl. ii, 436.—Rœmer & Schultes, Syst. v, 408.—Bot. Mag. t. 2456.—Walpers, Rep. vi, 421.—Dietrich, Syn. i, 805.

Itea Cyrilla, L'Heritier, Stirp. i, 137, t. 66.—Swartz, Prodr. 50; Fl. Ind. Occ. i, 506; Obs. 94, t. 4.—Willdenow, Spec. i, 1146.—Aiton, Hort. Kew. 2 ed. ii, 37.

C. racemosa, Loudon, Arboretum, iv, 2577, f. 2503.

C. polystachia, *C. parvifolia*, *C. fuscata*, Rafinesque, Aulikon Botanikon, 8.

IRON WOOD.

North Carolina southward, near the coast, to middle Florida (latitude 30°), westward, along the Gulf coast, to the valley of the Pearl river, Mississippi.

A small tree, sometimes 8 to 10 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or often a tall shrub, sending up many stems from the root; open swamps and low thickets; a variety (*Chapman*, *Curtiss*) with narrower, persistent leaves, and thicker spongy bark, in pond holes and wet depressions of the pine barrens of the Apalachicola region of western Florida, forms dense, impenetrable thickets.

Wood heavy, weak, hard, close-grained, compact; medullary rays thin, not conspicuous; color, brown tinged with red, the sap-wood a little lighter; specific gravity, 0.6784; ash, 0.42.

38.—Cliftonia ligustrina, Banks,

Ex. Gærtner f. Fruct. Suppl. 246, t. 225.—Bartram, Travels, 2 ed. 31.—Torrey & Gray, Fl. N. America, i, 256.—Nuttall, Sylva, ii, 92, t. 73; 2 ed. ii, 39, t. 73.—Planchon in Hooker's Jour. Bot. v, 255.—Walpers, Rep. vi, 422.—Dietrich, Syn. ii, 1412.—Schnizlein, Icon. t. 240xx, f. 5, 7-10, 20.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 273.—Porcher, Resources S. Forests, 130.—Baillon in Adansonia, i, 202, t. 4, f. 3-6.—Vasey, Cat. Forest Trees, 18.

Mylocaryum ligustrinum, Willdenow, Enum. i, 454.—Bot. Mag. t. 1625.—Lamarck, Ill. iii, 616, t. 952, f. 1.—Pursh, Fl. Am. Sept. i, 302, t. 14.—Poiret, Suppl. iv, 41.—Elliott, Sk. i, 508.—Eaton, Manual, 6 ed. 231.—Eaton & Wright, Bot. 323.—Darby, Fl. S. States, 417.—Wood, Cl. Book, 493; Bot. & Fl. 205.

TITI. IRON WOOD. BUCKWHEAT TREE.

Valley of the Savannah river, Georgia, southward to the Chattahoochee region of west Florida, westward along the Gulf coast to the valley of the Pearl river, Louisiana.

A small tree, sometimes 12 meters in height, with a trunk 0.30 to 0.40 meter in diameter, or toward its southern limits in Florida reduced to a shrub; margins of pine-barren ponds and streams.

Wood heavy, soft, not strong, close-grained, compact; medullary rays numerous, thin; color, brown tinged with red, the sap-wood lighter; specific gravity, 0.6249; ash, 0.42; largely used as fuel, burning with a clear flame.

CELASTRACEÆ.

39.—Euonymus atropurpureus, Jacquin,

Hort. Vind. ii, 155, t. 120.—Lamarck, Dict. ii, 573; Ill. ii, 98.—Aiton, Hort. Kew. i, 274; 2 ed. ii, 29.—Willdenow, Spec. i, 1132; Enum. i, 256.—Michaux, Fl. Bor.-Am. i, 155.—Persoon, Syn. i, 243.—Nouveau Duhamel, iii, 26.—Desfontaines, Hist. Arb. ii, 356.—Pursh, Fl. Am. Sept. i, 168.—Turpin, Dict. Sci. Nat. xvii, 532, t. 272.—Eaton, Manual, 28; 6 ed. 140.—Nuttall, Genera, 155.—Rœmer & Schultes, Syst. v, 466.—Hayne, Dend. Fl. 24.—Elliott, Sk. i, 293.—De Candolle, Prodr. ii, 4.—Torrey in Ann. Lyc. N. York, ii, 173; Fl. U. S. 261; Compend. Fl. N. States, 120; Fl. N. York, i, 141; Nicollet's Rep. 147.—Sprengel, Syst. i, 788.—Don, Miller's Dict. ii, 5.—Beck, Bot. 72.—Hooker, Jour. Bot. i, 201.—Spach, Hist. Veg. ii, 405.—Rafinesque, New Fl. 60.—Loudon, Arboretum, ii, 499, f. 167.—Torrey & Gray, Fl. N. America, i, 257.—Dietrich, Syn. i, 819.—Eaton & Wright, Bot. 240.—Griffith, Med. Bot. 219, f. 112.—Gray, Genera, ii, 188; Manual N. States, 5 ed. 116.—Richardson, Arctic Exped. 423.—Parry in Owen's Rep. 610.—Darby, Bot. S. States, 268.—Darlington, Fl. Cestrica, 3 ed. 48.—Baillon in Bull. Soc. Bot. France, v, 314.—Chapman, Fl. S. States, 76.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 102.—Lesquereux in Owen's 2d Rep. Arkansas, 354.—Wood, Cl. Book, 289; Bot. & Fl. 76.—Porcher, Resources S. Forests, 129.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 187.—Koch, Dendrologie, i, 629.—Young, Bot. Texas, 205.—Vasey, Cat. Forest Trees, 9.

E. Carolinensis, Marshall, Arbustum, 43.

E. latifolius, Marshall, Arbustum, 44 [not Aiton].—Agardh, Theor. & Syst. Pl. t. 22, f. 4.

BURNING BUSH. WAHOO. SPINDLE TREE. ARROW WOOD.

Western New York, west to the valley of the upper Missouri river (*Fort Union*), Montana, southward to northern Florida, southern Arkansas, and eastern Kansas.

A small tree, rarely 6 to 8 meters in height, with a trunk 0.15 meter in diameter, or more often a shrub 2 to 3 meters in height; low, rich woods, reaching its greatest development west of the Mississippi river.

Wood heavy, very close-grained, liable to check badly in seasoning; medullary rays hardly discernible; color, white tinged with orange; specific gravity, 0.6592; ash, 0.58.

Wahoo bark, a mild but rather uncertain purgative, is used by herbalists in the form of decoctions, tinctures, fluid extracts, etc. (*Am. Jour. Pharmacy*, xx, 80.—*U. S. Dispensatory*, 14 ed. 402.—*Nat. Dispensatory*, 2 ed. 559).

40.—Mygindа pallens, Smith,

Rees' Cycl. xxv, No. 4.—De Candolle, Prodr. ii, 13.—Dietrich, Syn. i, 554.—Grisebach, Fl. British West Indies, 146.—Chapman in Coulter's Bot. Gazette, iii, 3; Fl. S. States, Suppl. 612.

Semi-tropical Florida, Upper Metacombe Key; in the West Indies.

A small tree, rarely exceeding 4 meters in height, with a trunk 0.15 meter in diameter.

Wood very heavy, hard, very close-grained, compact, satiny; layers of annual growth and numerous medullary rays hardly distinguishable; color, dark brown or nearly black, the thick sap-wood lighter brown tinged with red; specific gravity, 0.9048; ash, 3.42.

41.—Schæfferia frutescens, Jacquin,

Stirp. Am. 259.—Gærtner f. Fruct. Suppl. 249, t. 225, f. 7.—Lamarck, Ill. iii, 402, t. 809.—Poiret in Lamarck, Dict. vi, 727.—De Candolle, Prodr. ii, 41.—Karsten, Fl. Columbiæ, i, t. 91.—Chapman, Fl. S. States, 76.—Grisebach, Fl. British West Indies, 146.—Walpers, Ann. vii, 581.

S. completa, Swartz, Fl. Ind. Occ. i, 327, t. 7, f. A.—Willdenow, Spec. iv, 741.—Aiton, Hort. Kew. 2 ed. v, 371.—Macfadyen, Fl. Jamaica, 207.

S. buxifolia, Nuttall, Sylva, ii, 42, t. 56; 2 ed. i, 190, t. 56.—Cooper in Smithsonian Rep. 1858, 264.

YELLOW WOOD. BOX WOOD.

Semi-tropical Florida, southern keys from Metacombe Key eastward, Caloosa river and sparingly on the Reef Keys; in the West Indies.

A small tree, occasionally 10 meters in height, with a trunk 0.15 to 0.20 meter in diameter, generally hollow and defective.

Wood heavy, hard, close-grained, compact, susceptible of a high polish; medullary rays numerous, obscure; color, light bright yellow, the sap-wood a little lighter; specific gravity, 0.7745; ash, 2.54.

RHAMNACEÆ.

42.—Reynosia latifolia, Grisebach,

Cat. Pl. Cuba, 34.—Eggers, Videnskab, Medd. fra. Nat. For. 173 & t.; Bull. U. S. Nat. Mus. xiii, 40.—Gray in Coulter's Bot. Gazette, iv, 208.—Chapman, Fl. S. States, Suppl. 612.

? Rhamnus lævigatus, Vahl, Symbolæ, iii, 41.

Ceanothus lævigatus, De Candolle, Prodr. ii, 30.

Scutia ferrea, Chapman, Fl. S. States, 72 [not Brongniart].

? Rhamindium revolutum, Chapman, Fl. S. States, Suppl. 612.

RED IRON WOOD. DARLING PLUM.

Semi-tropical Florida, Miami (*Garber*), bay Biscayne, and on the southern keys (*Curtiss*); in the West Indies.

A small tree, sometimes 8 meters in height, with a trunk 0.15 to 0.20 meter in diameter.

Wood heavy, exceedingly hard, strong, close-grained, compact; medullary rays numerous, thin; color, rich dark brown, the sap-wood light brown; specific gravity, 1.0715; ash, 3.20.

The edible fruit, ripening in April and May, of agreeable flavor.

43.—Condalia ferrea, Grisebach,

Fl. British West Indies, 100.—Walpers, Ann. vii, 588.—Gray in Coulter's Bot. Gazette, iv, 208.—Chapman, Fl. S. States, Suppl. 612.

Rhamnus ferrea, Vahl, Symbolæ, iii, 41, t. 58.

Zizyphus emarginatus, Swartz, Fl. Ind. Occ. iii, 1954.

Ceanothus ferreus, De Candolle, Prodr. ii, 30.

Scutia ferrea, Brongniart in Ann. Sci. Nat. 1 ser. x, 363 [not Chapman, Fl. S. States, 72].—Vasey, Cat. Forest Trees, 9.

BLACK IRON WOOD.

Semi-tropical Florida, cape Canaveral to bay Biscayne, on the southern keys; in the West Indies.

A small tree, sometimes 11 meters in height, with a trunk 0.25 to 0.38 meter in diameter, generally hollow and defective; common.

Wood exceedingly heavy and hard, strong, brittle, close-grained, compact, difficult to work; remarkable for the large percentage of ash; medullary rays very numerous, thin; color, rich orange-brown, the sap-wood lighter; specific gravity, 1.3020; ash, 8.31.

44.—Condalia obovata, Hooker,

Icon. t. 287.—Torrey & Gray, Fl. i, 685.—Gray in Jour. Boston Soc. Nat. Hist. vi, 169; Genera, ii, 172, t. 164; Smithsonian Contrib. iii, 32; v, 27; Hall's Pl. Texas, 5.—Torrey, Bot. Mex. Boundary Survey, 47.—Watson in Proc. Am. Acad. xvii, 336.

BLUE WOOD. LOGWOOD. PURPLE HAW.

Eastern and southwestern Texas, westward through southern New Mexico to southern Arizona; probably extending into northern Mexico.

A small tree, 6 to 10 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or often a shrub; reaching its greatest development along the streams of eastern Texas; one of the common "chaparral" plants of western Texas, here forming dense, impenetrable thickets.

Wood very heavy, hard, close-grained, liable to check in seasoning, containing many groups of large irregularly-arranged open ducts; medullary rays numerous, obscure; color, light red, the sap-wood light yellow; specific gravity, 1.1999; ash, 7.03.

45.—Rhamnus Caroliniana, Walter,

Fl. Caroliniana, 101.—Lamarck, Ill. ii, 88; Dict. iv, 476.—Michaux, Fl. Bor.-Am. i, 153.—Nouveau Duhamel, iii, 47.—Persoon, Syn. i, 239.—Pursh, Fl. Am. Sept. i, 166.—Nuttall, Genera, i, 153.—Rœmer & Schultes, Syst. v, 285.—Elliott, Sk. i, 289.—De Candolle, Prodr. ii, 26.—Sprengel, Syst. i, 768.—Torrey in Ann. Lyc. N. York, ii, 174.—Don, Miller's Dict. ii, 32.—Hooker, Jour. Bot. i, 202.—Torrey & Gray, Fl. N. America, i, 262.—Dietrich, Syn. i, 807.—Loudon, Arboretum, ii, 537.—Eaton, Manual, 6 ed. 300.—Eaton & Wright, Bot. 390.—Scheele in Rœmer, Texas, 432.—Nuttall, Sylva, ii, 50, t. 59; 2 ed. i, 198, t. 59.—Darby, Bot. S. States, 269.—Lesquereux in Owen's 2d Rep. Arkansas, 354.—Wood, Cl. Book, 219; Bot. & Fl. 77.—Koch, Dendrologie, i, 610.—Gray, Hall's Pl. Texas, 5.

? Frangula fragillis, Rafinesque, Fl. Ludoviciana, 320; Sylva Telluriana, 27.

Sarcomphalus Carolinianus, Rafinesque, Sylva Telluriana, 29.

Frangula Caroliniana, Gray, Genera, ii, 178, t. 167; Manual N. States, 5 ed. 115.—Torrey, Bot. Mex. Boundary Survey, 46.—Cooper in Smithsonian Rep. 1858, 251.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 92.—Chapman, Fl. S. States, 73.—Vasey, Cat. Forest Trees, 9.

INDIAN CHERRY.

Long Island, New York, west along the valley of the Ohio river to southern Illinois, Missouri south of the Meramec river, eastern Kansas, and the Indian territory, south to northern Florida (latitude 30°), and through the Gulf states to western Texas.

A small tree, 6 to 10 meters in height, with a trunk 0.20 to 0.30 meter in diameter, or in the Atlantic states generally a tall shrub; rich woods along streams and river bottoms, reaching its greatest development in southern Arkansas and eastern Texas.

Wood light, hard, not strong, coarse-grained, compact; medullary rays numerous, thin; color, light brown, the sap-wood lighter; specific gravity, 0.5462; ash, 0.64.

The edible fruit sweet and agreeable.

46.—Rhamnus Californica, Eschscholtz,

Mem. Acad. St. Petersburg, x, 281 (*Linnæa* Litt.-Ber. 1828, 149.—Presl, Rep. Bot. i, 197).—Don, Miller's Dict. ii, 32.—Torrey & Gray, Fl. N. America, i, 263.—Dietrich, Syn. i, 806.—Eaton & Wright, Bot. 390.—Brewer & Watson, Bot. California, i, 101.—Hemsley, Bot. Am.-Cent. i, 197.

R. oleifolius, Hooker, Fl. Bor.-Am. i, 123, t. 44.—Hooker & Arnott, Bot. Beechey, 136, 328.—Torrey & Gray, Fl. N. America, i, 260.—Eaton & Wright, Bot. 390.—Bentham, Bot. Sulphur, 10; Pl. Hartweg. 302.—Durand in Jour. Philadelphia Acad. 1855, 85.—Carrière in Rev. Hort. xlvi, 354, f. 47-49.

Endotropis oleifolia, Rafinesque, Sylva Telluriana, 31.

R. laurifolius, Nuttall in Torrey & Gray, Fl. N. America, i, 260.—Eaton & Wright, Bot. 390.

Frangula Californica, Gray, Genera, ii, 178; Jour. Boston Soc. Nat. Hist. vi, 146.—Torrey in Sitgreaves' Rep. 157; Pacific R. R. Rep. iv, 74; Bot. Mex. Boundary Survey, 46; Bot. Wilkes Exped. 261.—Newberry in Pacific R. R. Rep. vi, 69.—Bolander in Proc. California Acad. iii, 78.

California, west of the Sierra Nevadas, from the valley of the upper Sacramento river southward to Santa Barbara and fort Tejon.

A small tree, rarely 7 to 9 meters in height, with a trunk 0.30 to 0.37 meter in diameter (*Pringle*), or commonly a shrub, along the sea-coast and at high elevations often prostrate; common and reaching its greatest development in the valleys of the Santa Cruz mountains. A low shrubby form, densely white-tomentose, especially on the under side of the leaves, of southern California, Arizona, and New Mexico, is—

var. **tomentella**, Brewer & Watson, Bot. California, i, 101.

R. tomentellus, Bentham, Pl. Hartweg. 303.—Seemann, Bot. Herald, 275.—Walpers, Ann. ii, 267.

Frangula Californica, var. *tomentella*, Gray in Smithsonian Contrib. vi, 28.—Torrey in Pacific R. R. Rep. iv, 74; vii, 9.

Wood light, soft, rather coarse-grained, checking in drying; layers of annual growth marked by many rows of open ducts; medullary rays narrow, obscure; color, brown or light yellow, the sap-wood lighter; specific gravity, 0.6000; ash, 0.58.

47.—Rhamnus Purshiana, De Candolle,

Prodr. ii, 25.—Loudon, Arboretum, ii, 538, f. 211.—Hooker, Fl. Bor.-Am. i, 123, t. 43; London Jour. Bot. vi, 78.—Don, Miller's Dict. ii, 32.—Torrey & Gray, Fl. N. America, i, 262.—Dietrich, Syn. i, 807.—Nuttall, Sylva, ii, 52; 2 ed. i, 200.—Richardson, Arctic Exped. 423.—Newberry in Pacific R. R. Rep. vi, 69.—Koch, Dendrologie, i, 610.—Gray in Proc. Am. Acad. viii, 379.—Brewer & Watson, Bot. California, i, 101.—Hall in Coulter's Bot. Gazette, ii, 86.

R. alnifolius, Pursh, Fl. Am. Sept. i, 166 [not L'Heritier].

Cardiolepis obtusa, Rafinesque, Sylva Telluriana, 28.

Frangula Purshiana, Cooper in Smithsonian Rep. 1858, 259; Pacific R. R. Rep. xii², 29, 57.—Vasey, Cat. Forest Trees, 9.—Torrey, Bot. Wilkes Exped. 262.

BEARBERRY. BEAR WOOD. SHITTIM WOOD.

Puget sound, east along the mountain ranges of northern Washington territory to the Bitter Root mountain, Idaho (Mullan pass, *Watson*), and the shores of Flathead lake, Montana (*Canby & Sargent*), southward through western Washington territory, Oregon, and California, west of the Sierra Nevada, to about latitude 40°.

A small tree, often 12 meters in height, with a trunk 0.30 to 0.45 meter in diameter; depressions and along the sides and bottoms of cañons in the coniferous forests, reaching its greatest development along the western slope of the Coast Range of southern Oregon.

Wood light, very hard, not strong, close-grained, compact, satiny; medullary rays numerous, thin; color, light brown tinged with yellow, the sap-wood somewhat lighter; specific gravity, 0.5672; ash, 0.67.

The bark, like that of other species of the genus, possesses powerful cathartic properties, and, under the name of *Cascara sagrada*, has recently been introduced by herbalists in the form of fluid extracts, tinctures, etc., immense quantities being gathered for this purpose in the Oregon forests (*Nat. Dispensatory*, 2 ed. 659).

48.—Ceanothus thyrsiflorus, Eschscholtz,

Mem. Acad. St. Petersburg, x, 285.—Hooker, Fl. Bor.-Am. i, 125.—Don, Miller's Dict. ii, 37.—Hooker & Arnott, Bot. Beechey, 136, 328.—Torrey & Gray, Fl. N. America, i, 266.—Dietrich, Syn. i, 813.—Loudon, Arboretum, ii, 540.—Eaton & Wright, Bot. 185.—Lindley, Bot. Reg. xxx, t. 38.—Nuttall, Sylva, ii, 44, t. 57; 2 ed. i, 193, t. 57.—Bentham, Bot. Sulphur, 10; Pl. Hartweg. 302.—Ann. Gand. 1847, t. 107.—Torrey in Pacific R. R. Rep. iv, 14; Bot. Mex. Boundary Survey, 45; Bot. Wilkes Exped. 263.—Newberry in Pacific R. R. Rep. vi, 69.—Cooper in Pacific R. R. Rep. xii², 57.—Bolander in Proc. California Acad. iii, 78.—Koch, Dendrologie, i, 621.—Watson in Proc. Am. Acad. x, 334.—Brewer & Watson, Bot. California, i, 102.—Vasey, Cat. Forest Trees, 9.

BLUE MYRTLE.

California Coast ranges, from Mendicino county south to the valley of the San Louis Rey river (Pala, *Parish Brothers*).

A small tree, 8 to 10 meters in height, with a trunk 0.10 to 0.15 meter in diameter, or toward the southern limits reduced to a low shrub; common and reaching its greatest development in the *Sequoia* forests near Santa Cruz.

Wood light, soft, close-grained, compact; medullary rays very obscure; color, light brown, the sap-wood darker; specific gravity, 0.5750; ash, 0.69.

The bark of the root may be expected to possess similar astringent properties to that of the shrubby *C. Americana*, used with advantage in cases of diarrhea and dysentery, and as a domestic remedy in throat troubles (*U. S. Dispensatory*, 14 ed. 1609.—*Nat. Dispensatory*, 2 ed. 373).

49.—Colubrina reclinata, Brongniart,

Ann. Sci. Nat. 1 ser. x, 369.—Richard, Fl. Cuba, 359.—Grisebach, Fl. British West Indies, 101.—Eggers in Bull. U. S. Nat. Mus. No. 13, 40.

Rhamnus ellipticus, Aiton, Hort. Kew. i, 265; 2 ed. ii, 17.—Willdenow, Spec. i, 1093.—Swartz, Prodr. 50; Fl. Ind. Occ. i, 497.

Zizyphus Dominigensis, Nouveau Duhamel, iii, 56.

Ceanothus reclinatus, L'Heritier, Sert. 6.—Roemer & Schultes, Syst. v, 288.—De Candolle, Prodr. ii, 31.—Macfadyen, Fl. Jamaica, 211.

NAKED WOOD.

Semi-tropical Florida, Umbrella Key, on the north end of Key Largo, and sparingly on the small islands south of Elliott's Key; through the West Indies.

One of the largest trees of the region, deciduous, 12 to 18 meters in height, with a trunk 0.60 to 1.25 meter in diameter; reaching its greatest development within the United States on Umbrella Key, here forming a dense forest.

Wood heavy, hard, very strong, brittle, close-grained, compact, satiny, susceptible of a good polish, containing many small open ducts; medullary rays numerous, thin; color, dark brown tinged with yellow, the sap-wood light yellow; specific gravity, 0.8208; ash, 1.75.

"The trunk attains a size of over 1 meter and is most extraordinary. When 0.152 meter thick it becomes furrowed, and the furrows and ridges multiply and extend in all directions; trunks 0.75 to 1 meter in diameter appear like a mass of braided serpents. On small trunks the bark breaks up into flakes which curl up and drop off. Between the ridges where the bark persists the edges of dozens of papery layers may be seen" (*Curtiss in let*).

SAPINDACEÆ.

50.—Æsculus glabra, Willdenow,

Enum. 405.—Pursh, Fl. Am. Sept. i, 255.—Nuttall, Genera, i, 241.—De Candolle, Prodr. i, 597.—Torrey, Fl. U. S. 384; Compend. Fl. N. States, 164.—Guimpel, Otto & Hayne, Abb. Holz. 28, t. 24.—Hayne, Dend. Fl. 44.—Sprengel, Syst. ii, 166.—Don, Miller's Dict. i, 652.—Beck, Bot. 65.—Loudon, Arboretum, i, 467, f. 133.—Torrey & Gray, Fl. N. America, i, 251.—Dietrich, Syn. ii, 1225.—Eaton & Wright, Bot. 115.—Walpers, Rep. i, 424.—Gray, Genera, ii, 207, t. 176, 177; Manuel N. States, 5 ed. 118.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 79.—Wood, Cl. Book, 288; Bot. & Fl. 85.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 187.—Koch, Dendrologie, i, 508.—Vasey, Cat. Forest Trees, 9.—Ridgway in Proc. U. S. Nat. Mus. 1882, 61.

Æ. pallida, Willdenow, Enum. 406.—Nuttall, Genera, i, 242.—De Candolle, Prodr. i, 597.—Guimpel, Otto & Hayne, Abb. Holz. 29, t. 25.—Sprengel, Syst. ii, 166.—Don, Miller's Dict. i, 650.—Eaton, Manual, 6 ed. 6.—Lindley, Bot. Reg. xxiv, t. 51.—Loudon, Arboretum, i, 468, f. 134.

Æ. echinata, Muhlenberg, Cat. 38.

Æ. Ohioensis, Michaux f. Hist. Arb. Am. iii, 242; N. American Sylva, 3 ed. ii, 156, t. 92.—Poiret, Suppl. iii, 593.—De Candolle, Prodr. i, 597.—Don, Miller's Dict. i, 652.—Eaton, Manual, 6 ed. 6.—Riddell, Syn. Fl. W. States, 34.—Lindley, Bot. Reg. xxiv, 51, t. 51.—Nuttall, Sylva, ii, 71; 2 ed. ii, 17.

? *Æ. carnea*, Guimpel, Otto & Hayne, Abb. Holz. 25, t. 22.—Hayne, Dend. Fl. 43.—Lindley, Bot. Reg. xiii, t. 1056.—Watson, Dend. Brit. ii, t. 121.—Don, Miller's Dict. i, 652.—Torrey & Gray, Fl. N. America, i, 253.—Walpers, Rep. i, 425.

Pavia glabra, Spach in Ann. Sci. Nat. 2 ser. ii, 54; Hist. Veg. iii, 23.

Pavia pallida, Spach in Ann. Sci. Nat. 2 ser. ii, 54; Hist. Veg. iii, 23.

? *Pavia carnea*, Spach in Ann. Sci. Nat. 2 ser. ii, 54; Hist. Veg. iii, 23.—Don in Sweet's Brit. Fl. Gard. 2 ser. t. 301.

? *Pavia Watsoniana*, Spach in Ann. Sci. Nat. 2 ser. ii, 54; Hist. Veg. iii, 23.—Torrey & Gray, Fl. N. America, i, 253.

? *Æ. Watsoniana*, Dietrich, Syn. ii, 1225.—Walpers, Rep. i, 425.

Æ. Hippocastanum, var. *Ohioensis*, Loudon, Arboretum, i, 467.—Browne, Trees of America, 110.

Æ. Hippocastanum, var. *glabra*, Loudon, Arboretum, i, 467.—Browne, Trees of America, 111.

Æ. Hippocastanum, var. *pallida*, Loudon, Arboretum, i, 468.—Browne, Trees of America, 111.

OHIO BUCKEYE. FETID BUCKEYE.

Western slopes of the Alleghany mountains, Pennsylvania to northern Alabama, westward through southern Michigan (rare) to southern Iowa, eastern Kansas to about longitude 97° west, and the Indian territory.

A small tree, 8 to 15 meters in height, with a trunk 0.30 to 0.60 meter in diameter; rich soil along streams and river bottoms, reaching its greatest development in the high valleys of the southern Alleghany mountains.

Wood light, soft, not strong, close-grained, compact, difficult to split, often blemished by dark lines of decay; medullary rays obscure; color, white, the sap-wood darker; specific gravity, 0.4542; ash, 0.86; largely used in

common with that of the other species of the genus in the manufacture of woodenware, artificial limbs (for which the wood of *Æsculus* is preferred to that of all other American trees), paper-pulp, wooden hats, less commonly for the bearings of shafting and machinery, and occasionally manufactured into lumber.

The bark of the allied old world species *Æ. Hippocastanum* occasionally has been found efficacious as a substitute for *cinchona* bark in the treatment of intermittent fevers (*U. S. Dispensatory*, 14 ed. 1565.—*Nat. Dispensatory*, 2 ed. 712), and similar properties may be looked for in the bark of *Æ. glabra.*

51.—Æsculus flava, Aiton,

Hort. Kew. i, 494; 2 ed. ii, 335.—B. S. Barton, Coll. i, 13; Bot. Appx. 26, t. 15, f. 2.—Willdenow, Spec. ii, 286; Enum. i, 405; Berl. Baumz. 13.—Desfontaines, Hist. Arb. i, 385.—Pursh, Fl. Am. Sept. i, 255.—Nuttall, Genera, i, 242.—James in Long's Exped. i, 22.—Guimpel, Otto & Hayne, Abb. Holz. 27, t. 23.—Hayne, Dend. Fl. 44.—Elliott, Sk. i, 436.—Watson, Dend. Brit. ii, t. 163.—Loddiges, Bot. Cab. t. 1280.—Torrey & Gray, Fl. N. America, i, 252.—Dietrich, Syn. ii, 1225.—Eaton, Manual, 6 ed. 7.—Eaton & Wright, Bot. 116.—Walpers, Rep. i, 424.—Darby, Bot. S. States, 266.—Torrey in Pacific R. R. Rep. iv, 74.—Browne, Trees of America, 118.—Schnizlein, Icon. t. 230xx, f. 3.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 80.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 48.—Lesquereux in Owen's 2d Rep. Arkansas, 354.—Wood, Cl. Book, 288; Bot. & Fl. 75.—Gray, Manual N. States, 5 ed. 118.—Vasey, Cat. Forest Trees, 9.

Æ. octandra, Marshall, Arbustum, 4.—Miller's Dict. No. 1.

Pavia flava, Mœnch, Meth. 66.—De Candolle, Prodr. i, 598.—Don, Miller's Dict. i, 653.—Spach in Ann. Sci. Nat. 2 ser. ii, 55; Hist. Veg. iii, 25.—Loudon, Arboretum, i, 471 & t.

Æ. lutea, Wangenheim in Schrift. Gesell. Nat. Fr. Berlin, viii, 133, t. 6.—Michaux, Fl. Bor.-Am. i, 219.—Persoon, Syn. i, 403.—Koch, Dendrologie, i, 509.

Pavia lutea, Poiret in Lamarck, Dict. v, 94.—Nouveau Duhamel, iii, 155, t. 38.—Michaux f. Hist. Arb. Am. iii, 237, t. 11; N. American Sylva, 3 ed. ii, 153, t. 91.

Æ. neglecta, Lindley, Bot. Reg. xii, t. 1009.

Pavia neglecta, Don, Miller's Dict. i, 653.—Spach in Ann. Sci. Nat. 2 ser. ii, 55; Hist. Veg. iii, 24.—Loudon, Arboretum, i, 472.

SWEET BUCKEYE.

Allegheny county, Pennsylvania (*T. C. Porter*), southward along the Alleghany mountains to northern Georgia (Augusta) and Alabama, west along the valley of the Ohio river to southern Iowa, the Indian territory, and the valley of the Brazos river, eastern Texas.

A tree 18 to 28 meters in height, with a trunk 0.60 to 0.90 meter in diameter, or toward its southwestern limits reduced to a shrub; rich woods and along streams, reaching its greatest development on the slopes of the Alleghany mountains of North Carolina and Tennessee.

A variety with purple or flesh-colored flowers, the leaflets pubescent beneath, is—

var. purpurascens, Gray, Manual N. States, 5 ed. 118.

Æ. hybrida, De Candolle, Hort. Monsp. 1813, 75.—Poiret, Suppl. iv, 334.

Æ. discolor, Pursh, Fl. Am. Sept. i, 255.—Nuttall, Genera, i, 242.—Bot. Reg. iv, t. 310.—Elliott, Sk. i, 436.—Sprengel, Syst. ii, 167.—Sertum Botanicum, iv & t.—Eaton & Wright, Bot. 116.—Walpers, Ann. iv, 381.

Pavia discolor, Poiret, Suppl. v, 769.—Don, Miller's Dict. i, 653.—Eaton, Manual, 6 ed. 7.—Spach in Ann. Sci. Nat. 2 ser. ii, 57; Hist. Veg. iii, 28.—Loudon, Arboretum, i, 472.

Pavia hybrida, De Candolle, Prodr. i, 598.—Don, Miller's Dict. i, 653.—Eaton, Manual, 6 ed. 6.—Spach in Ann. Sci. Nat. 2 ser. ii, 56; Hist. Veg. iii, 27.—Loudon, Arboretum, i, 472.—Eaton & Wright, Bot. 116.—Koch, Dendrologie, i, 512.

Æ. Pavia, var. *discolor*, Torrey & Gray, Fl. N. America, i, 252.—Walpers, Rep. i, 424.—Gray in Jour. Boston Soc. Nat. Hist. vi, 167.

Wood light, soft, close-grained, compact, difficult to split; medullary rays numerous, obscure; color, creamy-white, the sap-wood hardly distinguishable; specific gravity, 0.4274; ash, 1.00.

52.—Æsculus Californica, Nuttall;

Torrey & Gray, Fl. N. America, i, 251; Sylva, ii, 69, t. 64; 2 ed. ii, 16, t. 64.—Hooker & Arnott, Bot. Beechey, 327.—Dietrich, Syn. ii, 1225.—Eaton & Wright, Bot. 116.—Walpers, Rep. i, 424.—Bentham, Bot. Sulphur, 9; Pl. Hartweg. 301.—Durand in Jour. Philadelphia Acad. 1855, 85.—Rev. Hort. iv, 150, f. 10, 11.—Torrey in Pacific R. R. Rep. iv, 74; Bot. Mex. Boundary Survey, 48; Bot. Wilkes Exped. 260.—Newberry in Pacific R. R. Rep. vi, 20, 69, f. 1.—Bot. Mag. t. 5077.—Fl. des Serres, xiii, 39, t. 1312.—London Gard. Chronicle, 1858, 844.—Belge, Hort. ix, 121 & t.—Gray in Proc. Boston Soc. Nat. Hist. vii, 146.—Bolander in Proc. California Acad. iii, 78.—Walpers, Ann. 624.—Koch, Dendrologie, i, 513.—Brewer & Watson, Bot. California, i, 106.—Vasey, Cat. Forest Trees, 9.

Calothyrsus Californica, Spach in Ann. Sci. Nat. 2 ser. ii, 62; Hist. Veg. iii, 35.

Pavia Californica, Hartweg in Jour. Hort. Soc. London, ii, 123.—Carrière in Rev. Hort. 1862, 369 & f.

CALIFORNIA BUCKEYE.

California, valley of the upper Sacramento river and Mendocino county, southward along the Coast ranges to San Luis Obispo, and along the western foot-hills of the Sierra Nevada to the San Bernardino mountains.

A low, widely-branching tree, 8 to 12 meters in height, with a short trunk 0.60 to 0.90 meter in diameter, often greatly expanded at the base, or more often a much-branched shrub 3 to 5 meters in height; borders of streams, reaching its greatest development in the cañons of the Coast Range, north of San Francisco bay.

Wood light, soft, not strong, very close-grained, compact; medullary rays numerous, obscure; color, white slightly tinged with yellow, the sap-wood hardly distinguishable; specific gravity, 0.4980; ash, 0.70.

53.—Ungnadia speciosa, Endlicher,

Atacta Bot. t. 36; Nov. Stirp. Desc. ix, 75.—Torrey & Gray, Fl. N. America, i, 684; Pacific R. R. Rep. ii, 162.—Walpers, Rep. i, 423; v, 371; Ann. vii, 625.—Gray in Jour. Boston Soc. Nat. Hist. vi, 167; Genera, ii, 211, t. 178, 179; Smithsonian Contrib. iii, 38; v, 30; Mem. Am. Acad. new ser. v, 299; Hall's Pl. Texas, 5.—Fl. des Serres, x, 217, t. 1059.—Torrey, Bot. Mex. Boundary Survey, 48.—Schnizlein, Icon. t. 230, f. 2, 8.—Cooper in Smithsonian Rep. 1858, 265.—Koch, Dendrologie, i, 515.—Baillon, Hist. Pl. v, 423.—Vasey, Cat. Forest Trees, 9.—Watson in Proc. Am. Acad. xvii, 337.

U. heterophylla, Scheele in Linnæa, xxi, 589; Rœmer, Texas, 589.

U. heptaphylla, Scheele in Linnæa, xxii, 352; Rœmer, Texas, 432.

SPANISH BUCKEYE.

Valley of the Trinity river (Dallas, *Reverchon*) through western Texas to the cañons of the Organ mountains, New Mexico (*Bigelow*); southward into Mexico.

A small tree, sometimes 6 to 8 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or toward its eastern and western limits reduced to a low shrub; common west of the Colorado river; bottoms and rich hillsides, reaching its greatest development in the valley of the Guadalupe river, between New Braunfels and the coast.

Wood heavy, soft, not strong, close-grained, compact, satiny, containing numerous evenly-distributed open ducts; medullary rays numerous, inconspicuous; color, red tinged with brown, the sap-wood lighter; specific gravity, 0.6332; ash, 1.17.

Fruit reputed poisonous.

54.—Sapindus marginatus, Willdenow,

Enum. i, 432.—Muhlenberg, Cat. 41.—De Candolle, Prodr. i, 607.—Sprengel, Syst. ii, 250.—Don, Miller's Dict. i, 665.—Spach, Hist. Veg. iii, 54.—Torrey & Gray, Fl. N. America, i, 255, 685; Pacific R. R. Rep. ii, 162.—Eaton, Manual, 6 ed. 323.—Eaton & Wright, Bot. 411.—Nuttall, Sylva, ii, 72, t. 65; 2 ed. ii, 19, t. 65.—Leavenworth in Am. Jour. Sci. i, 49, 130.—Engelmann & Gray in Jour. Boston Soc. Nat. Hist. v, 241.—Gray in Jour. Boston Soc. Nat. Hist. vi, 169; Genera, ii, 214, t. 180; Smithsonian Contrib. iii, 38; Hall's Pl. Texas, 5.—Engelmann in Wislizenus' Rep. 12.—Torrey in Emory's Rep. 138; Marcy's Rep. 282; Pacific R. R. Rep. iv, 2, 74; Bot. Mex. Boundary Survey, 47.—Scheele in Rœmer, Texas, 433.—Schnizlein, Icon. t. 230, f. 22.—Chapman, Fl. S. States, 79.—Lesquereux in Owen's 2d Rep. Arkansas, 354.—Wood, Cl. Book, 288; Bot. & Fl. 75.—Porcher, Resources S. Forests, 85.—Young, Bot. Texas, 208.—Vasey, Cat. Forest Trees, 9.—Hemsley, Bot. Am.-Cent. i, 214.—Watson in Proc. Am. Acad. xvii, 337.

S. saponaria, Lamarck, Ill. ii, 441, t. 307 [not Linnæus].—Michaux, Fl. Bor.-Am. i, 242.—Poiret in Lamarck, Dict. vi, 663, in part.—Persoon, Syn. i, 444.—Pursh, Fl. Am. Sept. i, 274.—Nuttall, Genera, i, 257.—Elliott, Sk. i, 460.—Torrey in Ann. Lyc. N. York, ii, 172.—Darby, Bot. S. States, 267.

? *S. inæqualis*, De Candolle, Prodr. i, 608.

S. falcatus, Rafinesque, Med. Bot. ii, 261.

S. acuminata, Rafinesque, New Fl. 22.

S. Drummondi, Hooker & Arnott, Bot. Beechey, 281 (excl. var.).—Walpers, Rep. i, 417.

WILD CHINA. SOAPBERRY.

Atlantic coast, Savannah river to the Saint John's river, Florida, and on Cedar Keys; southern Arkansas, valley of the Washita river (Prescott, *Letterman*) through western Louisiana and Texas to the mountain valleys of southern New Mexico and Arizona; southward into Mexico, and in the West Indies (? *S. inæqualis*).

A tree, sometimes 15 to 18 meters in height, with a trunk rarely 0.60 meter in diameter; west of the Colorado river much smaller, rarely 9 meters in height; along streams or toward the western limits of its distribution only in mountain valleys, reaching its greatest development along the river bottoms of eastern Texas.

Wood heavy, strong, hard, close-grained, compact, easily split into thin strips; layers of annual growth clearly marked by several rows of large open ducts; medullary rays thin, obscure; color, light brown tinged with yellow, the sap-wood lighter; specific gravity, 0.8126; ash, 1.50; largely used in Texas in the manufacture of cotton-baskets, and in New Mexico for the frames of pack-saddles.

Saponin, common in several species of the genus, and affording a substitute for soap, may be looked for in the fruit and roots of this tree.

55.—Sapindus Saponaria, Linnæus,

Spec. 1 ed. 367; Swartz, Obs. 152.—Lamarck, Ill. ii, 441, t. 307.—Willdenow, Spec. ii, 468.—Aiton, Hort. Kew. 2 ed. ii, 424.—Titford, Hort. Bot. Am. 61.—Poiret in Lamarck, Dict. vi, 663.—Descourtilz, Fl. Med. Antilles, iv, 121, t. 261.—De Candolle, Prodr. i, 607.—Spach. Hist. Veg. iii, 53.—Eaton, Manual, 6 ed. 323.—Macfadyen, Fl. Jamaica, 159.—Rafinesque, New Fl. 22.—Nuttall, Sylva, ii, 72; 2 ed. 20.—Richard, Fl. Cuba, 280.—Grisebach, Fl. British West Indies, 126.—Baillon, Hist. Pl. v, 349, f. 353.—Vasey, Cat. Forest Trees, 10.—Chapman in Coulter's Bot. Gazette, iii, 3; Fl. S. States, Suppl. 613.

SOAPBERRY.

Semi-tropical Florida, bay Biscayne, cape Sable, Caximbas bay, Thousand Islands, Key Largo, Elliott's Key; in the West Indies.

A small tree, 6 to 10 meters in height, with a trunk sometimes 0.38 meter in diameter; common on cape Sable, and reaching its greatest development within the United States on the Thousand Islands and along the shores of Caximbas bay.

Wood heavy, rather hard, close-grained, compact; medullary rays numerous, thin; color, light brown tinged with yellow, the sap-wood yellow; specific gravity, 0.8367; ash, 4.34.

The fruit and roots rich in *saponin* and used in the West Indies as a substitute for soap (*Guibourt, Hist. Drogues*, 7 ed. iii, 598.—*U. S. Dispensatory*, 14 ed. 1751); the round, black seeds for beads, buttons, and small ornaments.

56.—Hypelate paniculata, Cambessedes,

Mem. Mus. xviii, 32.—Don, Miller's Dict. i, 671.—Richard, Fl. Cuba, 295.—Grisebach, Fl. British West Indies, 127.—Chapman, Fl. S. States, 79.—Vasey, Cat. Forest Trees, 10.

Melicocca paniculata, Jussieu in Mem. Mus. iii, 187, t. 5.—De Candolle, Prodr. i, 615.—Nuttall, Sylva, ii, 74, t. 66; 2 ed. ii, 21, t. 66.

Exothea oblongifolia, Macfadyen, Fl. Jamaica, 232.

H. oblongifolia, Hooker in London Jour. Bot. iii, 226, t. 7.

INK WOOD. IRON WOOD.

Semi-tropical Florida, east coast, Mosquito inlet to the southern keys; in the West Indies.

A tree often 12 meters in height, with a trunk 0.45 meter in diameter.

Wood very heavy, exceedingly hard, very strong, close-grained, susceptible of a good polish, checking in drying; medullary rays obscure; color, bright reddish-brown, the sap-wood lighter; specific gravity, 0.9533; ash, 1.25; used in ship-building, for the handles of tools, and piles; resisting the attacks of the teredo.

57.—Hypelate trifoliata, Swartz,

Fl. Ind. Occ. ii, 655, t. 14.—Delessert, Icon. iii, t. 39.—De Candolle, Prodr. i, 614.—Chapman, Fl. S. States, 78.—Grisebach, Fl. British West Indies, 127; Cat. Pl. Cuba, 46.

WHITE IRON WOOD.

Semi-tropical Florida, Upper Metacombe and Umbrella Keys; in the West Indies.

A tree sometimes 12 meters in height, with a trunk 0.45 to 0.60 meter in diameter.

Wood very heavy, hard, close-grained, compact, susceptible of a fine polish, durable in contact with the soil; medullary rays thin, obscure; color, rich light brown, the sap-wood darker; specific gravity, 0.9102; ash, 1.38; used in ship-building, for the handles of tools, posts, etc.

58.—Acer Pennsylvanicum, Linnæus,

Spec. 1 ed. 1055.—Aiton, Hort. Kew. iii, 435.—Michaux, Fl. Bor.-Am. ii, 252.—Willdenow, Spec. iv, 989; Enum. i, 1045.—Desfontaines, Hist. Arb. i, 391.—Nouveau Duhamel, iv, 32.—Trattinick, Archiv. i, t. 11.—Hayne, Dend. Fl. 210.—Elliott, Sk. i, 451.—Torrey, Fl. U. S. 397; Compend. Fl. N. States, 170; Fl. N. York, i, 135.—Sprengel, Syst. ii, 224.—Eaton, Manual, 6 ed. 2.—Torrey & Gray, Fl. N. America, i, 246.—Hooker, Fl. Bor.-Am. i, 111.—Emerson, Trees Massachusetts, 496; 2 ed. ii, 566 & t.—Gray, Genera, ii, 200, t. 174, f. 1-3; Manual N. States, 5 ed. 119.—Richardson, Arctic Exped. 422.—Darby, Bot. S. States, 265.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 80.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 52.—Buchenau in Bot. Zeit. xix, 285, t. 2, f. 24.—Wood, Cl. Book, 286; Bot. & Fl. 74.—Koch, Dendrologie, i, 521.—Baillon, Hist. Pl. v, 373, f. 418-420.—Vasey, Cat. Forest Trees, 10.—Sears in Bull. Essex Inst. xiii, 175.—Bell in Geological Rep. Canada, 1879-'80, 53c.

A. Canadense, Marshall, Arbustum, 4.

A. striatum. Du Roi, Diss. 58; Harbk. i, 8, t. 1.—Wangenheim, Amer. 29, t. 12, f. 2.—Lamarck, Dict. ii, 381.—Ehrhart, Beitr iv, 25.—Mœnch, Meth. 56.—Persoon, Syn. i 417.—Michaux f. Hist. Arb. Am. ii, 242, t. 17; N. American Sylva, 3 ed. ii, 175, t. 47.—Pursh, Fl. Am. Sept. i, 267.—Nuttall, Genera, i, 258.—De Candolle, Prodr. i, 593.—Watson, Dend. Brit. i, t. 70.—Don, Miller's Dict. i, 648.—Beck, Bot. 64.—Loudon, Arboretum, i, 407 & t.—Spach, Hist. Veg. iii, 85; Ann. Sci. Nat. 2 ser. ii, 162.—Dietrich, Syn. 1281.—Eaton & Wright, Bot. 112.—Bigelow, Fl. Boston. 3 ed. 407.—Browne, Trees of America, 76.

STRIPED MAPLE. MOOSE WOOD. STRIPED DOGWOOD. GOOSE-FOOT MAPLE. WHISTLE WOOD.

Valley of the Saint Lawrence river (Ha-Ha bay), northern shores of lake Ontario, islands of lake Huron, south through the northern Atlantic states, and along the Alleghany mountains to northern Georgia, west through the lake region to northeastern Minnesota.

A small tree, 6 to 10 meters in height, with a trunk 0.15 to 0.20 meter in diameter; cool ravines and mountain sides.

Wood light, soft, close-grained, compact, satiny; medullary rays numerous, thin; color, light brown, the sap-wood lighter; specific gravity, 0.5299; ash, 0.36.

59.—Acer spicatum, Lamarck,

Dict. ii, 381.—Aiton, Hort. Kew. iii, 485.—Persoon, Syn. i, 417.—De Candolle, Prodr. i, 593.—Don, Miller's Dict. i, 648.—Audubon, Birds, t. 134.—Penn. Cycl. i, 77.—Eaton, Manual, 6 ed. 2.—Beck, Bot. 64.—Spach, Hist. Veg. 87; Ann. Sci. Nat. 2 ser. ii, 163.—Loudon, Arboretum, i, 406, t. 26.—Torrey & Gray, Fl. N. America, i, 246.—Dietrich, Syn. ii, 1281.—Eaton & Wright, Bot. 112.—Torrey, Fl. N. York, i, 185.—Browne, Trees of America, 74.—Emerson, Trees Massachusetts, 497; 2 ed. ii, 567 & t.—Parry in Owen's Rep. 610.—Richardson, Arctic Exped. 422.—Chapman, Fl. S. States, 80.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 52.—Wood, Cl. Book, 287; Bot. & Fl. 74.—Gray, Manual N. States, 5 ed. 119.—Koch, Dendrologie, i, 522.—Macoun in Geological Rep. Canada, 1875-'76, 192.—Sears in Bull. Essex Inst. xiii, 175.—Bell in Geological Rep. Canada, 1879-'80, 54c.—Nicholson in London Gard. Chronicle, 1881, 172.

A. Pennsylvanicum, Du Roi, Diss. 61; Harbk. i, 22, t. 1 [not Linnæus].—Wangenheim, Amer. 82, t. 12, f. 30.—Marshall, Arbustum, 2.

A. parviflorum, Ehrhart, Beitr. iv, 25; vi, 40.—Mœnch, Meth. 56.

A. montanum, Aiton, Hort. Kew. iii, 435; 2 ed. v, 447 (excl. syn. *striatum*).—Michaux, Fl. Bor.-Am. ii, 253.—Willdenow, Spec. iv, 988; Enum. i, 1045.—Desfontaines, Hist. Arb. i, 391.—Nouveau Duhamel, iv, 33.—Trattinick, Archiv. i, t. 13.—Pursh, Fl. Am. Sept. i, 267.—Nuttall, Genera, i, 253.—Guimpel, Otto & Hayne, Abb. Holz. 59, t. 48.—Hayne, Dend. Fl. 213.—Elliott, Sk. i, 452.—Torrey, Fl. U. S. 398; Compend. Fl. N. States, 170.—Sprengel, Syst. ii, 224.—Hooker, Fl. Bor.-Am. i, 111.—Bigelow, Fl. Boston. 3 ed. 408.—Darby, Bot. S. States, 265.

MOUNTAIN MAPLE.

Valley of the Saint Lawrence river, west along the northern shores of the great lakes to northern Minnesota and the Saskatchewan region, south through the northern states, and along the Alleghany mountains to northern Georgia.

A small tree, sometimes 8 to 10 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or often a tall shrub; cool woods and mountain ravines, reaching its greatest development on the western slopes of the Alleghany mountains of North Carolina and Tennessee.

Wood light, soft, close-grained, compact; medullary rays inconspicuous; color, light brown tinged with red, the sap-wood lighter; specific gravity, 0.5330; ash, 0.43.

60.—Acer macrophyllum, Pursh,

Fl. Am. Sept. i, 267.—Poiret, Suppl. v, 669.—Nuttall, Genera, i, 253; Sylva, ii, 77, t. 67; 2 ed. ii, 24, t. 67.—De Candolle, Prodr. i, 594.—Sprengel, Syst. ii, 225.—Penn. Cycl. i, 78.—Eaton, Manual, 6 ed. 2.—Hooker, Fl. Bor.-Am. i, 112, t. 38.—Don, Miller's Dict. i, 648.—Spach in Ann. Sci. Nat. 2 ser. ii, 165.—Torrey & Gray, Fl. N. America, i, 246.—Hooker & Arnott, Bot. Beechey, 327.—Dietrich, Syn. ii, 1281.—Loudon, Arboretum, i, 408, t. 28, f. 117, 118.—Eaton & Wright, Bot. 112.—Bentham, Pl. Hartweg. 301.—Browne, Trees of America, 78.—Richardson, Arctic Exped. 423.—Durand in Jour. Philadelphia Acad. 1855, 84.—Torrey in Pacific R. R. Rep. iv, 74; Bot. Mex. Boundary Survey, 47; Bot. Wilkes Exped. 258.—Newberry in Pacific R. R. Rep. vi, 21, 67.—Cooper in Pacific R. R. Rep. xii, 28, 57; Smithsonian Rep. 1858, 258.—Lyall in Jour. Linnæan Soc. vii, 134, 144.—Bolander in Proc. California Acad. iii, 78.—Wood, Cl. Book, 287; Bot. & Fl. 74.—Rothrock in Smithsonian Rep. 1867, 334.—Koch, Dendrologie, i, 528.—Gray in Proc. Am. Acad. viii, 379.—Brewer & Watson, Bot. California, i, 107.—Vasey, Cat. Forest Trees, 10.—Macoun in Geological Rep. Canada, 1875–'76, 192.—G. M. Dawson in Canadian Nat. new ser. ix, 330.—Nicholson in London Gard. Chronicle, 1881, 10.

A. palmatum, Rafinesque, New Fl. & Bot. i, 48 [not Thunberg].

BROAD-LEAVED MAPLE.

Coast of Alaska, from latitude 55° south along the islands and coast of British Columbia, through western Washington territory and Oregon, and along the California Coast ranges and western slopes of the Sierra Nevada to the San Bernardino mountains and Hot Spring valley, San Diego county (*Parish Brothers*), not ascending above 4,000 feet altitude.

A tree 24 to 30 meters in height, with a trunk 1.20 to 1.50 meter in diameter; along streams and river bottoms, reaching its greatest development on the rich bottom lands of the Coquille and other rivers of southern Oregon, where, with the California laurel, it forms dense, heavy forests.

Wood light, soft, not strong, close-grained, compact, easily worked, susceptible of a good polish; medullary rays numerous, thin; color, rich light brown tinged with red, the sap-wood lighter, often nearly white; specific gravity, 0.4909; ash, 0.54; largely used in Oregon in the manufacture of furniture, for ax and broom handles, frames of snow-shoes, etc.; specimens with the grain beautifully curled and contorted are common and valued in cabinet-making.

61.—Acer circinatum, Pursh,

Fl. Am. Sept. i, 266.—Poiret, Suppl. v, 669.—Nuttall, Genera, i, 253; Jour. Philadelphia Acad. vii, 16 (excl. syn.); Sylva, ii, 80, t. 67; 2 ed. ii, 27, t. 67.—De Candolle, Prodr. i, 595.—Sprengel, Syst. ii, 225.—Penn. Cycl. i, 79.—Eaton, Manual, 6 ed. 2.—Don, Miller's Dict. i, 651.—Spach in Ann. Sci. Nat. 2 ser. ii, 166; Hist. Veg. iii, 97.—Loudon, Arboretum, i, 422, f. 112, 127.—Torrey & Gray, Fl. N. America, i, 247.—Hooker, Fl. Bor.-Am. i, 112, t. 39.—Eaton & Wright, Bot. 112.—Dietrich, Syn. ii, 1282.—Browne, Trees of America, 91.—Richardson, Arctic Exped. 422.—Lindley in Paxton's Fl. Gard. ii, 156, f. 210 (London Gard. Chronicle, 1851, 791, f. 211).—Newberry in Pacific R. R. Rep. vi, 21, 69.—Cooper in Pacific R. R. Rep. xii, 28, 57; Smithsonian Rep. 1858, 258.—Lyall in Jour. Linnæan Soc. vii, 134.—Gray in Proc. Am. Acad. viii, 379.—Wood, Cl. Book, 287, Bot. & Fl. 74.—Koch, Dendrologie, i, 523.—Torrey, Bot. Wilkes Exped. 258.—Brewer & Watson, Bot. California, i, 107.—Vasey, Cat. Forest Trees, 10.—Hall in Coulter's Bot. Gazette, ii, 85.—Macoun in Geological Rep. Canada, 1875–'76, 192.—G. M. Dawson, Canadian Nat. new ser. ix, 330.—Nicholson in London Gard. Chronicle, 1881, 10.

A. virgatum, Rafinesque, New Fl. & Bot. i, 48.

VINE MAPLE.

British Columbia, valley of the Fraser river (Yale) and probably farther north, southward through Washington territory and Oregon, west of the Cascade mountains to the Mount Shasta region of northern California, rarely ascending to 4,000 feet altitude.

A small tree, sometimes 8 to 12 meters in height, with a trunk 0.20 to 0.30 meter in diameter; along streams; the stems often prostrate and forming dense, impenetrable thickets.

Wood heavy, hard, not strong, close-grained, compact; medullary rays numerous, thin; color, light brown or often nearly white, the sap-wood lighter; specific gravity, 0.6660; ash, 0.39; used as fuel; by lumbermen for ax and shovel handles, and by the coast Indians for the bows of fishing nets.

62.—Acer glabrum, Torrey,

Ann. Lyc. N. York, ii, 172; Bot. Wilkes Exped. 259.—Don, Miller's Dict. i, 650.—Eaton, Manual, 6 ed. 2.—Torrey & Gray, Fl. N. America, i, 247, 684.—Eaton & Wright, Bot. 112.—Walpers, Rep. i, 409.—Nuttall, Sylva, ii, 86; 2. ed., ii, 33.—Newberry in Pacific R. R. Rep. vi. 69.—Cooper in Smithsonian Rep. 1858, 258; Pacific R. R. Rep. xii, 51, 57; Am. Nat. iii, 406.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 187.—Gray in Am. Jour. Sci. 2 ser. xxxiv, 259; Proc. Philadelphia Acad. 1863, 59.—Porter in Hayden's Rep. 1870, 474; 1871, 480.—Watson in King's Rep. v, 52.—Porter & Coulter, Fl. Colorado; Hayden's Surv. Misc. Pub. No. 4, 19.—Coulter in Hayden's Rep. 1872, 763.—Macoun in Geological Rep. Canada, 1875–'76, 192.—Brewer & Watson, Bot. California, i, 107.—Rothrock in Wheeler's Rep. vi, 83.—Nicholson in London Gard. Chronicle, 1881, 750.

A. barbatum, Douglas in Hooker, Fl. Bor.-Am. i, 113.—Loudon, Arboretum, i, 420, f. 125 (excl. syn.).

A. Douglasii, Hooker in London Jour. Bot. vi, 77, t. 6.

A. tripartitum, Nuttall in Torrey & Gray, Fl. N. America, i, 247.—Dietrich, Syn. ii, 1281.—Eaton & Wright, Bot. 112.—Walpers, Rep. i, 409.—Nuttall, Sylva, ii, 85, t. 71; 2 ed. ii, 33, t. 71.—Gray in Mem. Am. Acad. new ser. iv[1], 28; Pacific R. R. Rep. iv, 73.—Newberry in Pacific R. R. Rep. vi, 69.

DWARF MAPLE.

British Columbia, valley of the Fraser river and probably farther north, south through Washington territory, Oregon, and along the Sierra Nevada of California to the Yosemite valley; east along the mountain ranges of Idaho and Montana to the eastern base of the Rocky mountains, south through Colorado and Utah, in the east Humboldt Range, Nevada, and in the mountain ranges of western New Mexico and eastern Arizona.

A small tree, 8 to 12 meters in height, with a trunk sometimes 0.30 meter in diameter, or more often reduced to a low shrub 1 to 2 meters in height; borders of streams, reaching its greatest development in the mountain cañons of western New Mexico and eastern Arizona.

Wood heavy, hard, close-grained, compact; medullary rays numerous, thin; color, light brown, or often nearly white, the sap-wood lighter; specific gravity, 0.6028; ash, 0.30.

63.—Acer grandidentatum, Nuttall;

Torrey & Gray, Fl. N. America, i, 247.—Dietrich, Syn. ii, 1283.—Eaton & Wright, Bot. 112.—Walpers, Rep. i, 409.—Nuttall, Sylva, ii, 82, t. 69; 2 ed. ii, 29, t. 69.—Watson in King's Rep. v, 52; Pl. Wheeler, 7.—Porter in Hayden's Rep. 1871, 480.—Vasey, Cat. Forest Trees, 10.—Parry in Am. Nat. ix, 201, 268.—Rothrock in Wheeler's Rep. vi, 83.—Rusby in Bull. Torrey Bot. Club, ix, 106.—Watson in Proc. Am. Acad. xvii, 338.—Nicholson in London Gard. Chronicle, 1881, 172.

Western Montana, headwaters of the Columbia river (*Nuttall*), cañons of the Wahsatch mountains, Utah, and south through eastern Arizona to southwestern New Mexico (Mogollon mountains, *E. L. Greene*); and reported in the ranges east of the Rio Grande; southward into Coahuila (*Palmer*).

A small tree, rarely exceeding 10 meters in height, with a trunk 0.20 to 0.25 meter in diameter; along streams; not common.

Wood heavy, hard, close-grained, compact; medullary rays numerous, thin, distinct; color, light brown, or often nearly white; specific gravity, 0.6902; ash, 0.64.

64.—Acer saccharinum, Wangenheim,

Amer. 36, t. 11, f. 26.—Lamarck, Dict. ii, 379.—Walter, Fl. Caroliniana, 251.—Aiton, Hort. Kew. iii, 434; 2 ed. v, 447.—Ehrhart, Beitr. iv, 24.—Persoon, Syn. i, 417.—Nouveau Duhamel, iv, 29, t. 8.—Willdenow, Spec. iv, 985; Enum. ii, 1044.—Desfontaines, Hist. Arb. i, 392.—Trattinick, Archiv. i, t. 3.—Michaux f. Hist. Arb. Am. ii, 218, t. 15; N. American Sylva, 3 ed. i, 153, t. 42.—Titford, Hort. Bot. Am. 105.—Pursh, Fl. Am. Sept. i, 266.—Eaton, Manual, 44; 6 ed. 2.—Nuttall, Genera, i, 253.—Hayne, Dend. Fl. 214.—Elliott, Sk. i, 450.—Richardson, Franklin Jour. 26; Arctic Exped. 422.—De Candolle, Prodr. i, 595.—Torrey, Fl. U. S. 396; Compend. Fl. N. States, 170; Fl. N. York, i, 135.—Sprengel, Syst. ii, 225.—Penn. Cycl. i, 79.—Hooker, Fl. Bor.-Am. i, 113.—Don, Miller's Dict. i, 650.—Beck, Bot. 63.—Bigelow, Fl. Boston. 3 ed. 406.—Spach, Hist. Veg. iii, 170; Ann. Sci. Nat. 2 ser. ii, 99.—Loudon, Arboretum, i, 411, t. 31, f. 122.—Torrey & Gray, Fl. N. America, i, 248.—Eaton & Wright, Bot. 112.—Dietrich, Syn. ii, 1282.—Walpers, Rep. i, 410.—Nees, Pl. Med. 5.—Nuttall, Sylva, ii, 88; 2 ed. ii, 35.—Browne, Trees of America, 83.—Emerson, Trees Massachusetts, 489; 2 ed. ii, 258 & t.—Gray, Genera, ii, 200, t. 174; Manual N. States, 5 ed. 119.—Darlington, Fl. Cestrica, 3 ed. 45.—Darby, Bot. S. States, 265.—Parry in Owen's Rep. 610.—Chapman, Fl. S. States, 80.—Lesquereux in Owen's 2d Rep. Arkansas, 354.—Wood, Cl. Book, 286; Bot. & Fl. 74.—Porcher, Resources S. Forests, 80.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 187.—Young, Bot. Texas, 206.—Vasey, Cat. Forest Trees, 10.—Guibourt, Hist. Drogues, 7 ed. iii, 606.—Ward in Bull. U. S. Nat. Mus. No. 22, 73.—Sears in Bull. Essex Inst. xiii, 175.—Bell in Geological Rep. Canada, 1879–'80, 51c.—Ridgway in Proc. U. S. Nat. Mus. 1882, 62.

A. saccharum, Marshall, Arbustum, 4.

A. barbatum, Michaux, Fl. Bor.-Am. ii, 253.—Willdenow, Spec. iv, 989.—Poiret, Suppl. ii, 575.—Pursh, Fl. Am. Sept. i, 266.—Nuttall, Genera, i, 255.—Elliott, Sk. i, 451.—De Candolle, Prodr. i, 595.—Torrey, Fl. U. S. 396; Compend. Fl. N. States, 169.—Eaton, Manual, 6 ed. 2.—Sprengel, Syst. ii, 224.—Don, Miller's Dict. i, 649.—Beck, Bot. 63.—Spach, Hist. Veg. iii, 178; Ann. Sci. Nat. 2 ser. ii, 118.—Torrey & Gray, Fl. N. America, i, 249, 684.—Eaton & Wright, Bot. 112.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 51.

SUGAR MAPLE. SUGAR TREE. HARD MAPLE. ROCK MAPLE.

Southern Newfoundland, valleys of the Saint Lawrence and Saguenay rivers, shores of lake Saint John, west along the northern shores of the great lakes to Lake of the Woods; south through the northern states and along the Alleghany mountains to northern Alabama and the Chattahoochee region of west Florida (var. *Floridanum*, *Chapman*, *l. c.*); west to Minnesota, eastern Nebraska, eastern Kansas (rare), and eastern Texas.

A tree of great economic value, 24 to 36 meters in height, with a trunk 0.60 to 1.20 meter in diameter, or toward its southwestern limits greatly reduced in size; rich woods, often forming extensive forests, and reaching its greatest development in region of the great lakes.

Wood heavy, hard, strong, tough, close-grained, compact, susceptible of a good polish; medullary rays numerous, thin; color, light brown tinged with red, the sap-wood lighter; specific gravity, 0.6912; ash, 0.54; largely used in the manufacture of furniture, shoe lasts and pegs, saddle-trees, in turnery, for interior finish, and flooring; in ship-building for keels, keelsons, shoes, etc., and furnishing valuable fuel; "curled" maple and "bird's-eye" maple, accidental forms in which the grain is beautifully curled and contorted, are common and highly prized in cabinet-making.

Maple sugar is principally made from this species; the ashes of the wood, rich in alkali, yield large quantities of potash.

Var. nigrum, Torrey & Gray,

Fl. N. America, i, 248.—Torrey, Fl. N. York, i, 136.—Loudon, Arboretum, i, 411.—Browne, Trees of America, 84.—Gray, Manual N. States, 5 ed. 119.—Vasey, Cat. Forest Trees, 10.—Bell in Geological Rep. Canada, 1879–'80, 54c.

A. saccharinum, Michaux, Fl. Bor.-Am. ii, 252 [not Wangenheim].

A. nigrum, Michaux f. Hist. Arb. Am. ii, 238, t. 16; N. American Sylva, 3 ed. i, 163, t. 43.—Pursh, Fl. Am. Sept. i, 266.—Poiret, Suppl. v, 669.—Nuttall, Genera, i, 253.—Elliott, Sk. i, 450.—De Candolle, Prodr. i, 595.—Torrey, Fl. U. S. 397; Compend. Fl. N. States, 170.—Sprengel, Syst. ii, 225.—Don, Miller's Dict. i, 650.—Beck, Bot. 63.—Eaton, Manual, 6 ed. 2.—Spach, Hist. Veg. iii, 104; Ann. Sci. Nat. 2 ser. ii, 170.—Dietrich, Syn. ii, 1282.—Eaton & Wright, Bot. 112.—Koch, Dendrologie, i, 532.—Gray in Am. Nat. vi, 767; vii, 422.—Wood, Cl. Book, 286; Bot. & Fl. 74.

BLACK SUGAR MAPLE.

Western Vermont, shores of lake Champlain, westward to southern Missouri, south through Tennessee to northern Alabama, the valley of the Chickasaw river, Mississippi (*Mohr*), and southwestern Arkansas (Fulton, *Letterman*).

A large tree along streams and river bottoms, in lower ground than the species with which it is connected by numerous intermediate forms.

Wood heavier than that of the species; specific gravity, 0.6915; ash, 0.71.

65.—Acer dasycarpum, Ehrhart,

Beitr. iv, 24.—Mœnch, Meth. 56.—Persoon, Syn. i, 417.—Willdenow, Spec. iv, 985; Enum. ii, 1044.—Aiton, Hort. Kew. 2 ed. v, 446.—Pursh, Fl. Am. Sept. i, 266.—Nuttall, Genera, i, 252; Sylva, ii, 87; 2 ed. ii, 35.—Hayne, Dend. Fl. 213.—Elliott, Sk. i, 449.—Torrey, Fl. U. S. 396; Compend. Fl. N. States, 169; Fl. N. York, i, 136, t. 18; Nicollet's Rep. 147.—Sprengel, Syst. ii, 225.—Tausch, Regensb. Fl. xii², 553.—Eaton, Manual, 6 ed. 2.—Loudon, Arboretum, i, 423, fig. 129 & t.—Hooker, Fl. Bor.-Am. i, 113; Jour. Bot. i, 200.—Bigelow, Fl. Boston. 3 ed. 407.—Torrey & Gray, Fl. N. America, i, 248.—Eaton & Wright, Bot. 112.—Emerson, Trees Massachusetts, 487; 2 ed. ii, 556 & t.—Parry in Owen's Rep. 610.—Darlington, Fl. Cestrica, 3 ed. 46.—Richardson, Arctic Exped. 423.—Darby, Bot. S. States, 265.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 81.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 51.—Lesquereux in Owen's 2d Rep. Arkansas, 354.—Wood, Cl. Book, 286; Bot. & Fl. 74.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 187.—Buchenau in Bot. Zeit. xix, 285, t. 11.—Gray, Manual N. States, 5 ed. 119.—Vasey, Cat. Forest Trees, 10.—Coulter's Bot. Gazette, v, 88.—Koch, Dendrologie, i, 541.—Sears in Bull. Essex Inst. xiii, 3.—Bell in Geological Rep. Canada, 1879–'80, 53c.—Nicholson in London Gard. Chronicle, 1881, 136, f. 24.—Ridgway in Proc. U. S. Nat. Mus. 1882, 62.

A. saccharinum, Linnæus, Spec. 1 ed. 1055.

A. rubrum, var. *pallidum*, Aiton, Hort. Kew. iii, 434.

A. eriocarpum, Michaux, Fl. Bor.-Am. ii, 253.—Desfontaines in Ann. Mus. vii, 412, t. 25, f. 1; Hist. Arb. i, 392.—Poiret, Suppl. ii, 573.—Trattinick, Archiv. i, t. 8.—Michaux f. Hist. Arb. Am. ii, 205, t. 13; N. American Sylva, 3 ed. i, 146, t. 40.—Nouveau Duhamel, iv, 30.—De Candolle, Prodr. i, 595.—Don, Miller's Dict. i, 650.—Penn. Cycl. i, 79.—Beck, Bot. 63.—Spach, Hist. Veg. iii, 116; Ann. Sci. Nat. 2 ser. ii, 177.—Darlington, Fl. Cestrica, 2 ed. 245.—Dietrich, Syn. ii, 1282.—Browne, Trees of America, 95.—Meehan in Proc. Philadelphia Acad. 1868, 140.

SOFT MAPLE. WHITE MAPLE. SILVER MAPLE.

Valley of the Saint John's river, New Brunswick, to Ontario, south of latitude 45°, south to western Florida; west to eastern Dakota, eastern Nebraska, the valley of the Blue river, Kansas, and the Indian territory.

A large tree, 18 to 30 or, exceptionally, 36 meters in height, with a trunk 1.20 to 1.80 meter in diameter; along streams and intervales, in rich soil; most common west of the Alleghany mountains, and reaching its greatest development in the basin of the lower Ohio river.

Wood light, hard, strong, brittle, close-grained, compact, easily worked; medullary rays numerous, thin; specific gravity, 0.5269; ash, 0.33; somewhat used in the manufacture of cheap furniture, for flooring, etc.; maple sugar is occasionally made from this species.

66.—Acer rubrum, Linnæus.

Spec. 1 ed. 1055.—Du Roi, Diss. 59.—Marshall, Arbustum, 3.—Lamarck, Dict. ii, 300; Ill. iii, 438, t. 844, f. 3.—Ehrhart, Beitr. iv, 23.—Abbot, Insects Georgia, ii, 93.—Aiton, Hort. Kew. iii, 434 (excl. var.); 2 ed. v, 446.—Mœnch, Meth. 56.—Michaux, Fl. Bor.-Am. ii, 253.—Persoon, Syn. i, 417.—Robin, Voyages, iii, 471.—Nouveau Duhamel, iv, 31.—Willdenow, Spec. iv, 984; Enum. ii, 1044.—Desfontaines in Ann. Mus. vii, 413, t. 25, f. 2; Hist. Arb. i, 391.—Poiret, Suppl. ii, 574.—Trattinick, Archiv. i, t. 9.—Michaux f. Hist. Arb. Am. ii, 210, t. 14; N. American Sylva, 3 ed. i 149, t. 41.—Pursh, Fl. Am. Sept. i, 265.—Bigelow, Fl. Boston. 377.—Nuttall, Genera, i, 252.—Eaton, Manual, 44; 6 ed. 2.—Hayne, Dend. Fl. 213.—Elliott, Sk. i, 449.—Torrey, Fl. U. S. 395; Compend. Fl. N. States, 169; Fl. N. York, i, 137.—Watson, Dend. Brit. ii, t. 169.—Sprengel, Syst. ii, 225.—Audubon, Birds, t. 54, 67.—Tausch, Regensb. Fl. xii², 552.—Penn. Cycl. i, 79.—Hooker, Fl. Bor.-Am. i, 114; Jour. Bot. i, 199.—Don, Miller's Dict. i, 650.—Beck, Bot. 63.—Spach, Hist. Veg. iii, 113; Ann. Sci. Nat. 2 ser. ii, 176.—Loudon, Arboretum, i, 424, f. 130 & t.—Torrey & Gray, Fl. N. America, i, 249, 684.—Dietrich, Syn. ii, 1282.—Eaton & Wright, Bot. 112.—Bigelow, Fl. Boston. 3 ed. 405.—Walpers, Rep. i, 409.—Reid in London Gard. Chronicle, 1844, 276.—Emerson, Trees Massachusetts, 483; 2 ed. ii, 551 & t.—Parry in Owen's Rep. 610.—Richardson, Arctic Exped. 422.—Nuttall, Sylva, ii, 87; 2 ed. ii, 34.—Darlington, Fl. Cestrica, 3 ed. 46.—Darby, Bot. S. States, 265.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 81.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 50.—Lesquereux in Owen's 2d Rep. Arkansas, 354.—Wood, Cl. Book, 286; Bot. & Fl. 74.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 187.—Porcher, Resources S. Forests, 79.—Buchenau in Bot. Zeit. xix, 285, t. 11.—Gray, Manual N. States, 5 ed. 119.—Koch, Dendrologie, i, 542.—Young, Bot. Texas, 206.—Vasey, Cat. Forest Trees, 10.—Macoun in Geological Rep. Canada, 1875–'76, 192.—Sears in Bull. Essex Inst. xiii, 176.—Bell in Geological Rep. Canada, 1879–'80, 54c.—Nicholson in London Gard. Chronicle, 1881, 172, f. 30, 31.—Ridgway in Proc. U. S. Nat. Mus. 1882, 62.

? *A. glaucum*, Marshall, Arbustum, 2.

? *A. Caroliniana*, Walter, Fl. Caroliniana, 251.

A. coccineum, Michaux f. Hist. Arb. Am. ii, 203; N. American Sylva, 3 ed. i, 142.

A. sanguineum, Spach, Hist. Veg. iii, 115; Ann. Sci. Nat. 2 ser. ii, 176.—Dietrich, Syn. ii, 1282.

RED MAPLE. SWAMP MAPLE. SOFT MAPLE. WATER MAPLE.

New Brunswick, Quebec and Ontario, south of latitude 49°, north and west to the Lake of the Woods, south to Indian and Caloosa rivers, Florida, west to eastern Dakota, eastern Nebraska, the Indian territory, and the valley of the Trinity river, Texas.

A large tree, 20 to 30 or, exceptionally, 32 meters in height, with a trunk 0.90 to 1.50 meter in diameter; borders of streams and low, wet swamps, reaching its greatest development in the valleys of the lower Wabash and Yazoo rivers.

Wood heavy, hard, not strong, close-grained, compact, easily worked; medullary rays numerous, obscure; color, brown, often tinged with red, the sap-wood lighter; specific gravity, 0.6178; ash, 0.37; largely used in cabinet-making, turnery, and for woodenware, gun stocks, etc.; an accidental variety with undulating grain is highly valued.

Ink is occasionally made, domestically, by boiling the bark of this species in soft water and combining the tannin with sulphate of iron; formerly somewhat used in dyeing.

Var. Drummondii.

A. Drummondii, Hooker & Arnott in Hooker, Jour. Bot. i, 199.—Nuttall, Sylva, ii, 83, t. 70; 2 ed. ii, 30, t. 70.

Southern Arkansas, eastern Texas, western Louisiana, and sparingly through the Gulf states to southern Georgia.

Well characterized by its obovate or truncate leaves, the base entire or slightly crenulate-toothed, densely covered, as well as the petioles and young shoots, with a thick white tomentum; fruit convergent, the wings bright red, even when fully ripe.

A large tree, in deep, wet swamps, connected with the species by numerous intermediate forms of Georgia, Florida, and Alabama.

Wood lighter than that of the species; specific gravity, 0.5459; ash, 0.34.

67.—Negundo aceroides, Mœnch.

Meth. 334.—Torrey & Gray, Fl. N. America, i, 250.—Eaton & Wright, Bot. 327.—Torrey in Nicollet's Rep. 147; Fremont's Rep. 88; Pacific R. R. Rep. iv, 73.—Nuttall, Sylva, ii, 92; 2 ed. ii, 38.—Gray in Jour. Boston Soc. Nat. Hist. vi, 166; Mem. Am. Acad. new ser. iv, 29; v, 309; Genera, ii, 202, t. 175; Pacific R. R. Rep. xii, 41; Manual N. States, 5 ed. 120.—Richardson, Arctic Exped. 423.—Parry in Owen's Rep. 610.—Darlington, Fl. Cestrica, 3 ed. 46.—Cooper in Smithsonian Rep. 1858, 251; Am. Nat. iii, 306.—Chapman, Fl. S. States, 81.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 53.—Wood, Cl. Book, 287; Bot. & Fl. 74.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 188.—Porter in Hayden's Rep. 1870, 474.—Watson in King's Rep. v, 52; Pl. Wheeler, 7.—Porter & Coulter, Fl. Colorado; Hayden's Surv. Misc. Pub. No. 4, 19.—Macoun & Gibson in Trans. Bot Soc. Edinburgh, xii, 319.—Young, Bot. Texas, 207.—Vasey, Cat. Forest Trees, 10.—Macoun in Geological Rep. Canada, 1875–'76, 192.—Brewer & Watson, Bot. California, i, 108.—Rothrock in Wheeler's Rep. vi, 84.—Hemsley, Bot. Am.-Cent. i, 214.—Sears in Bull. Essex Inst. xiii, 176.—Bell in Geological Rep. Canada, 1879–'80, 48c.—Nicholson in London Gard. Chronicle, 1881, 815.—Ridgway in Proc. U. S. Nat. Mus. 1882, 63.—Watson in Proc. Am. Acad. xvii, 338.

Acer Negundo, Linnæus, Spec. 1 ed. 1056.—Wangenheim, Amer. 30, t. 12, f. 29.—Marshall, Arbustum, 2.—Lamarck, Dict. ii, 380.—Walter, Fl. Caroliniana, 250.—Aiton, Hort. Kew. iii, 436; 2 ed. v, 448.—Michaux, Fl. Bor.-Am. ii, 253.—Persoon, Syn. i, 418.—Desfontaines, Hist. Arb. i, 391.—Willdenow, Spec. iv, 992; Enum. ii, 1046.—Nouveau Duhamel, iv, 27, t. 7.—Trattinick, Archiv. i, t. 40.—Michaux f. Hist. Arb. Am. ii, 247, t. 18; N. American Sylva, 3 ed. i, 172, t. 46.—Pursh, Fl. Am. Sept. i, 268.—Hayne, Dend. Fl. 216.—Elliott, Sk. i, 452.—James in Long's Exped. ii, 69.—Torrey, Fl. U. S. 298; Compend. Fl. N. States, 170; Ann. Lyc. N. York, ii, 172; Emory's Rep. 407.—Sprengel, Syst. ii, 225.—Guimpel, Otto & Hayne, Abb. Holz. 119, t. 95.—Eaton, Manual, 6 ed. 2.—Dietrich, Syn. ii, 1283.—Loudon, Arboretum, i, 469, t. 46, 47.—Darby, Bot. S. States, 265.—Buchenau in Bot. Zeit. xiv, 285, t. 11 & figs.—Koch, Dendrologie, i, 544.—Baillon, Hist. Pl. v, 374, f. 426.

Negundium fraxinifolium, Rafinesque, Med. Rep. v, 354.—Desvaux, Jour. Bot. v, 170.

Negundo fraxinifolium, Nuttall, Genera, i, 253.—De Candolle, Prodr. i, 596.—Hooker, Fl. Bor.-Am. i, 114; Jour. Bot. i, 200.—Don, Miller's Dict. i, 651.—Beck, Bot. 64.—Spach, Hist. Veg. iii, 119.—Rafinesque, New Fl. & Bot. i, 48.—Browne, Trees of America, 106.—Scheele in Roemer, Texas, 433.—Schnizlein, Icon. t. 227, f. 2, 18.

? *N. Mexicanum*, De Candolle, Prodr. i, 596.—Hemsley, Bot. Am.-Cent. i, 214.

N. trifoliatum, Rafinesque, New Fl. & Bot. i, 48.

N. lobatum, Rafinesque, New Fl. & Bot. i, 48.

N. Californicum, Scheele in Roemer, Texas, 433 [not Torrey & Gray].

BOX ELDER. ASH-LEAVED MAPLE.

Shores of the Winooski river and lake Champlain, Vermont, near Ithaca, New York, eastern Pennsylvania, and south to Hernando county, Florida (not detected in northeastern Florida); northwest through the lake region of the United States and Manitoba to the Dog's Head, lake Winnipeg, and along the southern branch of the Saskatchewan to the eastern base of the Rocky mountains; west in the United States to the eastern slopes of the Rocky mountains of Montana, through Colorado to the Wahsatch mountains, Utah; southwest through the basin of the Mississippi river, western Texas, and New Mexico to the Mogollon mountains, eastern Arizona; southward into Mexico.

A tree 15 to 22 meters in height, with a trunk 0.60 to 0.90 or, exceptionally, 1.20 meter in diameter; moist soil, borders of streams, etc.; in the Rocky Mountain region in high valleys, between 5,000 and 6,000 feet elevation; one of the most widely distributed trees of the American forest, reaching its greatest development in the valleys of the Wabash and Cumberland rivers.

Wood light, soft, not strong, close-grained, compact; medullary rays numerous, thin; color, creamy-white, the sap-wood hardly distinguishable; specific gravity, 0.4328; ash, 1.07; occasionally used in the interior finish of houses, for woodenware, cooperage, and paper-pulp.

Small quantities of maple sugar are sometimes obtained from this species.

68.—Negundo Californicum, Torrey & Gray,

Fl. N. America, i, 250, 684.—Hooker & Arnott, Bot. Beechey, 327, t. 77.—Eaton & Wright, Bot. 327.—Walpers, Rep. i, 410.—Bentham, Pl. Hartweg. 301.—Nuttall, Sylva, ii, 90, t. 72; 2 ed. ii, 37, t. 72.—Cooper in Smithsonian Rep. 1858, 258, in part.—Koch, Dendrologie, i, 545.—Brewer & Watson, Bot. California, i, 108.—Vasey, Cat. Forest Trees, 10.—Nicholson in London Gard. Chronicle, 1881, 815.

Acer Californicum, Dietrich, Syn. ii, 1283.

N. aceroides, Torrey in Pacific R. R. Rep. iv, 74; Bot. Mex. Boundary Survey, 47; Bot. Wilkes Exped. 259 [not Moench].—Bolander in Proc. California Acad. iii, 78.

BOX ELDER.

California, valley of the lower Sacramento river (Sacramento, and in Marin and Contra Costa counties), southward in the interior valleys of the Coast ranges to about latitude 35°, cañons of the western slopes of the San Bernardino mountains (*Parish Brothers*).

A small tree, 6 to 12 meters in height, with a trunk 0.30 to 0.60 meter in diameter; borders of streams.

Wood light, soft, not strong, close-grained, compact; medullary rays numerous, thin; color, nearly white, or slightly tinged with yellow; specific gravity, 0.4821; ash, 0.54; occasionally used in the manufacture of cheap furniture.

ANACARDIACEÆ.

69.—Rhus cotinoides, Nuttall,

Mss. in Herb. Philadelphia Acad.; Travels, 177.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 70.—Wood, Cl. Book, 285; Bot. & Fl. 73.—Buckley in Proc. Philadelphia Acad. 1881, 125.—Mohr in Proc. Philadelphia Acad. 1881, 217.

R. cotinus? Torrey & Gray, Fl. N. America, i, 216.—Wood, Cl. Book, 285.

Cotinus Americanus, Nuttall, Sylva, iii, 1, t. 81; 2 ed. ii, 71, t. 81.

Cotinus coggygria, Engler in De Candolle, Suites, iv, 351, in part.

Indian territory, "on the light, broken, calcareous, rocky banks of the Grand river, a large tributary of the Arkansas, at a place then known as the Eagle's Nest," (*Nuttall, l. c.*); Alabama, north of the Tennessee river on southern slopes of the Cumberland mountains (on a hill near Bailie's farm, twelve miles from Huntsville, on the Madison road, *Buckley, Mohr*), and doubtfully reported north of the Alabama line, in Tennessee.

CHITTAM WOOD.

In Alabama, a small wide-branching tree, 9 to 10 meters in height, with a trunk sometimes 0.30 meter in diameter; on limestone benches from 700 to 900 feet elevation, in dense forests of oak, ash, maple, etc.; local and very rare; not rediscovered in Arkansas or the Indian territory; in Alabama nearly exterminated.

Wood light, soft, rather coarse-grained, checking badly in drying, very durable in contact with the soil; layers of annual growth marked by several rows of large open ducts; medullary rays, numerous, very obscure; color, bright, clear, rich orange, the thin sap-wood nearly white; specific gravity, 0.6425; ash, 0.50; largely used locally for fencing, and yielding a clear orange dye.

70.—Rhus typhina, Linnæus,

Amœn. iv, 311.—Medicus, Bot. Beobacht. 1782, 228.—Wangenheim, Amer. 95.—Marshall, Arbustum, 129.—Walter, Fl. Caroliniana, 255.—Aiton, Hort. Kew. i, 365; 2 ed. ii, 162.—Ehrhart, Beitr. vi, 89.—Mœnch, Meth. 72.—Willdenow, Spec. i, 1478; Enum. i, 323.—B. S. Barton, Coll. i, 51.—Schkuhr, Handb. 237.—Michaux, Fl. Bor.-Am. i, 182.—Nouveau Duhamel, ii, 164, t. 47.—Persoon, Syn. i, 324.—Desfontaines, Hist. Arb. ii, 325.—Poiret in Lamarck, Dict. vii, 503.—Barton, Prodr. Fl. Philadelph. 39; Compend. Fl. Philadelph. i, 153.—Pursh, Fl. Am. Sept. i, 204.—Eaton, Manual, 35; 6 ed. 302.—Nuttall, Genera, i, 203.—Rœmer & Schultes, Syst. vi, 643.—Hayne, Dend. Fl. 33.—Elliott, Sk. i, 360.—Torrey, Fl. U. S. 322; Compend. Fl. N. States, 140; Fl. N. York, i, 128.—De Candolle, Prodr. ii, 67.—Sprengel, Syst. i, 936.—Watson, Dend. Brit. i, t. 17, 18.—Hooker, Fl. Bor.-Am. i, 126.—Don, Miller's Dict. ii, 70.—Beck, Bot. 76.—Spach, Hist. Veg. ii, 212.—Bennett, Pl. Jav. Rar. 80.—Loudon, Arboretum, ii, 550, f. 224.—Torrey & Gray, Fl. N. America, i, 217, 680.—Eaton & Wright, Bot. 392.—Bigelow, Fl. Boston. 3 ed. 126.—Dietrich, Syn. ii, 1002.—Emerson, Trees Massachusetts, 501; 2 ed. ii, 571 & t.—Browne, Trees of America, 184.—Griffith, Med. Bot. 186.—Parry in Owen's Rep. 610.—Darlington, Fl. Cestrica, 3 ed. 43.—Richardson, Arctic Exped. 424.—Darby, Bot. S. States, 254.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 69.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 93.—Lesquereux in Owen's 2d Rep. Arkansas, 353.—Wood, Cl. Book, 384; Bot. & Fl. 73.—Porcher, Resources S. Forests, 208.—Gray, Manual N. States, 5 ed. 111.—Koch, Dendrologie, i, 576.—Young, Bot. Texas, 197.—Vasey, Cat. Forest Trees, 10.—Guibourt, Hist. Drogues, 7 ed. iii, 488.—Nat. Dispensatory, 2 ed. 1230.—Ridgway in Proc. U. S. Nat. Mus. 1882, 63.—Engler in De Candolle, Suites, iv, 377.

Datisca hirta, Linnæus, Spec. 1 ed. 1037.—Don, Miller's Dict. i, 290.

R. hypselodendron, Mœnch, Meth. 73.

R. Canadense, Miller, Dict. No. 5.—Nouveau Duhamel, ii, 163.

R. viridiflora, Nouveau Duhamel, ii, 163.—Poiret in Lamarck, Dict. vii, 504.—De Candolle, Prodr. ii, 67.—Nuttall, Genera, i, 203.—Don, Miller's Dict. ii, 70.—Dietrich, Syn. ii, 1002.—Loudon, Arboretum, ii, 551.—Browne, Trees of America, 184.

R. typhina, var. *viridiflora*, Engler in De Candolle, Suites, iv, 378.

STAGHORN SUMACH.

New Brunswick, west through the valley of the Saint Lawrence river to southern Ontario and Minnesota, south through the northern states and along the Alleghany mountains to northern Georgia, central Alabama and Mississippi.

A small tree, rarely 9 meters in height, with a trunk 0.15 to 0.30 meter in diameter, or often a shrub; dry hillsides or often along streams in sandy, moist soil. A variety with laciniate leaves occurs near Hanover, New Hampshire, var. laciniata, *Wood, Cl. Book*, 284.—*Bot. & Fl.* 73).

Wood light, brittle, soft, coarse-grained, compact, satiny, susceptible of a good polish; layers of annual growth clearly marked by four to six rows of large open ducts; medullary rays numerous, obscure; color, yellow streaked with green, the sap-wood nearly white; specific gravity, 0.4357; ash, 0.50; occasionally used for inlaying cabinet work; the young shoots for "sap quills" in drawing the sap of the sugar maple.

Bark and leaves astringent, rich in tannin, and somewhat used locally as a dye and in dressing skins (*Special Rep. No.* 26, *U. S. Ag. Dep.* 22, t. 3); an infusion of the berries used domestically as a gargle in cases of catarrhal sore throat.

71.—Rhus copallina, Linnæus,

Spec. 1 ed. 266.—Medicus, Bot. Beobacht. 1782, 224.—Marshall, Arbustum, 128.—Wangenheim, Amer. 96.—Walter, Fl. Caroliniana, 255.—Gærtner, Fruct. i, 205, t. 44.—Aiton, Hort. Kew. i, 366; 2 ed. ii, 163.—Plenck, Icon. t. 233.—Lamarck, Ill. ii, 346, t. 207, f. 3.—Jacquin, Hort. Schönb. iii, 50, t. 341.—Willdenow, Spec. i, 1480; Enum. i, 324.—Michaux, Fl. Bor.-Am. i, 182.—Schkuhr, Handb. 237.—Nouveau Duhamel, ii, 160.—Persoon, Syn. i, 324.—Desfontaines, Hist. Arb. ii, 325.—Poiret in Lamarck, Dict. vii, 506.—Barton, Prodr. Fl. Philadelph. 39.—Pursh, Fl. Am. Sept. i, 205.—Eaton, Manual, 34; 6 ed. 302.—Nuttall, Genera, i, 203.—Rœmer & Schultes, Syst. vi, 647.—Hayne, Dend. Fl. 34.—Elliott, Sk. i, 362.—Torrey, Fl. U. S. 323; Compend. Fl. N. States, 140; Fl. N. York, 129.—De Candolle, Prodr. ii, 68.—Sprengel, Syst. i, 936.—Don, Miller's Dict. ii, 72.—Beck, Bot. 75.—Hooker in Jour. Bot. i, 202.—Spach, Hist. Veg. ii, 214.—Torrey & Gray, Fl. N. America, i, 217.—Eaton & Wright, Bot. 392.—Bigelow, Fl. Boston. 3 ed. 126.—Dietrich, Syn. ii, 1003.—Loudon, Arboretum, ii, 554.—Emerson, Trees Massachusetts, 503; 2 ed. ii, 574.—Griffith, Med. Bot. 186.—Gray in Mem. Am. Acad. new ser. vi, 28; Manual N. States, 5 ed. 111; Hall's Pl. Texas, 5.—Scheele in Rœmer, Texas, 431.—Darlington, Fl. Cestrica, 3 ed. 43.—Darby, Bot. S. States, 255.—Chapman, Fl. S. States, 69.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 92.—Lesquereux in Owen's 2d Rep. Arkansas, 352.—Wood, Cl. Book, 284; Bot. & Fl. 73.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 187.—Porcher, Resources S. Forests, 207.—Koch, Dendrologie, 575.—Young, Bot. Texas, 197.—Vasey, Cat. Forest Trees, 11.—Nat. Dispensatory, 2 ed. 1236.—Ward in Bull. U. S. Nat. Mus. No. 22, 73.—Ridgway in Proc. U. S. Nat. Mus. 1882, 63.—Engler in De Candolle, Suites, iv, 384.

? *R. copallina*, vars. *latifolia*, *latialata*, *angustifolia*, and *serrata*, Engler in De Candolle, Suites, iv, 384.

DWARF SUMACH.

Northern New England, south to Manatee and Caximbas bay, Florida, west to Missouri, Arkansas, and the valley of the San Antonio river, Texas.

A small tree, 6 to 9 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or at the north a low shrub 1 to 2 meters in height; dry hills and ridges, reaching its greatest development in southern Arkansas and eastern Texas; running into various forms. The best marked is—

var. leucantha, De Candolle, Prodr. ii, 68.—Gray in Jour. Boston Soc. Nat. Hist. vi, 158.

R. leucantha, Jacquin, Hort. Schönb. iii, 50, t. 342.—Spach, Hist. Veg. ii, 215.

R. copallina, var. *angustialata*, Engler in De Candolle, Suites, iv, 384.

Shrubby, leaflets lanceolate, flowers white.

Wood light, soft, not strong, coarse-grained, compact, satiny, susceptible of a good polish; layers of annual growth clearly marked by several rows of large open ducts; medullary rays thin, not prominent; color, light brown streaked with green, or often tinged with red; the sap-wood lighter; specific gravity, 0.5273; ash, 0.60.

Leaves and bark astringent, rich in tannin; the leaves largely collected, principally in Maryland, Virginia, West Virginia, and Tennessee, and ground for tanning and dyeing (*Special Rep.* No. 26, *U. S. Ag. Dep.* 26, t. 5); the fruit, acid and astringent, used, as well as that of the shrubby *Rhus glabra*, by herbalists in the form of decoctions, fluid extracts, etc., as a gargle in the treatment of sore throat.

Var. lanceolata, Gray,

Jour. Boston Soc. Nat. Hist. vi, 158.—Torrey, Bot. Mex. Boundary Survey, 44.—Watson in Proc. Am. Acad. xvii, 338.

R. copallina, var. *integrifolia*, Engler in De Candolle, Suites, iv, 384.

Western Texas, Dallas (*Reverchon*) to the Rio Grande.

A small tree, with lanceolate, elongated leaflets, 5 to 6 meters in height, with a trunk 0.12 to 0.15 meter in diameter; calcareous soil; common; specific gravity, 0.5184; ash, 0.85.

72.—Rhus venenata, De Candolle,

Prodr. ii, 68.—Hooker, Fl. Bor.-Am. i, 126.—Don, Miller's Dict. ii, 71.—Beck, Bot. 76.—Spach, Hist. Veg. ii, 215.—Lindley, Fl. Med. 284.—Loudon, Arboretum, ii, 552, f. 226.—Torrey & Gray, Fl. N. America, i, 218, 681.—Eaton & Wright, Bot. 392.—Dietrich, Syn. ii, 1003.—Torrey, Fl. N. York, i, 130.—Browne, Trees of America, 186.—Griffith, Med. Bot. 185.—Emerson, Trees Massachusetts, 504; 2 ed. ii, 575 & t.—Darlington, Fl. Cestrica, 3 ed. 44.—Richardson, Arctic Exped. 424.—Cooper in Smithsonian Rep. 1858, 250.—Chapman, Fl. S. States, 69.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 93.—Lesquereux in Owen's 2d Rep. Arkansas, 353.—Wood, Cl. Book, 284; Bot. & Fl. 73.—Gray, Manual N. States, 5 ed. 111.—Vasey, Cat. Forest Trees, 11.—Bailey in Am. Nat. vii, 5, f. 3.—Ward in Bull. U. S. Nat. Mus. No. 22, 73.—Engler in De Candolle, Suites, iv, 397.

R. vernix, Linnæus, Spec. 1 ed. 265, in part.—Kalm, Travels, English ed. 177.—Medicus, Bot. Beobacht. 1782, 223.—Marshall, Arbustum, 130.—Wangenheim, Amer. 92.—Aiton, Hort. Kew. i, 366; 2 ed. ii, 163.—Plenck, Icon. t. 234.—Lamarck, Ill. ii, 346, t. 207, f. 2.—Willdenow, Spec. i, 1479; Enum. i, 323.—B. S. Barton, Coll. i, 23, 50.—Schkuhr, Handb. 236.—Michaux, Fl. Bor.-Am. i, 183.—Nouveau Duhamel, ii, 165.—Persoon, Syn. i, 324.—Desfontaines, Hist. Arb. ii, 325.—Poiret in Lamarck, Dict. vii, 505.—Nuttall, Genera, i, 203.—Barton, Prodr. Fl. Philadelph. 39; Compend. Fl. Philadelph. 154.—Pursh, Fl. Am. Sept. i, 205.—Eaton, Manual, 34; 6 ed. 302.—Bigelow, Med. Bot. i, 96, t. 10; Fl. Boston. 3 ed. 126.—Rœmer & Schultes, Syst. vi, 646.—Hayne, Dend. Fl. 34.—Elliott, Sk. i, 362.—Torrey, Fl. U. S. 323; Compend. Fl. N. States, 203.—Sprengel, Syst. i, 936.—Hooker, Jour. Bot. i, 202.—Darby, Bot. S. States, 255.—Porcher, Resources S. Forests, 206.

POISON SUMACH. POISON ELDER.

Northern New England, south to northern Georgia, Alabama, and western Louisiana, west to northern Minnesota, Missouri, and Arkansas.

A small tree, 6 to 8 meters in height, with a trunk sometimes 0.15 to 0.20 meter in diameter, or more often a tall shrub; low, wet swamps or, more rarely, on higher ground.

Wood light, soft, coarse-grained, moderately compact; layers of annual growth clearly marked by three or four rows of large open ducts; medullary rays thin, very obscure; color, light yellow streaked with brown, the sap-wood lighter; specific gravity, 0.4382; ash, 0.64.

The whole plant, as well as the allied *R. Toxicodendron*, to most persons exceedingly poisonous to the touch, owing to the presence of a volatile principle, *Toxicodendric acid* (*U. S. Dispensatory*, 14 ed. 908.—*Nat. Dispensatory*, 2 ed. 1464); the white milky sap turning black in drying and yielding a valuable lacquer (*Bigelow, Med. Bot. l. c.*)

73.—Rhus Metopium, Linnæus,

Amœn. v, 395.—Titford, Hort. Bot. Am. 51.—Descourtilz, Fl. Med. Antilles, ii, 49, t. 79.—De Candolle, Prodr. ii, 67.—Macfadyen, Fl. Jamaica, 225.—Nuttall, Sylva, ii, 121, t. 80; 2 ed. ii, 68, t. 80.—Richard, Fl. Cuba, 381.—Cooper in Smithsonian Rep. 1858, 264.—Grisebach, Fl. British West Indies, 175.—Chapman, Fl. S. States, 69.—Wood, Bot. & Fl. 73.—Vasey, Cat. Forest Trees, 11.

Metopium Linnæi, Engler in De Candolle, Suites, iv, 367.

POISON WOOD. CORAL SUMACH. MOUNTAIN MANCHINEEL. BUM WOOD. HOG PLUM. DOCTOR GUM.

Semi-tropical Florida, bay Biscayne to the southern keys; in the West Indies.

A tree 12 to 15 meters in height, with a trunk sometimes 0.60 meter in diameter, reaching in the United States its greatest development on the shores of bay Biscayne, near Miami; one of the most common trees of the region, the large specimens generally decayed.

Wood heavy, hard, not strong, close-grained, checking badly in drying, containing many evenly-distributed open ducts; medullary rays numerous, thin; color, rich dark brown streaked with red, the sap-wood light brown or yellow; specific gravity, 0.7917; ash, 2.39; little esteemed.

A resinous gum, emetic, purgative, and diuretic, is obtained from incisions made in the bark of this species (*Pharm. Jour.* vii, 270.—*Guibourt, Hist. Drogues*, 7 ed. iii, 489).

74.—Pistacia Mexicana, HBK.

Nov. Gen. & Spec. vii, 22, t. 608.—De Candolle, Prodr. ii, 64.—Gray in Smithsonian Contrib. v, 27.—Torrey, Bot. Mex. Boundary Survey, 44.—Cooper in Smithsonian Rep. 1858, 265.—Brewer & Watson, Bot. California, i, 109.—Vasey, Cat. Forest Trees, 11.—Hemsley, Bot. Am.-Cent. i, 221.—Watson in Proc. Am. Acad. xvii, 338.

Texas, valley of the Rio Grande (near the mouth of the Pecos river, *Bigelow*); southward into Mexico (Saltillo, *Palmer*, etc.).

Wood not collected.

LEGUMINOSÆ.

75.—Eysenhardtia orthocarpa, Watson,

Proc. Am. Acad. xvii, 339.

E. amorphoides, var. *orthocarpa*, Gray in Smithsonian Contrib. iii, 46; v, 237.

E. amorphoides, Torrey, Bot. Mex. Boundary Survey, 51, in part.

Western Texas, valleys of the upper Guadalupe and Rio Grande, west to the Santa Rita and Santa Catalina mountains, Arizona (*Pringle*); southward into northern Mexico.

A small tree, 5 to 6 meters in height, with a trunk 0.09 to 0.15 meter in diameter, or more often a low shrub; dry, gravelly soil, reaching its greatest development near the summit of the Santa Catalina mountains, at 3,000 feet altitude.

Wood heavy, hard, close-grained, very compact; layers of annual growth clearly defined by numerous rows of open ducts; medullary rays numerous, thin; color, light reddish-brown, sap-wood clear yellow; specific gravity, 0.8740; ash, 1.28.

76.—Dalea spinosa, Gray,

Mem. Am. Acad. new ser. v, 315; Ives' Rep. 10.—Torrey, Pacific R. R. Rep. iv, 78; vii, 9, t. 3.—Bot. Mex. Boundary Survey, 53.—Walpers, Ann. iv, 485.—Cooper in Smithsonian Rep. 1858, 266.—Watson in Proc. Am. Acad. xi, 132.—Brewer & Watson, Bot. California, i, 143.—Hemsley, Bot. Am.-Cent. 249.

Asagræa spinosa, Baillon in Adansonia, ix, 232; Hist. Pl. ii, 288.

Colorado desert, southern California (Agua Caliente, Toras, etc.), and eastward to the valley of the lower Gila river, Arizona.

A small tree, sometimes 6 meters in height, with a short, stout trunk 0.45 to 0.50 meter in diameter (*Parry*, *Parish Brothers*), or often a low shrub; dry, gravelly, rocky soil.

Wood light, soft, rather coarse-grained, containing many evenly-distributed open ducts; medullary rays numerous, thin; color, walnut-brown, the sap-wood nearly white; specific gravity, 0.5536; ash, 4.04.

77.—Robinia Pseudacacia, Linnæus,

Spec. 1 ed. 722.—Marshall, Arbustum, 133.—Wangenheim, Amer. 16, t. 7.—L'Heritier, Stirp. Nov. 158.—Walter, Fl. Caroliniana, 186.—Aiton, Hort. Kew. iii, 53; 2 ed. iv, 323.—Gærtner, Fruct. ii, 307, t. 145.—Willdenow, Spec. iii, 1131; Enum. i, 769.—Michaux, Fl. Bor.-Am. ii, 65.—Nouveau Duhamel, ii, 60, t. 16.—Poiret in Lamarck Dict, vi, 222; Ill. iii, 163, t. 606.—Persoon, Syn. ii, 311.—Desfontaines, Hist. Arb. ii, 302.—Michaux f. Hist. Arb. Am. iii, 245, t. 1; N. American Sylva, 3 ed. ii, 92, t. 76.—Pursh, Fl. Am. Sept. ii, 487.—Eaton, Manual, 82; 6 ed. 306.—Thomas in Am. Month. Mag. & Crit. Rev. ii, 90.—Nuttall, Genera, ii, 118.—Hayne, Dend. Fl. 140.—Elliott, Sk. ii, 242.—De Candolle, Prodr. ii, 261.—Sprengel, Syst. iii, 247.—Torrey in Ann. Lyc. N. York, ii, 178; Compend. Fl. N. States, 271; Fl. N. York, i, 165; Emory's Rep. 408.—Hooker, Fl. Bor.-Am. i, 140.—Audubon, Birds, t. 104.—Don, Miller's Dict. ii, 237.—Beck, Bot. 82.—Spach, Hist. Veg. i, 258.—Torrey & Gray, Fl. N. America, i, 294.—Loudon, Arboretum, ii, 609, f. 305 & t.—Eaton & Wright, Bot. 397.—Bigelow, Fl. Boston. 3 ed. 295.—Browne, Trees of America, 197.—Emerson, Trees, Massachusetts, 460; 2 ed. ii, 522 & t.—Griffith, Med. Bot. 238, f. 123.—Dietrich, Syn. iv, 1053.—Darlington, Fl. Cestrica, 3 ed. 65.—Darby Bot. S. States, 280.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 94.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 48.—Lesquereux in Owen's 2d Rep. Arkansas, 356.—Wood, Cl. Book, 319; Bot. & Fl. 95.—Lemaire, Ill. Hort. xii, t. 427.—Porcher, Resources S. Forests, 188.—Gray, Manual N. States, 5 ed. 131.—Koch, Dendrologie, i, 55.—Verlot in Rev. Hort. 1873, 152 & f.—Young, Bot. Texas, 228.—Vasey, Cat. Forest Trees, 11.—Ridgway in Proc. U. S. Nat. Mus. 1882, 65.

Pseudacacia odorata, Mœnch, Meth. 145.

R. fragilis, Salisbury, Prodr. 336.

LOCUST. BLACK LOCUST. YELLOW LOCUST.

Alleghany mountains, Pennsylvania (Locust ridge, Monroe county, *Porter*) to northern Georgia; widely and generally naturalized throughout the United States east of the Rocky mountains, and possibly indigenous in northeastern (Crowley's ridge) and western Arkansas and the prairies of eastern Indian territory.

A tree 22 to 25 meters in height, with a trunk 0.90 to 1.20 meter in diameter; west of the Mississippi river much smaller or often a low shrub 1.80 to 3 meters in height, reaching its greatest development on the western slopes of the mountains of West Virginia.

Wood heavy, exceedingly hard and strong, close-grained, compact, very durable in contact with the ground; layers of annual growth clearly marked by two or three rows of large open ducts; color, brown or, more rarely, light green, the sap-wood yellow; specific gravity, 0.7333; ash, 0.51 (*Trecul in Am. Jour. Sci.* 3 ser. xix, 182, t. 2, f. 1; t. 6, 7, f. 10.); largely used in ship-building, for posts of all sorts, construction, and in turnery; preferred to other American woods for treenails, and in this form largely exported.

The bark of the root tonic, or in large doses purgative and emetic (*U. S. Dispensatory*, 14 ed. 1746.—*Nat. Dispensatory*, 2 ed. 1233); formerly widely planted as a timber tree (*Cobbett, Woodlands*, par. 323); its cultivation in the United States now generally abandoned on account of the destructive attacks of the locust borer (*Cyllene picta, Packard in Bull. U. S. Entomological Com.* No. 7, 95).

78.—Robinia viscosa, Ventenat.

Hort. Cels. 4, t. 4.—Bot. Mag. t. 560.—Willdenow, Spec. iii, 1131; Enum. ii, 769.—Michaux, Fl. Bor.-Am. ii, 65.—Nouveau Duhamel, ii, 64, t. 17.—Poiret in Lamarck, Dict. vi, 222.—B. S. Barton, Bot. Appx. 29, t. 21.—Persoon, Syn. ii, 311.—Desfontaines, Hist. Arb. ii, 302.—Aiton, Hort. Kew. 2 ed. iv, 323.—Michaux f. Hist. Arb. Am. iii, 262, t. 2; N. American Sylva, ii, 104, t. 77.—Pursh, Fl. Am. Sept. ii, 488.—Nuttall, Genera, ii, 118.—Hayne, Dend. Fl. 140.—Elliott, Sk. ii, 242.—De Candolle, Prodr. ii, 262.—Guimpel, Otto & Hayne, Abb. Holz. 81, t. 65.—Sprengel, Syst. iii, 247.—Don, Miller's Dict. ii, 236.—Eaton, Manual, 6 ed. 306.—Spach, Hist. Veg. i, 260.—Torrey & Gray, Fl. N. America, i, 295.—Loudon, Arboretum, ii, 626, t. 87, f. 306.—Eaton & Wright, Bot. 397.—Browne, Trees of America, 209.—Dietrich, Syn. iv, 1053.—Darby, Bot. S. States, 280.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 94.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 49.—Wood, Cl. Book, 319; Bot. & Fl. 95.—Porcher, Resources S. Forests, 193.—Gray, Manual N. States, 5 ed. 131.—Vasey, Cat. Forest Trees, 11.

R. glutinosa, Curtis, Bot. Mag. t. 560.—Koch, Dendrologie, i, 59.

CLAMMY LOCUST.

"High Alleghany mountains south of latitude 35°" (*Michaux*). "Open woods, slopes of Buzzard ridge, altitude 4,500 feet, near Highland, Macon county, North Carolina" (*J. Donnell Smith*).

A small tree, 9 to 12 meters in height, with a trunk not exceeding 0.30 meter in diameter; very rare, and not rediscovered until 1882 by the numerous botanists who have visited, during the last thirty years, the localities where the Michauxs, father and son, discovered this species; widely cultivated and now occasionally naturalized in the Atlantic states.

Wood (of a cultivated specimen) heavy, hard, close-grained, compact; layers of annual growth clearly marked by many rows of open ducts; medullary rays numerous, thin; color, brown, the sap-wood light yellow; specific gravity, 0.8094; ash, 0.20.

79.—Robinia Neo-Mexicana, Gray.

Mem. Am. Acad. new ser. v, 314.—Torrey in Pacific R. R. Rep. iv, 79; Bot. Mex. Boundary Survey, 53.—Walpers, Ann. iv, 491.—Cooper in Smithsonian Rep., 1858, 265.—Watson in King's Rep. v, 419.—Porter & Coulter, Fl. Colorado; Hayden's Surv. Misc. Pub. No. 4, 23.—Vasey, Cat. Forest Trees, 11.

LOCUST.

Colorado, valley of the Purgatory river (near Trinidad), headwaters of the Canadian river, through western and southwestern New Mexico to the Santa Catalina and Santa Rita mountains (*Lemmon, Pringle*), Arizona (4,500 to 7,000 feet altitude), southern Utah, Mount Zion cañon, west fork of the Rio Virgin, and near Kanah.

A small tree, sometimes 6 to 8 meters in height, with a trunk 0.15 to 0.25 meter in diameter, or toward its upper limits of growth reduced to a low shrub; reaching its greatest development in the valley of the Purgatory river, Colorado.

Wood heavy, exceedingly hard, strong, close-grained, compact, satiny, containing many evenly-distributed open ducts; medullary rays, thin, conspicuous; color, yellow streaked with brown, the sap-wood light yellow; specific gravity, 0.8034; ash, 0.60.

80.—Olneya Tesota, Gray.

Mem. Am. Acad. new ser. v, 328; Ives' Rep. 11.—Torrey in Pacific R. R. Rep. iv, 11, 82; vii, 10, t. 5; Bot. Mex. Boundary Survey, 58.—Walpers, Ann. iv, 479, 587.—Cooper in Smithsonian Rep. 1858, 265.—Brewer & Watson, Bot. California, i, 157.—Vasey, Cat. Forest Trees, 11.—Hemsley, Bot. Am.-Cent. i, 260.

IRON WOOD. ARBOL DE HIERRO.

California, valley of the Colorado river south of the Mohave mountains, valley of the lower Gila river, southwestern Arizona; southward in Sonora.

A small tree in the United States, rarely 9 meters in height, with a trunk sometimes 0.45 meter in diameter; dry *arroyos* and cañons; in Sonora more common and of larger size.

Wood very heavy and hard, strong, brittle, close-grained, compact, the grain generally contorted, difficult to cut and work, susceptible of a high polish; medullary rays numerous, thin; color, rich dark brown streaked with red, the sap-wood clear bright yellow; specific gravity, 1.0602; ash, 2.29 (the heart-wood, 1.1486; ash, 2.59; sap-wood, 0.8958; ash, 1.85); occasionally manufactured into canes.

81.—Piscidia Erythrina, Linnæus,

Spec. 2 ed. 993.—Jacquin, Amer. 206.—Swartz, Obs. 277.—Lamarck, Dict. i, 443; Ill. iii, 163, t. 605.—Titford, Hort. Bot. Am. 84.—Lunan, Hort. Jam. i, 269.—Humboldt, Bonpland & Kunth, Nov. Gen. & Spec. vi, 382.—De Candolle, Prodr. ii, 267.—Descourtilz, Fl. Med. Antilles, iii, 203, t. 196.—Macfadyen, Fl. Jamaica, i, 258.—Nuttall, Sylva, ii, 31, t. 52; 2 ed. i, 180.—Bentham in Jour. Linnæan Soc. iv, Suppl. 116; Bot. Sulphur, 81.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 110.—Grisebach, Fl. British West Indies, 200.—Porcher, Resources S. Forests, 175.—Vasey, Cat. Forest Trees, 11.—Hemsley, Bot. Am.-Cent. i, 319.

Erythrina piscipula, Linnæus, Spec. 1 ed. 107.

P. Carthagenensis, De Candolle, Prodr. ii, 267.

JAMAICA DOGWOOD.

Semi-tropical Florida, bay Biscayne, west coast, Pease creek to cape Sable, and on the southern keys; in the West Indies and southern Mexico.

A tree 12 to 15 meters in height, with a trunk 0.45 to 0.75 meter in diameter.

Wood heavy, very hard, not strong, close-grained, compact, susceptible of a high polish, containing few large scattered open ducts; medullary rays thin, not conspicuous; color, yellowish-brown, the sap-wood lighter; specific gravity, 0.8734; ash, 3.38; one of the favorite woods of the region for boat-building, fire-wood, and charcoal.

The bark, especially of the root, narcotic, occasionally administered in the form of tinctures, or used, as well as the young branches and leaves, to poison or stupefy fish.

82.—Cladrastis tinctoria, Rafinesque,

Fl. Kent. 1824; Neog. 1825; Med. Bot. ii, 210; New Sylva, iii, 83.—Torrey & Gray, Fl. N. America, i, 390.—Walpers, Rep. i, 807.—Browne, Trees of America, 192.—Darby, Bot. S. States, 294.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 113.—Porcher Resources S. Forests, 175.—Wood, Cl. Book, 301; Bot. & Fl. 84.—Gray, Manual N. States, 5 ed. 143.—Vasey, Cat. Forest Trees, 11.

Virgilia lutea, Michaux f. Hist. Arb. Am. iii, 266, t. 3; Travels, 289; N. American Sylva, 3 ed. ii, 106, t. 78.—Pursh, Fl. Am. Sept. i, 309.—Nuttall, Genera, i, 284.—Hayne, Dend. Fl. 53.—Loiseleur, Herb. Amat. t. 297.—De Candolle, Prodr. ii, 98.—Sprengel, Syst. iv², 1, 171.—Don, Miller's Dict. ii, 112.—Eaton, Manual, 6 ed. 397.—Spach, Hist. Veg. i, 163.—Eaton & Wright, Bot. 480.—Dietrich, Syn. ii, 1501.—Loudon, Arboretum, ii, 565, t. 78.

C. lutea, Koch, Dendrologie, i, 6.

YELLOW WOOD. YELLOW ASH. GOPHER WOOD.

Central Kentucky, cliffs of the Kentucky and Dick's rivers; middle Tennessee, mountains of east Tennessee to Cherokee county, North Carolina.

A tree 9 to 15 meters in height, with a trunk sometimes 0.90 or, exceptionally, 1.20 meter in diameter; rich hillsides; in Kentucky on the Trenton limestones, and reaching its best development in middle Tennessee; rare and very local, the large trees generally hollow or defective.

Wood heavy, very hard, strong, close-grained, compact, susceptible of a good polish; layers of annual growth clearly marked by several rows of open ducts, and containing many evenly-distributed similar ducts; color, bright, clear yellow, changing with exposure to light brown, the sap-wood nearly white; specific gravity, 0.6278; ash, 0.28; used for fuel, occasionally for gunstocks, and yielding a clear yellow dye.

83.—Sophora secundiflora, Lagasca;

De Candolle, Cat. Hort. Monsp. 148; Prodr. ii, 96.—Don, Miller's Dict. ii, 110.—Gray in Smithsonian Contrib. iii, 54.—Rev. Hort. 4 ser. iii, 201, t. 11.—Bentham & Hooker, Genera, i, 555.—Hemsley, Bot. Am.-Cent. i, 321.—Watson in Proc. Am. Acad. xvii, 347.

Broussonetia secundiflora, Ortega, Dec. v, 61, t. 7.

Virgilia secundiflora, Cavanilles, Icon. t. 401.

Agastianis secundiflora, Rafinesque, New Sylva, iii, 86.

Dermatophyllum speciosum, Scheele in Linnæa, xxi, 458.

S. speciosa, Bentham in Jour. Boston Soc. Nat. Hist. vi, 178.—Gray in Mem. Am. Acad. new ser. iv^{x}, 38; Smithsonian Contrib. iii, 54; Hall's Pl. Texas, 7.—Walpers, Ann. ii, 439.—Torrey, Bot. Mex. Boundary Survey, 58.—Young, Bot. Texas, 242.—Vasey, Cat. Forest Trees, 12.

FRIGOLITO.

Matagorda bay, Texas, west to the mountains of New Mexico (*Havard*).

A small tree, sometimes 9 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or often, especially west of the San Antonio river, a tall shrub, rarely exceeding 2 meters in height, forming dense thickets; borders of streams, generally in a low, rather moist soil.

Wood very heavy, hard, close-grained, compact, susceptible of a high polish; medullary rays numerous, thin; color, orange streaked with red, the heavier sap-wood brown or yellow; specific gravity, 0.9842; ash, 1.59; furnishing valuable fuel.

The seeds contain an exceedingly poisonous alkaloid, *Sophoria* (*H. C. Wood in Philadelphia Med. Times*, August 4, 1877.—*Rothrock in Coulter's Bot. Gazette*, ii, 133.—*Nat. Dispensatory*, 2 ed. 1333).

84.—Sophora affinis, Torrey & Gray,

Fl. N. America, i, 390.—Leavenworth in Am. Jour. Sci. 1 ser. ix, 130.—Gray in Jour. Boston Soc. Nat. Hist. vi, 178; Hall's Pl. Texas, 7.—Scheele in Rœmer, Texas, 428.—Vasey, Cat. Forest Trees, 12.

Styphnolobium affine, Walpers, Rep. i, 807.

Arkansas, valley of the Arkansas river (*Letterman*) to the valley of the San Antonio river, Texas.

A small tree, 5 to 7 meters in height, with a trunk sometimes 0.15 to 0.25 meter in diameter; borders of streams and prairies.

Wood heavy, very hard, strong, coarse-grained, compact; layers of annual growth clearly marked by several rows of large open ducts; medullary rays thin, conspicuous; color, light red, the sap-wood bright, clear yellow; specific gravity, 0.8509; ash, 0.73.

Ink is occasionally made domestically from the resinous exudations of the pod.

85.—Gymnocladus Canadensis, Lamarck,

Dict. i, 733; Ill. iii, 412, t. 823.—Michaux, Fl. Bor.-Am. ii, 241, t. 51.—Willdenow, Spec. iv, 460; Enum. ii, 1019; Berl. Baumz. 169.—Persoon, Syn. ii, 626.—Desfontaines, Hist. Arb. ii, 250.—Aiton, Hort. Kew. 2 ed. v, 400.—Michaux f. Hist. Arb. Am. ii, 272, t. 23; N. American Sylva, 3 ed. i, 182, t. 50.—Pursh, Fl. Am. Sept. i, 304.—Nuttall, Genera, ii, 243.—Hayne, Dend. Fl. 203.—James in Long's Exped. i, 138.—Reichenbach, Mag. Bot. t. 40.—De Candolle, Prodr. ii, 480.—Sprengel, Syst. ii, 327.—Torrey in Ann. Lyc. N. York, ii, 193; Compend. Fl. N. States, 376; Fl. N. York, i, 196; Emory's Rep. 407.—Hooker, Fl. Bor.-Am. i, 166.—Don, Miller's Dict. 429.—Eaton, Manual, 6 ed. 162.—Beck, Bot. 93.—Spach, Hist. Veg. i, 89.—Loudon, Arboretum, ii, 256 & t.—Torrey & Gray, Fl. N. America, i, 398.—Eaton & Wright, Bot. 258.—Richardson, Arctic Exped. 424.—Walpers, Rep. i, 809.—Browne, Trees of America, 218.—Cooper in Smithsonian Rep. 1858, 251.—Lesquereux in Owen's 2d Rep. Arkansas, 358.—Wood, Cl. Book, 300; Bot. & Fl. 83.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 190.—Gray, Manual N. States, 5 ed. 145.—Briot in Rev. Hort. 1870, 436.—Vasey, Cat. Forest Trees, 12.—Bell in Geological Rep. Canada, 1879-'80, 54c.—Ridgway in Proc. U. S. Nat. Mus. 1882, 63.—Chapman, Fl. S. States, Suppl. 618.

Guilandina dioica, Linnæus, Spec. 1 ed. 381.—Marshall, Arbustum, 56.—Aiton, Hort. Kew. ii, 56.—James in Long's Exped. i, 138.

Hyperanthera dioica, Vahl, Symbolæ, i, 31.

G. dioica, Koch, Dendrologie, i, 5.—Baillon, Hist. Pl. ii, 87, f. 52, 53.

KENTUCKY COFFEE TREE. COFFEE NUT.

Conococheague creek, Franklin county, Pennsylvania (*Porter*); western New York, shores of Cayuga and Seneca lakes, west through southern Ontario and southern Michigan to the valley of the Minnesota river, Minnesota, eastern Nebraska, eastern Kansas, southwestern Arkansas, and the Indian territory, to about longitude 96° west, south to middle Tennessee.

A tree 25 to 33 meters in height, with a trunk 0.60 to 0.90 meter in diameter; rich woods and bottoms; not common.

Wood heavy, not hard, strong, coarse-grained, durable in contact with the ground, liable to check in drying, easily worked, susceptible of a high polish; layers of annual growth clearly marked by one or two rows of open ducts; medullary rays numerous, thin; color, rich light brown tinged with red, the thin sap-wood lighter; specific gravity, 0.6934; ash, 0.67; occasionally used in cabinet-making, for posts, rails, &c.

The fresh leaves, macerated and sweetened, are used in Tennessee as a poison for house-flies; the seeds formerly as a domestic substitute for coffee.

86.—Gleditschia triacanthos, Linnæus,

Spec. 1 ed. 1056 (excl. var.).—Medicus, Bot. Beobacht. 1782, 230.—Lamarck, Dict. ii, 465; Ill. iii, 446, t. 857, f. 1.—Aiton, Hort. Kew. iii, 444 (excl. vars.); 2 ed. v, 474.—Mœnch, Meth. 69.—Abbot, Insects Georgia, ii, t. 285.—Michaux, Fl. Bor.-Am. ii, 257.—Schkuhr, Handb. iii, 554, t. 356.—Robin, Voyages, iii, 497.—Persoon, Syn. ii, 123.—Desfontaines, Hist. Arb. ii, 246.—Willdenow, Spec. iv, 1097; Enum. 1058; Berl. Baumz. 163.—Nouveau Duhamel, iv, 100, t. 25.—Michaux f. Hist. Arb. Am. iii, 164, t. 10; N. American Sylva, 3 ed. 108, t. 79.—Pursh, Fl. Am. Sept. i, 221.—Nuttall, Genera, ii, 239.—James in Long's Exped. i, 138.—Hayne, Dend. Fl. 218.—Elliott, Sk. ii, 709.—Guimpel, Otto & Hayne, Abb. Holz. 157, t. 132.—De Candolle, Prodr. ii, 479.—Sprengel, Syst. iii, 918.—Torrey, Compend. Fl. N. States, 375; Fl. N. York, i, 192.—Audubon, Birds, t. 42, 146, 150.—Rœmer & Schultes, Syst. vii, 78.—Don, Miller's Dict. ii, 428.—Beck, Bot. 93.—Eaton, Manual, 6 ed. 158.—Spach, Hist. Veg. i, 92.—Torrey & Gray, Fl. N. America, i, 398.—Loudon, Arboretum, ii, 650, t. 90, 91.—Eaton & Wright, Bot. 254.—Browne, Trees of America, 212.—Dietrich, Syn. iv, 539.—Darby, Bot. S. States, 295.—Cooper in Smithsonian Rep. 1858, 251.—Gray in Pacific R. R. Rep. xii², 42; Manual N. States, 5 ed. 145.—Chapman, Fl. S. States, 115.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 49.—Lesquereux in Owen's 2d Rep. Arkansas, 358.—Wood, Cl. Book, 300; Bot. & Fl. 83.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 190.—Porcher, Resources S. Forests, 195.—Koch, Dendrologie, i, 8.—Hunt in Am. Nat. i, 433.—Young, Bot. Texas, 246.—Vasey, Cat. Forest Trees, 12.—Ridgway in Proc. U. S. Nat. Mus. 1882, 64.—Burgess in Coulter's Bot. Gazette, vii, 95.

G. spinosa, Marshall, Arbustum, 54.

G. Meliloba, Walter, Fl. Caroliniana, 254.

G. macrantha, Willdenow, Berl. Baumz. 164.

G. elegans, Salisbury, Prodr. 323.

Melilobus heterophylla, Rafinesque, Sylva Telluriana, 121.

HONEY LOCUST. BLACK LOCUST. THREE-THORNED ACACIA. SWEET LOCUST. HONEY SHUCKS.

Pennsylvania, western slopes of the Alleghany mountains, west through southern Michigan to eastern Nebraska, eastern Kansas, and the Indian territory to about longitude 96° west; south to Tampa bay, Florida (not detected in eastern Florida), northern Alabama, northern Mississippi, and the valley of the Brazos river, Texas.

A tree, 25 or 30 meters, or exceptionally 40 meters, in height, with a trunk 0.60 to 1.20 meter in diameter; low, rich bottom lands, or more rarely on dry, sterile hills; the characteristic tree of the "barrens" of middle Kentucky and Tennessee, reaching its greatest development in the bottoms of the lower Ohio River basin; widely cultivated for shade and as a hedge plant, and now somewhat naturalized in the Atlantic states east of the Alleghany mountains.

A not uncommon form, nearly destitute of thorns, is—

var. **inermis**, Pursh, Fl. Am. Sept. i, 221.—De Candolle, Mem. Leg. t. 22, f. 109; Prodr. ii, 479.—Eaton, Manual, 6 ed. 158.—Torrey & Gray, Fl. N. America, i, 398.—Loudon Arboretum, ii, 650, t. 92, 93.—Browne, Trees of America, 213.

G. inermis, Linnæus, Spec. 1509, in part.—Nouveau Duhamel, iv, 100.—Bentham in Trans. Linnæan Soc. xxx³, 557.

A form with spines and fruit shorter than those of the type is—

var. **brachycarpos**, Michaux, Fl. Bor.-Am. ii, 257.—Torrey & Gray, Fl. N. America, i, 398.—Browne, Trees of America, 213.

G. brachycarpa, Pursh, Fl. Am. Sept. 221.—De Candolle, Prodr, ii, 479.—Sprengel, Syst. iii, 919.—Don, Miller's Dict. ii, 428.—Eaton, Manual, 6 ed. 158.—Eaton & Wright, Bot. 254.—Loudon, Arboretum, ii, 653.—Dietrich, Syn. iv, 539.

Wood heavy, hard, strong, coarse-grained, moderately compact, very durable in contact with the soil, susceptible of a high polish; layers of annual growth strongly marked by many rows of open ducts; medullary rays numerous, conspicuous; color, bright brown or red, the sap-wood lighter; specific gravity, 0.6740; ash, 0.80; used for fence posts and rails, wagon hubs, construction, etc.; its value hardly appreciated.

Beer is sometimes made domestically by fermenting the sweet, unripe fruit (*Porcher l. c.*).

87.—Gleditschia monosperma, Walter,

Fl. Caroliniana, 254.—Michaux, Fl. Bor.-Am. ii, 257.—Schkuhr, Handb. iii, 555.—Persoon, Syn. ii, 623.—Desfontaines, Hist. Arb. ii, 24.—Willdenow, Spec. iv, 1097; Enum. 1058; Berl. Baumz. 165.—Nouveau Duhamel, iv, 101.—Aiton, Hort. Kew. 2 ed. v, 474.—Michaux f. Hist. Arb. Am. iii, 169, t. 11; N. American Sylva, 3 ed. ii, 111, t. 80.—Pursh, Fl. Am. Sept. 221.—Poiret, Suppl. ii, 641.—Nuttall, Genera, ii, 239.—Hayne, Dend. Fl. 218.—Elliott, Sk. ii, 709.—De Candolle, Prodr. ii, 479.—Sprengel, Syst. iii, 919.—Don, Miller's Dict. 428.—Eaton, Manual, 6 ed. 158.—Spach, Hist. Veg. i, 98.—Torrey & Gray, Fl. N. America, i, 398.—Eaton & Wright, Bot. 254.—Loudon, Arboretum, ii, 653, f. 364.—Browne, Trees of America, 215.—Dietrich, Syn. iv, 539.—Darby, Bot. S. States, 295.—Chapman, Fl. S. States, 115.—Wood, Cl. Book, 300; Bot. & Fl. 83.—Gray. Manual N. States, 5 ed. 145.—Vasey, Cat. Forest Trees, 12—Ridgway in Proc. U. S. Nat. Mus. 1882, 64.

G. triacanthos, var. *monosperma*, Linnæus, Spec. 1 ed. 1057.—Aiton, Hort. Kew. iii, 444.

G. aquatica, Marshall, Arbustum, 54.

G. Carolinensis, Lamarck, Dict. ii, 465; Ill. iii, 447, t. 857, f. 2.—Rœmer & Schultes, Syst. vii, 74.

G. triacantha, Gærtner, Fruct. ii, 311, t. 146, f. 3 [not Linnæus].

G. inermis, Koch, Dendrologie, i, 9 [not Linnæus].

WATER LOCUST.

South Carolina to Matanzas inlet and Tampa bay, Florida, through the Gulf states to the valley of the Brazos river, Texas, and through Arkansas to middle Kentucky and Tennessee, southern Indiana and Illinois.

A tree 12 to 18 meters in height, with a trunk sometimes 0.60 or, exceptionally, 0.90 meter in diameter; deep swamps; rare in the south Atlantic and Gulf states; common and reaching its greatest development in the bottom lands of southern Arkansas, Louisiana, and eastern Texas, here often covering extensive areas.

Wood heavy, very hard, strong, rather coarse-grained, compact, susceptible of a high polish; layers of annual growth clearly marked by one to three rows of open ducts; medullary rays thin, conspicuous; color, rich bright brown tinged with red, the thick heavier sap-wood clear light yellow; specific gravity, 0.7342; ash, 0.73.

88.—Parkinsonia Torreyana, Watson,

Proc. Am. Acad. xi, 135.—Brewer & Watson, Bot. California, i, 162.

Cercidium floridum, Torrey in Pacific R. R. Rep. iv, 11, 82; v, 360, t. 3; Bot. Mex. Boundary Survey, 59.—Gray in Ives' Rep. 11.—Vasey, Cat. Forest Trees, 12.—James in Am. Nat. xv, 982.—Hemsley, Bot. Am.-Cent. i, 327.

GREEN-BARK ACACIA. PALO VERDE.

Colorado desert, southern California (Inio, Toras, etc., *Parish Brothers*), east to the valley of the lower Gila river, Arizona.

A low, much-branched tree, 8 to 10 meters in height, the short trunk sometimes 0.45 to 0.50 meter in diameter; low cañons and depressions in the sandhills of the desert; common and reaching its greatest development in the valleys of the lower Colorado and Gila rivers.

Wood heavy, not strong, soft, close-grained, compact, satiny, susceptible of a beautiful polish, containing many small evenly-distributed open ducts; medullary rays very numerous, thin; color, light brown, the sap-wood clear light yellow; specific gravity, 0.6531; ash, 1.12.

89.—Parkinsonia microphylla, Torrey,

Pacific R. R. Rep. iv, 82; Bot. Mex. Boundary Survey, 59.—Walpers, Ann. vii, 812.—Gray in Ives' Rep. 11.—Bentham in Martius, Fl. Brasil. xv², 78.—Watson, Pl. Wheeler, 8; Proc. Am. Acad. xi, 136.—Brewer & Watson, Bot. California, i, 162.—Hemsley, Bot. Am.-Cent. i, 327.

Valley of the lower Colorado and Bill Williams rivers, eastward through southern Arizona.

A small, much-branched tree, 6 to 7 meters in height, with a trunk 0.25 to 0.30 meter in diameter (Wickenburg, *Pringle*), or often a low shrub 1 to 3 meters in height.

Wood heavy, hard, coarse-grained, compact, containing numerous large, scattered, open ducts; medullary rays numerous, thin, conspicuous; color, rich dark brown streaked with red, the sap-wood light brown or yellow; specific gravity, 0.7449; ash, 3.64.

90.—Parkinsonia aculeata, Linnæus,

Spec. 1 ed. 375.—Jacquin, Stirp. Am. 121, t. 80.—Lamarck, Ill. ii, 475, t. 336.—Willdenow, Spec. ii, 513.—Aiton, Hort. Kew. 2 ed. iii, 24.—De Candolle, Mem. Leg. ii, t. 21; Prodr. ii, 486.—Descourtilz, Fl. Med. Antilles, i, 54, t. 12.—Macfadyen, Fl. Jamaica, 334.—Bentham, Bot. Sulphur, 87; Martius, Fl. Brasil. xv², 78, t. 26.—Cooper in Smithsonian Rep. 1858, 265.—Torrey, Bot. Mex. Boundary Survey, 59.—Grisebach, Fl. British West Indies, 204; Pl. Lorentz. 81.—Gray, Hall's Pl. Texas, 8.—Brewer & Watson, Bot. California, i, 162.—Vasey, Cat. Forest Trees, 12.—Hemsley, Bot. Am.-Cent. i, 327.—Watson in Proc. Am. Acad. xvii, 348.

Corpus Christi, Texas, west along the Mexican boundary to the valley of the Colorado river, Arizona (Yuma); and southward into Mexico; probably of American origin, but now widely naturalized throughout the tropical and warmer regions of the globe (*A. De Candolle, Geog. Bot.* ii, 719, 770, 793).

A small tree, 6 to 12 meters in height, with a trunk sometimes 0.30 meter in diameter.

Wood heavy, hard, very close-grained, inclined to check in drying, containing many evenly-distributed small open ducts; medullary rays very numerous, thin, conspicuous; color, light brown, the very thick sap-wood lighter, often tinged with yellow; specific gravity, 0.6116; ash, 2.32.

91.—Cercis Canadensis, Linnæus,

Spec. 1 ed. 374.—Du Roi, Obs. Bot. 10.—Marshall, Arbustum, 32.—Lamarck, Dict. ii, 586.—Wangenheim, Amer. 84.—Walter, Fl. Caroliniana, 135.—Aiton, Hort. Kew. ii, 47; 2 ed. iii, 22.—Willdenow, Spec. ii, 508; Enum. 439; Berl. Baumz. 84.—Nouveau Duhamel, i, 19.—Michaux, Fl. Bor.-Am. i, 265.—Schkuhr, Handb. 354.—Persoon, Syn. i, 454.—Desfontaines, Hist. Arb. ii, 254.—Pursh, Fl. Am. Sept. i, 308.—Eaton, Manual, 46; 6 ed. 89.—Nuttall, Genera, i, 283.—Hayne, Dend. Fl. 53.—Elliott, Sk. i, 470.—Torrey in Ann. Lyc. N. York, ii, 194; Fl. U. S. 441; Compend. Fl. N. States, 188; Fl. N. York, i, 188; Nicollet's Rep. 149; Emory's Rep. 408.—De Candolle, Prodr. ii, 518.—Sprengel, Syst. ii, 346.—Guimpel, Otto & Hayne, Abb. Holz. 116, t. 92.—Hooker, Fl. Bor.-Am. i, 167; Companion Bot. Mag. i, 24.—Don, Miller's Dict. ii, 468.—Beck, Bot. 94.—Spach, Hist. Veg. i, 129.—Torrey & Gray, Fl. N. America, i, 392.—Loudon, Arboretum, ii, 659 & t.—Eaton & Wright, Bot. 190.—Dietrich, Syn. ii, 155.—Browne, Trees of America, 221.—Gray in Mem. Am. Acad. new ser. iv[1], 38; Manual N. States, 5 ed. 144.—Richardson, Arctic Exped. 424.—Parry in Owen's Rep. 611.—Darlington, Fl. Cestrica, 3 ed. 67.—Darby, Bot. S. States, 294.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 114.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 50.—Lesquereux in Owen's 2d Rep. Arkansas, 357.—Wood, Cl. Book, 301; Bot. & Fl. 84.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 190.—Porcher, Resources S. Forests, 197.—Koch, Dendrologie i, 14.—Baillon, Hist. Pl. ii, 121.—Vasey, Cat. Forest Trees, 12.—Ridgway in Proc. U. S. Nat. Mus. 1882, 65.

Siliquastrum cordatum, Mœnch, Meth. 54.

C. Canadensis, var. *pubescens*, Pursh. Fl. Am. Sept. i, 308.—Loudon, Arboretum, ii, 659.

REDBUD. JUDAS TREE.

Western Pennsylvania, southward to Tampa bay, Florida, northern Alabama and Mississippi, westward through southern Michigan and Minnesota to eastern Nebraska; southwest through Missouri and Arkansas to the eastern portions of the Indian territory, Louisiana, and the valley of the Brazos river, Texas.

A small tree, 12 to 16 meters in height, with a trunk sometimes 0.30 meter in diameter; rich woods, borders of streams and swamps; most common and reaching its greatest development in southern Arkansas, the Indian territory, and eastern Texas, here, when in bloom, a conspicuous feature of the forest.

Wood heavy, hard, not strong, rather coarse-grained, compact, susceptible of a good polish; layers of annual growth clearly marked by one to three rows of open ducts; medullary rays exceedingly numerous, thin; color, rich dark brown tinged with red, the sap-wood lighter; specific gravity, 0.6363; ash, 0.72.

92.—Cercis reniformis, Engelmann;

Scheele in Rœmer, Texas, 428.—Watson in Proc. Am. Acad. xvii, 348.

C. occidentalis, var. Gray in Jour. Boston Soc. Nat. Hist. vi, 177.—Walpers, Ann. ii, 440.—Torrey, Bot. Mex. Boundary Survey, 58.—Brewer & Watson, Bot. California, i, 161.

C. occidentalis, Gray, Hall's Pl. Texas, 7 [not Torrey].—Hemsley, Bot. Am.-Cent. i, 340, in part.

C. occidentalis, var. *Texensis*, Watson, Index, i, 209.

REDBUD.

Middle and western Texas west of the Colorado river; in northern Mexico.

A small tree, 6 to 8 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or often a shrub forming dense thickets; limestone hills; formerly often confounded with the shrubby *C. occidentalis* of the California coast region.

Wood heavy, hard, close-grained, compact; layers of annual growth clearly marked by one to three rows of open ducts; medullary rays numerous, not conspicuous; color, brown streaked with yellow, the sap-wood lighter; specific gravity, 0.7513; ash, 0.77.

93.—Prosopis juliflora, De Candolle,

Prodr. ii, 447.—Descourtilz, Fl. Med. Antilles, viii, 107, t. 550.—Lindley, Fl. Med. 270.—Walpers, Rep. i, 861.—Bentham, Rev. Mim. in Trans. Linnæan Soc. xxx, 377.—Schnizlein, Icon. t. 277, f. 13.—Brewer & Watson, Bot. California, i, 163.—Rothrock in Wheeler's Rep. vi, 42, 107.—Hemsley, Bot. Am.-Cent. i, 344.

P. glandulosa, Torrey in Ann. Lyc. N. York, ii, 192, t. 2; Emory's Rep. 139; Pacific R. R. Rep. iv, 82.—Don, Miller's Dict. ii, 400.—Dietrich, Syn. ii. 1424.—Eaton & Wright, Bot. 376.—Walpers, Rep. i, 861.—Bentham in Hooker's Jour. Bot. iv, 348; London Jour. Bot. v, 81.—Grisebach, Fl. British West Indies, 217.—Watson in King's Rep. v, 420; Pl. Wheeler, 8.—Gray, Hall's Pl. Texas, 7.—Vasey, Cat. Forest Trees, 12.

Algarobia glandulosa, Torrey & Gray, Fl. N. America, i, 399; Pacific R. R. Rep. ii, 164.—Engelmann & Gray in Jour. Boston Soc. Nat. Hist. v, 242.—Engelmann in Wislizenus' Rep. 10.—Scheele in Rœmer, Texas, 427.—Gray in Jour. Boston Soc. Nat. Hist. vi, 181; Smithsonian Contrib. iii, 60; v, 51; Mem. Am. Acad. new ser. v, 304; Ives' Rep 11.—Torrey in Sitgreaves' Rep. 158; Pacific R. R. Rep. iv, 20, 82; vii, 10; Bot. Mex. Boundary Survey, 60.—Cooper in Smithsonian Rep. 1858, 259; Scientific Press, San Francisco, Nov. 1871, & f.—Palmer in Am. Nat. xii, 594.

P. odorata, Torrey in Fremont's Rep. 313, t. 1 (excl. fruit).

MESQUIT. ALGAROBA. HONEY LOCUST. HONEY POD.

Texas, valley of the Trinity river (Dallas, etc.) to the northern and western limits of the state; west through New Mexico and Arizona to the *mesas* west of the San Bernardino mountains, California, reaching southern Colorado, southern Utah (Saint George), and southern Nevada; southward through southern Mexico; in Jamaica.

A tree of the first economic value, sometimes 9 to 15 meters in height, with a trunk 0.90 meter in diameter, or much smaller, often reduced to a low shrub; on dry prairies and high rocky plains, or west of the Rocky mountains, along desert streams, here often forming open forests, and reaching its greatest development within the United States in the valley of the Santa Cruz and other streams of southern Arizona; in western Texas (Fort Stockton, etc.), on account of the annual burning of the prairies, rarely 1 meter in height, the roots then enormously developed, often weighing several hundred pounds, forming, as they are here locally known, "underground forests" and furnishing the best and cheapest fuel of the region.

Wood heavy, very hard, not strong, close-grained, compact, difficult to work, almost indestructible in contact with the soil, containing many evenly-distributed, rather large, open ducts; medullary rays numerous, distinct; color, rich dark brown or often red, the sap-wood clear yellow; specific gravity, 0.7652; ash, 2.18; of the root, specific gravity, 0.8493; ash, 3.02; exclusively used for the beams and underpinnings of the adobe houses of New Mexico, Arizona, and northern Mexico; for posts and fencing, and occasionally in the manufacture of furniture, the fellies of heavy wheels, etc.; the best and often the only fuel of the region, burning slowly with a clear flame, and producing valuable charcoal, but unsuited for the generation of steam on account of its destructive action upon boilers.

A gum resembling gum arabic is yielded by this species; the unripe and pulpy pods rich in grape sugar, edible, and furnishing valuable and important fodder.

94.—Prosopis pubescens, Bentham,

London Jour. Bot. v, 82; Rev. Mim. in Trans. Linnæan Soc. xxx, 380.—Walpers, Ann. i, 259.—Watson in King's Rep. v, 420; Pl. Wheeler, 8.—Brewer & Watson, Bot. California, i, 163.—Rothrock in Wheeler's Rep. vi, 42, 107.—Hemsley, Bot. Am.-Cent. i, 344.

P. odorata, Torrey in Fremont's Rep. 313, t. 1 (for fruit).

P. Emoryi, Torrey in Emory's Rep. 139.

Strombocarpa pubescens, Gray in Smithsonian Contrib. iii, 60; v, 51; Ives' Rep. 9.—Torrey & Gray in Pacific R. R. Rep. ii, 163.—Torrey in Pacific R. R. Rep. iv, 11, 20, 82; v, 360, t. 4; vii, 10; Bot. Mex. Boundary Survey, 60.—Cooper in Smithsonian Rep. 1858, 259; Scientific Press, San Francisco, Nov. 1871 & f.—Vasey, Cat. Forest Trees, 12.

Strombocarpa odorata, Torrey in Sitgreaves' Rep. 158.

SCREW BEAN. SCREW-POD MESQUIT. TORNILLA.

Valley of the Rio Grande (Presidio), western Texas, westward through New Mexico and Arizona (valley of the Gila and Colorado rivers) to southern California (White Water, *Parish Brothers*, Vallecito, *Thurber*), and southward into Mexico; southern Utah (Saint George), and southern Nevada (Ash Meadows).

A small tree, rarely 9 meters in height, with a trunk sometimes 0.30 to 0.45 meter in diameter, or often a tall, much-branched shrub; sandy or gravelly bottom lands, reaching its greatest development within the United States in the valleys of the lower Colorado and Gila rivers.

Wood heavy, exceedingly hard, not strong, brittle, close-grained, compact, containing many evenly-distributed open ducts; medullary rays numerous, thin; color, light brown, the sap-wood somewhat lighter; specific gravity, 0.7609; ash, 0.95; used for fuel and fencing.

The pods used as fodder, and sometimes made into flour by the Indians.

95.—Leucæna glauca, Bentham,

Hooker's London Jour. Bot. iv, 417; Rev. Mim. in Trans. Linnæan Soc. xxx, 443.—Walpers, Rep. i, 884.—Grisebach, Fl. British West Indies, 220.—Hemsley, Bot. Am.-Cent. i, 351.—Watson in Proc. Am. Acad. xvii, 350.—Chapman, Fl. S. States, Suppl. 619.

Mimosa glauca, Linnæus, Spec. 2 ed. 1504.

Acacia glauca, Willdenow, Spec. iv, 1075.—De Candolle, Prodr. ii, 467.

Acacia frondosa, Willdenow, Spec. iv, 1076.—De Candolle, Prodr. ii, 468.

Acacia biceps, Willdenow, Spec. iv, 1075.—De Candolle, Prodr. ii, 467.

Mimosa leucocephala, Lamarck, Dict. i, 12.

Acacia leucocephala, Link, Enum. Hort. Berl. ii, 444.—De Candolle, Prodr. ii, 467.

Mimosa biceps, Poiret, Suppl. i, 75.

Mimosa frondosa, Klein in Poiret, Suppl. i, 76.

Western Texas, San Saba to Devil's river (*Buckley*); southward into Mexico; semi-tropical Florida (introduced, *Curtiss*), and through the West Indies.

A small tree, 7 to 9 meters in height, with a trunk 0.10 to 0.15 meter in diameter, or often a tall or, in Florida, low shrub, sending up many stems from the ground.

Wood heavy, hard, close-grained, compact, containing many small, regularly-distributed open ducts; layers of annual growth and medullary rays hardly distinguishable; color, rich brown streaked with red, the sap-wood clear yellow; specific gravity, 0.9235; ash, 3.29.

96.—Leucæna pulverulenta, Bentham,

Hooker's London Jour. Bot. iv, 417; Rev. Mim. in Trans. Linnæan Soc. xxx, 443.—Hemsley, Bot. Am.-Cent. i, 351.

Acacia pulverulenta, Schlechtendal in Linnæa, xii, 571.

Acacia esculenta, Martens & Galeotti in Bull. Acad. Brux. x², 312.

Southern Texas, valley of the lower Rio Grande; southward into Mexico.

A small tree, 6 to 8 meters in height, with a trunk 0.10 to 0.15 meter in diameter, often forming dense thickets; rich, sandy loam.

Wood heavy, hard, very close-grained, compact, containing many small, regularly-distributed open ducts; medullary rays very numerous, thin, conspicuous; color, rich dark brown, the sap-wood clear yellow; specific gravity, 0.6732; ash, 1.01.

97.—Acacia Wrightii, Bentham,

Smithsonian Contrib. iii, 64; Rev. Mim. in Trans. Linnæan Soc. xxx, 521.—Gray, Smithsonian Contrib. v, 53.—Walpers, Ann. iv, 626.—Torrey, Bot. Mex. Boundary Survey, 161.—Brewer & Watson, Bot. California, i, 61.—Watson in Proc. Am. Acad. xvii, 351.

CAT'S CLAW.

Western Texas, valley of the Guadalupe river (New Braunfels), westward and southward to the valley of the Rio Grande; in northern Mexico.

A small tree, rarely 9 meters in height, with a trunk sometimes exceeding 0.30 meter in diameter, or often a low, much-branched shrub.

Wood very heavy, hard, very close-grained, compact; layers of annual growth marked by one or two rows of small open ducts, and containing many scattered smaller ducts; medullary rays hardly distinguishable; color, bright, clear brown streaked with red and yellow, the sap-wood clear yellow; specific gravity, 0.9392; ash, 0.63.

98.—Acacia Greggii, Gray,

Smithsonian Contrib. iii, 65; v, 53; Ives' Rep. 11.—Torrey in Sitgreaves' Rep. 158; Pacific R. R. Rep. vii, 10; Bot. Mex. Boundary Survey, 61.—Walpers, Ann. iv, 625.—Bentham, Rev. Mim. in Trans. Linnæan Soc. xxx, 521.—Cooper in Smithsonian Rep. 1860, 442.—Brewer & Watson, Bot. California, i, 164.—Rothrock in Wheeler's Rep. vi, 108.—Hemsley, Bot. Am.-Cent. i, 353.—James in Am. Nat. xv, 981.

CAT'S CLAW.

Western Texas, valley of the Rio Grande, westward through southern New Mexico and Arizona to San Diego, California; southward into northern Mexico.

A low, much-branched tree, sometimes 9 meters in height, with a trunk rarely 0.45 meter in diameter, or often a shrub; dry *mesas* and in low cañons; common; the large specimens generally hollow and defective.

Wood heavy, exceedingly hard, strong, brittle, close-grained, compact; layers of annual growth marked by numerous rows of rather large open ducts; medullary rays numerous, thin; color, rich brown or red, the sap-wood light yellow; specific gravity, 0.8550; ash, 0.91; used for fuel.

A resinous gum resembling gum arabic is produced by this species (*Am. Jour. Pharm.* lii, 419).

99.—Acacia Berlandieri, Bentham,

London Jour. Bot. i, 522; Rev. Mim. in Trans. Linnæan Soc. xxx, 529.—Walpers, Rep. i, 919.—Dietrich, Syn. iv, 500.

A. tephroloba, Gray in Smithsonian Contrib. iii, 65; v, 54.—Walpers, Ann. iv, 625.—Torrey, Bot. Mex. Boundary Survey, 61.—Hemsley, Bot. Am.-Cent. i, 352.—Watson in Proc. Am. Acad. xvii, 351.

Southern Texas, valley of the Nueces (La Salle county) to Devil's river; southward into Mexico.

A small tree, sometimes 6 to 8 meters in height, with a trunk 0.15 to 0.20 meter in diameter, or more often a tall shrub, sending up many stems from the ground; the large specimens usually hollow and defective.

Wood not examined.

100.—Lysiloma latisiliqua, Bentham,

Rev. Mim. in Trans. Linnæan Soc. xxx, 534.—Chapman, Fl. S. States, Suppl. 619.

Mimosa latisiliqua, Linnæus, Spec. 2 ed. 1504.

Acacia latisiliqua, Willdenow, Spec. iv, 1067.—Persoon, Syn. ii, 255.—De Candolle, Prodr. ii, 467.—Macfadyen, Fl. Jamaica, 318.—Nuttall, Sylva, ii, 34, t. 53; 2 ed. i, 183, t. 53.—Cooper in Smithsonian Rep. 1858, 264.

L. Bahamensis, Bentham in Hooker's London Jour. Bot. iii, 82.

Acacia Bahamensis, Grisebach, Fl. British West Indies, 221.

WILD TAMARIND.

Semi-tropical Florida, southern keys (Key Largo, Elliott's, Plantation, and Boca Chica Keys); through the West Indies.

A tree sometimes 15 meters in height, with a trunk 0.60 to 0.90 meter in diameter; bark of the young, vigorous trees smooth; the older trees generally decayed and defective, with rough, dark bark (*Curtiss*).

Wood heavy, hard, not strong, tough, close-grained, compact, susceptible of a fine polish, containing many scattered, open ducts; medullary rays numerous, not conspicuous; color, rich dark brown tinged with red, the sap-wood white; specific gravity, 0.6418; ash, 2.12; somewhat used locally in boat- and ship-building, and considered equal to mahogany for this purpose.

101.—Pithecolobium Unguis-cati, Bentham,

Hooker's London Jour. Bot. iii, 200; Rev. Mim. in Trans. Linnæan Soc. xxx, 572, 648.—Grisebach, Fl. British West Indies, 276.—Chapman, Fl. S. States, 116.—Vasey, Cat. Forest Trees, 13.

Mimosa Unguis-cati, Linnæus, Spec. 2 ed. 1497.—Jacquin, Hort. Schœnb. iii, 74, t. 392.—Descourtilz, Fl. Med. Antilles, i, t. 11.

Inga Unguis-cati, Willdenow, Spec. iv, 1006.—De Candolle, Prodr. ii, 436.—Nuttall, Sylva, ii, 37, t. 54; 2 ed. i, 86, t. 54.

Mimosa rosea, Vahl, Eclogæ, iii, 33, t. 25.

Inga rosea, Steudel in De Candolle, Prodr. ii, 437.

Inga forfex, Kunth, Mim. 12, t. 16.

P. forfex, Bentham in Hooker's London Jour. Bot. iii, 199.

Inga Guadalupensis, Desvaux, Jour. i, 70.

Mimosa Guadalupensis, Persoon, Syn. ii, 262.

Inga microphylla, Humboldt & Bonpland in Willdenow, Spec. iv, 1004.

P. microphyllum, Bentham in Hooker's London Jour. Bot. iii, 200.

P. Guadalupensis, Chapman, Fl. S. States, 116.

CAT'S CLAW.

Semi-tropical Florida, Caximbas bay, and on the southern keys; through the West Indies.

A small tree, sometimes 6 meters in height, with a trunk rarely exceeding 0.15 meter in diameter, or often throwing out many spreading, vine-like stems from the ground.

Wood very heavy, hard, close-grained, checking badly in drying; medullary rays numerous, inconspicuous; color, rich red varying to purple, sap-wood clear yellow; specific gravity, 0.9049; ash, 2.46.

ROSACEÆ.

102.—Chrysobalanus Icaco, Linnæus,

Spec. 1 ed. 513.—Jacquin, Stirp. Am. 154, t. 94.—Lamarck, Dict. iii, 224; Ill. ii, 542, t. 428.—Poiret, Suppl. iii, 135.—Aiton, Hort. Kew. 2 ed. iii, 200.—De Candolle, Prodr. ii, 525.—Lindley in Trans. Hort. Soc. London, v, 98.—Turpin, Dict. Sci. Nat. 236.—Tussac, Fl. Antilles, iv, 91, t. 31.—Spach, Hist. Veg. i, 369, t. 5, f. 4.—Torrey & Gray, Fl. N. America, i, 406.—Walpers, Rep. ii, 1; Ann. iv, 642.—Bentham, Bot. Sulphur, 91; Fl. Nigritiana, 336.—Sprengel, Icon. t. 274, f. 1–13.—Cooper in Smithsonian Rep. 1860, 439.—Chapman, Fl. S. States, 119.—Grisebach, Fl. British West Indies, 229.—Baillon in Adansonia, vii, 221; Hist. Pl. i, 427, f. 486, 487.—Hooker f. in Martius, Fl. Brasil. ii, 7.—Guibourt, Hist. Drogues, 7 ed. iii, 287.—Hemsley, Bot. Am.-Cent. i, 365.

COCOA PLUM.

Semi-tropical Florida, cape Canaveral to bay Biscayne, west coast Caximbas bay, and on the southern keys; through the West Indies and tropical America to Brazil.

A small tree, 7 to 10 meters in height, with a trunk 0.15 to 0.30 meter in diameter, or along sandy beaches a low, prostrate shrub 1.08 to 2.16 meters in height; reaching its greatest development within the United States on the borders and islands of the Everglades, near bay Biscayne.

Wood heavy, hard, strong, close-grained, compact, containing few irregularly-distributed, not large, open ducts; medullary rays numerous, thin; color, light brown often tinged with red, the sap wood lighter; specific gravity, 0.7709; ash, 0.87.

Varieties are distinguished by *A. H. Curtiss* with the skin of the edible fruit white or black, the latter more ovate with narrower, softer stones (? var. *pellocarpa, Hooker f. l. c.—C. pellocarpa, Miquel, Prim. Esseq.* 193.—*Grisebach, l. c.*).

103.—Prunus Americana, Marshall,

Arbustum, iii.—Darlington in Ann. Lyc. N. York, iii, 87, t. 1; Fl. Cestrica, 3 ed. 72.—Eaton, Manual, 6 ed. 285.—Beck, Bot. 95.—Torrey & Gray, Fl. N. America, i, 407; Pacific R. R. Rep. ii, 164.—Eaton & Wright, Bot. 377.—Nuttall, Sylva, ii, 19, t. 48; 2 ed. i, 169, t. 48.—Torrey, Fl. N. York, i, 194; Emory's Rep. 408; Pacific R. R. Rep. iv, 82.—Emerson, Trees Massachusetts, 449; 2 ed. ii, 511.—Hooker in London Jour. Bot. vi, 217.—Rœmer, Syn. Mon. iii, 59.—Gray in Mem. Am. Acad. new ser. iv[1], 40; Manual N. States, 5 ed. 148.—Scheele in Rœmer, Texas, 430.—Richardson, Arctic Exped. 424.—Parry in Owen's Rep. 611.—Chapman, Fl. S. States, 119.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 56.—Lesquereux in Owen's 2d Rep. Arkansas, 358.—Wood, Cl. Book, 327; Bot. & Fl. 102.—Engelmann in Trans. Am. Phil. Soc. new ser. xiii, 190.—Koch, Dendrologie, i, 101.—Porter & Coulter, Fl. Colorado; Hayden's Surv. Misc. Pub. No. 4, 33.—Vasey, Cat. Forest Trees, 13.—Macoun in Geological Rep. Canada, 1875-'76, 194.—Broadhead in Coulter's Bot. Gazette, iii, 52.—Bell in Geological Rep. Canada, 1879-'80, 54c.—Ridgway in Proc. U. S. Nat. Mus. 1882, 65.

P. Mississippi, Marshall, Arbustum, 112.

P. spinosa, Walter, Fl. Caroliniana, 146 [not Linnæus].

P. nigra, Aiton, Hort. Kew. ii, 165; 2 ed. iii, 198.—Willdenow, Spec. ii, 993; Berl. Baumz, 311.—Poiret in Lamarck, Dict. v, 674.—Persoon, Syn. ii, 35.—Bot. Mag. t. 1117.—Pursh, Fl. Am. Sept. i, 331.—Torrey, Fl. U. S. 469; Compend. Fl. N. States, 199.—Sprengel, Syst. ii, 477.—Rœmer, Syn. Mon. iii, 59.

Cerasus nigra, Loiseleur in Nouveau Duhamel, v, 32.—Seringe in De Candolle, Prodr. ii, 538.—Hooker, Fl. Bor.-Am. i, 167; Companion Bot. Mag. i, 24.—Don, Miller's Dict. ii, 513.—Beck, Bot. 96.—Spach, Hist. Veg. i, 399.—Loudon, Arboretum, ii, 704, f. 411, 412.

P. hiemalis, Elliott, Sk. i, 542 [not Michaux].

P. coccinea, Rafinesque, Fl. Ludoviciana, 135.

WILD PLUM. CANADA PLUM. HORSE PLUM.

Valley of the Saint Lawrence (Quebec) to the valley of Rainy and Assinaboine rivers and southern shores of lake Manitoba; northern Vermont, western New England, and southward through the Atlantic states to the Chattahoochee region of western Florida, west to the valley of the upper Missouri river, Dakota, and Cheyenne cañon, Pike's Peak region, Colorado, southwest through Arkansas, the Indian territory, to about longitude 102°, and the valley of the lower Concho river, Texas.

A small tree, 6 to 12 meters in height, with a trunk rarely exceeding 0.30 meter in diameter; rich woods, or along streams and borders of ponds and swamps, reaching its greatest development on the bottom lands of eastern Texas.

A form with the young leaves and pedicles pubescent is—

var. **mollis**, Torrey & Gray, Fl. N. America, i, 407.

P. hiemalis, Michaux, Fl. Bor.-Am. i, 284.—Poiret in Lamarck, Dict. v, 679.—Persoon, Syn. ii, 35.—Desfontaines, Hist. Arb. ii, 206.—Nouveau Duhamel, v, 184.—Hayne, Dend. Fl. 73.—Sprengel, Syst. ii, 477.—Spach, Hist. Veg. i, 398.—Rœmer, Syn. Mon. iii, 59.

P. mollis, Torrey, Fl. U. S. 470; Compend. Fl. N. States, 199.—Beck, Bot. 95.

Cerasus hiemalis, Seringe in De Candolle, Prodr. ii, 538.—Hooker, Fl. Bor.-Am. i, 168.—Beck, Bot. 96.—Loudon, Arboretum, ii, 704.—Don, Miller's Dict. ii, 504.

Cerasus Americana, Hooker, Companion Bot. Mag. i, 24.

Wood heavy, very hard, strong, very close-grained, compact, satiny, susceptible of a beautiful polish; medullary rays numerous, thin; color, rich bright brown or often red, the sap-wood lighter; specific gravity, 0.7215; ash, 0.18; used for the handles of tools, etc.

Often cultivated for the yellow, red, or rarely nearly black, acid or rarely sweet fruit, and furnishing an excellent stock on which to graft the varieties of the domestic plum.

104.—Prunus angustifolia, Marshall,

Arbustum, iii.—Koch, Dendrologie, i, 103.

P. Chicasa, Michaux, Fl. Bor.-Am. i, 284.—Poiret in Lamarck, Dict. v, 680.—Persoon, Syn. ii, 35.—Nuttall, Genera, i, 302.—Nouveau Duhamel, v, 183.—Elliott, Sk. i, 542.—Torrey in Ann. Lyc. N. York, ii, 194; Pacific R. R. Rep. iv, 82.—Sprengel, Syst. ii, 476.—Audubon, Birds, t. 53.—Eaton, Manual, 6 ed. 285.—Spach, Hist. Veg. i, 397.—Torrey & Gray, Fl. N. America, i, 407; Pacific R. R. Rep. ii, 164.—Eaton & Wright, Bot. 377.—Rœmer, Syn. Mon. iii, 58.—Darlington, Fl. Cestrica, 3 ed. 73.—Darby, Bot. S. States, 299.—Browne, Trees of America, 250.—Cooper in Smithsonian Rep. 1858, 251.—Chapman, Fl. S. States, 119.—Curtis in Rep. Geological Surv. N. Carolina 1860, iii, 56.—Lesquereux in Owen's 2d Rep. Arkansas, 858.—Wood, Cl. Book, 328; Bot. & Fl. 102.—Gray, Manual N. States, 5 ed. 148; Hall's Pl. Texas, 9.—Young, Bot. Texas, 1251.—Porter & Coulter, Fl. Colorado; Hayden's Surv. Misc. Pub. No. 4, 33.—Vasey, Cat. Forest Trees, 13.—Ridgway in Proc. U. S. Nat. Mus. 1882, 65.

P. insititia, Walter, Fl. Caroliniana, 146.—Abbot, Insects Georgia, ii, t. 60.

Cerasus Chicasa, Seringe in De Candolle, Prodr. ii, 538.—Hooker, Fl. Bor.-Am. i, 168; Companion Bot. Mag. i, 24.—Don, Miller's Dict. ii, 514.—Loudon, Arboretum, ii, 705.

CHICKASAW PLUM. HOG PLUM.

Probably native of the eastern slopes of the southern Rocky mountains, where it is found at an altitude of 7,000 feet, and of the high plateau east and southeast of them; now widely naturalized by early cultivation throughout the Atlantic forests south of Pennsylvania, and west of the Alleghany mountains extending as far north as southern Michigan.

A small tree, 6 to 8 meters in height, with a trunk, 0.15 to 0.20 meter in diameter, or often a low shrub; generally along streams or borders of prairies, in rich soil.

Wood heavy, soft, not strong, close-grained, compact; medullary rays numerous, thin; color, light brown or red, the sap-wood lighter; specific gravity, 0.6884; ash, 0.28; often cultivated for its globose red or yellow fruit.

105.—Prunus Pennsylvanica, Linnæus f.

Suppl. 252.—Willdenow, Spec. ii, 992; Enum. 518; Berl. Baumz. 310.—Abbot, Insects Georgia, i, t. 45.—Poiret in Lamarck, Dict. v, 673.—Persoon, Syn. ii, 35.—Nouveau Duhamel, v, 9.—Aiton, Hort. Kew. 2 ed. iii, 198.—Pursh, Fl. Am. Sept. i, 331.—Nuttall, Genera, i, 302.—Torrey, Fl. U. S. 468; Compend. Fl. N. States, 198.—Sprengel, Syst. ii, 477.—Hayne, Dend. Fl. 73.—Eaton, Manual, 6 ed., 285.—Beck in Am. Journal Sci. 1 ser. xiv, 112.—Dietrich, Syn. iii, 42.—Chapman, Fl. S. States, 130.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 57.—Wood, Bot. & Fl. 102.—Gray in Proc. Philadelphia Acad. 1863, 61; Manual N. States, 5 ed. 148.—Koch, Dendrologie, i, 117.—Porter & Coulter, Fl. Colorado; Hayden's Surv. Misc. Pub. No. 4, 33.—Emerson, Trees Massachusetts, 2 ed. ii, 513.—Vasey, Cat. Forest Trees, 13.—Macoun in Geological Rep. Canada, 1875–'76, 194.—Bell in Geological Rep. Canada, 1879–'80, 54c.—Sears in Bull. Essex Inst. xiii, 176.

? *P. lanceolata*, Willdenow, Berl. Baumz. 240, t. 3, f. 3.

Cerasus borealis, Michaux. Fl. Bor.-Am. i, 286.—Nouveau Duhamel, v, 32.—Michaux f. Hist. Arb. Am. iii, 159, t. 8; N. American Sylva, 3 ed. ii, 152, t. 90.—Seringe in De Candolle, Prodr. ii, 558.—Don, Miller's Dict. ii, 513.—Beck, Bot. 97.—Loudon, Arboretum, ii, 703, f. 410.—Rœmer, Syn. Mon. iii, 78.

P. borealis, Poiret in Lamarck, Dict. v, 674.—Pursh, Fl. Am. Sept. i, 538.—Eaton, Manual, 54.—Barton, Compend. Fl. Philadelph. i, 223.—Nuttall, Genera, i, 302.—Loddiges, Bot. Cab. t. 1598.—Bigelow, Fl. Boston. 3 ed. 205.

? *P. persicifolia*, Desfontaines, Hist. Arb. ii, 205.

? *Cerasus persicifolia*, Loiseleur in Nouveau Duhamel, v, 9.—Seringe in De Candolle, Prodr. ii, 537.—Don, Miller's Dict. ii, 512.—Spach, Hist. Veg. i, 411.—Rœmer, Syn. Mon. iii, 81.

Cerasus Pennsylvanica, Seringe in De Candolle, Prodr. ii, 538.—Hooker, Fl. Bor.-Am. i, 168.—Don, Miller's Dict. ii, 514.—Beck, Bot. 97.—Torrey & Gray, Fl. N. America, i, 409.—Loudon, Arboretum, ii, 705.—Eaton & Wright, Bot. 189.—Torrey, Fl. N. York, i, 196.—Nuttall, Sylva, ii, 15; 2 ed. i, 165.—Browne, Trees of America, 265.—Emerson, Trees Massachusetts, 1 ed. 451.—Rœmer, Syn. Mon. iii, 57.—Gray, Manual N. States, 1 ed. 115.—Parry in Owen's Rep. 611.—Richardson, Arctic Exped. 425.—Cooper in Smithsonian Rep. 1858, 251.—Wood, Cl. Book, 327.

WILD RED CHERRY. PIN CHERRY. PIGEON CHERRY.

Labrador, shores of Hudson's bay, and west through the Saskatchewan region to the valley of the upper Fraser river (Soda creek, *Macoun*); south through the northern states to Pennsylvania, central Michigan, northern Illinois, central Iowa, and along the high Alleghany mountains of North Carolina and Tennessee, and the Rocky mountains of Colorado.

A small tree, rarely exceeding 12 meters in height, with a trunk sometimes 0.60 meter in diameter, or in the Rocky Mountain region reduced to a low shrub; common in all the northern forests, in northern New England taking possession of ground cleared by fire of the coniferous forests.

Wood light, soft, close-grained, compact; medullary rays numerous, thin; color, light brown, sap-wood clear yellow; specific gravity, 0.5023; ash, 0.40.

The small acid fruit used domestically and by herbalists in the preparation of cough mixtures, etc.

106.—Prunus umbellata, Elliott,

Sk. i, 541.—Eaton, Manual, 6 ed. 286.—Dietrich, Syn. iii, 44.—Chapman, Fl. S. States, 119.—Wood, Cl. Book, 328; Bot. & Fl. 102.—Young, Bot. Texas, 251.—Vasey, Cat. Forest Trees, 13.

P. pumila, Walter, Fl. Caroliniana, 146 [not Linnæus].

Cerasus umbellata, Torrey & Gray, Fl. N. America, i, 409.—Eaton & Wright, Bot. 190.—Rœmer, Syn. Mon. iii, 78.

SLOE. BLACK SLOE.

South Carolina, south near the coast to Mosquito inlet and Tampa bay, Florida, and through central Alabama to eastern Mississippi (Holly Springs and Enterprise, *Mohr*).

A small tree, 5 to 6 meters in height, with a trunk 0.25 to 0.38 meter in diameter; dry, sandy soil.

Wood heavy, hard, close-grained, compact; medullary rays numerous, thin; color, dark reddish-brown, the sap-wood much lighter; specific gravity, 0.8202; ash, 0.12.

The black or red pleasantly acid fruit used as a preserve.

107.—Prunus emarginata, Walpers,

Rep. ii, 9.—Dietrich, Syn. iii, 42.—Loudon, Arboretum, ii, 714.—Watson in King's Rep. v, 79.—Torrey, Bot. Wilkes Exped. 284.—Brewer & Watson, Bot. California, i, 167.

Cerasus emarginata, Douglas in Hooker, Fl. Bor.-Am. i, 169.—Don, Miller's Dict. ii, 515.—Torrey & Gray, Fl. N. America, i, 410.—Eaton & Wright, Bot. 189.—Rœmer, Syn. Mon. iii, 79.—Torrey in Pacific R. R. Rep. iv, 83.—Bolander in Proc. California Acad. iii, 79.

Cerasus erecta, Presl, Epimel. Bot. 194.—Walpers, Ann, iii, 854.

Cerasus glandulosa, Kellogg in Proc. California Acad. i, 59.

Vancouver's island and the valley of the lower Fraser river, south through western Washington territory and Oregon, east to the western slopes of the Bitter Root mountain, Idaho (Lolo trail, *Watson*), and the valley of the Jocko river, Montana (*Canby & Sargent*). California along the western slopes of the Sierra Nevadas and on the Coast ranges, from San Francisco bay to the Santa Lucia mountains (*G. R. Vasey*), reaching an elevation of from 3,000 to 4,000 feet.

A tree often 12 to 15 meters in height, with a trunk sometimes exceeding 0.30 meter in diameter; at high elevations and throughout central California reduced to a shrub 2 to 3 meters in height, or in the Santa Lucia mountains 15 to 18 meters in height, with a trunk 0.60 to 0.90 meter in diameter (*Vasey*); generally along streams or in low, rich woods.

The wood of the type not collected.

Var. mollis, Brewer,

Bot. California, i, 167.—Hall in Coulter's Bot. Gazette, ii, 86.

Cerasus mollis, Douglas in Hooker, Fl. Bor.-Am. i, 169.—Hooker, London Jour. Bot. vi, 217.—Don, Miller's Dict. ii, 515.—Torrey & Gray, Fl. N. America, i, 410.—Loudon, Arboretum, ii, 417.—Eaton & Wright, Bot. 189.—Nuttall, Sylva, ii, 14, t. 46; 2 ed. i, 164, t. 46.—Rœmer, Syn. Mon. iii, 79.—Richardson, Arctic Exped, 425.—Newberry in Pacific R. R. Rep. vi, 73.—Cooper in Pacific R. R. Rep. xii, 29, 59; Am. Nat. iii, 406.—Lyall in Jour. Linnæan Soc. vii, 131.—Gray in Proc. Am. Acad. viii, 381.

P. mollis, Walpers, Rep. ii, 9.—Dietrich, Syn. iii, 42.—Torrey, Bot. Wilkes Exped. 284.—Vasey, Cat. Forest Trees, 13.—Macoun in Geological Rep. Canada, 1875–'76, 194.

The common northern and Idaho form, more or less wooly pubescent, especially on the under side of the leaves.

Wood light, soft, not strong, brittle, close-grained, compact; medullary rays numerous, thin; color, brown streaked with green; specific gravity, 0.4502; ash, 0.21.

108.—Prunus serotina, Ehrhart,

Beitr. iii, 20.—Willdenow, Spec. ii, 986; Enum. 517; Berl. Baumz. 301.—Persoon, Syn. ii, 34.—Desfontaines, Hist. Arb. ii, 204.—Aiton, Hort. Kew. 2 ed. iii, 196.—Eaton, Manual, 54; 6 ed. 284.—Nuttall, Genera, i, 302.—Barton, Compend. Fl. Philadelph. 54.—Guimpel, Otto & Hayne, Abb. Holz. 45, t. 37.—Hayne, Dend. Fl. 70.—Sprengel, Syst. ii, 478.—Nees, Pl. Neuwied, 9.—Hooker f. in Trans. Linnæan Soc. xxii², 327.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 56.—Lesquereux in Owen's 2d Rep. Arkansas, 358.—Wood, Bot. & Fl. 102.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 190.—Chapman, Fl. S. States, 120.—Gray, Manual N. States, 5 ed. 149; Hall's Pl. Texas, 9.—Koch, Dendrologie, i, 122.—Torrey, Bot. Wilkes Exped. 284.—Emerson, Trees Massachusetts, 2 ed. ii, 515 & t.—Brewer & Watson, Bot. California, i, 167.—Vasey, Cat. Forest Trees, 13.—Bentley & Trimen, Med. Pl. ii, 97, t. 97.—Sears in Bull. Essex Inst. xiii, 176.—Bell in Geological Rep. Canada, 1879-'80, 54ᵉ.—Ridgway in Proc. U. S. Nat. Mus. 1882, 56.

P. Virginiana, Miller, Dict. No. 3 [not Linnæus].—Du Roi, Obs. Bot. 12; Harbk. ii, 191.—Wangenheim, Amer. 34, t. 14.—Medicus, Bot. Beobacht. 1782, 345.—Marshall, Arbustum, 112.—Walter, Fl. Caroliniana, 146.—Aiton, Hort. Kew. ii, 163.—Poiret in Lamarck, Dict. v, 664.—Pursh, Fl. Am. Sept. i, 329.—Elliott, Sk. i, 540.—Torrey, Fl. U. S. 467; Compend. Fl. N. States, 189.—Bigelow, Fl. Boston. 3 ed. 204.

Cerasus Virginiana, Michaux, Fl. Bor.-Am. i, 285.—Michaux f. Hist. Arb. Am. iii, 151, t. 6; N. American Sylva, 3 ed. ii, 147, t. 88.—Hooker, Fl. Bor.-Am. i, 169 (excl. syn.).—Don, Miller's Dict. ii, 515.—Beck, Bot. 97.—Darlington, Fl. Cestrica, 2 ed. 289.—Loudon, Arboretum, ii, 710, f. 418.—Browne, Trees of America, 268.

Cerasus serotina, Loiseleur in Nouveau Duhamel, v, 3.—Seringe in De Candolle, Prodr. ii, 540.—Spach, Hist. Veg. i, 416.—Torrey & Gray, Fl. N. America, i, 410.—Loudon, Arboretum, ii, 712, f. 419 & t.—Eaton & Wright, Bot. 189.—Torrey, Fl. N. York, i, 196; Pacific R. R. Rep. vii, 11.—Penn. Cycl. vi, 432.—Carson, Med. Bot. i, 41, t. 35.—Griffith, Med. Bot. 288.—Emerson, Trees Massachusetts, 1 ed. 453.—Gray, Manual N. States, 1 ed. 115; Jour. Boston Soc. Nat. Hist. vi, 186.—Darlington, Fl. Cestrica, 3 ed. 75.—Darby, Bot. S. States, 299.—Cooper in Smithsonian Rep. 1858, 252.—Porcher, Resources S. Forests, 169.—Richardson, Arctic Exped. 425.—Wood, Cl. Book, 326.—Bolander in Proc. California Acad. iii, 79.

P. cartilaginea, Lehmann, Ind. Sem. Hamburg, 1833.

Padus serotina, Agardh, Theor. & Syst. Pl. t. 14, f. 8.

Padus Virginiana, Rœmer, Syn. Mon. iii, 86.

Padus cartilaginea, Rœmer, Syn. Mon. iii, 86.

WILD BLACK CHERRY. RUM CHERRY.

Southern Ontario, southward through the Atlantic forests to Matanzas inlet and Tampa bay, Florida, west to the valley of the Missouri river, Dakota, eastern Kansas, the Indian territory, and the valley of the upper San Antonio River, Texas.

A tree 18 to 30 meters in height, with a trunk 0.90 to 1.20 or, exceptionally, 1.50 meter in diameter; rich, generally elevated woodlands; common and reaching its greatest development on the western slopes of the Alleghany mountains from West Virginia southward; not common and of small size in the Gulf region and Texas

Wood light, hard, strong, close, straight-grained, compact, easily worked; medullary rays numerous, thin; color, light brown or red, growing darker with exposure, the thin sap-wood yellow; specific gravity, 0.5822; ash, 0.15; largely used and esteemed in cabinet work, interior finish, etc., and now becoming scarce.

The bark contains a bitter tonic principle, and infused with cold water generates a small percentage of hydrocyanic acid; employed as a tonic and sedative in cases of pulmonary consumption in the form of cold infusions, sirups, and fluid extracts (*Proc. Am. Phar. Assoc.* xxiii, 209.—*Globley in Jour. Pharm. et Chimie*, xv, 40.—*Guibourt, Hist. Drogues*, 7 ed. iii, 317.—*Pharm. Jour.* 3 ser. iv, 44.—*Flückiger & Hanbury, Pharmocographia*, 224.—*U. S. Dispensatory*, 14 ed. 749.—*Nat. Dispensatory*, 2 ed. 1177); the bitter fruit used domestically in the preparation of cherry brandy.

NOTE.—The closely-allied *P. Virginiana* of the north Atlantic region, a tall shrub, sometimes 6 to 8 meters in height, does not assume arborescent habit.

109.—Prunus Capuli, Cavanilles,

Sprengel, Syst. ii, 477.—Schlechtendal in Linnæa, xiii, 89, 404.—Koch, Dendrologie, i, 123.—Hemsley, Bot. Am.-Cent. i, 367.—Watson in Proc. Am. Acad. xvii, 352.

Cerasus Capollin, De Candolle, Prodr. ii, 539.—Don, Miller's Dict. ii, 515.—Loudon, Arboretum, ii, 713, f. 420.—Bentham, Pl. Hartweg. 10.—Lindley, Fl. Med. 232.—Penn. Cycl. vi, 432.—Torrey & Gray, Fl. N. America, i, 412.—Gray in Smithsonian Contrib. v, 54.

Cerasus Capuli, Seringe in De Candolle, Prodr. ii, 541.—Don, Miller's Dict. ii, 516.—Spach, Hist. Veg. i, 422.

P. Capollin, Zuccarini in Abhandl. Acad. Munich, ii, 345, t. 8.—Rœmer, Syn. Mon. iii, 87.—Torrey, Bot. Mex. Boundary Survey, 62.—Rusby in Bull. Torrey Bot. Club, ix, 53.

P. Canadensis, Mociño & Sessé, Pl. Mex. Icon. *ined.*

WILD CHERRY.

Apache and Guadalupe mountains, Texas, west through southern New Mexico and Arizona to the southern slopes of the San Francisco mountains; southward through northern New Mexico, and in Peru.

A small tree, in the United States, rarely 12 meters in height, with a trunk often 0.30 meter in diameter; bottoms of cañons and mountain valleys, generally between 5,000 and 7,000 feet elevation.

Wood heavy, moderately hard, close-grained, compact; medullary rays very numerous, thin; color, brown, or often bright, clear red, the sap-wood nearly white; specific gravity, 0.7879; ash, 0.20.

110.—Prunus demissa, Walpers,

Rep. ii, 10.—Dietrich, Syn. iii, 43.—Bentham, Pl. Hartweg. 307.—Torrey, Bot. Mex. Boundary Survey, 63.—Watson in King's Rep. v, 80; Pl. Wheeler, 8.—Porter in Hayden's Rep. 1871, 481.—Coulter in Hayden's Rep. 1872, 764.—Rothrock, Pl. Wheeler, 37.—Brandegee in Hayden's Rep. 1875, 236.—Brewer & Watson, Bot. California, i, 167.—Vasey, Cat. Forest Trees, 13.—Hall in Coulter's Bot. Gazette, ii, 86.—Macoun in Geological Rep. Canada, 1875-'76, 194.—Hemsley, Bot. Am.-Cent. i, 368.

Cerasus serotina, Hooker, Fl. Bor.-Am. i, 169, in part.

Cerasus demissa, Nuttall in Torrey & Gray, Fl. N. America, i, 411.—Gray in Mem. Am. Acad. new ser. iv[1], 40.—Durand in Jour. Philadelphia Acad. 1855, 87.—Torrey in Pacific R. R. Rep. iv, 83.—Newberry in Pacific R. R. Rep. vi, 73.—Cooper in Smithsonian Rep. 1858, 259; Pacific R. R. Rep. xii[2], 59.

Padus demissa, Rœmer, Syn. Mon. iii, 87.

P. Virginiana, var. *demissa*, Torrey, Bot. Wilkes Exped. 284.—Gray in Proc. Am. Acad. viii, 381.

WILD CHERRY.

Vancouver's island east to the western slopes of the Rocky mountains of Montana, south through the Pacific region; in Sonora.

A small tree, sometimes 7 to 10 meters in height, with a trunk 0.30 to 0.45 meter in diameter, or more often a low shrub; reaching its greatest development in the rich valleys of southern Oregon and northern California, near the coast; in southern California, and east of the Cascade and Sierra Nevada ranges, a low shrub confined to high, mountain valleys.

Wood heavy, hard, not strong, close-grained, compact; medullary rays numerous, conspicuous; color, light brown, the sap-wood lighter; specific gravity, 0.6951; ash, 0.50.

111.—Prunus Caroliniana, Aiton,

Hort. Kew. ii, 163; 2 ed. iii, 196.—Willdenow, Spec. ii, 987.—Poiret in Lamarck, Dict. v, 667.—Persoon, Syn. ii, 34.—Desfontaines, Hist. Arb. ii, 203.—Nuttall, Genera, i, 302.—Sprengel, Neue Entdeck. i, 304; Syst. ii, 478.—Hayne, Dend. Fl. 71.—Elliott, Sk. i, 540.—Audubon, Birds, t. 159, 190.—Eaton, Manual, 6 ed. 286.—Schlechtendal in Linnæa, xiii, 89.—Dietrich, Syn. iii, 43.—Chapman, Fl. S. States, 120.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 57.—Wood, Bot. & Fl. 103.—Koch, Dendrologie, i, 124.—Young, Bot. Texas, 252.—Gray, Hall's Pl. Texas, 9.—Vasey, Cat. Forest Trees, 13.

P. Carolina, Miller, Dict.—Du Roi, Harbk. ii, 198.

P. serratifolia, Marshall, Arbustum, 114.

P. Lusitanica, Walter, Fl. Caroliniana, 146.

Cerasus Caroliniana, Michaux, Fl. Bor.-Am. i, 285.—Nouveau Duhamel, v, 5.—Michaux f. Hist. Arb. Am. iii, 156, t. 7; N. American Sylva, 3 ed. ii, 150, t. 89.—Seringe in De Candolle, Prodr. ii, 540.—Don, Miller's Dict. ii, 516.—Spach, Hist. Veg. i, 420.—Penn. Cycl. vi, 432.—Loudon, Arboretum, ii, 720, f. 423.—Torrey & Gray, Fl. N. America, i, 411.—Eaton & Wright, Bot. 190.—Browne, Trees of America, 272.—Darby, Bot. S. States, 299.—Griffith, Med. Bot. 291.—Cooper in Smithsonian Rep. 1858, 252.—Porcher, Resources S. Forests, 171.—Wood, Cl. Book, 326.

P. sempervirens, Willdenow, Enum. Suppl. 33.

? *Bumelia serrata*, Pursh, Fl. Am. Sept. 155.—Rœmer & Schultes, Syst. iv, 498.

? *Achras serrata*, Poiret, Suppl. v, 36.

Leptocarpa Caroliniana, Nuttall, Sylva, ii, 18; 2 ed. i, 167.

Chimanthus amygdalinus, Rafinesque, Fl. Ludoviciana, 159.

Laurocerasus Caroliniana, Rœmer, Syn. Mon. iii, 90.

WILD ORANGE. MOCK ORANGE. WILD PEACH.

North Carolina, south, near the coast, to bay Biscayne, Florida, and southern Alabama, west, along the Gulf coast, to the valley of the Guadalupe river, Texas.

A small tree, evergreen, 10 to 12 meters in height, with a trunk rarely exceeding 0.30 meter in diameter; common and reaching its greatest development in the rich, light, deep soil of the bottoms of eastern Texas, here often covering extensive tracts known as "peach brakes"; not common in the eastern Gulf states.

Wood heavy, hard, strong, close-grained, checking badly in seasoning, susceptible of a good polish; medullary rays numerous, thin; color, light reddish-brown, or, more rarely, rich dark brown, the sap-wood lighter; specific gravity, 0.8688; ash, 0.41.

Generally planted in the southern states as an ornamental and hedge plant; foliage, bark, and fruit contain prussic acid, the leaves, especially when partly withered, often proving fatal to animals browsing upon them.

112.—Prunus sphærocarpa, Swartz,

Prodr. 81; Fl. Ind. Occ. ii, 927 [not Michaux].—Willdenow, Spec. ii, 987.—Poiret in Lamarck, Dict. v, 666.—Persoon, Syn. ii, 34.—Don, Miller's Dict. ii, 516.—Schlechtendal in Linnæa, xiii, 87.—Walpers, Rep. ii, 10.—Grisebach, Fl. British West Indies, 231.—Chapman, Fl. S. States, Suppl. 620.

Cerasus sphærocarpa, Loiseleur in Nouveau Duhamel, v, 4.—Seringe in De Candolle, Prodr. ii, 540.—Loudon, Arboretum ii, 721.—Bot. Mag. t. 3141.—Spach, Hist. Veg. i, 421.

Semi-tropical Florida, western shores of bay Biscayne (*Curtiss*); in the West Indies.

A small tree, in Florida not exceeding 6 meters in height, with a trunk 0.10 to 0.15 meter in diameter; high rocky woods or, more rarely, along the borders of streams and ponds; rare.

Wood heavy, hard, close-grained, checking badly in drying, containing many very small open ducts; layers of annual growth and medullary rays obscure; color, light, clear red, the sap-wood pale yellow; specific gravity, 0.8998; ash, 0.87.

113.—Prunus ilicifolia, Walpers,

Rep. ii, 10.—Dietrich, Syn. iii, 43.—Torrey, Bot. Mex. Boundary Survey, 63; Bot. Wilkes Exped. 285.—Brewer & Watson, Bot. California, i, 168; ii, 443.—Vasey, Cat. Forest Trees, 13.

Cerasus ilicifolia, Nuttall in Hooker & Arnott, Bot. Beechey, 340, t. 83.—Torrey & Gray, Fl. N. America, i, 411.—Nuttall, Sylva, ii, 16, t. 47; 2 ed. i, 165, t. 47.—Torrey in Emory's Rep. 139; Pacific R. R. Rep. iv, 83.—Paxton, Brit Fl. Garden, iii, 44, f. 254.—Walpers, Ann. iv, 654.—Cooper in Smithsonian Rep. 1858, 259.—Kellogg in Proc. California Acad. ii, 22.—Bolander in Proc. California Acad. iii, 79; iv, 22.—London Garden, 1873, 131 & fig.

Laurocerasus ilicifolia, Rœmer, Syn. Mon. iii, 92.

ISLAY.

California, Coast ranges from San Francisco bay south to the southern boundary of the state, extending to the western slopes of the San Bernardino and San Jacinto mountains.

A small tree, evergreen, often 9 to 12 meters in height, with a trunk 0.30 to 0.60 meter in diameter, or when distant from the coast often reduced to a low shrub.

Wood very heavy, hard, strong, close-grained, checking in seasoning, satiny, susceptible of a beautiful polish, containing many regularly-distributed rather small open ducts; medullary rays numerous, thin; color, bright reddish-brown, the sap-wood much lighter; specific gravity, 0.9803; ash, 0.78; furnishing valuable fuel.

114.—Vauquelinia Torreyi, Watson,

Proc. Am. Acad. xi, 147.—Brewer & Watson, Bot. California, i, 169.—Maximowicz in Act. Hort. St. Petersburg, v², 237.—Hemsley, Bot. Am.-Cent. i, 370.

Spiræa Californica, Torrey in Emory's Rep. 140.

V. corymbosa, Torrey, Bot. Mex. Boundary Survey, 64 [not Correa].

Arizona, high mountains near the Gila (*Emory*), summits of the Santa Catalina mountains (*Pringle*, *Lemmon*); in Sonora.

A small tree in the Santa Catalina mountains, 4 to 6 meters in height, with a trunk 0.10 to 0.20 meter in diameter; dry slopes and rocky bluffs at 2,700 to 4,000 feet elevation, granitic soil; generally hollow and decayed.

Wood very heavy, hard, very close-grained, compact, susceptible of a beautiful polish; medullary rays numerous, thin; color, rich dark brown streaked with red, the sap-wood yellow; specific gravity, 1.1374; ash, 1.45.

115.—Cercocarpus ledifolius, Nuttall;

Torrey & Gray, Fl. N. America, i, 427.—Hooker, Icon. t. 324.—Nuttall, Sylva, ii, 28, t. 51; 2 ed. i, 178, t. 51.—Walpers, Rep. ii, 46.—Dietrich, Syn. iii, 119.—Watson in King's Rep. v, 83, 420; Pl. Wheeler, 8.—Porter in Hayden's Rep. 1871, 481.—Coulter in Hayden's Rep. 1872, 765.—Parry in Am. Nat. ix, 201, 270; Proc. Davenport Acad. i, 146.—Engelmann in Simpson's Rep. 435.—Brewer & Watson, Bot. California, i, 174.—Vasey, Cat. Forest Trees, 13.—Sargent in Am. Jour. Sci. 3 ser. xvii, 421.—Rothrock in Wheeler's Rep. vi, 43, 111, 360.

MOUNTAIN MAHOGANY.

Cœur d'Alêne mountains, Idaho, southward along the western slopes of the Rocky mountains of Montana and Wyoming; eastern extremities of the Blue mountains of Washington territory and Oregon, Wahsatch mountains, Utah, and west along the mountain ranges of the Great Basin to the western slope of the Sierra Nevada of California, extending southward into Arizona and New Mexico.

A small, low tree, rarely 12 meters in height, with a trunk sometimes 0.60 to 0.90 meter in diameter, or north of Utah and Nevada reduced to a low shrub; dry, rocky mountain slopes, between 6,000 and 8,000 feet elevation, reaching its greatest development on the high ranges of central Nevada.

A shrubby variety of the Wahsatch mountain and other ranges of Utah, characterized by its rigid, intricately branched growth, short, revolute leaves and smaller flowers and fruit, is—

var. intricatus, M. E. Jones in herb.

C. intricatus, Watson in Proc. Am. Acad. x, 346.—Parry in Am. Nat. ix, 270; Proc. Davenport Acad. i, 147.

C. brevifolius, Watson in King's Rep. v, 83 [not Gray].

Wood very heavy, hard, close-grained, compact, brittle, difficult to work, susceptible of a beautiful polish; medullary rays very numerous, thin; color, bright, clear red, or often rich dark brown, the sap-wood clear yellow; specific gravity, 1.0731; ash, 1.04; furnishing the most valuable fuel of the region, and largely manufactured into charcoal.

116.—Cercocarpus parvifolius, Nuttall;

Hooker & Arnott, Bot. Beechey, 337.—Torrey & Gray, Fl. N. America, i, 427; Pacific R. R. Rep. ii, 164.—Hooker, Icon. t. 323.—Walpers, Rep. ii, 45.—Torrey in Fremont's Rep. 89; Emory's Rep. 139; Sitgreaves' Rep. 158; Pacific R. R. Rep. iv, 83; Bot. Mex. Boundary Survey, 63; Bot. Wilkes Exped. 287.—Dietrich, Syn. iii, 119.—Gray in Mem. Am. Acad. new ser. iv[1], 41; Smithsonian Contrib. iii, 68; v, 54; Proc. Boston Soc. Nat. Hist. vii, 146; Am. Jour. Sci. 2 ser. xxxiii, 411; Proc. Philadelphia Acad. 1863, 61.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 190.—Bolander in Proc. California Acad. iii, 79.—Porter in Hayden's Rep. 1870, 475; 1871, 481.—Watson in King's Rep. v, 82.—Porter & Coulter, Fl. Colorado; Hayden's Surv. Misc. Pub. No. 4, 34.—Rothrock, Pl. Wheeler, 37; Wheeler's Rep. vi, 111, 359.—Brewer & Watson, Bot. California, i, 174; ii, 444.—Vasey, Cat. Forest Trees, 13.—M. E. Jones, Excur. Bot. 12, 15, 20, 21.—Hemsley, Bot. Am.-Cent. i, 374.—Watson in Proc. Am. Acad. xvii, 353.

MOUNTAIN MAHOGANY.

California, valley of the Klamath river, southward through the Coast ranges to the San Bernardino and San Jacinto mountains, and in Lower California; Rocky mountains of Wyoming, Colorado, and New Mexico, mountains of southern Arizona, and southward into Sonora.

A small tree, rarely 6 to 9 meters in height, with a trunk sometimes 0.30 meter in diameter, or more often a shrub; dry, gravelly soil, reaching its greatest development on the mountains of southern New Mexico and Arizona, at an elevation of 6,000 to 8,000 feet.

A glabrous variety of southern California, with dark green leaves, is—

var. glaber, Watson, Bot. California, i, 175.

C. betulæfolius, Nuttall in Hooker, Icon. t. 322.—Walpers, Rep. ii, 46.

C. betuloides, Nuttall in Torrey & Gray, Fl. N. America, i, 427.—Hooker in London Jour. Bot. vi, 218.

A form with small entire or sparingly toothed leaves, of northern Mexico, is—

var. paucidentatus, Watson in Proc. Am. Acad. xvii, 353.

Wood very heavy, hard, close-grained, compact, difficult to work, susceptible of a beautiful polish; medullary rays numerous, thin; color, bright reddish-brown, the sap-wood light brown; specific gravity, 0.9365; ash, 0.45; furnishing valuable fuel.

117.—Pyrus coronaria, Linnæus,

Spec. 1 ed. 480.—Kalm, Travels, English ed. ii, 166.—Du Roi, Harbk. i, 229.—Marshall, Arbustum, 118.—Aiton, Hort. Kew. ii, 176; 2 ed. iii, 209.—Willdenow, Spec. ii, 1019; Enum. 527; Berl. Baumz. 330.—Persoon, Syn. ii, 40.—Pursh, Fl. Am. Sept. i, 340.—Eaton, Manual, 56; 6 ed. 291.—Nuttall, Genera, i, 307.—Barton, Compend. Fl. Philadelph. i, 228.—Hayne, Dend. Fl. 86.—Torrey, Fl. U. S. i, 180; Compend. Fl. N. States, 203; Fl. N. York, i, 223.—Bot. Mag. t. 2009.—Elliott, Sk. i, 559.—Bot Reg. viii, 651.—Sprengel, Syst. ii, 510.—De Candolle, Prodr. ii, 635.—Don, Miller's Dict. ii, 647.—Beck, Bot. 113.—Hooker, Companion Bot. Mag. i, 25.—Reichenbach, Fl. Exot. t. 240.—Torrey & Gray, Fl. N. America, i, 223.—Dietrich, Syn. iii, 154.—Loudon, Arboretum, ii, 908 & t.—Browne, Trees of America, 297.—Richardson, Arctic Exped. 428.—Parry in Owen's Rep. 612.—Darby, Bot. S. States, 307.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 128.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 69.—Lesquereux in Owen's 2d Rep. Arkansas, 359.—Wood, Cl. Book, 532; Bot. & Fl. 112.—Porcher, Resources S. Forests, 149.—Gray, Manual N. States, 5 ed. 161.—Koch, Dendrologie, i, 214.—Wenzig in Linnæa, xxxviii, 40 (excl. var.).—Macoun & Gibson in Trans. Bot. Soc. Edinburgh, xii, 325.—Vasey, Cat. Forest Trees, 13.—London Garden, xix, 400, t. 280.—Ward in Bull. U. S. Nat. Mus. No. 22, 78.—Ridgway in Proc. U. S. Nat. Mus. 1882, 66.

Malus coronaria, Miller, Dict. No. 2.—Mœnch, Meth. 682.—Michaux, Fl. Bor.-Am. i, 292.—Poiret in Lamarck, Dict. v, 562.—Desfontaines, Hist. Arb. ii, 140.—Nouveau Duhamel, vi, 139, t. 44, f. 1.—Michaux f. Hist. Arb. Am. iii, 65, t. 10; N. American Sylva, 3 ed. ii, 58, t. 65.—Barton, Prodr. Fl. Philadelph. 55.—Spach, Hist. Veg. ii, 136, t. 8.—Rœmer, Syn. Mon. iii, 191.—Decaisne in Nouv. Arch. Mus. x, 154.—Carrière in Rev. Hort. 1877, 410 & t.

Cratægus coronaria, Salisbury, Prodr. 357.

Malus microcarpa coronaria, Carrière in Rev. Hort. 1884, 104, f. 24.

AMERICAN CRAB. SWEET-SCENTED CRAB.

Ontario, valley of the Humber river, shores of lake Erie, southward through western New York and Pennsylvania to the District of Columbia, and along the Alleghany mountains to central Alabama and northern Mississippi; west to southern Minnesota, Iowa, eastern Kansas, the Indian territory, and northern Louisiana.

A small tree, rarely 6 to 9 meters in height, with a trunk often 0.30 meter in diameter; rich, rather low woods, reaching its greatest development in the valleys of the lower Ohio region.

Wood heavy, rather soft, not strong, very close-grained, checking badly in drying; medullary rays numerous, obscure; color, brown varying to light red, the sap-wood yellow; specific gravity, 0.7048; ash, 0.52; used for levers, handles of tools, and in turnery.

Often planted for ornament on account of its fragrant blossoms; the small, yellow-green austere fruit used for preserves, and occasionally made into cider.

118.—Pyrus angustifolia, Aiton,

Hort. Kew. ii, 176; 2 ed. iii, 209.—Willdenow, Spec. ii, 1020.—Poiret in Lamarck, Dict. v, 455.—Persoon, Syn. ii, 40.—Pursh, Fl, Am. Sept. i, 341.—Elliott, Sk. i, 559.—Torrey, Fl. U. S. 480; Compend. Fl. N. States, 203.—Sprengel, Syst. ii, 509.—De Candolle, Prodr. ii, 635.—Watson, Dend. Brit. ii, t. 132.—Bot. Reg. xiv, 1207.—Don, Miller's Dict. 647.—Beck, Bot. 113.—Hooker, Companion Bot. Mag. i, 25.—Torrey & Gray, Fl. N. America, i, 471.—Loudon, Arboretum, ii, 909 & t.—Eaton & Wright, Bot. 382.—Dietrich, Syn. iii, 154.—Nuttall, Sylva, ii, 24; 2 ed. i, 174.—Darby, Bot. S. States, 307.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 128.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 69.—Lesquereux in Owen's 2d Rep. Arkansas, 359.—Wood, Cl. Book, 333; Bot. & Fl. 112.—Gray, Manual N. States, 5 ed. 161.—Koch, Dendrologie, i, 213.—Vasey, Cat. Forest Trees, 14.—Ridgway in Proc. U. S. Nat. Mus. 1882, 66.

P. coronaria, Wangenheim, Amer. 61, t. 21, f. 47 [not Linnæus].—Walter, Fl. Caroliniana, 148.

Malus angustifolia, Michaux, Fl. Bor.-Am. i, 292.—Decaisne in Nouv. Arch. Mus. x, 155.

Malus sempervirens, Desfontaines, Hist. Arb. ii, 141.—Nouveau Duhamel, vi, 638, t. 43, f. 1.—Poiret, Suppl. iv, 524.—Spach, Hist. Veg. ii, 135, t. 8, figs.—Rœmer, Syn. Mon. iii, 191.

P. coronaria, var. *angustifolia*, Wenzig in Linnæa, xxxviii, 41.

Chloromeles sempervirens, Decaisne in Fl. des Serres, xxiii, 126.

AMERICAN CRAB APPLE. SOUTHERN CRAB APPLE.

Pennsylvania ?, southern Delaware, and the valley of the lower Wabash river, Illinois, south to the Chattahoochee region of western Florida.

A small tree, 6 to 9 meters in height, with a trunk rarely 0.30 meter in diameter; low, rich woods; most common and reaching its greatest development along the river bottoms of the south Atlantic states; less common west of the Alleghany mountains.

Wood heavy, hard, close-grained, checking badly in drying; medullary rays numerous, obscure; color, light brown tinged with red, the sap-wood yellow; specific gravity, 0.6895; ash, 0.33; used for levers, handles of tools, etc.

The austere fruit used for preserves and made into cider.

119.—Pyrus rivularis, Douglas;

Hooker, Fl. Bor.-Am. i, 203, t. 68.—Don, Miller's Dict. ii, 647.—Torrey & Gray, Fl. N. America, i, 471.—Eaton & Wright, Bot. 383.—Walpers, Rep. ii, 53.—Dietrich, Syn. iii, 154.—Ledebour, Fl. Rossica, ii, 99.—Nuttall, Sylva, ii, 22, t. 49; 2 ed. i, 172, t. 49.—Richardson, Arctic Exped. 428.—Torrey in Pacific R. R. Rep. iv, 85; Bot. Wilkes Exped. 292.—Newberry in Pacific R. R. Rep. vi, 73.—Cooper in Smithsonian Rep. 1858, 259; Pacific R. R. Rep. xii, 29, 60.—Rothrock in Smithsonian Rep. 1867, 435, 446.—Koch, Dendrologie, i, 212.—Gray in Proc. Am. Acad. viii, 382.—Wenzig in Linnæa, xxxviii, 38.—Brewer & Watson, Bot. California, i, 188.—Vasey, Cat. Forest Trees, 14.—Hall in Coulter's Bot. Gazette, ii, 87.—Macoun in Geological Rep. Canada, 1875-'76, 195.—Dawson in Canadian Nat. new ser. ix, 330.

P. diversifolia, Bongard in Mem. Acad. Sci. St. Petersburg, 6 ser. ii, 133.

P. fusca, Rafinesque, Med. Bot. ii, 254.

P. subcordata, Ledebour, Fl. Rossica, ii, 95.

Malus rivularis, Rœmer, Syn. Mon. iii, 215.—Decaisne in Nouv. Arch. Mus. x, 155.

Malus diversifolia, Rœmer, Syn. Mon. iii, 215.—Decaisne in Nouv. Arch. Mus. x, 155.

Malus subcordata, Rœmer, Syn. Mon. iii, 192.

OREGON CRAB APPLE.

Coast of Alaska, southward along the coast and islands of British Columbia, through Washington territory and Oregon, west of the Cascade mountains, to Sonoma county, California.

A small tree, sometimes 9 meters in height, with a trunk 0.30 to 0.45 meter in diameter; rich, low woods, generally along streams, often forming dense thickets.

Wood heavy, hard, very close-grained, liable to check badly in drying, susceptible of a beautiful polish; medullary rays numerous, obscure; color, light brown tinged with red, the sap-wood lighter; specific gravity, 0.8316; ash, 0.41; used for mallets, mauls, bearings of machinery, etc.

The small, black, pleasantly acid fruit occasionally used as a preserve, and prized by the Indians as food.

120.—Pyrus Americana, De Candolle;

Prodr. ii, 637.—Watson, Dend. Brit. i. t. 54.—Sprengel, Syst. ii, 511.—Hooker, Fl. Bor.-Am. i, 204.—Don, Miller's Dict. ii, 648.—Beck, Bot. 113.—Audubon, Birds, t. 363.—Torrey & Gray, Fl. N. America, i, 472.—Loudon, Arboretum, iii, 920 & t.—Eaton & Wright, Bot. 383.—Torrey, Fl. N. York, i, 224.—Dietrich, Syn. iii, 155.—Nuttall, Sylva, ii, 25, t. 50; 2 ed. i, 175, t. 50.—Browne, Trees of America, 326.—Emerson, Trees Massachusetts, 439; 2 ed. ii, 499.—Parry in Owen's Rep. 612.—Richardson, Arctic Exped. 428.—Lange, Pl. Grœnl. 134.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 129.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 70.—Wood, Cl. Book, 333; Bot. & Fl. 112.—Porcher, Resources S. Forests, 168.—Gray, Manual N. States, 5 ed. 161.—Koch, Dendrologie, i, 190.—Brewer & Watson, Bot. California, i, 189.—Vasey, Cat. Forest Trees, 14.—Macoun in Geological Rep. Canada, 1875-'76, 195.—Sears in Bull. Essex Inst. xiii, 176.—Bell in Geological Rep. Canada, 1879-'80, 54c.

Sorbus Americana, Marshall, Arbustum, 145.—Willdenow, Enum. 520.—Pursh, Fl. Am. Sept. i, 341.—Poiret, Suppl. v, 164.—Eaton, Manual, 55; 6 ed. 351.—Nuttall, Genera, i, 305.—Hayne, Dend. Fl. 75.—Torrey, Fl. U. S. 477; Compend. Fl. N. States, 202.—Spach, Hist. Veg. ii, 95.—Bigelow, Fl. Boston. 3 ed. 207.—Rœmer, Syn. Mon. iii, 138.—Maximowicz in Bull. Acad. St. Petersburg, xix, 174.—Wenzig in Linnæa, xxxviii, 71.—Decaisne in Nouv. Arch. Mus. x, 158.

Sorbus aucuparia, Poiret in Lamarck, Dict. vii, 234, in part.—Bigelow, Fl. Boston. 1. ed. 119.—Decaisne in Nouv. Arch. Mus. x, 158, in part.

Sorbus aucuparia, var. *Americana*, Persoon, Syn. ii, 38 & addend.

P. aucuparia, Meyer, Pl. Labrador, 81, in part.—Schlechtendal in Linnæa, x, 99.—Hooker f. in Trans. Linnæan Soc. xxii², 290, 327, in part.

Sorbus humifusa, Rafinesque, Med. Bot. ii, 265.

MOUNTAIN ASH.

Greenland?, Labrador, Newfoundland, Anticosti island, and westward along the southern shore of James' bay to the valley of the Nelson river (White Mud falls), southward through all mountainous regions of the northeastern states, and along the high mountains of Virginia and North Carolina; in northern Michigan, Wisconsin, and Minnesota.

A small tree, 6 to 9 meters in height, with a trunk 0.30 to 0.45 meter in diameter; borders of swamps and in moist, rocky woods, reaching its greatest development on the northern shores of lakes Huron and Superior.

A form with smaller fruit, peculiar to the high southern Alleghany mountains, is—

var. microcarpa, Torrey & Gray, Fl. N. America, i, 472.

Sorbus aucuparia, var. *a*. Michaux, Fl. Bor.-Am. i, 290.

Sorbus microcarpa, Pursh, Fl. Am. Sept. i, 341.—Poiret, Suppl. v, 164.—Elliott, Sk. i, 555.—Torrey, Fl. U. S. 477.—Eaton, Manual, 6 ed. 351.—Spach, Hist. Veg. ii, 95.—Rœmer, Syn. Mon. iii, 138.

P. microcarpa, Sprengel, Syst. ii, 511.—De Candolle, Prodr. ii, 636.—Don, Miller's Dict. ii, 648.—Beck, Bot. 113.—Eaton & Wright, Bot. 383.—Loudon, Arboretum, ii, 921.

Sorbus Americana, var. *microcarpa*, Wenzig in Linnæa, xxxviii, 71.

Sorbus riparia, Rafinesque, New Sylva, 15.

Wood light, soft, close-grained, compact; medullary rays numerous, obscure; color, light brown, the sap-wood lighter; specific gravity, 0.5451; ash, 0.83.

Often planted for ornament.

121.—Pyrus sambucifolia,

Chamisso & Schlechtendal in Linnæa, ii, 36.—Bongard in Mem. Acad. Sci. St. Petersburg, 6 ser. ii, 133.—Don, Miller's Dict. ii, 648.—Torrey & Gray, Fl. N. America, i, 472.—Walpers, Rep. ii, 53.—Dietrich, Syn. iii, 155.—Ledebour, Fl. Rossica, ii, 99.—Trautvetter & Meyer, Fl. Ochot. 37.—Maximowicz, Prim. Fl. Amurensis, 103.—Rothrock in Smithsonian Rep. 1867, 446.—Gray, Manual N. States, 5 ed. 161; Proc. Am. Acad. viii, 382.—Porter in Hayden's Rep. 1870, 475.—Watson in King's Rep. v, 92.—Porter & Coulter, Fl. Colorado; Hayden's Surv. Misc. Pub. No. 4, 38.—Brewer & Watson, Bot. California, i, 189.—Macoun in Geological Rep. Canada, 1875–'76, 195.—Hall in Coulter's Bot. Gazette, ii, 87.—G. M. Dawson in Canadian Nat. new ser. ix, 10.—Sears in Bull. Essex Inst. xiii, 176.

Sorbus aucuparia, var. *β*. Michaux, Fl. Bor.-Am. i, 290.

Sorbus aucuparia, Schrank, Pl. Labrador, 25, in part [not Linnæus].

P. Americana, Newberry in Pacific R. R. Rep. vi, 73 [not De Candolle].—Cooper in Pacific R. R. Rep. xii², 60.—Torrey, Bot. Wilkes Exped. 292.

P. aucuparia, Meyer, Pl. Labrador, 81, in part.—Schlechtendal in Linnæa, x, 99, in part.—Hooker in Trans. Linnæan Soc. xxii², 290, 327, in part.

Sorbus sambucifolia, Rœmer, Syn. Mon. iii, 139.—Maximowicz in Bull. Acad. Sci. St. Petersburg, xix, 174.—Wenzig in Linnæa, xxxviii, 73.—Decaisne in Nouv. Arch. Mus. x, 159.

Sorbus Sitchensis, Rœmer, Syn. Mon. iii, 139.

MOUNTAIN ASH.

Labrador to northern New England and the shores of lake Superior; high mountain ranges of the Pacific region from Alaska to southern New Mexico; in Kamtchatka.

A small tree, 9 to 12 meters in height, with a trunk sometimes 0.30 meter in diameter, or in the Pacific forests generally reduced to a low shrub; cold, wet swamps or borders of streams, reaching its greatest development in northern New England and Minnesota.

Wood light, soft, weak, close-grained, compact; medullary rays numerous, obscure; color, light brown, the sap-wood nearly white; specific gravity, 0.5928; ash, 0.35.

The bark and unripe fruit of the American mountain ashes, like those of the nearly-allied *P. aucuparia* of Europe, are extremely astringent, and occasionally used, domestically, in infusions, decoctions, etc., in the treatment of diarrhea (*Nat. Dispensatory*, 2 ed. 1333).

122.—Cratægus rivularis, Nuttall;

Torrey & Gray, Fl. N. America, i, 464.—Dietrich, Syn. iii, 161.—Walpers, Rep. ii, 58.—Nuttall, Sylva, ii, 9; 2 ed. i, 160.—Cooper in Smithsonian Rep. 1858, 258; Am. Nat. iii, 407.—Regel in Act. Hort. St. Petersburg, i, 107.—Watson in King's Rep. v, 92.—Porter in Hayden's Rep. 1871, 482.—Coulter in Hayden's Rep. 1872, 765.—Brandegee in Hayden's Rep. 1875, 236.—Vasey, Cat. Forest Trees, 14.—Macoun in Geological Rep. Canada, 1875–'76, 195.—Engelmann in Coulter's Bot. Gazette, vii, 128.

C. sanguinea, var. *Douglasii*, Coulter in Hayden's Rep. 1872, 765 [not Torrey & Gray].

British Columbia, south through eastern Oregon and Washington territory, east and southeast along the mountain ranges of Idaho, Montana, Utah, and Colorado, to the Pinos Altos mountains, New Mexico (*Greene*).

A small tree, 6 to 8 meters in height, with a trunk rarely exceeding 0.30 meter in diameter, or often a tall, much-branched shrub, forming dense, impenetrable thickets along borders of streams and swamps.

Wood heavy, hard, close-grained, compact; medullary rays numerous, thin; color, bright reddish-brown, the sap-wood nearly white; specific gravity, 0.7703; ash, 0.35.

123.—Cratægus Douglasii, Lindley,

Bot. Reg. xxi, t. 1810.—Loudon, Arboretum, ii, 823, f. 584 & t.—Koch, Dendrologie, i, 147.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 26.—Brewer & Watson, Bot. California, i, 189.—Macoun in Geological Rep. Canada, 1875–'76, 195.—Engelmann in Coulter's Bot. Gazette, vii, 128.

? *C. glandulosa*, Pursh, Fl. Am. Sept. i, 337, in part.

C. punctata, var. *brevispina*, Douglas in Hooker, Fl. Bor.-Am. i, 201.

C. sanguinea, var. *Douglasii*, Torrey & Gray, Fl. N. America, i, 464.—Walpers, Rep. ii, 58.—Dietrich, Syn. iii, 160.—Torrey, Bot. Wilkes Exped. 292.—Regel in Act. Hort. St. Petersburg, i, 116.

C. sanguinea, Nuttall, Sylva, ii, 6, t. 44; 2 ed. i, 157, t. 44 [not Pallas].—Cooper in Smithsonian Rep. 1858, 259; Am. Nat. iii, 407.—Vasey, Cat. Forest Trees, 14.

Anthomeles Douglasii, Rœmer, Syn. Mon. iii, 140.

C. rivularis, Brewer & Watson, Bot. California, i, 189 [not Nuttall].

British Columbia, valley of the Parsnip river, in about latitude 55° N., south through Washington territory and Oregon to the valley of the Pitt river, California, extending east through Idaho and Montana to the western base of the Rocky mountains (valley of the Flathead river, *Canby & Sargent*).

A small tree, sometimes 12 meters in height, with a trunk 0.30 to 0.45 meter in diameter, or often a tall shrub throwing up many stems from the ground and forming impenetrable thickets; rather wet, sandy soil along streams, and reaching its greatest development in the valleys west of the Cascade mountains; toward its eastern limits a low shrub.

Wood heavy, hard, tough, close-grained, compact, satiny, susceptible of a beautiful polish; medullary rays numerous, thin; color, nearly white tinged with rose, the sap-wood lighter; specific gravity, 0.6950; ash, 0.33; used for wedges, mauls, etc.

The small, sweet, black fruit, ripening in August, is largely collected by the Indians.

124.—Cratægus brachyacantha, Sargent & Englemann;

Engelmann in Coulter's Bot. Gazette, vii, 128.

HOGS' HAW.

New Orleans?, (*Drummond* in herb. *Gray*); Minden, Louisiana (*Mohr*); Concord, Texas (*Sargent*); Longview, Texas (in fruit, *Letterman*).

A tree 9 to 12 meters in height, with a trunk sometimes 0.60 meter in diameter; borders of streams in low, very rich soil; the largest North American representative of the genus.

Wood heavy, hard, very close-grained, compact, susceptible of a beautiful polish; medullary rays numerous, very obscure; color, light brown tinged with rose, the sap-wood lighter; specific gravity, 0.6793; ash, 0.42.

The large blue-black fruit greedily eaten by hogs and other animals.

125.—Cratægus arborescens, Elliott,

Sk. i, 550.—Eaton, Manual, 6 ed. 112.—Torrey & Gray, Fl. N. America, i, 466.—Eaton & Wright, Bot. 212.—Dietrich, Syn. iii, 160.—Walpers, Rep. ii, 58.—Nuttall, Sylva, ii, 10, t. 45; 2 ed. i, 160, t. 45.—Darby, Bot. S. States, 306.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 127.—Wood, Cl. Book, 331; Bot. & Fl. 111.—Young, Fl. Texas, 259.—Vasey, Cat. Forest Trees, 14.—Engelmann in Bull. Torrey Bot. Club, ix, 4.

Phænopyrum arborescens, Rœmer, Syn. Mon. iii, 153.

C. Crus-galli, var. *pyracanthifolia*, Regel in Act. Hort. St. Petersburg, i, 109, in part.

Valley of the Savannah river, South Carolina (Aiken, *Ravenel*), south to the Chattahoochee region of western Florida; valley of the Mississippi river, near Saint Louis (*Engelmann*), south and southwest to western Louisiana, and the valley of the lower Colorado river, Texas.

A small tree, 6 to 9 meters in height, with a trunk sometimes 0.45 to 0.60 meter in diameter; borders of streams and in rather low, wet swamps.

Wood heavy, hard, not strong, close-grained, compact, susceptible of a beautiful polish; medullary rays very numerous, obscure; color, light brown tinged with red, the sap-wood lighter; specific gravity, 0.6491; ash, 0.57.

The small globular fruit bright red or, more rarely, orange.

126.—Cratægus Crus-galli, Linnæus,

Spec. 1 ed. 476.—Kalm, Travels, English ed. i, 115.—Medicus, Bot. Beobacht. ii, 344.—Walter, Fl. Caroliniana, 147.—Aiton, Hort. Kew. ii, 170; 2 ed. iii, 202.—Willdenow, Spec. ii, 1004.—Micaux, Fl. Bor.-Am. i, 288.—Persoon, Syn. ii, 37.—Pursh, Fl. Am. Sept. i, 338.—Eaton, Manual, 55; 6 ed. 111.—Nuttall, Genera, i, 305.—Barton, Compend. Fl. Philadelph. i, 225; Prodr. Fl. Philadelph. 54.—Elliott, Sk. i, 548.—Torrey, Fl. U. S. 476; Compend. Fl. N. States, 202; Fl. N. York, i, 221.—Watson, Dend. Brit. i, t. 56.—De Candolle, Prodr. ii, 626.—Hooker, Fl. Bor.-Am. i, 260; Companion Bot. Mag. i, 25.—Don, Miller's Dict. ii, 598.—Beck, Bot. 111.—Torrey & Gray, Fl. N. America, i, 463.—Loudon, Arboretum, ii, 820, f. 574, 575 & t.—Eaton & Wright, Bot. 212.—Bigelow, Fl. Boston. 3 ed. 206.—Dietrich, Syn. iii, 158.—Browne, Trees of America, 278.—Emerson, Trees Massachusetts, 433; 2 ed. ii, 492 & t.—Rœmer, Syn. Mon. iii, 117.—Parry in Owen's Rep. 612.—Darlington, Fl. Cestrica, 3 ed. 83.—Darby, Bot. S. States, 305.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 127.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 83.—Lesquereux in Owen's 2d Rep. Arkansas, 359.—Wood, Cl. Book, 331; Bot. & Fl. 111.—Porcher, Resources S. Forests, 148.—Gray, Manual N. States, 5 ed. 160; Hall's Pl. Texas, 9.—Young, Bot. Texas, 258.—Regel in Act. Hort. St. Petersburg, i, 108.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 19.—Vasey, Cat. Forest Trees, 14.—Bell in Geological Rep. Canada, 1879–'80, 54c.—Ridgway in Proc. U. S. Nat. Mus. 1882, 66.

C. lucida, Du Roi, Obs. Bot. 13.—Wangenheim, Amer. 53, t. 17, f. 42.—Sprengel, Syst. ii, 506.—De Candolle, Prodr. ii, 629.—Eaton, Manual, 6 ed. 112.—Don, Miller's Dict. ii, 599.—Eaton & Wright, Bot. 212.

Mespilus Crus-galli, Marshall, Arbustum, 88.—Lamarck, Dict. iv, 441.—Desfontaines, Hist. Arb. ii, 157.—Nouveau Duhamel, iv, 149.—Willdenow, Enum. 522; Berl. Baumz. 244.—Hayne, Dend. Fl. 80.—Koch, Dendrologie, i, 142.

? *Mespilus cuneiformis*, Marshall, Arbustum, 88.

Mespilus lucida, Ehrhart, Beitr. iv, 17.—Mœnch, Meth. 685.—Spach, Hist. Veg. ii, 57.

Mespilus cuneifolia, Mœnch, Meth. 684.

C. Crus-galli, var. *splendens*, Aiton, Hort. Kew. 2 ed. iii, 202.

Mespilus Watsoniana, Spach, Hist. Veg. ii, 57.

C. Watsoniana, Rœmer, Syn. Mon. iii, 117.

COCKSPUR THORN. NEWCASTLE THORN.

Valley of the Saint Lawrence river, west through southern Ontario to Manitoba, south through the Atlantic forests to the valley of the Chipola river, western Florida, and the valley of the Colorado river, Texas.

A small tree, 4 to 10 meters in height, with a trunk sometimes 0.30 meter in diameter, running into various forms. The best marked are—

var. **pyracanthifolia**, Aiton, Hort. Kew. ii, 170; 2 ed. iii, 202.—De Candolle, Prodr. ii, 626.—Torrey & Gray, Fl. N. America, i, 464.—Loudon, Arboretum, ii, 820, t. 128, f. 580.—Browne, Trees of America, 278.—Regel in Act. Hort. St. Petersburg, i, 109, in part.

C. salicifolia, Medicus, Bot. Beobacht. ii, 345.—Rœmer, Syn. Mon. iii, 117.

C. Crus-galli, var. *salicifolia*, Aiton, *l. c.*; 2 ed. *l. c.*—Willdenow, Berl. Baumz. 244.—De Candolle, *l. c.*—Loudon, *l. c.* f. 551–553, 578 & t.—Browne, *l. c.*—Regel, *l. c.* 110.

Mespilus Crus-galli, var. *salicifolia*, Hayne, Dend. Fl. 80.

Mespilus Crus-galli, var. *pyracanthifolia*, Hayne, *l. c.*

Mespilus salicifolia, Koch, Dendrologie, i, 144.

C. Coursetiana, Rœmer, Syn. Mon. iii, 117.

var. **ovalifolia**, Lindley, Bot. Reg. xxii, t. 1860.—Torrey & Gray, Fl. N. America, i, 464.—Dietrich, Syn. iii, 159.—Loudon, Arboretum, ii, 821, f. 579 & t.—Regel in Act. Hort. St. Petersburg, i, 109.

Mespilus ovalifolia, Hornemann, Hort. Hafn. Suppl. 52.—Koch, Dendrologie, i, 143.

Mespilus prunellifolia, Poiret, Suppl. iv, 72.

C. ovalifolia, De Candolle, Prodr. ii, 627.—Don, Miller's Dict. ii, 598.—Rœmer, Syn. Mon. iii, 117.

C. prunellifolia, De Candolle, *l. c.*—Don, *l. c.*—Rœmer, *l. c.*

Mespilus elliptica, Guimpel, Otto & Hayne, Abb. Holz. 170, t. 144 [not Lamarck].—Spach. Hist. Veg. ii, 68.

var. **linearis**, De Candolle, Prodr. ii, 626.—Torrey & Gray, Fl. N. America, i, 464.—Dietrich, Syn. iii, 159.—Loudon, Arboretum, ii, 821, f. 577.—Browne, Trees of America, 278.—Regel in Act. Hort. St. Petersburg, i, 110.

Mespilus lucida, var. *angustifolia*, Ehrhart, Beitr. iv, 18.

C. linearis, Persoon, Syn. ii, 37.—Rœmer, Syn. Mon. iii, 118.

Mespilus linearis, Desfontaines, Hist. Arb. ii, 156.—Poiret, Suppl. iv, 70.—Spach, Hist. Veg. ii, 57.

var. prunifolia, Torrey & Gray, Fl. N. America, i, 464.—Dietrich, Syn. iii, 159.—Loudon, Arboretum, ii, 821, f. 576 & t.—Regel in Act. Hort. St. Petersburg, i, 110.

Mespilus prunifolia, ? Marshall, Arbustum, 90.—Lamarck, Dict. iv, 443.—Nouveau Duhamel, iv, 150, t. 40.—Sprengel, Syst. ii, 506.

Mespilus rotundifolia, Ehrhart, Beitr. iii, 20.

C. prunifolia, Persoon, Syn. ii, 37.—Bosc in De Candolle, Prodr. ii, 627.—Don, Miller's Dict. ii, 598.—Lindley, Bot. Reg. xxii, t. 1868.—Eaton, Manual, 6 ed. 112.—Eaton & Wright, Bot. 212.

Mespilus Bosciana, Spach, Hist. Veg. ii, 58.

C. Bosciana, Rœmer, Syn. Mon. iii, 118.

Wood heavy, hard, not strong, close-grained, compact, satiny, susceptible of a fine polish; medullary rays numerous, very obscure; color, brown tinged with red, the sap-wood rather lighter; specific gravity, 0.7194; ash, 0.56.

The long, strong spines are occasionally collected and used to fasten sacks and for similar purposes.

127.—Cratægus coccinea, Linnæus,

Spec. 1 ed. 476.—Walter, Fl. Caroliniana, 147.—Aiton, Hort. Kew. ii, 167; 2 ed. iii, 200.—Willdenow, Spec. ii, 1000 (excl. syn.).—Michaux, Fl. Bor.-Am. i, 288.—Persoon, Syn. ii, 36.—Pursh, Fl. Am. Sept. i, 337.—Eaton, Manual, 55; 6 ed. 111.—Nuttall, Genera, i, 305.—Schrank, Pfl. Labrador, 26.—Barton, Compend, Fl. Philadelph. i, 226.—Hayne, Dend. Fl. 77.—Elliott, Sk. i, 553.—Torrey, Fl. U. S. 474; Compend. Bot. N. States, 201; Fl. N. York, i, 221; Emory's Rep. 408.—De Candolle, Prodr. ii, 627.—Hooker, Fl. Bor.-Am. i, 201; Bot. Mag. t. 3432.—Don, Miller's Dict. ii, 599.—Meyer, Pl. Labrador, 82.—Beck, Bot. 112.—Lindley, Bot. Reg. 23, t. 1957.—Torrey & Gray, Fl. N. America, i, 465.—Bigelow, Fl. Boston. 3 ed. 206.—Eaton & Wright, Bot. 211.—Dietrich, Syn. iii, 160.—Walpers, Rep. ii, 58.—Loudon, Arboretum, ii, 816, f. 564-566, t. 121.—Schnizlein, Icon. t. 270, f. 18-20, 22.—Emerson, Trees Massachusetts, 434; 2 ed. ii, 493 & t.—Richardson, Arctic Exped. 427.—Darlington, Fl. Cestrica, 3 ed. 83.—Darby, Bot. S. States, 305.—Cooper in Smithsonian Rep. 1858, 252.—Gray in Pacific R. R. Rep. xii, 43; Manual N. States, 5 ed. 160.—Chapman, Fl. S. States, 127.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 82.—Lesquereux in Owen's 2d Rep. Arkansas, 309.—Wood, Cl. Book, 331; Bot. & Fl. 111.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 9.—Vasey, Cat. Forest Trees, 14.—Sears in Bull. Essex Inst. xiii, 177.—Bell in Geological Rep. Canada, 1879-'80, 55c.—Ridgway in Proc. U. S. Nat. Mus. 1882, 66.

Mespilus coccinea, Marshall, Arbustum, 87.—Mœnch, Meth. 684.—Lamarck, Dict. iv, 442.—Desfontaines, Hist. Arb ii, 156.—Willdenow, Enum. 523; Berl. Baumz. 238.—Wendland in Regensb. Fl. 1823, 699.—Sprengel, Syst. ii, 507.—Spach, Hist. Veg. ii, 64.

Mespilus rotundifolia, Ehrhart, Beitr. iii, 20.—Wendland in Regensb. Fl. 1823, 700.—Watson, Dend. Brit. i, t. 58.—Koch, Dendrologie, i, 148.

Pyrus glandulosa, Mœnch, Meth. 680.

C. glandulosa, Willdenow, Spec. ii, 1002 (excl. syn.).—Pursh, Fl. Am. Sept. i, 337, in part.—Torrey, Fl. U. S. 475; Compend. Fl. N. States, 201.—De Candolle, Prodr. ii, 627.—Loddiges, Bot. Cab. t. 1012.—Hooker, Fl. Bor.-Am. i, 201.—Don, Miller's Dict. ii, 599.—Eaton, Manual, 6 ed. 111.—Beck, Bot. 112.—Eaton & Wright, Bot. 211.—Loudon, Arboretum, ii, 817, f. 550, 567, 568 & t.—Richardson, Arctic Exped. 427.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 84.—Regel in Act. Hort. St. Petersburg, i, 120.

Mespilus glandulosa, Willdenow, Enum. 523.—Sprengel, Syst. ii, 507.—Spach, Hist. Veg. ii, 62.—Koch, Dendrologie, i, 145.

Mespilus pubescens, Wendland in Regensb. Fl. 1823, 700.

C. Crus-galli, Bigelow, Fl. Boston. 2 ed. 194 [not Linnæus].

? *Mespilus Wendlandii*, Opiz in Regensb. Fl. 1834, 590.

C. macracantha, Loddiges in Loudon, Arboretum, ii, 819, f. 572, 573 & t.

C. glandulosa, var. *macracantha*, Lindley in Bot. Reg. xxii, t. 1912.

Mespilus flabellata, Spach, Hist. Veg. ii, 63.—Koch, Dendrologie, i, 148.

Halmia flabellata, Rœmer, Syn. Mon. iii, 136.

Anthomeles rotundifolia, Rœmer, Syn. Mon. iii, 140.

Phænopyrum coccineum, Rœmer, Syn. Mon. iii, 156.

Phænopyrum Wendlandii, Rœmer, Syn. Mon. iii, 156.

SCARLET HAW. RED HAW. WHITE THORN.

West coast of Newfoundland, west along the valley of the Saint Lawrence river and the northern shores of the great lakes to Manitoba, south through the Atlantic forests to northern Florida and eastern Texas.

A small tree, sometimes 9 meters in height, with a trunk 0.30 meter in diameter; open upland woods or along streams and borders of prairies; very common at the north, rare at the south; running into many forms, varying in the size and shape of the leaves, size of the fruit, etc. The best marked are—

var. viridis, Torrey & Gray, Fl. N. America, i, 465.—Torrey in Nicollet's Rep. 149.

C. viridis, Linnæus, Spec. 1 ed. 476.—Willdenow, Spec. ii, 1001.—Persoon, Syn. ii, 36.—Elliott, Sk. i, 551.—De Candolle, Prodr. ii, 630.—Don, Miller's Dict. ii, 601.—Eaton, Manual, 6 ed. 112.—Darlington, Fl. Cestrica, 2 ed. 293.—Eaton & Wright, Bot. 212.—Beck, Bot. 305.—Darby, Bot. S. States, 305.—Wood, Cl. Book, 332; Bot. & Fl. 111.

? *Phænopyrum viride*, Rœmer, Syn. Mon. iii, 156.

Mespilus viridis, Koch, Dendrologie, i, 149.

C. glandulosa, var. *rotundifolia*, Regel in Act. Hort. St. Petersburg, i, 120.

var. populifolia, Torrey & Gray, Fl. N. America, i, 465.

C. populifolia, Elliott, Sk. i, 553 [not Walter].—Nuttall, Genera, i, 305.—Eaton, Manual, 6 ed. 112—Beck, Bot. 305.—Eaton & Wright, Bot. 212.—Darby, Bot. S. States, 305.

Mespilus populifolia, Lamarck, Dict. iv, 447.

Phænopyrum populifolium, Rœmer, Syn. Mon. iii, 156.

C. coccinea, var. *typica*, Regel in Act. Hort. St. Petersburg, i, 121.

var. oligandra, Torrey & Gray, Fl. N. America, i, 465.

Wood heavy, hard, close-grained, compact; medullary rays thin, very obscure; color, brown tinged with red, the sap-wood a little lighter; specific gravity, 0.8618; ash, 0.38.

128.—Cratægus subvillosa, Schrader,

Ind. Sem. Hort. Gœtt.—Torrey in Pacific R. R. Rep. iv, 35.—Ridgway in Proc. U. S. Nat. Mus. 1882, 66.

C. coccinea, var. *mollis*, Torrey & Gray, Fl. N. America, i, 465.—Gray in Jour. Boston Soc. Nat. Hist. vi, 186.—Parry in Owen's Rep. 612.—Regel in Act. Hort. St. Petersburg, i, 121.

Phænopyrum subvillosum, Rœmer, Syn. Mon. iii, 154.

C. mollis, Scheele in Linnæa, xxi, 569; Rœmer, Texas, Appx. 473.—Walpers, Ann. ii, 523.

C. sanguinea, var. *villosa*, Ruprecht & Maximowicz, Prim. Fl. Amurensis, 101.

C. Texana, Buckley in Proc. Philadelphia Acad. 1861, 454 (see Gray in same, 1862, 163).—Young, Fl. Texas, 258.

C. tomentosa, var. *mollis*, Gray, Manual N. States, 5 ed. 160.—Wood, Cl. Book, 330; Bot. & Fl. 121.—Vasey, Cat. Forest Trees, 14.

Mespilus tiliæfolia, Koch, Dendrologie, i, 151.

SCARLET HAW.

Eastern Massachusetts (possibly introduced); central Michigan to eastern Nebraska, south to middle Tennessee, and southwest through Missouri, Arkansas, the Indian territory, and Texas to the valley of the San Antonio river.

A small tree, 7 to 9 meters in height, with a trunk rarely 0.45 meter in diameter; rich woods and along borders of streams and prairies.

Wood heavy, hard, not strong, close-grained, compact; medullary rays numerous, very obscure; color, light brown or light red, the sap-wood lighter; specific gravity, 0.7953; ash, 0.69.

The large red fruit often downy, edible, and of agreeable flavor.

129.—Cratægus tomentosa, Linnæus,

Spec. 1 ed. 476 (excl. syn. Gronovius).—Kalm, Travels, English ed. ii, 151.—Du Roi, Harbk. i, 183.—Torrey & Gray, Fl. N. America, i, 466.—Dietrich, Syn. iii, 160.—Torrey, Fl. N. York, i, 222.—Emerson, Trees Massachusetts, 1 ed. 435; 2 ed. ii, 494 & t.—Parry in Owen's Rep. 612.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 127.—Lesquereux in Owen's 2d Rep. Arkansas, 359.—Wood, Cl. Book, 330.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 191.—Gray, Manual N. States, 5 ed. 160.—Young, Bot. Texas, 258.—Vasey, Cat. Forest Trees, 14.—Macoun in Geological Rep. Canada, 1875-'76, 195.—Ridgway in Proc. U. S. Nat. Mus. 1882, 66.

C. leucophlœos, Mœnch, Hort. Weiss. 31, t. 2.—Regel in Act. Hort. St. Petersburg, i, 106.

Mespilus Calpodendron, Ehrhart, Beitr. ii, 67.

C. pyrifolia, Aiton, Hort. Kew. ii, 168; 2 ed. iii, 200.—Willdenow, Spec. ii, 1001.—Persoon, Syn. ii, 36.—Nouveau Duhamel, iv, 131.—Poiret, Suppl. i, 292.—Pursh, Fl. Am. Sept. i, 337.—Nuttall, Genera, i, 305.—Elliott, Sk. i, 550.—Torrey, Fl. U. S. 475; Compend. Fl. N. States, 201.—De Candolle, Prodr. ii, 627.—Hooker, Fl. Bor.-Am. i, 201.—Don, Miller's Dict. ii, 599.—Eaton, Manual, 6 ed. 111.—Lindley, Bot. Reg. xxii, t. 1877.—Loudon, Arboretum, ii, 819, f. 571 & t.—Eaton & Wright, Bot. 211.

Mespilus latifolia, Lamarck, Dict. iv, 444.—Desfontaines, Hist. Arb. ii, 156.—Nouveau Duhamel, iv, 150.—Spach, Hist. Veg. ii, 60.

C. latifolia, Persoon, Syn. ii, 36.—Don, Miller's Dict. ii, 598.—Eaton, Manual, 6 ed. 112.—Eaton & Wright, Bot. 212.—Rœmer, Syn. Mon. 119.

Mespilus pyrifolia, Willdenow, Enum. 523; Berl. Baumz. 240.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 15.—Sprengel, Syst. ii, 507.—Hayne, Dend. Fl. 78.

Mespilus lobata, Poiret, Suppl. iv, 71.

Mespilus odorata, Wendland in Regensb. Fl. 1823, 700.

Mespilus pruinosa, Wendland in Regensb. Fl. 1823, 700.

C. lobata, Bosc in De Candolle, Prodr. ii, 628.

C. flava, Hooker, Fl. Bor.-Am. i, 202 (excl. syn.).

Halmia tomentosa, Rœmer, Syn. Mon. 135.

Halmia lobata, Rœmer, Syn. Mon. 135.

Phœnopyrum pruinosum, Rœmer, Syn. Mon. 155.

? *C. coccinea*, var. *viridis*, Torrey in Pacific R. R. Rep. iv, 86 [not Torrey & Gray].

C. tomentosa, var. *pyrifolia*, Gray, Manual N. States, 5 ed. 160.—Wood, Bot. & Fl. 111.

C. coccinea, Brandegee in Hayden's Rep. 1875, 236 [not Linnæus].

C. leucocephalus, Lavallée, Arboretum Segrez. 78, t. 22 [not Mœnch].

C. coccinea, var. *cordata*, Lavallée, Arboretum Segrez. 81, t. 22.

BLACK THORN. PEAR HAW.

New Brunswick, westward along the valley of the Saint Lawrence river and the northern shores of the great lakes to the Saskatchewan region, southward through the Atlantic forests to the Chattahoochee region of western Florida, and eastern Texas west to the mountains of eastern Washington territory and Oregon, southwestern Colorado, and southwestern New Mexico.

A small tree, 6 to 9 meters in height, with a trunk rarely 0.45 meter in diameter, or often, especially west of the Rocky mountains, reduced to a low shrub, here forming dense thickets along mountain streams; the most widely-distributed of the North American *Cratægi*, varying greatly in the size, shape, and color of the fruit, form of the leaves, amount of pubescence, etc.

Wood heavy, hard, not strong, close-grained, compact; medullary rays numerous, thin; color, bright reddish-brown, the sap-wood lighter; specific gravity, 0.7633; ash, 0.50.

Var. punctata, Gray,

Manual N. States, 2 ed. 124.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 127.—Porter in Hayden's Rep. 1871, 481.—Vasey, Cat. Forest Trees, 14.

C. punctata, Jacquin, Hort. Vindob. i, 10, t. 28.—Aiton, Hort. Kew. ii, 169; 2 ed. iii, 202.—Willdenow, Spec. ii, 1004.—Michaux, Fl. Bor.-Am. i, 289.—Persoon, Syn. i, 37.—Pursh, Fl. Am. Sept. i, 338.—Elliott, Sk. i, 548.—Torrey, Fl. U. S. 476; Compend. Fl. N. States, 202; Fl. N. York, i, 222.—De Candolle, Prodr. ii, 627.—Hooker, Fl. Bor.-Am. i, 201 (excl. var.); Companion Bot. Mag. i, 25.—Don, Miller's Dict. ii, 589.—Eaton, Manual, 6 ed. 111.—Beck, Bot. 111.—Torrey & Gray, Fl. N. America, i, 466.—Loudon, Arboretum, ii, 818, f. 569, 570 & t.—Eaton & Wright, Bot. 211.—Dietrich, Syn. iii, 159.—Browne, Trees of America, 277.—Emerson, Trees Massachusetts, 435; 2 ed. ii, 495.—Gray, Manual N. States, 1 ed. 128.—Richardson, Arctic Exped. 427.—Darlington, Fl. Cestrica, 3 ed. 84.—Darby, Bot. S. States, 306.—Lesquereux in Owen's 2d Rep. Arkansas, 359.—Wood, Cl. Book, 330; Bot. & Fl. 111.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 191.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 14.

Mespilus cornifolia, Muenchhausen, Hausv. v, 145.—Lamarck, Dict. iv, 444.—Koch, Dendrologie, i, 134.—Spach, Hist. Veg. ii, 60, t. 10, f. c.

C. Crus-galli, Wangenheim, Amer. 52.—Du Roi, Harbk. i, 195 [not Linnæus].

Mespilus cuneifolia, Ehrhart, Beitr. iii, 21.—Sprengel, Syst. ii, 506.—Spach, Hist. Veg. ii, 61.

Mespilus punctata, Loiseleur in Nouveau Duhamel, iv, 152.—Willdenow, Enum. 524; Berl. Baumz. 243.—Poiret, Suppl. iv, 70.—Hayne, Dend. Fl. 79.—Watson, Dend. Brit. i, t. 57.—Spach, Hist. Veg. ii, 61.—Wenzig in Linnæa, xxxviii, 128.

Mespilus pyrifolia, Desfontaines, Hist. Arb. ii, 155.

C. punctata, var. *rubra* and *aurea*, Aiton, Hort. Kew. 2 ed. iii, 202.

C. latifolia, De Candolle, Prodr. ii, 627.

? C. flexuosa, Schweinitz in Long's 2d Exped. ii, Appx. 112.

C. flava, Darlington, Fl. Cestrica, 2 ed. 292 [not Aiton].

C. cuneifolia, Rœmer, Syn. Mon. iii, 118.

C. obovatifolia, Rœmer, Syn. Mon. iii, 120.

Halmia punctata, Rœmer, Syn. Mon. iii, 134.

Halmia cornifolia, Rœmer, Syn. Mon. iii, 134.

C. tomentosa, var. *plicata*, Wood, Cl. Book, 330; Bot. & Fl. 111.

C. punctata, var. *xanthocarpa*, Lavallée, Arboretum Segrez. i, 53, t. 16.

Fruit larger than that of the species, dull red or yellow.

130.—Cratægus cordata, Aiton,

Hort. Kew. ii, 168; 2 ed. iii, 200.—Willdenow, Spec. ii, 1000.—Persoon, Syn. ii, 36.—Eaton, Manual, 55; 6 ed. 111.—Elliott, Sk. i, 554.—Torrey, Fl. U. S. 474; Compend. Fl. N. States, 201.—De Candolle, Prodr. ii, 628.—Watson, Dend. Brit. i, t. 63.—Lindley, Bot, Reg. xiv, t. 1151.—Hooker, Fl. Bor.-Am. i, 201.—Don, Miller's Dict. ii, 599.—Beck, Bot. 112.—Torrey & Gray, Fl. N. America, i, 467.—Loudon, Arboretum, ii, 825 & t.—Eaton & Wright, Bot. 211.—Dietrich, Syn. iii, 160.—Browne, Trees of America, 280.—Richardson, Arctic Exped. 427.—Darlington, Fl. Cestrica, 3 ed. 83.—Darby, Bot. S. States, 306.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 127.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 82.—Wood, Cl. Book, 331; Bot. & Fl. 111.—Gray, Manual N. States, 5 ed. 159.—Young, Bot. Texas, 257.—Regel in Act. Hort. St. Petersburg, i, 114.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 31.—Vasey, Cat. Forest Trees, 14.

Mespilus Phœnopyrum, Ehrhart in Linnæus f. Suppl. 254; Beitr. i, 181; ii, 67.—Mœnch, Meth. 685.—Lamarck, Dict. iv, 446.

C. populifolia, Walter, Fl. Caroliniana, 147 [not Elliott].—Pursh, Fl. Am. Sept. i, 337.

Mespilus acerifolia, Burgsdorf in Lamarck, Dict. iv, 442.—Nouveau Duhamel, iv, 151.—Spach, Hist. Veg. ii, 65.

Mespilus cordata, Miller, Icon. t. 179.—Willdenow, Enum. 523; Berl. Baumz. 239.—Hayne, Dend. Fl. 77.—Sprengel, Syst. ii, 507.—Koch, Dendrologie, i, 138.

Phœnopyrum cordatum, Rœmer, Syn. Mon. iii, 157.

Phœnopyrum acerifolium, Rœmer, Syn. Mon. iii, 157.

WASHINGTON THORN.

Valley of the upper Potomac river, Virginia, southward along the Alleghany mountains to northern Georgia and Alabama, extending west through eastern and middle Kentucky and Tennessee to the valley of the lower Wabash river, Illinois.

A small tree, 6 to 8 meters in height, with a trunk rarely 0.30 meter in diameter; generally along banks of streams.

Wood heavy, hard, close-grained, compact; medullary rays numerous, obscure; color, brown tinged with red, the sap-wood lighter; specific gravity, 0.7293; ash, 0.46.

Formerly widely planted as a hedge plant.

131.—Cratægus apiifolia, Michaux.

Fl. Bor.-Am. i, 287.—Persoon, Syn. ii, 38.—Pursh, Fl. Am. Sept. i, 336.—Nuttall, Genera, i, 305.—Elliott, Sk. i, 552.—De Candolle, Prodr. ii, 627.—Don, Miller's Dict. ii, 599.—Audubon, Birds, t. 192.—Eaton, Manual, 6 ed. 112.—Hooker, Companion Bot. Mag. i, 25.—Torrey & Gray, Fl. N. America, i, 467.—Loudon, Arboretum, ii, 824, f. 588, 589 & t.—Eaton & Wright, Bot. 212.—Dietrich, Syn. iii, 160.—Darby, Bot. S. States, 306.—Rœmer, Syn. Mon. iii, 121.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 127.—Wood, Cl. Book, 331; Bot. & Fl. 111.—Gray, Manual N. States, 5 ed. 159; Hall's Pl. Texas, 9.—Young, Bot. Texas, 257.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 29.—Vasey, Cat. Forest Trees, 14.

C. oxyacantha, Walter, Fl. Caroliniana, 147 [not Linnæus].

Mespilus apiifolia, Marshall, Arbustum, 89.—Poiret, Suppl. iv, 68.—Sprengel, Syst. ii, 508.—Spach, Hist. Veg. ii, 67.

Mespilus monogyna, var. *apiifolia*, Koch, Dendrologie, i, 160.

C. oxyacantha, var. *apiifolia*, Regel in Act. Hort. St. Petersburg, 119.

PARSLEY HAW.

Southern Virginia, southward near the coast to about latitude 28°, extending west through the Gulf states to southern Arkansas and the valley of the Trinity river, Texas.

A small tree, rarely 6 to 9 meters in height, with a slender stem rarely exceeding 0.08 to 0.10 meter in diameter, or more often a low shrub, throwing up many stems from the ground; low, rich soil, reaching its greatest development in the pine-barren hummocks of central Florida.

Wood heavy, hard, very close-grained, compact, susceptible of a beautiful polish; medullary rays thin, very obscure; color, bright brown tinged with red or rose, the sap-wood much lighter; specific gravity, 0.7453; ash, 0.97.

132.—Cratægus spathulata, Michaux.

Fl. Bor.-Am. i, 228.—Persoon, Syn. ii, 37.—Barton, Compend. Fl. Philadelph. i, 226.—Elliott, Sk. i, 552.—Loddiges, Bot. Cab. t. 1261.—Don, Miller's Dict. ii, 599.—Hooker, Companion Bot. Mag. i, 25.—Gray in Lindley, Bot. Reg. xxiii under t. 1957; Manual N. States, 5 ed. 159.—Eaton, Manual, 6 ed. 112.—Torrey & Gray, Fl. N. America, i, 467.—Loudon, Arboretum, ii, 825, f. 591 & t.—Eaton & Wright, Bot. 212.—Dietrich, Syn. iii, 160.—Darby, Bot. S. States, 306.—Chapman, Fl. S. States, 126.—Lesquereux in Owen's 2d Rep. Arkansas, 359.—Wood, Cl. Book, 331; Bot. & Fl. 111.—Young, Bot. Texas, 257.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 31.—Ridgway in Am. Nat. vi, 728.

Mespilus Azarolus, Marshall, Arbustum, 89 [not Linnæus].

Mespilus spathulata, Poiret, Suppl. iv, 68.—Desfontaines, Hist. Arb. ii, 157.—Sprengel, Syst. ii, 507.—Spach, Hist. Veg. ii, 66.—Koch, Dendrologie, i, 137.

C. microcarpa, Lindley, Bot. Reg. xxii, t. 1846.

Phænopyrum spathulatum, Rœmer, Syn. Mon. iii, 355.

SMALL-FRUITED HAW.

Virginia, southward to the Chattahoochee region of western Florida, west through the Gulf states to the valley of the Washita river, Arkansas (Hot Springs, *Letterman*), and the Colorado river, Texas.

A small tree, 6 to 8 meters in height, with a trunk 0.20 to 0.25 meter in diameter, or often reduced to a low shrub; margins of streams and prairies; common and reaching its greatest development along the bottom lands of western Louisiana and eastern Texas.

Wood heavy, hard, not strong, close-grained, compact; medullary rays very numerous, obscure; color, light brown or red, the sap-wood lighter; specific gravity, 0.7159; ash, 0.66.

133.—Cratægus berberifolia, Torrey & Gray,

Fl. N. America, i, 469.—Dietrich, Syn. iii, 159.—Walpers, Rep. ii, 59.—Rœmer, Syn. Mon. iii, 115.—Wood, Cl. Book, 332.—Regel in Act. Hort. St. Petersburg, i, 123.—Engelmann in Coulter's Bot. Gazette, vii, 128.

Mespilus berberifolia, Wenzig in Linnæa, xxxviii, 125.

Phænopyrum ellipticum, Rœmer, Syn. Mon. iii, 155.

Phænopyrum Virginicum, Rœmer, Syn. Mon. iii, 155.

New Orleans? (*Drummond*, No. 105[1]); Opelousas, Louisiana (*Carpenter*, *Sargent*).

A small tree, 6 to 8 meters in height, with a trunk 0.20 to 0.25 meter in diameter; borders of prairies, in low ground; the fruit and wood not yet collected.

134.—Cratægus æstivalis, Torrey & Gray,

Fl. N. America, i, 468.—Walpers, Rep. ii, 58.—Dietrich, Syn. iii, 162.—Nuttall, Sylva, ii, 12; 2 ed. i, 162.—Darby, Bot. S. States, 306.—Chapman, Fl. S. States, 127.—Lesquereux in Owen's 2d Rep. Arkansas, 359.—Wood, Cl. Book, 331; Bot. & Fl. 111.—Regel in Act. Hort. St. Petersburg, i, 124.—Vasey, Cat. Forest Trees, 14.

Mespilus æstivalis, Walter, Fl. Caroliniana, 148.—Lamarck, Dict. iv, 447.

C. elliptica, Elliott, Sk. i, 548 [not Aiton].

C. lucida, Elliott, Sk. i, 549 [not Ehrhart].

C. opaca, Hooker & Arnott in Companion Bot. Mag. i, 25.—Loudon, Arboretum, iv, 2563.

Anthomeles æstivalis, Rœmer, Syn. Mon. iii, 141.

MAY HAW. APPLE HAW.

South Carolina, south to northern Florida, west through the Gulf states to southern Arkansas and the valley of the Sabine river, Texas.

A small tree, 6 to 9 meters in height, with a trunk 0.15 to 0.20 meter in diameter; generally in sandy soil along the margins of streams and ponds; common and reaching its greatest development in the bottom lands of western Louisiana and eastern Texas.

Wood heavy, hard, not strong, close-grained, compact; medullary rays numerous, obscure; color, light brown or red, the sap-wood lighter; specific gravity, 0.6564; ash, 0.57.

The large, globular, fragrant, red fruit, of agreeable subacid flavor, used as a preserve, in jellies, etc.; ripening in May.

135.—Cratægus flava, Aiton,

Hort. Kew. ii, 169; 2 ed. iii, 201.—Willdenow, Spec. ii, 1002.—Persoon, Syn. ii, 37.—Pursh, Fl. Am. Sept. i, 338.—Nuttall, Genera, i, 305.—De Candolle, Prodr. ii, 628.—Watson, Dend. Brit. i, t. 59.—Don, Miller's Dict. ii, 600.—Lindley, Bot. Reg. xxiii, t. 1939.—Torrey & Gray, Fl. N. America, i, 468.—Eaton, Manual, 6 ed. 112.—Loudon, Arboretum, ii, 823, f. 585 & t.—Eaton & Wright, Bot. 211.—Dietrich, Syn. iii, 160.—Darby, Bot. S. States, 306.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 28.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 83.—Lesquereux in Owen's 2d Rep. Arkansas, 359.—Wood, Cl. Book, 332; Bot. & Fl. 111.—Gray, Manual N. States, 5 ed. 160.—Regel in Act. Hort. St. Petersburg, i, 122.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 27.—Vasey, Cat. Forest Trees, 14.

Mespilus flexispina, Mœnch, Verz. Baum. 62, t. 4.—Koch, Dendrologie, i, 139.

C. glandulosa, Aiton, Hort. Kew. ii, 168; 2 ed. iii, 201 [not Michaux].—Persoon, Syn. ii, 37.—Poiret, Suppl. iv, 69, in part.

Mespilus Caroliniana, Poiret in Lamarck, Dict. iv, 442.—Desfontaines, Hist, Arb. ii, 156.—Sprengel, Syst. ii, 507.

C. Caroliniana, Persoon, Syn. ii, 36.—Elliott, Sk. i, 554.—Eaton, Manual, 6 ed. 112.—Eaton & Wright, Bot. 212.

Mespilus flava, Willdenow, Enum. 523.—Poiret, Suppl. iv, 70.—Watson, Dend. Brit. i, t. 59.—Spach, Hist. Veg. ii, 59.

C. turbinata, Pursh, Fl. Am. Sept. Addend. 735.—Poiret, Suppl. v, 543.—Elliott, Sk. i, 549.—De Candolle, Prodr. ii, 627.—Don, Miller's Dict. ii, 599.—Eaton & Wright, Bot. 212.

Mespilus turbinata, Sprengel, Syst. ii, 506.—Spach, Hist. Veg. ii, 66.

C. flava, var. *lobata*, Lindley, Bot. Reg. xxiii, t. 1932.

C. lobata, Bosc in De Candolle, Prodr. ii, 628.—Don, Miller's Dict. ii, 599.—Loudon, Arboretum, ii, 824, f. 554, 586.

Phænopyrum Carolinianum, Rœmer, Syn. Mon. iii, 152.

Anthomeles flava, *glandulosa*, and *turbinata*, Rœmer, Syn. Mon. iii, 141.

SUMMER HAW. YELLOW HAW.

Virginia, southward, generally near the coast, to Tampa bay, Florida, west through the Gulf states to eastern Texas and southern Arkansas.

A small tree, rarely 7 meters in height, with a trunk 0.30 meter in diameter, or reduced to a much-branched shrub 2 to 3 meters in height; borders of streams, in low, sandy soil subject to overflow.

Wood heavy, hard, close-grained, checking badly in drying, satiny, susceptible of a good polish; medullary rays very numerous, obscure; color, light brown tinged with red or rose, the sap-wood lighter; specific gravity, 0.7809; ash, 0.79.

Fruit small, red or yellow, acid.

Var. pubescens, Gray,

Manual N. States, 5 ed. 160.

Mespilus hiemalis, Walter, Fl. Caroliniana, 148.—Lamarck, Dict. iv, 447.

C. viridis, Walter, Fl. Caroliniana, 147 [not Linnæus].—Elliott, Sk. i, 551.

C. elliptica, Aiton, Hort. Kew. ii, 168; 2 ed. iii, 201.—Willdenow, Spec. ii, 1002.—Persoon, Syn. ii, 37.—Pursh, Fl. Am. Sept. i, 337.—Nuttall, Genera, i, 305.—Torrey, Fl. U. S. 475; Compend. Fl. N. States, 201.—De Candolle, Prodr. ii, 627.—Hooker, Fl. Bor.-Am. i, 201.—Don, Miller's Dict. ii, 598.—Beck, Bot. 33.—Eaton, Manual, 6 ed. 111.—Torrey & Gray, Fl. N. America, i, 469.—Eaton & Wright, Bot. 211.—Dietrich, Syn. iii, 109.—Darby, Bot. S. States, 306.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 84.—Regel in Act. Hort. St. Petersburg, i, 122.

Mespilus elliptica, Lamarck, Dict. iv, 447.—Wenzig in Linnæa, xxxviii, 125.—Koch, Dendrologie, i, 140.

C. glandulosa, Michaux, Fl. Bor.-Am. i, 288 [not Aiton].—Nuttall, Genera, i, 305.—Chapman, Fl. S. States, 128.—Vasey, Cat. Forest Trees, 14.

C. Michauxii, Persoon, Syn. ii, 38.

C. spathulata, Pursh, Fl. Am. Sept. i, 336 [not Michaux].—De Candolle, Prodr. ii, 627.—Lindley, Bot. Reg. xxii, t. 1890; xxiii, under t. 1957.

Mespilus Michauxii, Hornemann, Hort. Hafn. 455.—Poiret, Suppl. iv, 69.

C. flava, Elliott, Sk. i, 551 [not Aiton].

C. Virginica, Loddiges in Loudon, Arboretum, ii, 842, f. 560, 615.—Kaleniczenko in Bull. Soc. Imp. Nat. Moscow, xlviii, 58.

SUMMER-HAW. RED HAW.

Virginia, southward to Tampa bay, Florida, and sparingly through the Gulf states to western Louisiana.

A low tree growing with the species, from which it is distinguished by the pubescence of the calyx and young branches, the smaller flowers, and larger, bright red or yellow, globular or pear-shaped fruit.

Wood heavy, hard, not strong, close-grained, compact; medullary rays numerous, very obscure; color, bright red or rose, the sap-wood lighter; specific gravity, 0.7683; ash, 0.91.

The large, edible fruit used in the south Atlantic states in preserves, jellies, etc.

NOTE.—*Cratægus parvifolia*, Aiton, of the south Atlantic region, a low shrub, is not included in this catalogue.

136.—Heteromeles arbutifolia, Rœmer,

Syn. Mon. iii, 105.—Decaisne in Nouv. Arch. Mus. x, 144, t. 9.—Brewer & Watson, Bot. California, i, 188; ii, 444.

Cratægus arbutifolia, Poiret in Nouveau Duhamel, iv, 131; Dict. Suppl. i, 292.—Aiton, Hort. Kew. 2 ed. iii, 202.—Loddiges, Bot. Cab. t. 201.

Aronia arbutifolia, Nuttall, Genera, i, 306.

Photinia arbutifolia, Lindley in Trans. Linnæan Soc. xiii, 103; Bot. Reg. vi, 491 & under t. 1956.—Sprengel, Syst. ii, 508.—De Candolle, Prodr. ii, 631.—Chamisso & Schlechtendal in Linnæa, ii, 542.—Don, Miller's Dict. ii. 602.—Spach, Hist. Veg. ii, 80.—Hooker & Arnott, Bot. Beechey, 139, 340.—Torrey & Gray, Fl. N. America, i, 473.—Dietrich, Syn. iii, 162.—Loudon, Arboretum, ii, 868, f. 619.—Bentham, Bot. Sulphur, 14; Pl. Hartweg. 307.—Torrey in Emory's Rep. 140; Sitgreaves' Rep. 119; Pacific R. R. Rep. iv, 85; Bot. Mex. Boundary Survey, 64; Bot. Wilkes Exped. 201.—Wood, Cl. Book, 329.—Bolander in Proc. California Acad. iii, 80.—Vasey, Cat. Forest Trees, 14.—Palmer in Am. Nat. xii, 599.—Maximowicz in Bull. Acad. Sci. St. Petersburg, xix, 180.—Wenzig in Linnæa, xxxviii, 96.

Mespilus arbutifolia, Link, Enum. Hort. Berol. ii, 36.

Photinia salicifolia, Presl, Epimel. Bot. 204.—Walpers, Ann. iii, 858.

H. Fremontiana, Decaisne in Nouv. Arch. Mus. x, 144.

TOYON. TOLLON. CALIFORNIA HOLLY.

California Coast ranges, Mendocino to San Diego county, extending east to the foot-hills of the Sierra Nevada and San Bernardino mountains.

A small, low-branched evergreen tree, rarely exceeding 9 meters in height, the short trunk sometimes 0.30 to 0.45 meter in diameter, or more often a low, much-branched shrub.

Wood very heavy, hard, close-grained, inclined to check in drying, satiny, susceptible of a beautiful polish; medullary rays numerous, very obscure; color, dark reddish-brown, the sap-wood lighter; specific gravity, 0.9326; ash, 0.54.

137.—Amelanchier Canadensis, Torrey & Gray,

Fl. N. America, i, 473.—Walpers, Rep. ii, 55.—Dietrich, Syn. iii, 158.—Torrey, Fl. N. York, i, 225.—Browne, Trees of America, 282.—Emerson, Trees Massachusetts, i, 443; 2 ed. ii, 503 & t.—Parry in Owen's Rep. 612.—Darlington, Fl. Cestrica, 3 ed. 86.—Richardson, Arctic Exped. 428.—Seemann, Bot. Herald, 52.—Hooker f. in Trans. Linnæan Soc. xxii², 290, 327.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 129.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 68.—Lesquereux in Owen's 2d Rep. Arkansas, 359.—Wood, Cl. Book, 329; Bot. & Fl. 110.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 191.—Porcher, Resources S. Forests, 168.—Gray, Manual N. States, 5 ed. 162.—Koch, Dendrologie, i, 180.—Vasey, Cat. Forest Trees, 14.—Maximowicz in Bull. Acad. St. Petersburg, xix, 175.—Ridgway in Proc. U. S. Nat. Mus. 1882, 66.

Mespilus Canadensis, Linnæus, Spec. 1 ed. 478 (excl. syn. Gronovius).—Walter, Fl. Caroliniana, 148.—Aiton, Hort. Kew. ii, 173.

Cratægus tomentosa, Linnæus, Spec. 1 ed. 476 (excl. syn. Gronovius).

Pyrus Botryapium, Linnæus f. Suppl. 255.—Wangenheim, Amer. 90, t. 28, f. 65.—Ehrhart, Beitr. i, 183; ii, 68.—Willdenow, Spec. ii, 1013; Enum. 525; Berl. Baumz. 322.—Aiton, Hort. Kew. 2 ed. iii, 207.—Pursh, Fl. Am. Sept. i, 339.—Hayne, Dend. Fl. 83.—Guimpel, Otto & Hayne, 100, t. 79.—Sprengel, Syst. ii, 509.—Audubon, Birds, t. 60.—Bigelow, Fl. Boston. 3 ed. 308.

Cratægus racemosa, Lamarck, Dict. i, 84.—Desfontaines, Hist. Arb. ii, 148.—Nouveau Duhamel, iv, 133.—Poiret, Suppl. i, 292.

Mespilus nivea, Marshall, Arbustum, 90.

Mespilus Canadensis, var. *cordata*, Michaux, Fl. Bor.-Am. i, 291.

Aronia Botryapium, Persoon, Syn. ii, 39.—Nuttall, Genera, i, 557.—Elliott, Sk. i, 557.—Torrey, Fl. U. S. 479; Compend. Fl. N. States, 203.—Eaton, Manual, 6 ed. 29.—Eaton & Wright, Bot. 135.

Mespilus arborea, Michaux f. Hist. Arb. Am. iii, 68, t. 11; N. American Sylva, 3 ed. ii, 60, t. 66.—Barton, Prodr. Fl. Philadelph. 55.

A. Botryapium, Lindley in Trans. Linnæan Soc. xiii, 100.—De Candolle, Prodr. ii, 632.—Hooker, Fl. Bor.-Am. i, 202.—Don, Miller's Dict. ii, 604.—Beck, Bot. 112.—Spach, Hist. Veg. ii, 84.—Loudon, Arboretum, ii, 874, f. 627–629 & t.—Rœmer, Syn. Mon. iii, 145.—Darby, Bot. S. States, 307.—Wenzig in Linnæa, xxxiii, 110.—Decaisne in Nouv. Arch. Mus. x, 135.

Aronia arborea, Barton, Compend. Philadelph. i, 228.

Aronia cordata, Rafinesque, Med. Bot. ii, 196.

A. ovalis, Hooker, Fl. Bor.-Am. i, 202, in part.

Pyrus Bartramiana, Tausch, Fl. xxi, 715.

Pyrus Wangenheimiana, Tausch, Fl. xxi, 715.

A. Bartramiana, Rœmer, Syn. Mon. iii, 145.

A. Wangenheimiana, Rœmer, Syn. Mon. 146.

JUNE BERRY. SHAD BUSH. SERVICE TREE. MAY CHERRY.

Newfoundland and Labrador, west along the southern shores of Hudson bay to the Saskatchewan region, south through the Atlantic forests to northern Florida, southwestern Arkansas, and the Indian territory.

A small tree, 9 to 15 meters in height, with a trunk 0.30 to 0.45 meter in diameter, or in some forms reduced to a low shrub (var. *rotundifolia*, Torrey & Gray; var. *oligocarpa*, Torrey & Gray); common at the north, rare at the south, and reaching its greatest development on the high slopes of the southern Alleghany mountains; varying greatly in the shape of the leaves, size of the flowers, amount of pubescence on the leaves and young shoots, etc.

The best marked arborescent variety is—

var. **oblongifolia**, Torrey & Gray, Fl. N. America, i, 473.—Walpers, Rep. ii, 55.—Dietrich, Syn. iii, 158.—Torrey, Fl. N. York, i, 225; Nicollet's Rep. 149.—Emerson, Trees Massachusetts, i, 444; 2 ed. ii, 504 & t.—Wood, Cl. Book, 330; Bot. & Fl. 110.—Gray, Manuel N. States, 5 ed. 162.—Macoun in Geological Rep. Canada, 1875–'76, 195.

Cratægus spicata, Lamarck, Dict. i, 84.—Desfontaines, Hist. Arb. ii, 148.—Nouveau Duhamel, iv, 132.—Poiret, Suppl. i, 292.

Mespilus Canadensis, var. *obovalis*, Michaux, Fl. Bor.-Am. i, 291.

Pyrus ovalis, Willdenow, Spec. ii, 1014; Berl. Baumz. 323.—Pursh, Fl. Am. Sept. i, 340.—Schrank, Pl. Labrador, 26.—Bigelow, Fl. Boston. 3 ed. 207.

Aronia ovalis, Torrey, Fl. U. S. 479; Compend. Fl. N. States, 203.—Eaton, Manual, 6 ed. 29.—Eaton & Wright, Bot. 135.

A. ovalis, De Candolle, Prodr. ii, 632.—Meyer, Pl. Labrador, 81.—Hooker, Fl. Bor.-Am. i, 202, in part.—Don, Miller's Dict. ii, 604.—Beck, Bot. 112.—Spach, Hist. Veg. ii, 85.—Loudon, Arboretum, ii, 876, f. 632.

A. intermedia, Spach, Hist. Veg. ii, 85.—Wenzig in Linnæa, xxxiii, 112.

A. oblongifolia, Rœmer, Syn. Mon. iii, 147.

A. spicata, Decaisne in Nouv. Arch. Mus. x, 135, t. 9, f. 5.

Wood heavy, exceedingly hard, strong, close-grained, checking somewhat in seasoning, satiny, susceptible of a good polish; medullary rays very numerous, obscure; color, dark brown often tinged with red, the sap-wood much lighter; specific gravity, 0.7838; ash, 0.55; the small fruit sweet and edible.

NOTE.—The closely allied *Amelanchier alnifolia*, Nuttall, a low shrub, is widely distributed over the mountain ranges of the interior Pacific region.

HAMAMELACEÆ.

138.—Hamamelis Virginica, Linnæus,

Spec. 2 ed. 124.—Marshall, Arbustum, 58.—Du Roi, Harbk. i, 423.—Wangenheim, Amer. 89, t. 29, f. 62.—Lamarck, Dict. iii, 68; Ill. i, 350, t. 88.—Aiton, Hort. Kew. i, 167; 2 ed. i, 275.—Schkuhr, Handb. i, 88, t. 27.—Willdenow, Spec. i, 701; Enum. 171; Berl. Baumz. 172.—Michaux, Fl. Bor. Am. i, 100.—Persoon, Syn. i, 150.—Desfontaines, Hist. Arb. ii, 29.—Pursh. Fl. Am. Sept. i, 116.—Nuttall, Genera, i, 107.—Nouveau Duhamel, vii, 207, t. 60.—Elliott, Sk. i, 219.—Rœmer & Schultes, Syst. iii, 483.—Loddiges, Bot. Cab. t. 598.—Barton, Fl. N. America, iii, 21, t. 78.—Torrey, Fl. U. S. 192; Compend. Fl. N. States, 86; Fl. N. York, i, 260.—Guimpel, Otto & Hayne, Abb. Holz. 95, t. 75.—Sprengel, Syst. i, 491.—Rafinesque, Med. Bot. i, 227, f. 45.—De Candolle, Prodr. iv, 268.—Hooker, Fl. Bor.-Am. i, 275; Companion Bot. Mag. i, 48.—Don, Miller's Dict. iii, 396, f. 69.—Beck, Bot. 152.—Eaton, Manual 6 ed. 164.—Spach, Hist, Veg. viii, 79.—Dietrich, Syn. i, 550.—Torrey & Gray, Fl. N. America, i, 597.—Loudon, Arboretum, ii, 1007, f. 756, 757.—Eaton & Wright, Bot. 260.—Bigelow, Fl. Boston. 3 ed. 63.—Emerson, Trees Massachusetts, 416; 2 ed. ii, 473 & t.—Darby, Bot. S. States, 328.—Darlington, Fl. Cestrica, 3 ed. 98.—Agardh, Theor. & Syst. Pl. t. 13, f. 7.—Schnizlein, Icon. t. 167, f. 18-25, 27-29.—Gray in Am. Jour. Sci. 2 ser. xxiv, 438; 3 ser. v, 144; Manual N. States, 5 ed. 173.—Chapman, Fl. S. States, 157.—Curtis in Rep. Geological Surv. N. Carolina, iii, 105.—Lesquereux in Owen's 2d Rep. Arkansas, 362.—Wood, Cl. Book, 375; Bot. & Fl. 120.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 193.—Porcher, Resources S. Forests, 58.—Koch, Dendrologie, ii, 458.—Baillon in Adansonia, x, 123; Hist. Pl. iii, 389, f. 462-464.—Young, Bot. Texas, 291.—Maout & Decaisne, Bot. English ed. 408 & f.

H. dioica, Walter, Fl. Caroliniana, 255.—Gmelin, Syst. Veg. i, 281.

H. androgyna, Walter, Fl. Caroliniana, 255.—Gmelin, Syst. Veg. i, 282.

H. corylifolia, Mœnch, Meth. 273.

H. macrophylla, Pursh. Fl. Am. Sept. i, 116.—Poiret, Suppl. v, 698.—Elliott, Sk. i, 220.—Rœmer & Schultes, Syst. iii, 483.—Rafinesque, Med. Bot. i, 230.—Eaton, Manual, 6 ed. 164.—Don, Miller's Dict. iii, 396.—Eaton & Wright, Bot. 261.

Trilopus Virginiana, nigra, rotundifolia, and *dentata*, Rafinesque, New Sylva, 15-17.

H. Virginiana, var. *parvifolia*, Nuttall, Genera, i, 107.—Torrey, Fl. U. S. 193; Compend. Fl. N. States, 87.—Don, Miller's Dict. iii, 396.—Beck, Bot. 152.—Torrey & Gray, Fl. N. America, i, 597.

H. parvifolia, Rafinesque, Med. Bot. i, 230.

Trilopus parvifolia, Rafinesque, New Sylva, 17.

WITCH HAZEL.

Northern New England and southern Ontario to Wisconsin, south through the Atlantic region to northern Florida and eastern Texas.

A small tree, exceptionally 7 to 9 meters in height, with a trunk 0.30 to 0.37 meter in diameter, or more often a tall shrub throwing up many stems from the ground; common; rich, rather damp woodlands, reaching its greatest development in the region of the southern Alleghany mountains.

Wood heavy, hard, very close-grained, compact; layers of annual growth hardly distinguishable; medullary rays numerous, thin, obscure; color, light brown tinged with red, the sap-wood nearly white; specific gravity, 0.6856; ash, 0.37.

The bark and leaves rich in tannin, and largely used by herbalists in the form of fluid extracts, decoctions, etc., in external applications, and as a reputed remedy in hemorrhoidal affections (*New York Jour. Med.* x, 208.—*Trans. Am. Med. Assoc.* i, 350.—*U. S. Dispensatory*, 14 ed. 1661.—*Nat. Dispensatory*, 2 ed. 704).

139.—Liquidambar Styraciflua, Linnæus,

Spec. 1 ed. 999.—Marshall, Arbustum, 77.—Wangenheim, Amer. 49, t. 16, f. 40.—Walter, Fl. Caroliniana, 237.—Lamarck, Dict. iii, 533; Ill. iii, 367, t. 783.—Aiton, Hort. Kew. iii, 365; 2 ed. v, 306.—Gærtner, Fruct. ii, 57, t. 90.—Mœnch, Meth. 340.—Abbot, Insects Georgia, i, 48.—B. S. Barton, Coll. i, 16.—Willdenow, Spec. iv, 475; Enum. 985; Berl. Baumz. 214.—Michaux, Fl. Bor.-Am. ii, 202.—Persoon, Syn. ii, 573.—Desfontaines, Hist. Arb. ii, 541.—Titford, Hort. Bot. Am. 97.—Schkuhr, Handb. iii, 275, t. 307.—Nouveau Duhamel, ii, 42, t. 10; vii, 207, t. 60.—Michaux f. Hist. Arb. Am. iii, 194, t. 4; N. American Sylva, 3 ed. ii, 42, t. 64.—Barton, Prodr. Fl. Philadelph. 92; Compend. Fl. Philadelph. ii, 177.—Pursh, Fl. Am. Sept. ii, 635.—Eaton, Manual, 110; 6 ed. 208.—Rafinesque, Fl. Ludoviciana, 116.—Nuttall, Genera, ii, 219; Trans. Am. Phil. Soc. 2 ser. v, 168.—Nees, Fl. Offic. t. 95.—Elliott, Sk. ii, 621.—Sprengel, Syst. iii, 864.—Humboldt, Bonpland & Kunth, Nouv. Gen. & Spec. vii, 273.—Audubon, Birds, t. 44.—Torrey, Compend. Fl. N. States, 357; Fl. N. York, ii, 217.—Beck, Bot. 326.—Hooker, Companion Bot. Mag. ii, 64.—Eaton & Wright, Bot. 302.—Spach, Hist. Veg. x, 84.—Loudon, Arboretum, iv, 2049, f. 1961 & t.—Lindley, Fl. Med. 322.—Griffith, Med. Bot. 581, f. 254.—Broomfield in London Jour. Bot. vii, 144.—Schnizlein, Icon. t. 98, f. 5-21.—Seemann, Bot. Herald, 346.—Darby, Bot. S. States, 509.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 157.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 77.—Lesquereux in Owen's 2d Rep. Arkansas, 362.—Wood, Cl. Book, 375; Bot. & Fl. 120.—Porcher, Resources S. Forests, 344.—De Candolle, Prodr. xvi², 157.—Oliver in Hooker f. Icon. xi, 13.—Gray, Manual N. States, 5 ed. 174.—Koch, Dendrologie, ii, 464.—Young, Bot. Texas, 291.—Vasey, Cat. Forest Trees, 15.—Maout & Decaisne, Bot. English ed. 412 & figs.—Baillon, Hist. Pl. iii, 397, f. 471-474.—Guibourt, Hist. Drogues, 7 ed. ii, 300, f. 445.—Ridgway in Am. Nat. vi, 664; Proc. U. S. Nat. Mus. 1882, 67.—Broadhead in Coulter's Bot. Gazette, iii, 53.—Hemsley, Bot. Am.-Cent. i, 400.

L. Styraciflua, var. *Mexicana*, Örsted, Am.-Cent. xvi, t. 11.

L. macrophylla, Örsted, Am.-Cent. xvi, t. 10.

SWEET GUM. STAR-LEAVED GUM. LIQUIDAMBER. RED GUM. BILSTED.

Fairfield county, Connecticut, to the valleys of the lower Ohio, White, and Wabash rivers, south to cape Canaveral and Tampa bay, Florida, southwest through southern Missouri, Arkansas, and the Indian territory to the valley of the Trinity river, Texas; in central and southern Mexico.

A large tree, often 30 to 36 or, exceptionally, 48 meters in height, with a trunk 1.20 to 1.80 meter in diameter; in low, wet soil; very common and reaching its greatest development in the bottom lands of the Mississippi basin, here, with the cotton gum, forming a large proportion of the heavy forest growth.

Wood heavy, hard, not strong, rather tough, close-grained, compact, inclined to shrink and warp badly in seasoning, susceptible of a beautiful polish; medullary rays numerous, very obscure; color, bright brown tinged with red, the sap-wood nearly white; specific gravity, 0.5910; ash, 0.61; manufactured into lumber and used in the construction of buildings for plates, boarding, and clapboards, in cabinet work as a substitute for black walnut, and for veneering and street pavements; its great economic value hardly appreciated on account of the difficulty experienced in properly seasoning it.

The balsamic exudation obtained from this species at the south collected by herbalists and sometimes used in the form of a sirup as a substitute for storax in the treatment of catarrhal affections, or externally as an ointment in dressing frost-bite, abscess, etc., and in the manufacture of chewing gums (*Flückiger & Hanbury, Pharmacographia*, 246.—*Nat. Dispensatory*, 2 ed. 834).

RHIZOPHORACEÆ.

140.—Rhizophora Mangle, Linnæus,

Spec. 1 ed. 443.—Jacquin, Amer. 141, t. 89.—Gærtner, Fruct. i, 212, t. 45, f. 1.—Lamarck, Ill. ii, 517, t. 396; Dict. vi, 160.—Willdenow, Spec. ii, 844.—Persoon, Syn. ii, 2.—Decourtilz, Fl. Med. Antilles, i, 45, t. 10.—Vellozo, Fl. Flum. t. 1.—De Candolle, Prodr. iii, 32.—Eaton, Manual, 6 ed. 301.—Spach, Hist. Veg. iv, 332, t. 34.—Torrey & Gray, Fl. N. America, i, 484.—Nuttall in Am. Jour. Sci. 1 ser. v, 295.—Hooker & Arnott, Bot. Beechey, 290.—Arnott in Ann. Nat. Hist. i, 361.—Walpers, Rep. ii, 70.—Bentham, Bot. Sulphur, 14.—Darby, Bot. S. States, 312.—Porcher, Resources S. Forests, 55.—Grisebach, Fl. British West Indies, 274.—Schnizlein, Icon. t. 263, f. 1-7.—Maout & Decaisne, Bot. English ed. 419.—Eichler in Martius, Fl. Brasil. xii², 426, t. 90.—Vasey, Cat. Forest Trees, 15.—Baillon, Hist. Pl. vi, 284, f. 253-259.

R. racemosa, Meyer, Prim. Fl. Essequ. 185.—De Candolle, Prodr. iii, 32.

R. Americana, Nuttall, Sylva, i, 95, t. 24; 2 ed. i, 112, t. 24.—Cooper in Smithsonian Rep. 1858, 264.

MANGROVE.

Semi-tropical Florida, Mosquito inlet and Cedar Keys to the southern keys; delta of the Mississippi river and coast of Texas; southward through the West Indies and tropical America; now widely naturalized throughout the tropics of the old world (*A. De Candolle, Geog. Bot.* ii, 772).

A tree 12 to 18, or, exceptionally, 27 meters in height, with a trunk 0.30 to 0.60 meter in diameter, or more commonly not exceeding 4 to 7 meters in height; low saline shores, reaching in the United States its greatest development on bay Biscayne and cape Sable; south of latitude 29°, bordering with almost impenetrable thickets the coast of the Florida peninsula, ascending the rivers for many miles, especially those flowing from the Everglades, and entirely covering many of the southern keys.

Wood exceedingly heavy, hard and strong, close-grained, checking in drying, satiny, susceptible of a beautiful polish, containing many evenly-distributed rather small open ducts; medullary rays numerous, thin; color, dark reddish brown streaked with lighter brown, sap-wood lighter; specific gravity, 1.1617; ash, 1.82; furnishing valuable fuel; not greatly affected by the teredo, and used for piles.

COMBRETACEÆ.

141.—Conocarpus erecta, Linnæus,

Spec. 1 ed. 176.—Lamarck, Dict. ii, 96; Ill. i, 126, f. 1.—Jacquin, Amer. t. 78.—Gærtner, Fruct. ii, 470, t. 177, f. 3.—Swartz, Obs. 79.—Willdenow, Sp. i, 994.—Aiton, Hort. Kew. 2 ed. i, 381.—Titford, Hort. Bot. Am. 47.—De Candolle, Prodr. iii, 16.—Decourtilz, Fl. Med. Antilles, vi, 68, t. 399.—Spach, Hist. Veg. iv, 304.—Torrey & Gray, Fl. N. America, i, 485.—Nuttall, Sylva, i, 113, t. 33; 2 ed. i, 128, t. 33.—Richard, Fl. Cuba, 526.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 136.—Grisebach, Fl. British West Indies, 277.—Eichler in Martius, Fl. Brasil. xiv², 101, t. 35, f. 2.—Vasey, Cat. Forest Trees, 15.

BUTTON WOOD.

Semi-tropical Florida, cape Canaveral to the southern keys, west coast, Tampa bay to cape Sable; through the West Indies to Brazil.

A low tree, often 8 or, exceptionally, 15 to 18 meters in height, with a trunk sometimes 0.60 meter in diameter; common and reaching its greatest development in the United States on Lost Man's river, north of cape Sable; or reduced to a low under shrub (var. *procumbens*, De Candolle, *l. c.*—Eichler, *l. c.*; *C. procumbens*, Linnæus, Spec. 1 ed. 177.—Jacquin *l. c.* 79, t. 52, f. 2.—Gærtner, *l. c.* iii, 205, f. 4—Grisebach, *l. c.*; *C. acutifolia*, Willdenow in Rœmer & Schultes, Syst. v, 574).

Wood very heavy and hard, strong, close-grained, very compact, susceptible of a beautiful polish; medullary rays numerous, obscure; color, dark yellow brown, the sap-wood lighter; specific gravity, 0.9900; ash, 0.32; burning slowly like charcoal, and highly valued for fuel.

142.—Laguncularia racemosa, Gærtner f.

Fruct. Suppl. 209, t. 217.—De Candolle, Prodr. iii, 17.—Spach, Hist. Veg. iv, 305.—Nuttall, Sylva, i, 117, t. 34; 2 ed. i, 132, t. 34.—Bentham, Bot. Sulphur, 14, 92.—Richard, Fl. Cuba, 527.—Eichler in Martius, Fl. Brasil. xiv², 102, t. 35, f. 3.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 136.—Grisebach, Fl. British West Indies, 276.—Vasey, Cat. Forest Trees, 15.—Baillon, Hist. Pl. vi, 278.

Conocarpus racemosa, Linnæus, Spec. 2 ed. 251; Syst. 181.—Jacquin, Amer. 80, t. 53.—Swartz, Obs. 79.—Willdenow, Spec. i, 995.

Schousbœa commutata, Sprengel, Syst. ii, 332.

Bucida Buceras, Vellozo, Fl. Flum. iv, t. 87 [not Linnæus].

L. glabrifolia, Presl, Reil. Hænk, ii, 22.—Walpers, Rep. ii, 63.—Chapman, Fl. S. States, 136.

WHITE BUTTON WOOD. WHITE MANGROVE.

Semi-tropical Florida, cape Canaveral to the southern keys, west coast, Cedar Keys to cape Sable; through the West Indies and tropical America; coast of tropical Africa.

A small tree, sometimes 6 or, exceptionally, 22 meters in height (Shark river, Florida, *Curtiss*), with a trunk 0.30 to 0.60 meter in diameter, or toward its northern limits reduced to a low shrub; very common; saline shores of lagoons and bays.

Wood very heavy and hard, strong, close-grained, very compact; susceptible of a beautiful polish; medullary rays numerous, obscure; color, dark yellow-brown, the sap-wood much lighter; specific gravity, 0.7137; ash, 1.62.

MYRTACEÆ.

143.—Calyptranthes Chytraculia, Swartz,

Prodr. 79; Fl. Ind. Occ. ii, 921.—Willdenow, Spec. ii, 975.—Aiton, Hort. Kew. 2 ed. iii, 192.—De Candolle, Prodr. iii, 237.—Nuttall, Sylva, i, 101, t. 26; 2 ed. i, 117, t. 26.—Berg in Linnæa, xxvii, 26.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 131.—Grisebach, Fl. British West Indies, 232.—Hemsley. Bot. Am.-Cent. i, 408.

Myrtus Chytraculia, Linnæus, Amœn. v, 398.—Swartz, Obs. 202.

Eugenia pallens, Poiret, Suppl. iii, 122.

Semi-tropical Florida, shores of bay Biscayne, Key Largo; in the West Indies.

A small tree, sometimes 8 meters in height, with a trunk 0.10 to 0.15 meter in diameter.

Wood very heavy, hard, close-grained, compact, containing many evenly-distributed rather large open ducts; medullary rays numerous, thin; color, brown tinged with red, the sap-wood a little lighter; specific gravity, 0.8992; ash, 3.32.

144.—Eugenia buxifolia, Willdenow,

Spec. ii, 960.—Persoon, Syn. ii, 28.—De Candolle, Prodr. iii, 275.—Nuttall, Sylva, i, 108, t. 29; 2 ed. i, 123, t. 29.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 131.—Grisebach, Fl. British West Indies, 236.—Vasey, Cat. Forest Trees, 15.

Myrtus buxifolia, Swartz, Prodr. 78; Fl. Ind. Occ. ii, 899.

Myrtus axillaris, Poiret in Lamarck, Dict. iv, 412.

E. myrtoides, Poiret, Suppl. iii, 125.

Myrtus Poireti, Sprengel, Syst. ii, 483.

E. triplinervia, Berg in Linnæa, xxvii, 190, in part.

GURGEON STOPPER. SPANISH STOPPER.

Semi-tropical Florida, cape Canaveral to the southern keys, west coast, Caloosa river to cape Romano; in the West Indies.

A small tree, rarely 6 to 9 meters in height, with a trunk sometimes 0.30 meter in diameter, reaching its greatest development on the rich hummocks of the Everglades.

Wood very heavy, exceedingly hard, very strong, close-grained, very compact; medullary rays numerous, thin; color, dark brown shaded with red, the sap-wood a little lighter; specific gravity, 0.9360; ash, 1.50; somewhat used for fuel.

145.—Eugenia dichotoma, De Candolle,

Prodr. iii, 278.—Nuttall, Sylva, i, 103, t. 27; 2 ed. i, 120, t. 27.—Berg in Linnæa, xxvii, 261.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 131.—Vasey, Cat. Forest Trees, 15.

E. divaricata, Lamarck, Dict. i, 202.

? *Myrtus dichotoma*, Vahl in Poiret, Suppl. iv, 53.

Anamomis punctata, Grisebach, Fl. British West Indies, 240.

NAKED WOOD.

Semi-tropical Florida, Mosquito inlet to cape Canaveral, common; west coast, Caloosa river to cape Romano; in the West Indies.

A small tree, sometimes 6 to 8 meters in height, with a trunk rarely 0.15 meter in diameter.

A form with the leaves, buds, and calyx more or less pubescent (*E. dichotoma*, var. *fragrans*, Nuttall, *l. c.*; *E. pungens*, Willdenow, Spec. ii, 964; Bot. Mag. t. 1242; *E. montana*, Aublet, Guian. i, 495, t. 195), not rare in West Indies, and, according to *Nuttall*, collected by Mr. Baldwin in the vicinity of New Smyrna, Florida, has not been rediscovered within the limits of the United States.

Wood very heavy, hard, close-grained, compact; medullary rays numerous, thin; color, light brown or red, sap-wood yellow; specific gravity, 0.8983; ash, 0.74.

The small, edible fruit of agreeable aromatic flavor, and greatly improved by cultivation in rich soil.

146.—Eugenia monticola, De Candolle,

Prodr. iii, 275.—Chapman, Fl. S. States, 131.—Grisebach, Fl. British West Indies, 236.—Vasey, Cat. Forest Trees, 15.

Myrtus monticola, Swartz, Fl. Ind. Occ. ii, 898.

E. triplinervia, Berg in Linnæa, xxvii, 199, in part.

E. axillaris, Berg in Linnæa, xxvii, 201, in part.

STOPPER. WHITE STOPPER.

Florida, Saint John's river to Umbrella Key; rare; in the West Indies.

A small tree, rarely 7 meters in height, with a trunk 0.30 meter in diameter, or in northern Florida reduced to a low shrub.

Wood very heavy, hard, strong, very close-grained, compact; medullary rays numerous, thin; color, brown, often tinged with red, the sap-wood darker; specific gravity, 0.9156; ash, 1.89.

147.—Eugenia longipes, Berg,

Linnæa, xxvii, 150.—Chapman, Fl. S. States, Suppl. 620.

STOPPER.

Semi-tropical Florida, No-Name Key; in the West Indies.

A small tree, 4 to 7 meters in height, with a trunk 0.15 to 0.20 meter in diameter; rare.

Wood very heavy, hard, close-grained, checking badly in drying, containing many evenly-distributed open ducts; medullary rays numerous, very obscure; color, dark brown or nearly black, the sap-wood brown tinged with red; specific gravity, 1.1235; ash, 3.48.

The small red fruit with the flavor of cranberries.

148.—Eugenia procera, Poiret,

Suppl. ii, 129.—De Candolle, Prodr. iii, 268.—Nuttall, Sylva, i, 106, t. 28; 2 ed. i, 122, t. 28.—Berg in Linnæa, xxvii, 207.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 131.—Grisebach, Fl. British West Indies, 238.—Vasey, Cat. Forest Trees, 15.

Myrtus procera, Swartz, Prodr. 77; Fl. Ind. Occ. ii, 887.—Willdenow, Spec. ii, 968.

E. Baruensis, Grisebach, Cat. Pl. Cub. [not Jacquin], 87.

RED STOPPER.

Semi-tropical Florida, shores of bay Biscayne, Key Largo, Elliott's Key; in the West Indies.

A tree, 12 to 18 meters in height, with a trunk 0.30 to 0.45 meter in diameter; often forming extensive groves, and reaching its greatest development in the United States in the neighborhood of Miami, bay Biscayne.

Wood very heavy, exceedingly hard, very strong and close-grained, compact; medullary rays numerous, hardly distinguishable; color, light yellow-brown, the sap-wood darker; specific gravity, 0.9453; ash, 2.62; probably valuable in cabinet-making and as a substitute for box-wood for coarse wood-engraving.

NOTE.—*Psidium Guaiava*, Raddi, the Guava, widely cultivated in the tropics for its fruit, is now sparingly naturalized in semi-tropical Florida.

CACTACEÆ.

149.—Cereus giganteus, Engelmann;

Emory's Rep. 158; Am. Jour. Sci. 2 ser. xiv, 335; xvii, 231; Proc. Am. Acad. iii, 287; Bot. Mex. Boundary Survey, Cactaceæ, 42, t. 61, 62 & front.; Brewer & Watson, Bot. California, i, 247.—Thurber in Mem. Am. Acad. new ser. v, 302, 305.—Fl. des Serres, x, 24, & t.; xv, 187, t. 1600.—Bigelow in Pacific R. R. Rep. iv, 12.—Engelmann & Bigelow in Pacific R. R. Rep. iv, 36.—Walpers, Ann. v, 46.—Cooper in Smithsonian Rep. 1858, 259.—Lemaire, Ill. Hort. ix, Misc. 95.—Marcou in Jour. Hort. Soc. France, 2 ser. iii, 676.—Lindley, Treasury Bot. 256, t. 17.—Vasey, Cat. Forest Trees, 15.—Rothrock in Wheeler's Rep. vi, front.—Hemsley, Bot. Am.-Cent. i, 343.—James in Am. Nat. xv, 982, f. 3.

Pilocereus Engelmanni, Lemaire, Ill. Hort. ix, Misc. 95.

SUWARROW. SAGUARO. GIANT CACTUS.

Valley of Bill Williams river, Arizona, south and east through central Arizona to the valley of the San Pedro river; southward in Sonora.

A tall, columnar tree, 8 to 18 meters in height, with a trunk sometimes 0.60 meter in diameter; dry, stony *mesas* or low hills rising from the desert.

Wood of the large, strong ribs, very light, soft, rather coarse-grained, solid, satiny, susceptible of a fine polish, almost indestructible in contact with the ground; medullary rays very numerous, broad; color, light brown tinged with yellow; specific gravity, 0.3188; ash, 3.45; used in the region almost exclusively for the rafters of adobe houses, for fencing, and by the Indians for lances, bows, etc.

The edible fruit largely collected and dried by the Indians.

CORNACEÆ.

150.—Cornus alternifolia, Linnæus f.

Suppl. 125.—Lamarck, Dict. ii, 116; Ill. i, 303.—L'Heritier, Cornus, 10, t. 6.—Ehrhart, Beitr. iii, 19.—Aiton, Hort. Kew. i, 159; 2 ed. i, 262.—Willdenow, Spec. i, 664; Enum. 165; Berl. Baumz. 104.—Michaux, Fl. Bor.-Am. i, 93.—Persoon, Syn. i, 144.—Desfontaines, Hist. Arb. i, 351.—Nouveau Duhamel, ii, 157, t. 45.—Pursh, Fl. Am. Sept. i, 109.—Nuttall, Genera, i, 99.—Rœmer & Schultes, Syst. iii, 323; Mant. 251.—Elliott, Sk. i, 210.—Guimpel, Otto & Hayne, Abb. Holz. 53, t. 43.—Hayne, Dend. Fl. 8.—Torrey, Fl. U. S. 180; Compend. Fl. N. States, 83; Fl. N. York, i, 288.—Sprengel, Syst. i, 451.—De Candolle, Prodr. iv, 271.—Hooker, Fl. Bor.-Am. i, 275.—Don, Miller's Dict. iii, 398.—Beck, Bot. 154.—Eaton, Manual, 6 ed. 109.—Tausch in Regensb. Fl. xxi, 732.—Spach, Hist. Veg. viii, 92.—Dietrich, Syn. i, 503.—Torrey & Gray, Fl. N. America, i, 649.—Loudon, Arboretum, ii, 1010, f. 760.—Eaton & Wright, Bot. 210.—Bigelow, Fl. Boston. 3 ed. 60.—C. A. Meyer in Mem. Acad. Sci. St. Petersburg, v, 6, 13.—Walpers, Rep. v, 932.—Emerson, Trees Massachusetts, 409; 2 ed. ii, 463 & t.—Parry in Owen's Rep. 613.—Darlington, Fl. Cestrica, 3 ed. 110.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 167.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 167.—Wood, Cl. Book, 391; Bot. & Fl. 143.—Gray, Manual N. States, 5 ed. 201.—Koch, Dendrologie, i, 690.—Young, Bot. Texas, 303.

C. alterna, Marshall, Arbustum, 35.

DOGWOOD.

New Brunswick, west along the valley of the Saint Lawrence river to the northern shores of lake Superior, south through the northern states and along the Alleghany mountains to northern Georgia and Alabama.

A small tree, 4 to 8 meters in height, with a trunk 0.15 to 0.20 meter in diameter; low, rich woods and borders of streams and swamps.

Wood heavy, hard, close-grained, checking badly in drying; medullary rays numerous, thin; color, brown tinged with red, the sap-wood light yellow; specific gravity, 0.6696; ash, 0.41.

151.—Cornus florida, Linnæus,

Spec. 1 ed. 117.—Marshall, Arbustum, 35.—Lamarck, Dict. ii, 114; Ill. i, 302.—Wangenheim, Amer. 51, t. 17, f. 41.—Walter, Fl. Caroliniana, 88.—L'Heritier, Cornus, 4.—Aiton, Hort. Kew. i, 157; 2 ed. i, 261.—Willdenow, Spec. i, 661; Enum. 164; Berl. Baumz. 100.—Abbot, Insects Georgia, ii, t. 73.—B. S. Barton, Coll. i, 12, 45; ii, 17, 19.—Bot. Mag. t. 526.—Michaux, Fl. Bor.-Am. i, 91.—Persoon, Syn. i, 143.—Desfontaines, Hist. Arb. i, 350.—Schkuhr, Handb. 82.—Titford, Hort. Bot. Am. 41, t. 16, f. 7.—Nouveau Duhamel, ii, 153.—Michaux f. Hist. Arb. Am. iii, 138, t. 3; N. American Sylva, 3 ed. i, 176, t. 48.—Pursh, Fl. Am. Sept. i, 108.—Bigelow, Med. Bot. ii, 69, t. 73; Fl. Boston. 3 ed. 59.—Eaton, Manual, 19; 6 ed. 108.—Nuttall, Genera, i, 98.—Barton, Med. Bot. i, 43, t. 3.—Rœmer & Schultes, Syst. iii, 319.—Hayne, Dend. Fl. 6.—Guimpel, Otto & Hayne, Abb. Holz. 21, t. 19.—Elliott, Sk. i, 207.—Torrey in Ann. Lyc. N. York, ii, 208; Fl. U. S. 178; Compend. Fl. N. States, 82; Fl. N. York, i, 290; Nicollet's Rep. 151; Emory's Rep. 408.—Sprengel, Syst. i, 451.—Beck in Am. Jour. Sci. 1 ser. x, 264; Bot. 153.—Audubon, Birds, t. 8, 73, 122.—Rafinesque, Med. Bot. i, 131, f. 28.—De Candolle, Prodr. iv, 273.—Hooker, Fl. Bor.-Am. i, 277, in part; Companion Bot. Mag. i, 48.—Don, Miller's Dict. iii, 400.—Lindley, Fl. Med. 81.—Dietrich, Syn. i, 504.—Torrey & Gray, Fl. N. America, i, 652.—Loudon, Arboretum, ii, 1017, f. 769.—Eaton & Wright, Bot. 209.—Reid in London Gard. Chronicle, 1844, 276.—Browne, Trees of America, 350.—Emerson, Trees Massachusetts, 413; 2 ed. ii, 467 & t.—Griffith, Med. Bot. 347, f. 164.—Carson, Med. Bot. i, 50, t. 42.—Richardson, Arctic Exped. 429.—Darlington, Fl. Cestrica, 3 ed. 111.—Darby, Bot. S. States, 339.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 168.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 60.—Lesquereux in Owen's 2d Rep. Arkansas, 364.—Wood, Cl. Book, 391; Bot. & Fl. 143.—Blakie in Canadian Nat. vi, 1.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 194.—Porcher, Resources S. Forests, 59.—Gray, Manual N. States, 5 ed. 200; Hall's Pl. Texas, 11.—Koch, Dendrologie, i, 694.—Young, Bot. Texas, 303.—Vasey, Cat. Forest Trees, 16.—Baillon, Hist. Pl. vii, 68, f. 46.—Broadhead in Coulter's Bot. Gazette, iii, 53.—Bentley & Trimen, Med. Pl. ii, 136, t. 136.—Bell in Geological Rep. Canada, 1879–'80, 55c.—Ridgway in Proc. U. S. Nat. Mus. 1882, 67.

Benthamidia florida, Spach, Hist. Veg. viii, 107.

FLOWERING DOGWOOD. BOX WOOD.

Southern New England, southern Ontario, southern Minnesota, and through the Atlantic forests to latitude 28° 50′ in Florida, and the valley of the Brazos river, Texas.

A small tree, 9 to 12 meters in height, with a trunk 0.30 to 0.45 meter in diameter, or toward its northern limits reduced to a low shrub; rich woods; very common, especially at the south.

Wood heavy, hard, strong, close-grained, tough, checking badly in drying, satiny, susceptible of a beautiful polish; medullary rays numerous, conspicuous; color, brown, changing in different specimens to shades of green and red, the sap-wood lighter; specific gravity, 0.8153; ash, 0.67; used in turnery, for wood engravings and the bearings of machinery, hubs of wheels, barrel hoops, etc.

The bark, especially of the root, in common with that of the other species of the genus, possesses bitter tonic properties, and is used in decoctions, etc., in the treatment of intermittent and malarial fevers (*Am. Jour. Pharm.* vii, 109.—*Maisch in Proc. Am. Pharm. Assoc.* 315.—*U. S. Dispensatory*, 14 ed. 352.—*Nat. Dispensatory*, 2 ed. 467).

152.—Cornus Nuttallii, Audubon,

Birds, t. 467.—Torrey & Gray, Fl. N. America, i, 652.—Walpers, Rep. ii, 435.—Bentham, Pl. Hartweg. 312.—Nuttall, Sylva, iii, 51, t. 97; 2 ed. ii, 117, t. 97.—Durand in Jour. Philadelphia Acad. 1855, 89.—Torrey in Pacific R. R. Rep. iv, 94; Bot. Mex. Boundary Survey, 71; Bot. Wilkes Exped. 326.—Newberry in Pacific R. R. Rep. vi, 24, 75.—Cooper in Smithsonian Rep. 1858, 259; Pacific R. R. Rep. xii², 29, 63.—Lyall in Jour. Linnæan Soc. vii, 134.—Gray in Proc. Am. Acad. viii, 387.—Brewer & Watson, Bot. California, i, 274; ii, 452.—Vasey, Cat. Forest Trees, 16.—Hall in Coulter's Bot. Gazette, ii, 88.—Macoun in Geological Rep. Canada, 1875-'76, 198.—G. M. Dawson in Canadian Nat. new ser. ix, 331.

C. florida, Hooker, Fl. Bor.-Am. i, 277, in part.

FLOWERING DOGWOOD.

Vancouver's island and along the coast of southern British Columbia, through western Washington territory and Oregon, and southward through the Coast ranges of California and along the western slope of the Sierra Nevada to the San Bernardino mountains.

A small, slender tree, sometimes 18 to 24 meters in height, with a trunk rarely 0.45 meter in diameter; ascending the Cascade mountains to 3,000 feet, and the San Bernardino mountains to from 4,000 to 5,000 feet elevation; common; rich, rather damp soil, generally in the dense shade of coniferous forests.

Wood heavy, exceedingly hard, strong, close-grained, compact, satiny, susceptible of a good polish; medullary rays numerous, obscure; color, light brown tinged with red, the sap-wood lighter; specific gravity, 0.7481; ash, 0.50; somewhat used in cabinet-making, for mauls, handles, etc.

153.—Nyssa capitata, Walter,

Fl. Caroliniana, 253.—Lamarck, Dict. iv, 508.—Michaux f. Hist. Arb. Am. ii, 257, t. 20; N. American Sylva, 3 ed. iii, 37, t. 113.—Aiton, Hort. Kew. 2 ed. v, 480.—Poiret, Suppl. v, 740.—Elliott, Sk. ii, 685.—Hooker, Companion Bot. Mag. ii, 62.—Eaton, Manual, 6 ed. 236.—Eaton & Wright, Bot. 329.—Spach, Hist. Veg. x, 464.—Darby, Bot. S. States, 493.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 168.—Lesquereux in Owen's 2d Rep. Arkansas, 364.—Wood, Cl. Book, 392; Bot. & Fl. 143.—Koch, Dendrologie, ii, 456.—Vasey, Cat. Forest Trees, 16.

N. Ogeche, Marshall, Arbustum, 97.

N. coccinea, Bartram, Travels, 2 ed. 17.

N. tomentosa, Poiret in Lamarck, Dict. iv, 508.

N. candicans, Michaux, Fl. Bor.-Am. ii, 259.—Persoon, Syn. ii, 614.—Desfontaines, Hist. Arb. i, 37.—Willdenow, Spec. iv, 1113.—Pursh, Fl. Am. Sept. i, 117.—Poiret, Suppl. iv, 116.—Nuttall, Genera, ii, 236; Trans. Am. Phil. Soc. v, 167.—Rœmer & Schultes, Syst. v, 557.—Sprengel, Syst. i, 832.—Dietrich, Syn. i, 879.—Loudon, Arboretum, iii, 1318, f. 1199.—Browne, Trees of America, 426.

N. montana, Gærtner, Fruct. iii, 201, t. 216.

OGEECHEE LIME. SOUR TUPELO. GOPHER PLUM.

Georgia, from the valley of the Ogeechee to the Saint Mary's river, west Florida (near Vernon, *Mohr*), and in southern Arkansas.

A tree 9 to 18 meters in height, with a trunk 0.30 to 0.90 meter in diameter; deep swamps and river bottoms; rare and local.

Wood light, soft, not strong, tough, rather coarse-grained, compact, unwedgeable, containing many regularly-distributed open ducts; medullary rays numerous, thin; color, white, the sap-wood hardly distinguishable; specific gravity, 0.4613; ash, 0.34.

A conserve, under the name of "Ogeechee limes", is made from the large, acid fruit.

154.—Nyssa sylvatica, Marshall,

Arbustum, 97.—Michaux f. Hist. Arb. Am. ii, 260, t. 21; N. American Sylva, 3 ed. iii, 29, t. 110.—Poiret, Suppl. iv, 116.—Barton, Prodr. Fl. Philadelph. 97; Compend. Fl. Philadelph. ii, 193.

N. aquatica, Linnæus, Spec. 1 ed. 1058, in part.—St. Hilaire, Fam. Nat. ii, 152.—Persoon, Syn. ii, 614.—Michaux f. Hist. Arb. Am. ii, 165, t. 22; N. American Sylva, 3 ed. iii, 31, t. 111.—Rœmer & Schultes, Syst. v, 576.—Barton, Prodr. Fl. Philadelph. 97; Compend. Fl. Philadelph. ii, 192.—Sprengel, Syst. i, 832.—Audubon, Birds, t. 133.—Elliott, Sk. ii, 684.—Dietrich, Syn. i, 878.—Eaton, Manual, 6 ed. 236.—Eaton & Wright, Bot. 329.—Spach, Hist. Veg. x, 464.—Darby, Bot. S. States, 492.—Chapman, Fl. S. States, 168.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 168.—Porcher, Resources S. Forests, 347.—Koch, Dendrologie, ii, 455.—Young, Bot. Texas, 304.—Vasey, Cat. Forest Trees, 16.

N. multiflora, Wangenheim, Amer. 46, t. 16, f. 39.—Elliott, Sk. ii, 684.—Walter, Fl. Caroliniana, 253.—Beck, Bot. 307.—Eaton, Manual, 6 ed. 236.—Eaton & Wright, Bot. 329.—Spach, Hist. Veg. x, 463.—Torrey, Fl. N. York, ii, 161, t. 95.—Emerson, Trees Massachusetts, 312, t. 17; 2 ed. ii, 353 & t.—Schnizlein, Icon. t. 108, f. 1, 2.—Darlington, Fl. Cestrica, 3 ed. 254.—Darby, Bot. S. States, 492.—Cooper in Smithsonian Rep. 1858, 252.—Chapman, Fl. S. States, 168.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 62.—Lesquereux in Owen's 2d Rep. Arkansas, 364.—Wood, Cl. Book, 392; Bot. & Fl. 143.—Gray, Manual N. States, 5 ed. 201.—Koch, Dendrologie, ii, 554.—Young, Bot. Texas, 304.—Vasey, Cat. Forest Trees, 16.—Broadhead in Coulter's Bot. Gazette, iii, 53.—Bessey in Am. Nat. xv, 134.—Bell in Geological Rep. Canada, 1879-'80, 55c.—Ridgway in Proc. U. S. Nat. Mus. 1882, 68.—Burgess in Coulter's Bot. Gazette, vii, 95.

N. Caroliniana, Poiret in Lamarck, Dict. iv, 507; Lamarck, Ill. iii, 442, t. 851, f. 1.

N. biflora, Walter, Fl. Caroliniana, 253.—Lamarck, Dict. iv, 508.—Michaux, Fl. Bor.-Am. ii, 259.—Willdenow, Spec. iv, 1113; Enum. 1061; Berl. Baumz. 256.—Desfontaines, Hist. Arb. i, 37.—Gærtner f. Fruct. Suppl. 203, t. 216.—Aiton, Hort. Kew. 2 ed. v, 479.—Pursh, Fl. Am. Sept. i, 177.—Nuttall, Genera, ii, 236; Trans. Am. Phil. Soc. v, 167.—Poiret, Suppl. iv, 115.—Torrey in Ann. Lyc. N. York, ii, 200; Compend. Bot. N. States, 372.—Hayne, Dend. Fl. 229.—Eaton, Manual, 116.—Beck, Bot. 307.—Loudon, Arboretum, iii, 1317, f. 1195, 1196.—Browne, Trees of America, 423.—Baillon, Hist. Pl. v, 266, f. 241–244.

N. integrifolia, Aiton, Hort. Kew. iii, 446.—Persoon, Syn. ii, 614.

N. Canadensis, Poiret in Lamarck, Dict. iv, 507.

N. villosa, Michaux, Fl. Bor.-Am. ii, 258.—Willdenow, Spec. iv, 1112.—Desfontaines Hist. Arb. i, 37.—Aiton, Hort. Kew. 2 ed. v, 479.—Bigelow, Fl. Boston. 3 ed. 380.—Pursh, Fl. Am. Sept. i, 117.—Nuttall, Genera, ii, 276.—Rœmer & Schultes, Syst. v, 575.—Sprengel, Syst. i, 832.—Torrey, Compend. Bot. N. States, 372.—Dietrich, Syn. i, 878.—Loudon, Arboretum, iii, 1317, f. 1197, 1198.

N. multiflora, var. *sylvatica*, Watson, Index, 442.

TUPELO. SOUR GUM. PEPPERIDGE. BLACK GUM.

Valley of the Kennebec river, Maine (Kent's Hill, *Prof. Stone*), West Milton, Vermont, west to central Michigan, south to Tampa bay, Florida, and the valley of the Brazos river, Texas.

A tree 15 to 36 meters in height, with a trunk 0.60 to 1.50 meter in diameter, or at the north much smaller; borders of swamps, or on rather high, rich hillsides and pine uplands; at the south often in pine-barren ponds and deep swamps, the base of the trunk then greatly enlarged and swollen (*N. aquatica*).

Wood heavy, rather soft, strong, very tough, unwedgeable, difficult to work, inclined to check unless carefully seasoned, not durable in contact with the soil, containing numerous regularly-distributed small open ducts; medullary rays numerous, thin; color, light yellow or often nearly white, the sap-wood hardly distinguishable; specific gravity, 0.6353; ash, 0.52; now largely used for the hubs of wheels, rollers in glass factories, ox yokes, and on the gulf coast for wharf piles.

NOTE.—Various forms of *Nyssa*, which at different times have been considered by botanists as entitled to specific rank, are connected by so many intermediate forms, and offer so few distinctive characters, that they are here united into one polymorphous species, which thus enlarged may properly bear Marshall's earlier name of *Nyssa sylvatica*, rather than the more familiar *Nyssa multiflora* of Wangenheim.

155.—Nyssa uniflora, Wangenheim,

Amer. 83, t. 27, f. 57.—Walter, Fl. Caroliniana, 253.—Elliott, Sk. ii, 686.—Eaton & Wright, Bot. 329.—Darby, Bot. S. States, 493.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 168.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 62.—Wood, Cl. Book, 392; Bot. & Fl. 143.—Gray, Manual N. States, 5 ed. 201.—Koch, Dendrologie, ii, 455.—Young, Bot. Texas, 304.—Vasey, Cat. Forest Trees, 16.

N. aquatica, Linnæus, Spec. 1058, in part.—Marshall, Arbustum, 96.—Lamarck, Dict. iv, 507.—Desfontaines, Hist. Arb. i, 36.

N. denticulata, Aiton, Hort. Kew. iii, 446; 2 ed. v, 480.—Persoon, Syn. ii, 615.—Willdenow, Spec. iv, 1114.—Gærtner f. Fruct. Suppl. 203, t. 216.—Pursh. Fl. Am. Sept. i, 178.—Poiret, Suppl. iv, 115.—Nuttall, Genera, ii, 236.—Hayne, Dend. Fl. 229.—Rœmer & Schultes, Syst. v, 577.—Sprengel, Syst. i, 832.—Dietrich, Syn. i, 879.

N. angulosa, Poiret in Lamarck, Dict. iv, 507; Ill. iii, 442, t. 851, f. 2.—Rœmer & Schultes, Syst. v, 578.

N. palustris, Salisbury, Prodr. 175.

N. tomentosa, Michaux, Fl. Bor.-Am. ii, 259.—Persoon, Syn. ii, 615.—Willdenow, Spec. iv, 1113.—Pursh, Fl. Am. Sept. i, 177.—Nuttall, Genera, ii, 236.—Rœmer & Schultes, Syst. v, 577.—Elliott, Sk. ii, 685.—Sprengel, Syst. i, 832.—Audubon, Birds, t. 13.—Dietrich, Syn. i, 879.—Eaton & Wright, Bot. 329.—Darby, Bot. S. States, 493.

N. angulisans, Michaux, Fl. Bor.-Am. ii, 259.—Dietrich, Syn. i, 879.—Spach, Hist. Veg. x, 465.

N. grandidentata, Michaux f. Hist. Arb. Am. ii, 252, t. 19; N. American Sylva, 3 ed. ii, 34, t. 112.—Loudon, Arboretum, iii, 1319, f. 1200, 1201.—Lesquereux in Owen's 2d Rep. Arkansas, 364.

N. capitata var. *grandidentata*, Browne, Trees of America, 426.

LARGE TUPELO. COTTON GUM. TUPELO GUM.

Southern Virginia, south near the coast to the valley of the Saint Mary's river, Georgia, through the Gulf states to the valley of the Neches river, Texas, and through Arkansas and southern and southeastern Missouri to the valley of the lower Wabash river, Illinois.

A large tree, 21 to 30 meters in height, with a trunk 0.90 to 1.20 meter in diameter; deep swamps and river bottoms subject to frequent overflow; one of the largest and most common trees of the bottom lands of the lower Mississippi river basin, and reaching its greatest development in the cypress swamps of western Louisiana and eastern Texas, near the coast.

Wood light, soft, not strong, close-grained, compact, unwedgeable; medullary rays numerous, thin; color, light brown, or often nearly white; specific gravity, 0.5194; ash, 0.70; used in turnery, largely for woodenware, broom handles, and wooden shoes; that of the root for the floats of nets, etc., as a substitute for cork.

CAPRIFOLIACEÆ.

156.—Sambucus glauca, Nuttall;

Torrey & Gray, Fl. N. America, ii, 13.—Walpers, Rep. ii, 453.—Torrey in Pacific R. R. Rep. vi, 12; Ives' Rep. 15; Bot. Mex. Boundary Survey, 71.—Gray in Smithsonian Contrib. v, 66; Proc. Am. Acad. vii, 387; Syn. Fl. N. America, i², 9.—Watson in King's Rep. v, 134.—Vasey, Cat. Forest Trees, 16.—Brewer & Watson, Bot. California, i, 278.—Hall in Coulter's Bot. Gazette, 88.—Rothrock in Wheeler's Rep. vi, 135, 363.

S. Californica, Hort.—Koch, Dendrologie, ii, 72.

? *S. Mexicana*, Newberry in Pacific R. R. Rep. vi, 75 [not Presl].

ELDER.

Valley of the Fraser river and Vancouver's island, British Columbia, southward through California to the Mexican boundary, extending west to the Blue mountains of Oregon and the Wahsatch range, Utah.

A small tree, sometimes 8 to 9 meters in height, with a trunk 0.30 to 0.45 meter in diameter, or toward its northern limits reduced to a large shrub; confined to valleys, in dry, gravelly soil.

Wood light, soft, weak, coarse-grained, checking in drying; medullary rays numerous, rather conspicuous; color, yellow tinged with brown, the sap-wood lighter; specific gravity, 0.5037; ash, 1.57.

The large blue-black fruit edible and sometimes cooked.

157.—Sambucus Mexicana, Presl,

Hort. Hank.—De Candolle, Prodr. iv, 322.—Don, Miller's Dict. iii, 437.—Loudon, Arboretum, ii, 1030.—Gray in Smithsonian Contrib. v, 66; Syn. Fl. N. America, i², 9.—Torrey in Pacific R. R. Rep. iv, 95; Bot. Mex. Boundary Survey, 71.—Brewer & Watson, Bot. California, i, 278.—Rothrock in Wheeler's Rep. vi, 135.—Hemsley, Bot. Am.-Cent. ii, 1.

S. glauca, Bentham, Pl. Hartweg. 313 [not Nuttall].

S. velutina, Durand & Hilgard in Jour. Philadelphia Acad. new ser. iii, 39.

ELDER.

Valley of the Nueces river (San Patricio), south and west along the southern boundary of the United States to Posa creek, Kern county, California, and southward into Mexico.

A small tree, sometimes 6 meters in height, with a trunk 0.15 to 0.25 meter in diameter; bottom lands, in moist, gravelly loam.

Wood light, soft, rather coarse-grained, compact; medullary rays numerous, thin, conspicuous; color, light brown, the sap-wood lighter; specific gravity, 0.4614; ash, 2.00.

158.—Viburnum Lentago, Linnæus,

Spec. 1 ed. 268.—Marshall, Arbustum, 160.—Wangenheim, Amer. 100.—Walter, Fl. Caroliniana, 116.—Aiton, Hort. Kew. i, 372; 2 ed. ii, 168.—Willdenow, Spec. i, 1491; Enum. 327; Berl. Baumz. 531.—Nouveau Duhamel, ii, 129.—Schkuhr, Handb. 234.—Michaux, Fl. Bor.-Am. i, 178.—Persoon, Syn. i, 327.—Desfontaines, Hist. Arb. i, 344.—Poiret in Lamarck, Dict. viii, 658.—Pursh, Fl. Am. Sept. i, 201.—Barton, Prodr. Fl. Philadelph. 40.—Eaton, Manual, 34; 6 ed. 387.—Nuttall, Genera, i, 202.—Hayne, Dend. Fl. 37.—Rœmer & Schultes, Syst. vi, 637.—Elliott, Sk. i, 365.—Torrey, Fl. U. S. i, 318; Compend. Fl. N. States, 138; Fl. N. York, i, 305.—Watson, Dend. Brit. i, t. 21.—Sprengel, Syst. i, 934.—Guimpel, Otto & Hayne, Abb. Holz. 125, t. 102.—De Candolle, Prodr. iv, 325.—Hooker, Fl. Bor.-Am. i, 279.—Beck, Bot. 156.—Don, Miller's Dict. iii, 440.—Spach, Hist. Veg. viii, 311.—Loudon, Arboretum, ii, 1033, f. 780.—Dietrich, Syn. ii, 1011.—Eaton & Wright, Bot. 473.—Torrey & Gray, Fl. N. America, ii, 15.—Bigelow, Fl. Boston. 3 ed. 123.—Penn. Cycl. xxvii, 294.—Emerson, Trees Massachusetts, 364; 2 ed. ii, 412.—Darlington, Fl. Cestrica, 3 ed. 115.—Darby, Bot. S. States, 342.—Chapman, Fl. S. States, 171.—Wood, Cl. Book, 398; Bot. & Fl. 147.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 194; Trans. St. Louis Acad. ii, 269.—Gray, Manual N. States, 5 ed. 206; Syn. Fl. N. America, i², 12.—Koch, Dendrologie, ii, 62.—Young, Bot. Texas, 309.—Vasey, Cat. Forest Trees, 16.—Macoun in Rep. Geological Surv. Canada, 1875–'76, 198.—Ridgway in Proc. U. S. Nat. Mus. 1882, 68.

SHEEPBERRY. NANNYBERRY.

Southern shores of Hudson bay west in British America to about longitude 102°, south through the northern states to southern Indiana and Saint Louis county, Missouri, and along the Alleghany mountains to northern Georgia.

A small tree, 6 to 9 meters in height, with a trunk sometimes 0.15 to 0.25 meter in diameter; rocky ridges and along borders of streams and swamps, in rich, moist soil; most common and reaching its greatest development far north.

Wood heavy, hard, close-grained, compact, emitting a disagreeable odor; medullary rays thin, barely distinguishable; color, dark orange-brown, the sap-wood nearly white; specific gravity, 0.7303; ash, 0.29.

159.—Viburnum prunifolium, Linnæus,

Spec. 1 ed. 268.—Marshall, Arbustum, 160.—Wangenheim, Amer. 98.—Walter, Fl. Caroliniana, 116.—Aiton, Hort. Kew. i, 371; 2 ed. ii, 167.—Willdenow, Spec. i, 1487; Enum. 326; Berl. Baumz. 530.—Abbot, Insects Georgia, ii, 53.—Nouveau Duhamel, ii, 128, t. 38.—Schkuhr, Handb. 233.—Michaux, Fl. Bor.-Am. i, 178.—Persoon, Syn. i, 326.—Desfontaines, Hist. Arb. i, 344.—Poiret in Lamarck, Dict. viii, 653.—Pursh, Fl. Am. Sept. i, 201.—Barton, Prodr. Fl. Philadeph. 39; Compend. Fl. Philadelph. i, 151.—Nuttall, Genera, i, 202.—Rœmer & Schultes, Syst. vi, 631.—Hayne, Dend. Fl. 37.—Torrey, Fl. U. S. i, 318; Compend. Fl. N. States, 138.—Elliott, Sk. i, 365.—Sprengel, Syst. i, 933.—Guimpel, Otto & Hayne, Abb. Holz. 125, t. 101.—Watson, Dend. Brit. i, t. 23.—Audubon, Birds, t. 23.—De Candolle, Prodr. iv, 325.—Beck, Bot. 156.—Don, Miller's Dict. iii, 440.—Spach, Hist. Veg. viii, 312.—Loudon, Arboretum, ii, 1034, t. 193.—Hooker, Fl. Bor.-Am. ii, 279.—Torrey & Gray, Fl. N. America, ii, 14.—Walpers, Rep. ii, 451.—Darlington, Fl. Cestrica, 3 ed. 115.—Darby, Bot. S. States, 342.—Chapman, Fl. S. States, 171.—Wood, Cl. Book, 398; Bot. & Fl. 147.—Gray, Manual N. States, 5 ed. 206; Syn. Fl. N. America, i², 12.—Engelmann in Trans. St. Louis Acad. ii, 269.—Koch, Dendrologie, ii, 62.—Young, Bot. Texas, 309.—Vasey, Cat. Forest Trees, 16.—Ridgway in Proc. U. S. Nat. Mus. 1882, 68.—Watson in Proc. Am. Acad. xviii, 96.

V. pyrifolium, Poiret in Lamarck, Dict. v, 658.—Pursh, Fl. Am. Sept. i, 201.—Nuttall, Genera, i, 202.—Barton, Compend. Fl. Philadelph. i, 152.—Rœmer & Schultes, Syst. vi, 631.—Hayne, Dend. Fl. 37.—Watson, Dend. Brit. i, t. 22.—Desfontaines, Hist. Arb. i, 345; Cat. Hort. Paris, 3 ed. 404.—De Candolle, Prodr. iv, 325.—Beck, Bot. 156.—Loudon, Arboretum, ii, 1034, f. 781, 782.—Bigelow, Fl. Boston, 3 ed. 123.

V. prunifolium, var. *ferrugineum*, Torrey & Gray, Fl. N. America, ii, 15.

BLACK HAW. STAG BUSH.

Fairfield county, Connecticut, valley of the lower Hudson river (Fishkill landing), south to Hernando county, Florida, and the valley of the Colorado river, Texas, west to Missouri, Arkansas, and the Indian territory.

A small tree, sometimes 6 to 9 meters in height, with a trunk rarely exceeding 0.15 meter in diameter, or at the north generally reduced to a low, much-branched shrub; usually on rocky hillsides, in rich soil.

Wood heavy, very hard, strong, brittle, close-grained, liable to check in drying; medullary rays numerous, very obscure; color, brown tinged with red, the sap-wood nearly white; specific gravity, 0.8332; ash, 0.52.

The edible fruit sweet and insipid; the tonic and astringent bark somewhat used in the treatment of uterine disorders in the form of decoctions or fluid extracts (*Boston Med. and Surg. Jour.* October 10, 1867.—*U. S. Dispensatory*, 14 ed. 1783.—*Nat. Dispensatory*, 2 ed. 1821).

RUBIACEÆ.

160.—Exostemma Caribæum, Rœmer & Schultes,

Syst. v, 18.—Sprengel, Syst. i, 705.—De Candolle, Prodr. iv, 359.—Don, Miller's Dict. iii, 481.—Dietrich, Syn. i, 722.—Spach, Hist. Veg. viii, 395.—Torrey & Gray, Fl. N. America, ii, 36.—Chapman, Fl. S. States, 180.—Grisebach, Fl. British West Indies, 324.—Guibourt, Hist. Drogues, 7 ed. iii. 187, f. 628.—Gray, Syn. Fl. N. America, i², 23.

Cinchona Caribæa, Jacquin, Stirp. Amer. t. 176, f. 65.—Gærtner, Fruct. i, 109, t. 33.—Aiton, Hort. Kew. i, 228; 2 ed. i, 372.—Lambert, Cinchona, 38, t. 12 (excl. syn.).—Andrews, Bot. Rep. vii, t. 481.

Cinchona Jamaicencis, Wright in Trans. Royal Soc. lxvii, 504, t. 10.

Semi-tropical Florida, on the southern keys; through the West Indies.

A small tree, sometimes 7 meters in height, with a trunk 0.20 to 0.30 meter in diameter.

Wood very heavy, exceedingly hard, strong, close-grained, checking in drying, satiny, susceptible of a beautiful polish; medullary rays numerous, very obscure; color, light brown, beautifully streaked with different shades of yellow and brown, the sap-wood clear, rich yellow; specific gravity, 0.9310; ash, 0.23.

161.—Pinckneya pubens, Michaux,

Fl. Bor.-Am. i, 103, t. 13.—Willdenow, Enum. Suppl. 30.—Aiton, Hort. Kew. 2 ed. i, 372.—Michaux f. Hist. Arb. Am. ii, 276, t. 24; N. American Sylva, i, 180, t. 49.—Pursh, Fl. Am. Sept. i, 158.—Nuttall, Genera, ii, 37.—Barton, Fl. N. America, i, 25, t. 7.—Sprengel, Syst. i, 705.—Elliott, Sk. i, 269.—Rafinesque, Med. Bot. ii, 57, t. 72.—De Candolle, Prodr. iv, 366.—Audubon, Birds, t. 165.—Eaton, Manual, 6 ed. 263.—Don, Miller's Dict. iii, 486.—Lindley, Fl. Med. 433.—Spach, Hist. Veg. viii, 400.—Eaton & Wright, Bot. 357.—Torrey & Gray, Fl. N. America, ii, 37.—Browne, Trees of America, 354.—Griffith, Med. Bot. 365, f. 174.—Darby, Bot. S. States, 347.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 179.—Wood, Cl. Book, 401; Bot. & Fl. 150.—Porcher, Resources S. Forests, 404.—Vasey, Cat. Forest Trees, 17.—Gray, Syn. Fl. N. America, i², 23.

Cinchona Caroliniana, Poiret in Lamarck, Dict. vi, 40.

P. pubescens, Persoon, Syn. i, 197.—Gærtner f. Fruct. Suppl. 81, t. 194, f. 3.

GEORGIA BARK.

South Carolina, near the coast; basin of the upper Apalachicola river in Georgia and Florida.

A small tree, 6 to 9 meters in height, with a trunk 0.15 to 0.30 meter in diameter; borders of streams, in low, sandy swamps; rare.

Wood light, soft, weak, close-grained, checking badly in drying; layers of annual growth clearly marked by four to six rows of large open ducts; medullary rays few, obscure; color, brown, the sap-wood lighter; specific gravity, 0.5350; ash, 0.41.

Infusions of the bark are successfully used in the treatment of intermittent fever, as a substitute for cinchona. (*U. S. Dispensatory*, 14 ed. 1734).

162.—Genipa clusiæfolia, Grisebach,

Fl. British West Indies, 317.—Gray, Syn. Fl. N. America, i², 29.

Gardenia clusiæfolia, Jacquin, Coll. Appx. 37, t. 4, f. 3.—Persoon, Syn. i, 199.—De Candolle, Prodr. iv, 381; Dietrich, Syn. i, 796.

Randia clusiæfolia, Chapman, Fl. S. States, 179.—Vasey, Cat. Forest Trees, 17.

SEVEN-YEAR APPLE.

Semi-tropical Florida, on the southern keys; in the West Indies.

A small, much-branched, knotty tree, sometimes 6 meters in height, with a trunk rarely exceeding 0.10 meter in diameter, or in Florida more often a shrub; saline shores.

Wood very heavy, hard, close-grained, compact, susceptible of a beautiful polish; medullary rays numerous, thin; color, rich dark brown shaded with orange, the sap-wood light yellow; specific gravity, 1.0316; ash, 1.06.

The large insipid fruit popularly but incorrectly supposed to require seven years in which to ripen.

163.—Guettarda elliptica, Swartz,

Prodr. 59; Fl. Ind. Occ. i, 634.—Lamarck, Ill. ii, 218.—Persoon, Syn. i, 200.—Poiret, Suppl. ii, 859.—Rœmer & Schultes, Syst. iv, 412.—De Candolle, Prodr. iv, 457.—Dietrich, Syn. i, 787.—Don, Miller's Dict. iii, 551.—Torrey & Gray, Fl. N. America, ii, 35.—Grisebach, Fl. British West Indies, 332.—Gray, Syn. Fl. N. America, i², 30.

G. Blodgettii, Shuttleworth in herb.—Chapman, Fl. S. States, 178.—Vasey, Cat. Forest Trees, 17.

Semi-tropical Florida, on the southern keys; through the West Indies.

A small tree, 4 to 7 meters in height, with a trunk rarely exceeding 0.20 meter in diameter.

Wood heavy, hard, very close-grained, checking in drying, satiny, susceptible of a beautiful polish, containing numerous scattered small open ducts; medullary rays numerous, thin; color, light brown tinged with red; specific gravity, 0.8337; ash, 1.05.

ERICACEÆ.

164.—Vaccinium arboreum, Marshall,

Arbustum, 157.—Michaux, Fl. Bor.-Am. i, 230.—Persoon, Syn. i, 479.—Desfontaines, Hist. Arb. i, 270.—Pursh, Fl. Am. Sept. i, 285.—Nuttall, Genera, i, 263.—Elliott, Sk. i, 495.—Don, Miller's Dict. iii, 853.—Loudon, Arboretum, ii, 1159.—De Candolle, Prodr. vii, 567.—Dietrich, Syn. ii, 1264.—Darby, Bot. S. States, 414.—Loddiges, Bot. Cab. t. 1885.—Walpers, Ann. ii, 1096.—Chapman, Fl. S. States, 259.—Wood, Cl. Book, 482; Bot. & Fl. 198.—Lesquereux in Owen's 2d Rep. Arkansas, 373.—Young, Bot. Texas, 369.—Gray, Hall's Pl. Texas, 15; Syn. Fl. N. America, ii¹, 20.—Vasey, Cat. Forest Trees, 71.

V. mucronatum, Walter, Fl. Caroliniana, 139 [not Linnæus].

V. diffusum, Aiton, Hort. Kew. ii, 356.—Bot. Mag. t. 1607.—Koch, Dendrologie, ii, 96.

Batodendron arboreum, Nuttall in Trans. Am. Phil. Soc. 2 ser. viii, 261; Sylva, iii, 43; 2 ed. ii, 111.

FARKLEBERRY.

North Carolina, south near the coast to Hernando county, Florida, through the Gulf states, and from southern Illinois and southern Missouri south through Arkansas and eastern Texas to the shores of Matagorda bay.

A small tree, 7 to 9 meters in height, with a trunk rarely 0.25 meter in diameter, or toward its northern limits often reduced to a low shrub; very common throughout the pine belt of the Gulf states along the larger ponds and streams, in moist, sandy soil, and reaching its greatest development in eastern Texas, near the coast.

Wood heavy, hard, very close-grained, compact, liable to twist in drying, satiny, susceptible of a beautiful polish; medullary rays numerous, broad, conspicuous; color, light brown tinged with red, the sap-wood hardly distinguishable; specific gravity, 0.7610; ash, 0.39; somewhat used in turnery in the manufacture of small handles, etc.

165.—Andromeda ferruginea, Walter,

Fl. Caroliniana, 138.—Aiton, Hort. Kew. ii, 67; 2 ed. iii, 52.—Willdenow, Sp. ii, 609.—Michaux, Fl. Bor.-Am. i, 252.—Nouveau Duhamel, i, 190.—Ventenat, Hort. Malmaison, 80, t. 80.—Persoon, Syn. i, 480.—Desfontaines, Hist. Arb. i, 257.—Pursh, Fl. Am. Sept. i, 292.—Elliott, Sk. i, 489.—Darby, Bot. S. States, 420.—Chapman, Fl. S. States, 263.—Wood, Cl. Book, 488; Bot. & Fl. 202.—Gray, Syn. Fl. N. America ii¹, 33.

A. rhomboidalis, Nouveau Duhamel, i, 192.

A. ferruginea, var. *arborescens*, Michaux, Fl. Bor.-Am. i, 252.

A. ferruginea, var. *fruticosa*, Michaux, Fl. Bor. Am. i, 252.

A. rigida, Pursh, Fl. Am. Sept. i, 292.—Loddiges, Bot. Cab. t. 430.

Lyonia ferruginea, Nuttall, Genera, i, 266.—Don, Miller's Dict. iii, 830.—Loudon, Arboretum, ii, 1109.—Dietrich, Syn. ii, 1399.—De Candolle, Prodr. vii, 600.—Koch, Dendrologie, ii, 122.

Lyonia rigida, Nuttall, Genera, i, 266.—Don, Miller's Dict. iii, 830.—De Candolle, Prodr, vii, 600.

South Carolina to northern Florida, near the coast.

A small tree, in rich hummocks, 6 to 9 meters in height, with a trunk 0.15 to 0.25 meter in diameter, often crooked or semi-prostrate; or in sandy pine-barren soil reduced to a low shrub, 0.60 to 0.90 meter in height; the leaves varying greatly in shape, venation, etc.

Wood heavy, hard, not strong, very close-grained, checking in drying, satiny, susceptible of a beautiful polish; medullary rays numerous, thin; color, bright brown tinged with red, the sap-wood a little lighter; specific gravity, 0.7500; ash, 0.46.

166.—Arbutus Menziesii, Pursh,

Fl. Am. Sept. i, 282.—Sprengel, Syst. ii, 286.—Don, Miller's Dict. iii, 834.—Loudon, Arboretum, ii, 1122.—De Candolle, Prodr. vii, 582.—Dietrich, Syn. ii, 1387.—Hooker, Fl. Bor.-Am. ii, 36.—Hooker & Arnott, Bot. Beechey, 143.—Nuttall, Sylva, iii, 42, t. 95; 2 ed. ii, 109, t. 95.—Torrey in Pacific R. R. Rep. iv, 116; Bot. Wilkes Exped. 378.—Newberry in Pacific R. R. Rep. vi, 23, 79, f. 22.—Cooper in Smithsonian Rep. 1858, 260; Pacific R. R. Rep. xii², 29, 66.—Lyall in Jour. Linnæan Soc. vii, 131.—Gray in Proc. Am. Acad. vii, 393; Bot. California, i, 452, in part; Syn. Fl. N. America, ii¹, 27, in part.—Vasey, Cat. Forest Trees, 17.—Hall in Coulter's Bot. Gazette, ii, 88.—Macoun in Geological Rep. Canada, 1875–'76, 203.—G. M. Dawson in Canadian Nat. new ser. ix, 331.—Hemsley, Bot. Am.-Cent. ii, 276.

A. procera, Douglas in Lindley's Bot. Reg. xxi, t. 1753.—Loudon, Arboretum, ii, 1121.—De Candolle, Prodr. vii, 582.—Dietrich, Syn. ii, 1387.—Paxton, Mag. Bot. ii, 147 & t.—Walpers, Rep. vi, 416.

A. laurifolia, Lindley, Bot. Reg. xxx, t. 67.—Hooker, Fl. Bor.-Am. ii, 36.

MADROÑA.

Islands of British Columbia, from Seymour narrows southward through Washington territory and Oregon, near the coast, and through the Coast ranges of California to the Santa Lucia mountains.

A small tree, sometimes 15 to 25 meters in height, with a trunk 0.90 to 1.20 meter in diameter, or, exceptionally, much larger (the great specimen near San Rafael, Marin county, California, 6.85 meters in circumference 2 meters from the ground); south of San Francisco bay much smaller, often reduced to a low shrub; hillsides, in rich soil.

Wood heavy, hard, strong, close-grained, checking in drying; medullary rays numerous, conspicuous; color, light brown shaded with red, the sap-wood lighter; specific gravity, 0.7052; ash, 0.40; largely used in the manufacture of gunpowder, the bark in tanning.

167.—Arbutus Xalapensis, HBK.

Nov. Gen. & Spec. iii, 281.—Sprengel, Syst. ii, 286.—Don, Miller's Dict. iii, 834.—Hooker, Icon. i, t. 27.—Bentham, Pl. Hartweg. 66.—De Candolle, Prodr. vii, 583.—Dietrich, Syn. ii, 1388.—Walpers, Ann. ii, 1105.—Jour. Hort. Soc. London, v, 192 & t.

?*A. variens*, Bentham, Pl. Hartweg. 77.—Paxton, Brit. Fl. Gard. ii, 118.—Hemsley, Bot. Am.-Cent. ii, 277.

?*A. macrophylla*, Martens & Galeotti in Bull. Acad. Brux. ix, 9.—Walpers, Rep. ii, 725.

A. Menziesii, Gray in Bot. California, i, 452, in part; Syn. Fl. N. America, ii¹, 27, in part.—Rothrock in Wheeler's Rep. vi, 25, 183 [not Pursh].

Southern Arizona, Santa Rita mountains, between 4,500 and 7,000 feet elevation; southward through northern Mexico.

A small tree, with white, scaly bark, 9 to 12 meters in height, with a trunk 0.45 to 0.60 meter in diameter; dry, gravelly slopes; large specimens generally hollow and defective.

Wood heavy, soft, not strong, brittle, close-grained, checking badly in drying, susceptible of a good polish; medullary rays numerous, obscure; color, light brown tinged with red, the sap-wood lighter; specific gravity, 0.7099; ash, 0.25.

168.—Arbutus Texana, Buckley,

Proc. Philadelphia Acad. 1861, 460.—Gray in Proc. Philadelphia Acad. 1862, 165.—Young, Bot. Texas, 370.

A. Menziesii, Gray in Bot. California, i, 452, in part; Syn. Fl. N. America, ii¹, 27, in part.

?*A. Xalapensis*, Watson in Proc. Am. Acad. xviii, 111.

Western Texas, Hays and Travis counties (*Buckley*), west to the Guadalupe and Eagle mountains (*Havard*), and southward, probably into northern Mexico.

A small tree, 5 to 6 meters in height, with a trunk 0.15 to 0.25 meter in diameter; dry limestone hills and ridges; rare.

Wood heavy, hard, close-grained, compact; medullary rays numerous, obscure; color, brown, the sap-wood lighter, tinged with red; specific gravity, 0.7500; ash, 0.51; used in turnery, the manufacture of mathematical instruments, etc.

NOTE.—The synonomy and specific position of the Mexican species of *Arbutus* which reach the southern boundary of the United States are still obscure, and cannot be well elucidated with the existing knowledge of the Mexican flora.

169.—Oxydendrum arboreum, De Candolle,

Prodr. vii, 601.—Dietrich, Syn. ii, 1389.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 263.—Lesquereux in Owen's 2d Rep. Arkansas, 372.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 79.—Wood, Cl. Book, 489; Bot. & Fl. 203.—Gray, Manual N. States, 5 ed. 296; Syn. Fl. N. America, ii[1], 33.—Koch, Dendrologie, ii, 128.—Vasey, Cat. Forest Trees, 17.—Nat. Dispensatory, 2 ed. 798.

Andromeda arborea, Linnæus, Spec. 1 ed. 394.—Lamarck, Dict. i, 158.—Marshall, Arbustum, 7.—Wangenheim, Amer. 105.—Walter, Fl. Caroliniana, 138.—Aiton, Hort. Kew. ii, 69; 2 ed. iii, 53.—Willdenow, Spec. ii, 612; Enum. 452; Berl. Baumz. 31.—Michaux, Fl. Bor.-Am. i, 255.—Nouveau Duhamel, i, 178.—Bot. Mag. t. 905.—Desfontaines, Hist. Arb. i, 257.—Michaux f. Hist. Arb. Am. iii, 222, t. 7; N. American Sylva, 3 ed. ii, 126, t. 85.—Pursh, Fl. Am. Sept. i, 295.—Nuttall, Genera, i, 265.—Elliott, Sk. i, 491.—Barton, Fl. N. America, i, 105, t. 30.—Hayne, Dend. Fl. 59.—Torrey, Fl. U. S. i, 420; Compend. Fl. N. States, 182.—Sprengel, Syst. ii, 291.—Gray, Manual N. States, 1 ed. 266.—Darby, Bot. S. States, 419.—Porcher, Resources S. Forests, 379.

Andromeda arborescens, Persoon, Syn. i, 480.—Willdenow, Enum. 453.—Loddiges, Bot. Cab. t. 1210.

Lyonia arborea, Don in Edinburgh Phil. Jour. xvii, 159.—Don, Miller's Dict. iii, 831.—Loudon, Arboretum, ii, 1111.—Spach, Hist. Veg. ix, 486.—Browne, Trees of America, 356.

SORREL TREE. SOUR WOOD.

Western Pennsylvania, southward along the Alleghany mountains to western Florida and the eastern shores of Mobile bay, west to middle Tennessee and through the upper regions of the Gulf states to western Louisiana.

A small tree, 12 to 18 meters in height, with a trunk 0.25 to 0.35 meter in diameter; usually in rather dry, gravelly soil.

Wood heavy, hard, very close-grained, compact, susceptible of a beautiful polish; medullary rays numerous, thin; color, brown tinged with red, the sap-wood somewhat lighter; specific gravity, 0.7458; ash, 0.37; used for the handles of tools, bearings of machinery, etc.

170.—Kalmia latifolia, Linnæus,

Spec. 1 ed. 301.—Kalm, Travels, English ed. i, 335.—Marshall, Arbustum, 72.—Lamarck, Dict. ii, 345; Ill. ii, 487, t. 363, f. 1.—Gærtner, Fruct. i, 305, t. 63, f. 7.—Wangenheim, Amer. 64, t. 24, f. 50.—Walter, Fl. Caroliniana, 138.—Aiton, Hort, Kew. ii, 64; 2 ed. iii, 47.—Lamarck, Ill. 487, t. 363, f. 1.—Abbot, Insects Georgia, i, t. 87.—Willdenow, Spec. ii, 600; Enum. 450; Berl. Baumz. 202.—Schkuhr, Handb. 359, t. 116.—Michaux, Fl. Bor.-Am. i, 258.—Persoon, Syn. i, 477.—Desfontaines, Hist. Arb. i, 220.—Robin, Voyages, iii, 419.—Michaux f. Hist. Arb. Am. iii, 144, t. 4; N. American Sylva, 3 ed. ii, 62, t. 67.—Pursh, Fl. Am. Sept. i, 296.—Barton, Prodr. Fl. Philadelph. 49.—Eaton, Manual, 47; 6 ed. 195.—Bigelow, Med. Bot. i, 113, t. 13; Fl. Boston. 3 ed. 179.—Nuttall, Genera, i, 267.—Hayne, Dend. Fl. 54.—Elliott, Sk. i, 481.—Torrey, Fl. U. S. i, 422; Compend. Fl. N. States, 182.—Sprengel, Syst. ii, 293.—Audubon, Birds, t. 55.—Rafinesque, Med. Bot. ii, 16, t. 57.—Sertum Botanicum, iv & t.—Beck, Bot. 219.—Don, Miller's Dict. iii, 850.—Lindley, Fl. Med. 380.—Loudon, Arboretum, ii, 1151, f. 959.—De Candolle, Prodr. vii, 729.—Spach, Hist. Veg. ix, 498, t. 139.—Hooker, Fl. Bor.-Am. ii, 41.—Dietrich, Syn. ii, 1407.—Browne, Trees of America, 363.—Emerson, Trees Massachusetts, 392; 2 ed. ii. 443 & t.—Griffith, Med. Bot. 428, f. 192.—Darlington, Fl. Cestrica, 3 ed. 172.—Darby, Bot. S. States, 420.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 264.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 99.—Lesquereux in Owen's 2d Rep. Arkansas, 373.—Wood, Cl. Book, 484; Bot. & Fl. 200.—Porcher, Resources S. Forests, 381.—Gray, Manual N. States, 5 ed. 298; Syn. Fl. N. America, ii[1], 38.—Koch, Dendrologie, ii, 152.—Vasey, Cat. Forest Trees, 17.—London Garden, xxii, 6, t. 343.

LAUREL. CALICO BUSH. SPOON WOOD. IVY.

New Brunswick and the northern shores of lake Erie, south to western Florida, and through the Gulf states to western Louisiana and the valley of the Red river, Arkansas (Hot Springs, *Letterman*).

A small tree, sometimes 9 to 12 meters in height, with a trunk 0.30 to 0.60 meter in diameter, or more often a low shrub; rich woodlands; most common and reaching its greatest development in the southern Alleghany mountains, here often forming dense, impenetrable thickets.

Wood heavy, hard, strong, brittle, close-grained, compact; principal medullary rays broad, dark brown, conspicuous, intermediate rays numerous, thin, inconspicuous; color, brown tinged with red, the sap-wood somewhat lighter; specific gravity, 0.7160; ash, 0.41; used for tool handles, in turnery, and for fuel.

The leaves, buds, and fruit, reputed poisonous to cattle, are occasionally used medicinally (*U. S. Dispensatory*, 14 ed. 1682.—*Nat. Dispensatory*, 2 ed. 798).

171.—Rhododendron maximum, Linnæus,

Spec. 1 ed. 391.—Marshall, Arbustum, 127.—Gærtner, Fruct. i, 304, t. 63, f. 6.—Wangenheim, Amer. 63, t. 22, f. 49.—Aiton, Hort. Kew. ii, 67; 2 ed. iii, 50.—Mœnch, Meth. 45.—Lamarck, Dict. vi, 365; Ill. ii, 448, t. 364, f. 1.—B. S. Barton, Coll. i, 18.—Willdenow, Spec. ii, 606; Enum. 451; Berl. Baumz. 357.—Nouveau Duhamel, ii, 141.—Michaux, Fl. Bor.-Am. i, 259.—Schkuhr, Handb. 362.—Persoon, Syn. i, 478.—Desfontaines, Hist. Arb. i, 221.—Bot. Mag. t. 951.—Michaux f. Hist. Arb. Am. iii, 144, t. 4; N. American Sylva, 3 ed. ii, 64, t. 68.—Pursh, Fl. Am. Sept. i, 297.—Eaton, Manual, 47; 6 ed. 301.—Nuttall, Genera, i, 268.—Bigelow, Med. Bot. iii, 101, t. 51; Fl. Boston. 3 ed. 178.—Elliott, Sk. i, 483.—Hayne, Dend. Fl. 57.—Torrey, Fl. U. S. i, 426; Compend. Fl. N. States, 184.—Sprengel, Syst. ii, 292.—Audubon, Birds, t. 103.—Beck, Bot. 220.—Don, Miller's Dict. iii, 843.—Loudon, Arboretum, ii, 1134, f. 932.—De Candolle, Prodr. vii, 722.—Hooker, Fl. Bor.-Am. ii, 43.—Spach, Hist. Veg. ix, 503.—Dietrich, Syn. ii, 1404.—Eaton & Wright, Bot. 391.—Browne, Trees of America, 359.—Emerson, Trees Massachusetts, 384; 2 ed. ii, 435 & t.—Griffith, Med. Bot. 428.—Darlington, Fl. Cestrica, 3 ed. 171.—Darby, Bot. S. States, 421.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 265.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 97.—Lesquereux in Owen's 2d Rep. Arkansas, 373.—Wood, Cl. Book, 491; Bot. & Fl. 204.—Porcher, Resources S. Forests, 380.—Gray, Manual N. States, 5 ed. 300; Syn. Fl. N. America ii[1], 42.—Koch, Dendrologie, ii, 169.—Vasey, Cat. Forest Trees, 17.

R. procerum, Salisbury, Prodr. 287.

R. maximum, var. *roseum*, Pursh, Fl. Am. Sept. i, 297.—Elliott, Sk. i, 484.

R. maximum, var. *album*, Pursh, Fl. Am. Sept. i, 297.—Elliott, Sk. i, 484.

R. maximum, var. *purpureum*, Pursh, Fl. Am. Sept. i, 297.—Elliott, Sk. i, 484.

R. purpureum, Don, Miller's Dict. iii, 843.—Loudon, Arboretum, ii, 1134.—Dietrich, Syn, ii, 1404.

R. Purshii, Don, Miller's Dict. iii, 843.—Loudon, Arboretum, ii, 1135.—Dietrich, Syn. ii, 1404 (var. *album*, Pursh, *l. c.*).

GREAT LAUREL. ROSE BAY.

Nova Scotia and the northern shores of lake Erie, south through New England, New York, and along the Alleghany mountains to northern Georgia.

A small tree, sometimes 10 to 12 meters in height, with a trunk rarely exceeding 0.30 meter in diameter, or often a tall, straggling shrub; at the north in cold swamps; rare; very common and reaching its greatest development in the southern Alleghany mountains, steep, rocky banks of streams, etc.; never on limestone.

Wood heavy, hard, strong, brittle, close-grained, compact; medullary rays numerous, thin; color, light clear brown, the sap-wood lighter; specific gravity, 0.6303; ash, 0.36; occasionally used in turnery for the handles of tools, etc., and a possible substitute for box-wood in engraving. A decoction of the leaves is occasionally used domestically in the treatment of rheumatism, sciatica, etc.

MYRSINACEÆ.

172.—Myrsine Rapanea, Rœmer & Schultes,

Syst. iv, 509.—Don, Miller's Dict. iv, 10.—Dietrich, Syn. i, 618.—A. De Candolle, Prodr. viii, 97.—Miquel in Martius, Fl. Brasil. ix, 307, t. 50–52.—Gray, Syn. Fl. N. America ii[1], 65.

Rapanea Guyanensis, Aublet, Guian. i, 121, t. 46.—Swartz, Obs. 51; Fl. Ind. Occ. i, 262.—Lamarck, Ill. ii, 48, t. 122, f. 1.

Samara pentandra, Swartz, Obs. 51; Fl. Ind. Occ. i, 262 [not Aiton].

Samara floribunda, Willdenow, Spec. i, 665.—Lamarck, Ill. ii, 46, t. 122, f. 1.

Caballeria coriacea, Meyer, Prim. Fl. Essequ. 118.

M. Floridana, A. De Candolle in Trans. Linnæan Soc. xvii, 107; Prodr. viii, 98.—Dietrich, Syn. i, 98.—Chapman, Fl. S. States, 277.

M. floribunda, Grisebach, Fl. British West Indies, 393.

Semi-tropical Florida, Indian river southward to the southern keys; through the West Indies to Brazil.

A small tree, in Florida rarely exceeding 8 meters in height, with a trunk 0.10 to 0.15 meter in diameter, or often a shrub; borders of ponds and fresh-water creeks; in the West Indies much larger.

Wood heavy, hard, very close-grained, compact; medullary rays numerous, very conspicuous; color, brown tinged with red and beautifully striped with the darker medullary rays, the sap-wood hardly distinguishable; specific gravity, 0.8341; ash, 0.81.

173.—Ardisia Pickeringia, Nuttall,

Sylva, iii, 69, t. 102; 2 ed. ii, 133, t. 102.—A. De Candolle, Prodr. viii, 124.—Cooper in Smithsonian Rep. 1858, 264.—Chapman, Fl. S. States, 277.—Vasey, Cat. Forest Trees, 19.—Gray, Syn. Fl. N. America, ii[1], 65.—Hemsley, Bot. Am.-Cent. ii, 294.

Cyrilla paniculata, Nuttall in Am. Jour. Sci. v, 290.

Pickeringia paniculata, Nuttall in Jour. Philadelphia Acad. vii, 1.

MARLBERRY. CHERRY.

Semi-tropical Florida, Mosquito inlet to the southern keys, west coast, Caloosa river to cape Romano; in the West Indies and southern Mexico.

A small tree, sometimes 8 meters in height, with a trunk rarely 0.15 meter in diameter, or often a shrub; reaching its greatest development in Florida on the shores of bay Biscayne.

Wood heavy, hard, very close-grained, compact, susceptible of a beautiful polish; medullary rays very numerous, conspicuous; color, rich brown, beautifully marked with the darker medullary rays, the sap-wood a little lighter; specific gravity, 0.8602; ash, 1.85.

174.—Jacquinia armillaris, Jacquin,

Amer. 53, t. 39.—Linnæus, Spec. 2 ed. 272.—Aiton, Hort. Kew. i, 257; 2 ed. ii, 5.—Lamarck, Ill. ii, 46, t. 39.—Vahl, Eclog. i, 26.—Swartz, Obs. 85.—Willdenow, Spec. i, 1064; Enum. 246.—Persoon, Syn. i, 234.—Rœmer & Schultes, Syst. iv, 490.—Sprengel, Syst. i, 668.—Don, Miller's Dict. iv, 24.—Dietrich, Syn. i, 638.—Bentham, Bot. Sulphur, 123.—A. De Candolle, Prodr. viii, 149.—Miquel in Martius, Fl. Brasil. ix, 282, t. 27.—Cooper in Smithsonian Rep. 1858, 265.—Chapman, Fl. S. States, 276.—Grisebach, Fl. British West Indies, 397.—Seemann, Jour. Bot. iii, 279.—Vasey, Cat. Forest Trees, 19.—Gray, Syn. Fl. N. America, ii[1], 66.—Hemsley, Bot. Am.-Cent. ii, 294.

Chrysophyllum Barbasco, Lœfling, Iter. 204, 277.

JOE WOOD.

Semi-tropical Florida, on the southern keys; rare; through the West Indies to Brazil.

A low, rigid tree, rarely exceeding in Florida 4 meters in height, with a trunk sometimes 0.15 meter in diameter; in the Bahamas and other West Indian islands probably much larger.

Wood heavy, hard, coarse-grained, checking and shrinking badly in drying, containing many scattered large open ducts; medullary rays numerous, broad, conspicuous; color, light clear brown tinged with yellow; specific gravity, 0.6948; ash, 3.45.

The saponaceous leaves sometimes used as a substitute for soap.

SAPOTACEÆ.

175.—Chrysophyllum oliviforme, Lamarck,

Dict. i, 552; Ill. ii, 42.—Descourtilz, Fl. Med. Antilles, ii, 71.—A. De Candolle, Prodr. viii, 158.—Grisebach, Fl. British West Indies, 398.—Gray, Syn. Fl. N. America, ii[1], 67.—Chapman, Fl. S. States, Suppl. 634.

C. Caneto, β. Linnæus, Sp. 3 ed. 278 (excl. syn. Lœfling).

C. monopyrenum, Swartz, Prodr. 49; Fl. Ind. Occ. i, 480.—Persoon, Syn. i, 236.—Rœmer & Schultes, Syst. iv 703.—Sprengel, Syst. i, 666.—Bot. Mag. t. 3303.—Dietrich, Syn. i, 638.—Miquel in Martius, Fl. Brasil. vii, 94.

C. ferrugineum, Gærtner f. Fruct. Suppl. 120, t. 202, f. 1.

C. microphyllum, Chapman in Coulter's Bot. Gazette, iii, 9.—Vasey, Cat. Forest Trees, 18 [not A. De Candolle].

Semi-tropical Florida, cape Canaveral to the southern keys (Elliott's Key, No-Name Key, Key Largo), west coast, Caloosa river to cape Sable; rare; through the West Indies to Brazil.

A small tree, sometimes 9 meters in height, with a trunk 0.25 to 0.30 meter in diameter.

Wood very heavy, hard, strong, close-grained, checking in drying; medullary rays numerous, not conspicuous; color, light brown shaded with red, the thin sap-wood a little lighter; specific gravity, 0.9360; ash, 1.24.

176.—Sideroxylon Mastichodendron, Jacquin,

Coll. ii, t. 17, f. 5.—Lamarck, Ill. ii, 41, t. 120, f. 2.—Gærtner f. Fruct. Suppl. 125.—Sprengel, Syst. i, 666.—Dietrich, Syn. i, 622.—A. De Candolle, Prodr. viii, 181.—Grisebach, Fl. British West Indies, 399.—Gray, Syn. Fl. N. America ii[1], 67.

Bumelia pallida, Swartz, Prodr. 40; Fl. Ind. Occ. 489.

Achras pallida, Poiret in Lamarck, Dict. vi, 533.

Bumelia Mastichodendron, Rœmer & Schultes, Syst. iv, 493.

S. pallidum, Sprengel, Syst. i, 666.—A. De Candolle, Prodr. viii, 180.—Chapman, Fl. S. States, 274.—Vasey, Cat. Forest Trees, 18.

Bumelia fœtidissima, Nuttall, Sylva, iii, 39, t. 94; 2 ed. ii, 108, t. 94.—Cooper in Smithsonian Rep. 265.

MASTIC.

Semi-tropical Florida, cape Canaveral to the southern keys, west coast, cape Romano to cape Sable; in the West Indies.

A tree often 18 meters in height, with a trunk 0.60 to 0.90 meter in diameter; the largest and most valuable tree of semi-tropical Florida; common.

Wood very heavy, exceedingly hard, strong, close-grained, checking in drying, containing few scattered small open ducts; medullary rays numerous, not conspicuous; color, bright orange, the sap-wood yellow; specific gravity, 1.0109; ash, 5.14; not affected by the teredo; largely used in ship- and boat-building.

The dry fruit, of a pleasant subacid flavor, eagerly eaten by animals.

177.—Dipholis salicifolia, A. De Candolle,

Prodr. viii, 188 (Delessert, Icon. Mex. *ined.* t. 40).—Richard, Fl. Cuba, t. 54[2].—Miquel in Martius, Fl. Brasil. vii, 45, t. 18.—Chapman, Fl. S. States, 274.—Grisebach, Fl. British West Indies, 401.—Vasey, Cat. Forest Trees, 18.—Gray, Syn. Fl. N. America ii[1], 67.

Achras salicifolia, Linnæus, Spec. 2 ed. 470.

Bumelia salicifolia, Swartz, Prodr. 50; Fl. Ind. Occ. i, 491.—Lamarck, Ill. ii, 42.—Willdenow, Spec. i, 1086.—Aiton, Hort. Kew. 2 ed. ii, 12.—Rœmer & Schultes, Syst. iv, 494.—Dietrich, Syn. i, 621.

Sideroxylon salicifolium, Gærtner f. Fruct. Suppl. 124, t. 202.—Lamarck, Ill. ii, 42.

BUSTIC. CASSADA.

Semi-tropical Florida, bay Biscayne to the southern keys; through the West Indies to Brazil.

A tree sometimes 15 meters in height, with a trunk rarely 0.60 meter in diameter; the large trees hollow and defective; rare.

Wood very heavy, exceedingly hard, very strong, close-grained, compact, checking in drying, susceptible of a beautiful polish, containing many scattered large open ducts; color, dark brown or red, the sap-wood lighter; specific gravity, 0.9316; ash, 0.32.

178.—Bumelia tenax, Willdenow,

Spec. i, 1088; Enum. 248; Berl. Baumz. 67.—Aiton, Hort. Kew. 2 ed. ii, 12.—Rœmer & Schultes, Syst. iv, 496.—Elliott, Sk. i, 288.—Persoon, Syn. i, 237.—Hayne, Dend. Fl. 18.—Sprengel, Syst. i, 664.—Eaton, Manual, 6 ed. 60.—Don, Miller's Dict. iv, 30.—Loudon, Arboretum, ii, 1193, f. 1017.—Dietrich, Syn. i, 621.—Spach, Hist. Veg. ix, 388.—Eaton & Wright, Bot. 162.—Nuttall, Sylva, iii, 35, t. 92; 2 ed. ii, 104, t. 92.—A. De Candolle, Prodr. viii, 196.—Darby, Bot. S. States, 428.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 275.—Wood, Cl. Book, 501; Bot. & Fl. 210.—Vasey, Cat. Forest Trees, 19.—Gray, Syn. Fl. N. America, ii[1], 68.

Sideroxylon tenax, Linnæus, Mant. 48.—Jacquin, Coll. ii, 252.—Lamarck, Dict. i, 245; Ill. ii, 42.—Aiton, Hort. Kew, i, 262.—Swartz, Obs. 91.—Desfontaines, Hist. Arb. i, 204.—Robin, Voyages, iii, 461.

Sideroxylon Carolinense, Jacquin, Obs. iii, 3, t. 54.

Sideroxylon sericeum, Walter, Fl. Caroliniana, 100.

Sideroxylon chrysophylloides, Michaux, Fl. Bor.-Am. i, 123.—Rafinesque, Fl. Ludoviciana, 53.

B. chrysophylloides, Pursh, Fl. Am. Sept. i, 155.—Nuttall, Genera, i, 135.—Watson, Dend. Brit. i, t. 10.

?*B. reclinata*, Chapman, Fl. S. States, 275 [not Ventenat].

North Carolina, south near the coast to cape Canaveral and Cedar Keys, Florida.

A small tree, 6 to 9 meters in height, with a trunk sometimes 0.15 meter in diameter; sandy soil.

Wood heavy, hard, not strong, very close-grained, compact, susceptible of a beautiful polish; well characterized, as in all the North American species, by large open ducts, defining, with several rows, the rings of annual growth, and connected by conspicuous branching groups of similar ducts, giving to a cross-section a beautifully reticulated appearance; medullary rays numerous, thin; color, light brown streaked with white, the sap-wood lighter; specific gravity, 0.7293; ash, 0.78.

179.—Bumelia lanuginosa, Persoon.

Syn. i, 237.—Pursh, Fl. Am. Sept. i, 155.—Nuttall, Genera, i, 135.—Rœmer & Schultes, Syst. iv, 497.—Elliott, Sk. i, 288.—Eaton, Manual, 6 ed. 60.—Don, Miller's Dict. iv, 30.—Loudon, Arboretum, ii, 1194.—Eaton & Wright, Bot. 162.—A. De Candolle, Prodr. viii, 190.—Darby, Bot. S. States, 428.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 275.—Lesquereux in Owen's 2d Rep. Arkansas, 374.—Wood, Cl. Book, 501; Bot. & Fl. 210.—Gray, Manual N. States, 5 ed. 308; Hall's Pl. Texas, 15; Syn. Fl. N. America, ii¹, 68.—Young, Bot. Texas, 377.—Vasey, Cat. Forest Trees, 19.

?*Sideroxylon tenax*, Walter, Fl. Caroliniana, 100.

Sideroxylon lanuginosum, Michaux, Fl. Bor.-Am. i, 122.

?*B. oblongifolia*, Nuttall, Genera, i, 135; Sylva, iii, 33; 2 ed. ii, 102.—Sprengel, Syst. i, 664.—Eaton, Manual, 6 ed. 60.—Eaton & Wright, Bot. 162.—Don, Miller's Dict. iv, 30.—Loudon, Arboretum, ii, 1194.—Dietrich, Syn. i, 621.—A. De Candolle, Prodr. viii, 190.—Lesquereux in Owen's 2d Rep. Arkansas, 374.

B. ferruginea, Nuttall, Sylva, iii, 34; 2 ed. ii, 103.

B. tomentosa, A. De Candolle, Prodr. viii, 190.

B. arborea, Buckley in Proc. Philadelphia Acad. 1861, 461.

GUM ELASTIC. SHITTIM WOOD.

Georgia and northern Florida to Mobile bay, Alabama; southern Illinois and southern Missouri, through Arkansas to the valley of the Rio Grande, Texas (Eagle pass, *Havard*) (*B. oblongifolia*).

An evergreen tree, sometimes 18 meters in height, with a trunk 0.90 meter in diameter, or in the Atlantic states much smaller, rarely exceeding 6 meters in height; common and reaching its greatest development in the rich bottom lands of eastern Texas.

A low, depressed form of the sand-hills of the Altamaha river, Georgia, still to be rediscovered, with small leaves and "edible fruit as large as a small date", is var. macrocarpa, Gray, Syn. Fl. N. America, ii¹, 68 (*B. macrocarpa*, Nuttall, Sylva, iii, 37; 2 ed. ii, 106).

Wood heavy, soft, weak, close-grained, very compact, the open ducts conspicuous; medullary rays numerous, thin; color, light brown or yellow, the sap-wood lighter; specific gravity, 0.6544; ash, 1.23; somewhat used in cabinet-making, for which it is well suited.

A clear, very viscid gum exuded from the freshly-cut wood is sometimes used domestically.

180.—Bumelia spinosa, A. De Candolle.

Prodr. viii, 191 (Delessert, Icon. Mex. *ined.* t. 75).—Hemsley, Bot. Am.-Cent. ii, 299.—Watson in Proc. Am. Acad. xviii, 112.

Santa Catalina mountains, Arizona, at an elevation of 2,700 feet (*Pringle*); Parras and Saltillo, Mexico (*Palmer*, No. 787).

A small tree, 6 to 7 meters in height, with a trunk 0.20 to 0.25 meter in diameter; dry, gravelly soil, near water-courses.

Wood heavy, hard, very close-grained, compact, the open ducts conspicuous; medullary rays thin, obscure; color, light rich brown or yellow, the sap-wood lighter; specific gravity, 0.6603; ash, 1.24.

181.—Bumelia lycioides, Gærtner f.

Fruct. Suppl. 127, t. 120.—Persoon, Syn. i, 237.—Willdenow, Enum. 249; Berl. Baumz. 68.—Pursh, Fl. Am. Sept. i, 237.—Nuttall, Genera, i, 135; Sylva, iii, 31, t. 91; 2 ed. ii, 101, t. 91.—Rœmer & Schultes, Syst. iv, 495.—Hayne, Dend. Fl. 19.—Elliott, Sk. i, 287.—Sprengel, Syst. i, 664.—Eaton, Manual, 6 ed. 60.—Don, Miller's Dict. iv, 30.—Loudon, Arboretum, ii, 1193, f. 1016.—Dietrich, Syn. i, 621.—Spach, Hist. Veg. ix, 388.—Eaton & Wright, Bot. 162.—A. De Candolle, Prodr. viii, 189.—Griffith, Med. Bot. 441.—Darby, Bot. S. States, 427.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 275.—Lesquereux in Owen's 2d Rep. Arkansas, 374.—Wood, Cl. Book, 501; Bot. & Fl. 210.—Gray, Manual N. States, 5 ed. 308; Syn. Fl. N. America, ii¹, 68.—Young, Bot. Texas, 376.—Vasey, Cat. Forest Trees, 19.—Hemsley, Bot. Am.-Cent. ii, 298.

Sideroxylon lycioides, Linnæus, Hort. Cliff. 488 (excl. hab.).—Lamarck, Dict. i, 246; Ill. ii, 42.—Aiton, Hort. Kew. i, 262; 2 ed. ii, 13.—Willdenow, Spec. i, 1090.—Michaux, Fl. Bor.-Am. i, 122.—Pursh, Fl. Am. Sept. i, 155.—Jaume St. Hilaire, Fl. & Pom. Am. Franc. t. 81.

Sideroxylon decandrum, Linnæus, Mant. 48.—Willdenow, Spec. i, 1091.

Syderoxylon læve, Walter, Fl. Caroliniana, 100.

IRON WOOD. SOUTHERN BUCKTHORN.

Coast of Virginia and southern Illinois, south to Mosquito inlet and Caloosa river, Florida, and through southern Missouri, Arkansas, and Texas to the valley of the Rio Concho, Texas.

A small tree, sometimes 9 to 12 meters in height, with a trunk rarely exceeding 0.15 meter in diameter; low, rich soil, or often, in the Atlantic and Gulf states, a low, semi-prostrate shrub, described as—

var. reclinatum, Gray, Syn. Fl. N. America, ii[1], 68.

Sideroxylon reclinatum, Michaux, Fl. Bor.-Am. i, 122.

B. reclinata, Ventenat, Choix, t. 22.—Persoon, Syn. i, 237.—Pursh, Fl. Am. Sept. i, 155.—Rœmer & Schultes, Syst. iv, 496.—Elliott, Sk. i, 287.—Eaton, Manual, 6 ed. 60.—Dietrich, Syn. i, 621.—Don, Miller's Dict. iv, 30.—Loudon, Arboretum, ii, 1193.—A. De Candolle, Prodr. viii, 190.—Darby, Bot. S. States, 428.—Wood, Cl. Book, 501; Bot. & Fl. 210.

Wood heavy, hard, not strong, close-grained, compact; medullary rays numerous, thin; color, light brown or yellow, the sap-wood lighter; specific gravity, 0.7467; ash, 0.81.

182.—Bumelia cuneata, Swartz,

Fl. Ind. Occ. i, 496.—Persoon, Syn. i, 237.—Rœmer & Schultes, Syst. iv, 498.—Sprengel, Syst. i, 665.—Don, Miller's Dict. iv, 30.—Dietrich, Syn. i, 621.—Grisebach, Fl. British West Indies, 401.—Gray, Syn. Fl. N. America. ii[1], 68.—Hemsley, Bot. Am.-Cent. ii, 297.

Achras cuneifolia, Poiret in Lamarck, Dict. vi, 534.

B. angustifolia, Nuttall, Sylva, iii, 38, t. 93; 2 ed. ii, 106, t. 93.—Cooper in Smithsonian Rep. 1858, 265.

Sideroxylon cuneatum, A. De Candolle, Prodr. viii, 181.

B. parvifolia, A. De Candolle, Prodr. viii, 190.—Chapman, Fl. S. States, 275.—Vasey, Cat. Forest Trees, 19.

B. myrsinifolia, A. De Candolle, Prodr. viii, 192.

B. reclinata, Torrey, Bot. Mex. Boundary Survey, 109 [not Ventenat].

ANTS' WOOD. DOWNWARD PLUM. SAFFRON PLUM.

A small tree, rarely exceeding 4 meters in height, with a trunk sometimes 0.30 meter in diameter.

Semi-tropical Florida, Merritt's island, Indian river, and southward to the southern keys, not rare; west coast, Cedar Keys to cape Romano, rare; rocky shores and in the interior of low, barren keys; Texas, valley of the lower Rio Grande, Ross to Laredo, and southward into northern Mexico; in the West Indies.

Wood heavy, hard, not strong, very close-grained, compact, satiny, susceptible of a beautiful polish; medullary rays numerous, thin; color, light brown or orange, the sap-wood lighter; specific gravity, 0.7959; ash, 1.90.

183.—Mimusops Sieberi, A. De Candolle,

Prodr. viii, 204.—Chapman, Fl. S. States, 275.—Vasey, Cat. Forest Trees, 18.—Gray, Syn. Fl. N. America, ii[1], 69.

Achras Zapotilla, var. *parviflora*, Nuttall, Sylva, iii, 28, t. 90; 2 ed. ii, 97, t. 90.

M. dissecta, Grisebach, Fl. British West Indies, 400, in part.

Achras mammosa, Sieber, Pl. Trin. No. 33 [not Linnæus nor Bonpland].

WILD DILLY.

Semi-tropical Florida, on the southern keys, common; in the West Indies.

A small, low, gnarled tree, sometimes 9 meters in height, with a trunk 0.30 to 0.40 meter in diameter; generally hollow and defective.

Wood very heavy, hard, strong, close-grained, inclined to check in drying, susceptible of a beautiful polish; medullary rays numerous, very obscure; color, rich, very dark brown, the sap-wood lighter; specific gravity, 1.0838; ash, 2.61.

EBENACEÆ.

184.—Diospyros Virginiana, Linnæus,

Spec. 1 ed. 1057.—Kalm, Travels, English ed. i, 127, 345.—Marshall, Arbustum, 40.—Wangenheim, Amer. 84, t. 28, f. 58.—Walter, Fl. Caroliniana, 253.—Aiton, Hort. Kew. iii, 446; 2 ed. v, 478.—Abbot, Insects Georgia, ii, t. 61, 74.—B. S. Barton, Coll. i, 11, 45; ii, 52.—Michaux, Fl. Bor.-Am. ii, 258.—Gærtner f. Fruct. Suppl. 138, t. 207.—Willdenow, Spec. iv, 1107; Enum. 1061; Berl. Baumz. 127.—Poiret in Lamarck, Dict. v, 528.—Persoon, Syn. ii, 1806.—Desfontaines, Hist. Arb. i, 208.—Titford, Hort. Bot. Am. 106.—Michaux f. Hist. Arb. Am. ii, 195, t. 12; N. American Sylva, 3 ed. ii, 157, t. 93.—Pursh, Fl. Am. Sept. ii, 265.—Nouveau Duhamel, vi, 84.—Barton, Prodr. Fl. Philadelph. 97; Compend. Fl. Philadelph. ii, 198.—Eaton, Manual, 117; 6 ed. 126.—Nuttall, Genera, ii, 240.—Hayne, Dend. Fl. 228.—Elliott, Sk. ii, 712.—Collin, Förslag af några Nord-Americas Träd. 23.—Torrey, Compend. Fl. N. States, 375.—Audubon, Birds, t. 87.—Sprengel, Syst. ii, 202.—Watson, Dend. Brit. ii, 146.—Rafinesque, Med. Bot. i, 153, t. 32.—Beck, Bot. 229.—Don, Miller's Dict. iv, 39.—Loudon, Arboretum, ii, 1195, t. 200, 201.—Eaton & Wright, Bot. 225.—A. De Candolle, Prodr. iv, 228.—Browne, Trees of America, 368.—Griffith, Med. Bot. 435, f. 196.—Dietrich, Syn. v, 437.—Belg. Hort. iv, 118 & t.—Darby, Bot. S. States, 425.—Darlington, Fl. Cestrica, 3 ed. 176.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 273.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 70.—Lesquereux in Owen's 2d Rep. Arkansas, 374.—"Ettingsh. Blatt-Skel. Dikot. 89, t. 38, f. 12."—Wood, Cl. Book, 500; Bot. & Fl. 209.—Porcher, Resources S. Forests, 385.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 200.—Gray, Manual N. States, 5 ed. 308; Hall's Pl. Texas, 15; Syn. Fl. N. America, ii[1], 69.—Koch, Dendrologie, ii, 204.—Hiern in Trans. Cambridge Phil. Soc. xii[1], 224.—Vasey, Cat. Forest Trees, 18.—Broadhead in Coulter's Bot. Gazette, iii, 59.—Ridgway in Proc. U. S. Nat. Mus. 1882, 68.

D. concolor, Mœnch, Meth. 471.

D. Guaiacana, Robin, Voyages, iii, 417.

D. pubescens, Pursh, Fl. Am. Sept. i, 265 [not Persoon].—Rafinesque, Fl. Ludoviciana, 139.—Don, Miller's Dict. iv, 38.—Loudon, Arboretum, ii, 1196.

D. Virginiana, var. *pubescens*, Nuttall, Genera, ii, 240.—Elliott, Sk. ii, 713.

D. Virginiana, var. *microcarpa*, Rafinesque, Med. Bot. i, 115.

D. Virginiana, var. *concolor*, Rafinesque, Med. Bot. i, 155.

D. Virginiana, var. *macrocarpa*, Rafinesque, Med. Bot. i, 155.

D. Persimon, Wikström, Jahr. Schwed. 1830, 92.

D. ciliata, Rafinesque, New Fl. & Bot. i, 25 [not A. De Candolle].

D. calycina, Audibert, Cat. Hort. Tonn. (ex. Spach).—Loudon, Gard. Mag. 1841, 394.

D. angustifolia, Audibert, Cat. Hort. Tonn. (ex. Spach).—Loudon, Gard. Mag. 1841, 394.

D. lucida, Hort.—Loudon, Gard. Mag. 1841, 394.

D. intermedia, Hort.—Loudon, Gard. Mag. 1841, 394.

PERSIMMON.

Light-house point, New Haven, Connecticut, Long Island, New York, and southward to bay Biscayne and the Caloosa river, Florida, southern Alabama and Mississippi; southern Ohio to southeastern Iowa, southern Missouri, Arkansas, eastern Kansas, the Indian territory, and the valley of the Colorado river, Texas.

A tree 10 to 20 or, exceptionally, 30 to 35 meters in height (*Ridgway*), with a trunk sometimes 0.60 meter in diameter; very common and often entirely occupying abandoned fields throughout the middle and lower regions of the southern Atlantic and Gulf states, reaching its greatest development in the rich bottom lands of the lower Ohio basin.

Wood heavy, hard, strong, very close-grained, compact, susceptible of a high polish, containing few scattered, open ducts, the rings of annual growth marked by one or more rows of similar ducts; medullary rays numerous, conspicuous; color, dark brown, or often nearly black, the thick sap-wood light brown, often containing numerous darker spots; specific gravity of the sap-wood, 0.7908; ash, 0.96; used in turnery for shoe-lasts, plane-stocks, etc., and preferred for shuttles; the dark heart-wood only developed in very old specimens and rarely seen.

The yellow edible fruit exceedingly austere until after frost, then becoming sweet and luscious, or in the Gulf states ripening in August without austerity; sometimes used domestically, fermented with hops, corn-meal, or wheat bran, as a beverage under the name of "simmon beer".

A decoction of the bitter and astringent unripe fruit and inner bark occasionally used in the treatment of diarrhœa, sore throat, hemorrhage, etc. (*B. R. Smith in Am. Jour. Pharm.* October, 1846, 215.—*J. E. Bryan in same*, May, 1860, 215.—*U. S. Dispensatory*, 14 ed. 380.—*Nat. Dispensatory*, 2 ed. 514).

185.—Diospyros Texana, Scheele,

Linnæa, xxii, 145; Rœmer, Texas, 441; Appx. 763.—Walpers, Ann. iii, 14.—Torrey, Bot. Mex. Boundary Survey, 109.—Cooper in Smithsonian Rep. 1858, 266.—Young, Bot. Texas, 376.—Hiern in Trans. Cambridge Phil. Soc. xii[1], 238.—Gray, Hall's Pl. Texas, 15; Syn. Fl. N. America, ii[1], 70.—Vasey, Cat. Forest Trees, 18.—Hemsley, Bot. Am.-Cent. ii, 300.

BLACK PERSIMMON. MEXICAN PERSIMMON. CHAPOTE.

Western Texas, Matagorda bay to the valley of the Concho river; southward into northern Mexico.

A small tree, 4 to 10 meters in height, with a trunk sometimes 0.30 meter in diameter, or more often a low shrub; not rare, and reaching its greatest development in Texas along the rich bottoms of the Guadalupe river; borders of prairies, in rich soil; in Mexico more common and of larger size.

Wood heavy, hard, very close-grained, compact, satiny, taking a beautiful polish, containing few minute, scattered, open ducts; medullary rays numerous, thin; color, nearly black, often streaked with yellow, the thick sap-wood clear bright yellow; specific gravity, 0.8460; ash, 3.33; used in turnery for the handles of tools, etc., suitable for wood-engraving, and probably the best substitute among American woods for box-wood.

The small black fruit sweet and insipid.

STYRACACEÆ.

186.—Symplocos tinctoria, L'Heritier,

Trans. Linnæan Soc. i, 176.—Willdenow, Spec. iii, 1436.—Aiton, Hort. Kew. iv, 419.—Sprengel, Syst. iii, 339.—Don, Miller's Dict. iv, 2.—A. De Candolle, Prodr. viii, 254.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 272.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 65.—Lesquereux in Owen's 2d Rep. Arkansas, 374.—Wood, Cl. Book, 499; Bot. & Fl. 209.—Gray, Manual N. States, 5 ed. 310; Syn. Fl. N. America, ii[1], 71.—Young, Bot. Texas, 374.—Vasey, Cat. Forest Trees, 18.

Hopea tinctoria, Linnæus, Mant. 105.—Walter, Fl. Caroliniana, 189.—Michaux, Fl. Bor.-Am. ii, 42.—Persoon, Syn. ii, 72.—Desfontaines, Hist. Arb. i, 217.—Gærtner f. Fruct. Suppl. 146, t. 209, f. 2.—Robin, Voyages, iii, 419.—Michaux f. Hist. Arb. Am. iii, 61, t. 9; N. American Sylva, 3 ed. iii, 45, t. 117.—Pursh, Fl. Am. Sept. ii, 451.—Nuttall, Genera, ii, 83.—Elliott, Sk. ii, 173.—Eaton, Manual, 6 ed. 176.—Spach, Hist. Veg. ix, 420.—Eaton & Wright, Bot. 272.—Darby, Bot. S. States, 425.—Porcher, Resources S. Forests, 388.

HORSE SUGAR. SWEET LEAF.

Southern Delaware, south to about latitude 30° in Florida, and west through the Gulf states to western Louisiana and southern Arkansas (Malvern, Texarkana, *Letterman*).

A small tree, 6 to 10 meters in height, with a trunk 0.20 to 0.25 meter in diameter, or often a low shrub; borders of cypress swamps or in deep, damp, shaded woods.

Wood light, soft, not strong, close-grained, checking in drying; medullary rays numerous, thin; color, light red, or often nearly white, the sap-wood lighter; specific gravity, 0.5325; ash, 0.68.

Leaves sweet, greedily eaten by cattle and horses, and yielding, as does also the bark, a yellow dye.

187.—Halesia diptera, Linnæus,

Spec. 2 ed. 636.—Marshall, Arbustum, 57.—Lamarck, Dict. ii, 66.—Willdenow, Spec. ii, 849; Enum. 496; Berl. Baumz. 171.—Cavanilles, Diss. vi, 338, t. 187.—Michaux, Fl. Bor.-Am. ii, 40.—Persoon, Syn. ii, 4.—Aiton, Hort. Kew. 2 ed. iii, 143.—Nouveau Duhamel, v, 144.—Pursh, Fl. Am. Sept. ii, 450.—Nuttall, Genera, ii, 83.—Elliott, Sk. i, 508.—Hayne, Dend. Fl. 66.—Loddiges, Bot. Cab. t. 1172.—Sprengel, Syst. iii, 84.—Eaton, Manual, 6 ed. 164.—Don, Miller's Dict. iv, 7.—Loudon, Arboretum, ii, 1191, f. 1014.—Spach, Hist. Veg. ix, 426.—Eaton & Wright, Bot. 260.—A. De Candolle, Prodr. viii, 270.—Miers, Contrib. i, 193.—Darby, Bot. S. States, 425.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 271.—Wood, Cl. Book, 499; Bot. & Fl. 209.—Koch, Dendrologie, ii, 201.—Vasey, Cat. Forest Trees, 18.—Gray, Syn. Fl. N. America, ii[1], 71.

H. reticulata, Buckley in Proc. Philadelphia Acad. 1860, 444.

SNOW-DROP TREE. SILVER-BELL TREE.

South Carolina to northern Florida, near the coast, and west through the lower region of the Gulf states to eastern Texas and Garland county, Arkansas (*Harvey*).

A small tree, sometimes 6 to 10 meters in height, with a trunk 0.10 to 0.20 meter in diameter, or often a shrub sending up many clustered stems from the root; borders of swamps, in low, wet woods.

Wood light, soft, strong, very close-grained, compact; medullary rays numerous, thin; color, light brown, the sap-wood lighter; specific gravity, 0.5705; ash, 0.42.

188.—Halesia tetraptera, Linnæus,

Spec. 2 ed. 636.—Marshall, Arbustum, 57.—Gærtner, Fruct. i, 160, t. 32, f. 2.—Lamarck, Dict. ii, 66; Ill. ii, 521, t. 404, f. 1.—Aiton, Hort. Kew. ii, 125; 2 ed. iii, 143.—Mœnch, Meth. 507.—Abbot, Insects Georgia i, t. 46.—Willdenow, Spec. ii, 849; Enum. 496; Berl. Baumz. 170.—Cavanilles, Diss. vi, 338, t. 186.—Michaux, Fl. Bor.-Am. ii, 40.—Persoon, Syn. ii, 4.—Desfontaines, Hist. Arb. i, 216.—Nouveau Duhamel, v, 143, t. 45.—Pursh, Fl. Am. Sept. ii, 449.—Nuttall, Genera, ii, 82.—Bot. Mag. t. 910.—Elliott, Sk. i, 507.—Hayne, Dend. Fl. 66.—Loddiges, Bot. Cab. t. 1173.—Sprengel, Syst. iii, 84.—Guimpel, Otto & Hayne, Abb. Holz. 43, t. 35.—Eaton, Manual, 6 ed. 164.—Don, Miller's Dict. iv, 6.—Loudon, Arboretum, ii, 1190, f. 1012, t. 196, 197.—Spach, Hist. Veg. ix, 426.—Eaton & Wright, Bot. 260.—A. De Candolle, Prodr. viii, 270.—Browne, Trees of America, 366.—Miers, Contrib. i, 191, t. 93.—Darby, Bot. S. States, 425.—Cooper in Smithsonian Rep. 1858, 253.—Agardh, Theor. & Syst. Pl. t. 22, f. 16, 17.—Chapman, Fl. S. States, 271.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 80.—Wood, Cl. Book, 499; Bot. & Fl. 209.—Örsted in Saerskitt. Aftryk. af Nat. For. Viden. Meddelt. Nos. 1-6, 1866, 89, f. 2.—Gray, Manual N. States, 5 ed. 310; Syn. Fl. N. America, ii[1], 71.—Koch, Dendrologie, ii, 199.—Young, Bot. Texas, 374.—Vasey, Cat. Forest Trees, 18.

RATTLEBOX. SNOW-DROP TREE. SILVER-BELL TREE. CALICO WOOD.

Mountains of West Virginia to southern Illinois, south to middle Florida, central Alabama and Mississippi, and through Arkansas to western Louisiana and eastern Texas.

A tree 10 to 15 meters in height, with a trunk rarely 0.60 meter in diameter, or often a tall shrub; generally along streams, in rich soil; most common and reaching its greatest development in the southern Alleghany mountains; common in cultivation.

Wood light, soft, close-grained, compact; medullary rays numerous, thin; color, light brown, the sap-wood lighter; specific gravity, 0.5628; ash, 0.40.

NOTE.—*Halesia parviflora*, Michaux, of southern Georgia, and Florida, does not attain the size or habit of a tree.

OLEACEÆ.

189.—Fraxinus Greggii, Gray,

Proc. Am. Acad. vii, 64; Syn. Fl. N. America, ii[1], 74.—Hemsley, Bot. Am.-Cent. ii, 305.

F. Schiedeana, var. *parvifolia*, Torrey, Bot. Mex. Boundary Survey, 166.

Western Texas, valley of the Rio Grande, from the San Pedro to the Pecos river; southward into Mexico.

A small tree, sometimes 7 to 9 meters in height, with a trunk 0.10 to 0.15 meter in diameter (Lampasas mountains, Mexico, *Buckley*), or often a graceful shrub; limestone soil.

Wood heavy, hard, very close-grained, compact; layers of annual growth and medullary rays obscure; color, brown, the sap-wood lighter; specific gravity, 0.7904; ash, 0.93.

190.—Fraxinus anomala, Torrey;

Watson in King's Rep. v, 283.—Parry in Am. Nat. ix, 203.—Vasey, Cat. Forest Trees, 20.—Gray, Syn. Fl. N. America, ii[1], 74.

Southwestern Colorado, McElmo river (*Brandegee*), southern Utah, Kanawa, Leeds, Silver Leaf, Labyrinth cañon of the Colorado river, valley of the Rio Virgen, near Saint George.

A small tree, sometimes 6 meters in height, with a trunk 0.15 to 0.20 meter in diameter, with the habit of a dwarf pear tree; common on elevated sandstone *mesas* and plateaus.

Wood heavy, hard, coarse-grained, containing many large, open, scattered ducts, the layers of annual growth marked by several rows of similar ducts; medullary rays numerous, thin; color, light brown, the sap-wood lighter; specific gravity, 0.6597; ash, 0.85.

191.—Fraxinus pistaciæfolia, Torrey,

Pacific R. R. Rep. iv, 128; Bot. Mex. Boundary Survey, 166.—Cooper in Smithsonian Rep. 1858, 260.—Gray, Hall's Pl. Texas, 19; Syn. Fl. N. America, ii[1], 74.—Vasey, Cat. Forest Trees, 20.—Rusby in Bull. Torrey Bot. Club. ix, 54.—Hemsley, Bot. Am.-Cent. ii, 305.—Watson in Proc. Am. Acad. xviii, 113.

F. velutina, Torrey in Emory's Rep. 149.

F. coriacea, Watson in Am. Nat. vii, 302, in part.—Rothrock in Wheeler's Rep. vi, 186, t. 22.—Vasey, Cat. Forest Trees, 20.

F. pistaciæfolia, var. *coriacea*, Gray, Syn. Fl. N. America, ii[1], 74.

ASH.

Mountains of western Texas, through southern New Mexico, southern and eastern Arizona, to southern Nevada (Ash Meadows, *Rothrock*); in northern Mexico.

A small tree, 10 to 12 meters in height, with a trunk rarely 0.45 meter in diameter; generally along borders of streams, in elevated cañons, less commonly in dry soil, the foliage then thick and coriaceous or, more rarely, velvety tomentose (var. *coriacea*, *Gray*, *l. c.*); the large specimens generally hollow and defective.

Wood heavy, soft, not strong, coarse-grained, compact; medullary rays numerous, thin; color, light brown, the sap-wood lighter; specific gravity, 0.6810; ash, 0.62; occasionally used in wagon-building, for ax handles, etc.

192.—Fraxinus Americana, Linnæus,

Spec. 2 ed. 1510.—Walter, Fl. Caroliniana, 254.—Aiton, Hort. Kew. iii, 445; 2 ed. v, 476.—Willdenow, Spec. iv, 1102; Enum. 1060; Berl. Baumz. 145.—Muhlenberg & Willdenow in Neue Schriften Gesell. Nat. Fr. Berlin, iii, 393.—Vahl Enum. i, 49.—Persoon, Syn. ii, 604.—Desfontaines, Hist. Arb. i, 102.—Nouveau Duhamel, iv, 63.—Michaux f. Hist. Arb. Am. iii, 106, t. 8; N. American Sylva, 3 ed. iii, 49, t. 118 (excl. fruit).—Barton, Prodr. Fl. Philadelph. 97; Compend. Fl. Philadelph. ii, 192.—Eaton, Manual, 114.—Hayne, Dend. Fl. 221.—Cobbett, Woodlands, 131.—Sprengel, Syst. i, 95.—Beck, Bot. 232.—Loudon, Arboretum, ii, 1232, f. 1055 & t.—Penn. Cycl. x, 455.—Bigelow, Fl. Boston. 3 ed. 408.—Hooker, Fl. Bor.-Am. ii, 51.—Torrey, Fl. N. York, ii, 125, t. 89.—A. De Candolle, Prodr. viii, 177.—Browne, Trees of America, 394.—Darlington, Fl. Cestrica, 3 ed. 238.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 369.—Curtis in Geological Rep. N. Carolina, 1860, iii, 54.—Wood, Cl. Book, 597; Bot. & Fl. 277.—Lesquereux in Owen's 2d Rep. Arkansas, 382.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 206.—Porcher, Resources S. Forests, 494.—Gray, Manual N. States, 5 ed. 401; Hall's Pl. Texas, 19; Syn. Fl. N. America, ii[1], 74.—Koch, Dendrologie, ii, 252.—Young, Bot. Texas, 452.—Vasey, Cat. Forest Trees, 20.—Macoun in Geological Rep. Canada, 1875-'76, 207.—Sears in Bull. Essex Inst. xiii, 177.—Bell in Geological Rep. Canada, 1879-'80, 52c.—Ridgway in Proc. U. S. Nat. Mus. 1882, 68.

F. Caroliniensis, Wangenheim, Amer. 81.

F. alba, Marshall, Arbustum, 51.—Hayne, Dend. Fl. 223.

F. acuminata, Lamarck, Dict. ii, 542.—Bosc in Mem. Inst. 1808, 205.—Pursh, Fl. Am. Sept. ii, 9.—Nuttall, Genera, ii, 231; Sylva, iii, 64; 2 ed. ii, 129.—Hayne, Dend. Fl. 220.—Elliott, Sk. ii, 672.—Sprengel, Syst. i, 95.—Torrey, Compend. Fl. N. States, 371; Nicollet's Rep. 154.—Rœmer & Schultes, Syst. iii, 277.—Darlington, Fl. Cestrica, 2 ed. 8.—Eaton, Manual, 6 ed. 148.—Beck, Bot. 232.—Don, Miller's Dict. iv, 56.—Eaton & Wright, Bot. 247.—Emerson, Trees Massachusetts, 333; 2 ed. ii, 376 & t.—Darby, Bot. S. States, 429.—Porcher, Resources S. Forests, 494.

? *F. juglandifolia*, Lamarck, Dict. ii, 542.—Bosc in Mem. Inst. 1808, 208.—Desfontaines, Hist. Arb. i, 103.—Hayne, Dend. Fl. 221.—Beck, Bot. 232.—Don, Miller's Dict. iv, 55.

F. Canadensis, Gærtner, Fruct. i, 222, t. 49.

F. epiptera, Michaux, Fl. Bor.-Am. ii, 256.—Vahl, Enum. i, 50.—Willdenow, Spec. iv, 1102; Berl. Baumz. 147.—Persoon, Syn. ii, 603.—Desfontaines, Hist. Arb. i, 103.—Poiret, Suppl. ii, 671.—Nuttall, Genera, ii, 231.—Pursh, Fl. Am. Sept. i, 8.—Elliott, Sk. ii, 672.—Sprengel, Syst. i, 96.—Rœmer & Schultes, Syst. 278.—Eaton, Manual, 6 ed. 148.—Don, Miller's Dict. iv, 55.—Loudon, Arboretum, ii, 1237.—Penn. Cycl. x, 455.—Eaton & Wright, Bot. 247.—Hooker, Fl. Bor.-Am. ii, 50.—A. De Candolle, Prodr. viii, 277.—Darby, Bot. S. States, 429.—Cooper in Smithsonian Rep. 1858, 399.

F. lancea, Bosc in Mem. Inst. 1808, 209 (*fide* Loudon, Arboretum, ii, 1237).

F. discolor, Muhlenberg, Cat. 111.—Rafinesque, Fl. Ludoviciana, 37.—Spach, Hist. Veg. viii, 297.

F. Americana, var. *latifolia*, Loudon, Arboretum, ii, 1232.—Browne, Trees of America, 396.

? *F. juglandifolia*, var. *serrata*, Hayne, Dend. Fl. 221.

? *F. juglandifolia*, var. *subserrata*, Hayne, Dend. Fl. 221.

WHITE ASH.

Nova Scotia, New Brunswick, southern Ontario to northern Minnesota, south to northern Florida, central Alabama and Mississippi, and west to eastern Nebraska, eastern Kansas, the Indian territory, and the valley of the Trinity river, Texas.

A large tree of the first economic value, 15 to 30 or, exceptionally, 42 meters (*Ridgway*) in height, with a trunk 1.20 to 1.80 meter in diameter; low, rich, rather moist soil, reaching its greatest development in the bottom lands of the lower Ohio River basin; toward its western and southwestern limits smaller, of less economic value, and generally replaced by the green ash (*Fraxinus viridis*).

A form of the southern states with remarkably small fruit has been described as—

var. **microcarpa**, Gray, Syn. Fl. N. America, ii[1], 75.

F. albicans, Buckley in Proc. Philadelphia Acad. 1862, 4, in part.

F. Curtissii, Vasey, Cat. Forest Trees, 20.

Wood heavy, hard, strong, ultimately brittle, coarse-grained, compact; layers of annual growth clearly marked by several rows of large open ducts, occupying in slowly-grown specimens nearly the entire width of the annual rings; medullary rays numerous, obscure; color, brown, the sap-wood much lighter, often nearly white; specific gravity, 0.6543; ash, 0.42; specific gravity of the heavier sap-wood, 0.7180; largely used in the manufacture of agricultural implements, carriages, handles, oars, and for interior and cabinet work.

Var. Texensis,

Gray, Syn. Fl. N. America, ii[1], 75.

F. albicans, Buckley in Proc. Philadelphia Acad. 1862, 4, in part.

F. coriacea, Watson in Am. Nat. vii, 302, in part.

F. pistaciæfolia, Gray, Hall's Pl. Texas, 19 [not Torrey].

Western Texas, Dallas (*Reverchon*), to the valley of the Devil's river.

A small tree, 10 to 12 meters in height, with a trunk sometimes 0.60 meter in diameter; dry, rocky hills and ridges.

Wood heavy, hard, strong, rather close-grained, compact; layers of annual growth marked by one or more rows of open ducts; medullary rays numerous, obscure; color, light brown, the sap-wood lighter; specific gravity, 0.7636; ash, 0.70; used for the same purposes as that of the species.

193.—Fraxinus pubescens, Lamarck,

Dict. ii, 548.—Walter, Fl. Caroliniana, 254.—Willdenow, Spec. iv, 1103; Enum. 1060; Berl. Baumz. 148.—Muhlenberg & Willdenow in Neue Schriften Gesell. Nat. Fr. Berlin, iii, 393.—Vahl, Enum. i, 51.—Persoon, Syn. ii, 604.—Desfontaines, Hist. Arb. i, 102.—Nouveau Duhamel, iv, 62.—Aiton, Hort. Kew. 2 ed. v, 476.—Pursh, Fl. Am. Sept. i, 9.—Roemer & Schultes, Syst. 279.—Nuttall, Genera, ii, 231.—Hayne, Dend. Fl. 223.—Elliott, Sk. ii, 673.—Sprengel, Syst. i, 95.—Torrey, Compend. Fl. N. States, 371; Fl. N. York, ii, 126.—Beck, Bot. 232.—Eaton, Manual, 6 ed. 148.—Don, Miller's Dict. iv, 55.—Loudon, Arboretum, ii, 1233, f. 1056.—Penn. Cycl. x, 455.—Eaton & Wright, Bot. 247.—Hooker, Fl. Bor.-Am. ii, 51.—A. De Candolle, Prodr. viii, 278.—Emerson, Trees Massachusetts, 337; 2 ed. ii, 380.—Darlington, Fl. Cestrica, 3 ed. 239.—Darby, Bot. S. States, 429.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 370.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 54.—Wood, Cl. Book, 597; Bot. & Fl. 277.—Gray, Manual N. States, 5 ed. 402; Syn. Fl. N. America, ii[1], 75.—Young, Bot. Texas, 452.—Vasey, Cat. Forest Trees, 20.—Sears in Bull. Essex Inst. xiii, 177.—Ridgway in Proc. U. S. Nat. Mus. 1882, 69.

F. Pennsylvanica, Marshall, Arbustum, 51.—Koch, Dendrologie, ii, 253.

F. nigra, Du Roi, Harbk. 2 ed. i, 398 [not Marshall].

F. pubescens, var. *longifolia*, Willdenow, Spec. iv, 1104.—Vahl, Enum. i, 52.—Pursh, Fl. Am. Sept. ii, 9.—Loddiges, Cat. ed. 1836.—Loudon, Arboretum, ii, 1233.—A. De Candolle, Prodr. viii, 278.

F. pubescens, var. *latifolia*, Willdenow, Spec. iv, 1104.—Vahl, Enum. i, 52.—Pursh, Fl. Am. Sept. i, 9.—Hayne, Dend. Fl. 223.—Eaton, Manual, 6 ed. 148.—Loudon, Arboretum, ii, 1233.—A. De Candolle, Prodr. viii, 278.

F. pubescens, var. *subpubescens*, Persoon, Syn. ii, 605.—Pursh, Fl. Am. Sept. i, 9.—Eaton, Manual, 6 ed. 148.—Loudon, Arboretum, ii, 1234.—A. De Candolle, Prodr. viii, 278.—Browne, Trees of America, 395.

F. longifolia, Bosc in Mem. Inst. 1808, 209.

F. subvillosa, Bosc in Mem. Inst. 1808, 209.

F. tomentosa, Michaux f. Hist. Arb. Am. iii, 112, t. 9; N. American Sylva, 3 ed. iii, 53, t. 119.—Barton, Compend. Fl. Philadelph. ii, 192.

F. Americana, var. *pubescens*, Browne, Trees of America, 395.

F. oblongocarpa, Buckley in Proc. Philadelphia Acad. 1864, 4.

RED ASH.

New Brunswick to southern Ontario and northern Minnesota, south to northern Florida and central Alabama.

A tree 12 to 15 meters in height, with a trunk rarely exceeding 0.60 meter in diameter; borders of streams and swamps, in low ground; common and reaching its greatest development in the north Atlantic states; rare west of the Alleghany mountains, probably not extending west of the Mississippi river.

Wood heavy, hard, strong, brittle, coarse-grained, compact; medullary rays numerous, thin; color, rich brown, the sap-wood light brown streaked with yellow; specific gravity, 0.6251; ash, 0.26; specific gravity of the lighter sap-wood, 0.5609; somewhat used as a substitute for the more valuable white ash, with which it is often confounded.

194.—Fraxinus viridis, Michaux f.

Hist. Arb. Am. iii, 115, t. 10; N. American Sylva, 3 ed. iii, 54, t. 120 (excl. fruit).—Hayne, Dend. Fl. 222.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 370.—Gray in Pacific R. R. Rep. xii[2], 46; Manual N. States, 5 ed. 402; Hall's Pl. Texas, 19; Syn. Fl. N. America, ii[1], 75.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 54.—Lesquereux in Owen's 2d Rep. Arkansas, 382.—Wood, Cl. Book, 598; Bot. & Fl. 277.—Watson in King's Rep. v, 284.—Young, Bot. Texas, 453.—Vasey, Cat. Forest Trees, 20.—Macoun in Geological Rep. Canada, 1875-'76, 207.—Bell in Geological Rep. Canada, 1879-'80, 49.—Hemsley, Bot. Am.-Cent. ii, 305.—Burgess in Coulter's Bot. Gazette, vii, 95.

F. juglandifolia, Willdenow, Spec. iv, 1104; Enum. 1060; Berl. Baumz. 140 [not Lamarck].—Vahl, Enum. i, 50.—Persoon, Syn. ii, 604.—Nouveau Duhamel, iv, 63, t. 16.—Aiton, Hort. Kew. 2 ed. v, 476.—Pursh, Fl. Am. Sept. i, 9.—Rœmer & Schultes, Syst. i, 278; iii, Suppl. 255.—Eaton, Manual, 114.—Sprengel, Syst. i, 95.—Torrey, Compend. Fl. N. States, 371.—Beck, Bot. 233.—Don, Miller's Dict. iv, 55.—Loudon, Arboretum, ii, 1236, f. 1061, 1062 & t.—Eaton & Wright, Bot. 247.—Gray, Manual N. States, 1 ed. 373.

?*F. Caroliniana*, Willdenow, Spec. iv, 1103; Enum. 1060; Berl. Baumz. 148.—Vahl, Enum. i, 51.—Du Roi, Harbk. 2 ed. i, 400.—Persoon, Syn. ii, 605.—Desfontaines, Hist. Arb. i, 103.—Nouveau Duhamel, iv, 62.—Pursh, Fl. Am. Sept. i, 9.—Nuttall, Genera, ii, 231.—Elliott, Sk. ii, 673.—Hayne, Dend. Fl. 223.—Sprengel, Syst. i, 95.—Eaton, Manual, 6 ed. 148.—Don, Miller's Dict. iv, 55.—Eaton & Wright, Bot. 147.—Darby, Bot. S. States, 429.

F. juglandifolia, var. *subintegerrima*, Vahl, Enum. i, 50.

F. expansa, Willdenow, Berl. Baumz. 150.—Rœmer & Schultes, Syst. i, 279.—Don, Miller's Dict. iv, 55.—Loudon, Arboretum, ii, 1238.—A. De Candolle, Prodr. viii, 278.—Browne, Trees of America, 399.

F. Americana, var. *juglandifolia*, Browne, Trees of America, 398.

F. Novæ-Angliæ, Koch, Dendrologie, ii, 251 [not Miller nor Wangenheim]

GREEN ASH.

Shores of lake Champlain, Tiverton, Rhode Island, and southward to northern Florida, west to the valley of the Saskatchewan, the eastern ranges of the Rocky mountains of Montana, the Wahsatch mountains of Utah, and the ranges of eastern and northern Arizona.

A tree 15 to 18 meters in height, with a trunk rarely exceeding 0.60 meter in diameter; borders of streams or in low, rather moist soil; at the west confined to the bottom lands of the large streams and to high mountain cañons.

Wood heavy, hard, strong, brittle, rather coarse-grained, compact, satiny, containing numerous scattered, small, open ducts, the layers of annual growth marked by several rows of larger ducts; medullary rays numerous, obscure; color, brown, the sap-wood lighter; specific gravity, 0.7117; ash, 0.65; inferior in quality, although often used as a substitute for white ash.

Var. Berlandieriana, Torrey,

Bot. Mex. Boundary Survey, 166.—Gray, Syn. Fl. N. America, ii[1], 75.—Hemsley, Bot. Am.-Cent. ii, 305.—Watson in Proc. Am. Acad. xviii, 113.

F. Berlandieriana, De Candolle, Prodr. viii, 278.

F. trialata, Buckley in Proc. Philadelphia Acad. 1862, 5.

Texas, west of the Colorado river; southward into northern Mexico.

A small tree, 9 to 12 meters in height, with a trunk rarely exceeding 0.30 meter in diameter; borders of streams, in low, rich soil.

Wood light, soft, rather close-grained, compact, containing few small, scattered, open ducts, the layers of annual growth clearly marked by one or two rows of larger ducts; medullary rays numerous, obscure; color, light brown, the sap-wood lighter; specific gravity, 0.5780; ash, 0.54.

195.—Fraxinus platycarpa, Michaux,

Fl. Bor.-Am. ii, 256.—Vahl, Enum. i, 49.—Persoon, Syn. ii, 605.—Desfontaines, Hist. Arb. i, 103.—Nouveau Duhamel, iv, 64.—Michaux f. Hist. Arb. Am. iii, 128, t. 13; N. American Sylva, 3 ed. iii, 63, t. 124.—Poiret, Suppl. ii, 671.—Pursh, Fl. Am. Sept. i, 9.—Rœmer & Schultes, Syst. i, 278.—Nuttall, Genera, ii, 231.—Hayne, Dend. Fl. 225.—Elliott, Sk. ii, 673.—Sprengel, Syst. i, 96.—Eaton, Manual, 6 ed. 149.—Don, Miller's Dict. iv, 55.—Eaton & Wright, Bot, 247.—A. De Candolle, Prodr. viii, 277.—Darby, Bot. S. States, 429.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 370.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 53.—Lesquereux in Owen's 2d Rep. Arkansas, 382.—Wood, Cl. Book, 598; Bot. & Fl. 277.—Gray, Manual N. States, 5 ed. 402; Syn. Fl. N. America, ii[1], 75.—Young, Bot. Texas, 453.—Vasey, Cat. Forest Trees, 20.

?*F. Caroliniana*, Miller, Dict. No. 6.—Lamarck, Dict. ii, 518.—Rœmer & Schultes, Syst. i, 278.—Don, Miller's Dict, iv, 55.—Loudon, Arboretum, ii, 1237.—Koch, Dendrologie, ii, 258.

F. excelsior, Walter, Fl. Caroliniana, 254 [not Linnæus].

F. Americana, Marshall, Arbustum, 50 [not Linnæus].

F. pallida, Bosc in Mem. Inst. 1808, 209.

F. pubescens, Bosc in Mem. Inst. 1808, 210 [not Lamarck].

F. triptera, Nuttall, Genera, ii, 232; Sylva, iii, 62, t. 100; 2 ed. 127, t. 100.—Elliott, Sk. ii, 674.—Don, Miller's Dict, iv, 56.—Loudon, Arboretum, ii, 1240.—A. De Candolle, Prodr. viii, 274.—Darby, Bot. S. States, 429.

F. curvidens, Hoffmannsegg, Verz. d. Pflanzenkult. 29.

F. pauciflora, Nuttall, Sylva, iii, 61, t. 100; 2 ed. ii, 126, t. 100.

F. Americana, var. *Caroliniana*, Browne, Trees of America, 398

F. Americana, var. *triptera*, Browne, Trees of America, 399.

F. Nuttallii, Buckley in Proc. Philadelphia Acad. 1860, 444.

F. nigrescens, Buckley in Proc. Philadelphia Acad. 1862, 5.

WATER ASH.

Southeastern Virginia, south near the coast to cape Canaveral and the Caloosa river, Florida, west through the Gulf states to the valley of the Sabine river, Texas, and the Washita river, southwestern Arkansas; in the West Indies.

A small tree, 9 to 12 meters in height, with a trunk rarely exceeding 0.30 meter in diameter; deep river swamps.

Wood very light, soft, not strong, brittle, close-grained, compact, the open ducts not conspicuous; medullary rays few, obscure; color, nearly white, or sometimes tinged with yellow, the sap-wood lighter; specific gravity, 0.3541; ash, 0.73.

196.—Fraxinus quadrangulata, Michaux,

Fl. Bor.-Am. ii, 255.—Willdenow, Spec. iv, 1104.—Vahl, Enum. i, 50.—Persoon, Syn. ii, 605.—Bosc in Mem. Inst. 1808, 211.—Desfontaines, Hist. Arb. i, 103.—Nouveau Duhamel, iv, 64.—Michaux f. Hist. Arb. Am. iii, 118, t. 11; 2 ed. iii, 61, t. 123.—Poiret, Suppl. ii, 671.—Pursh, Fl. Am. Sept. i, 8.—Rœmer & Schultes, Syst. i, 278.—Nuttall, Genera, ii, 231.—Hayne, Dend. Fl. 223.—Sprengel, Syst. i, 96.—Eaton, Manual, 6 ed. 149.—Don, Miller's Dict. iv, 55.—Loudon, Arboretum, ii, 1235, f. 1059, 1060.—Spach, Hist. Veg. viii, 296.—Penn. Cycl. x, 455.—Eaton & Wright, Bot. 247.—A. De Candolle, Prodr. viii, 278.—Cooper in Smithsonian Rep. 1858, 254.—Chapman, Fl. S. States, 370.—Lesquereux in Owen's 2d Rep. Arkansas, 382.—Wood, Cl. Book, 598; Bot. & Fl. 277.—Gray, Manual N. States, 5 ed. 402; Syn. Fl. N. America, ii[1], 75.—Koch, Dendrologie, ii, 259.—Young, Bot. Texas, 453.—Vasey, Cat. Forest Trees, 20.—Engelmann in Coulter's Bot. Gazette, v, 63.—Ridgway in Proc. U. S. Nat. Mus. 1882, 69.—Burgess in Coulter's Bot. Gazette, vii, 95.

F. tetragona, Cels in Nouv. Cours, Agr. vii, 73.

F. quadrangularis, Loddiges, Cat. 1836.

F. nervosa, Loddiges, Cat. 1836.

F. quadrangulata, var. *nervosa*, Loudon, Arboretum, ii, 1235.

F. Americana, var. *quadrangulata*, Browne, Trees of America, 397.

F. Americana, var. *quadrangulata nervosa*, Browne, Trees of America, 397.

BLUE ASH.

Southern Michigan to central Minnesota, south to northern Alabama, and through Iowa and Missouri to northeastern Arkansas (Duvall's bluff, *Letterman*).

A tree 18 to 25 or, exceptionally, 37 meters in height, with a trunk rarely exceeding 0.60 meter in diameter; generally on limestone hills, rarely extending into the bottom lands, and reaching its greatest development in the basin of the lower Wabash river.

Wood heavy, hard, not strong, brittle, close-grained, compact, satiny; layers of annual growth clearly marked by one to three rows of large open ducts; medullary rays numerous, obscure; color, light yellow streaked with brown, the sap-wood lighter; specific gravity, 0.7184; ash, 0.78; largely used for flooring, in carriage-building, etc.

The inner bark, macerated, dyes blue.

197.—**Fraxinus Oregana**, Nuttall,

Sylva, iii, 59, t. 99; 2 ed. ii, 124, t. 99.—Torrey in Pacific R. R. Rep. iv, 128.—Newberry in Pacific R. R. Rep. vi, 25, 87.—Cooper in Smithsonian Rep. 1858, 260; Pacific R. R. Rep. xii[2], 28, 68; Am. Nat. iii, 407.—Koch, Dendrologie, ii, 260.—Gray in Bot. California, i, 472; Syn. Fl. N. America, ii[1], 76.—Vasey, Cat. Forest Trees, 20.

F. pubescens, var. Hooker, Fl. Bor.-Am. ii, 51.

F. grandifolia, Bentham, Bot. Sulphur, 33.

OREGON ASH.

Shores of Puget sound, south through Washington territory and Oregon west of the eastern valleys of the Cascade mountains, along the California Coast ranges to San Francisco bay and the western slopes of the Sierra Nevada to the San Bernardino and Hot Spring mountains, California.

A tree sometimes 24 meters in height, with a trunk rarely exceeding 0.60 meter in diameter; moist soil, generally along streams, and reaching its greatest development in the bottom lands of southwestern Oregon.

Wood light, hard, not strong, brittle, coarse-grained, compact, containing many large, open, scattered ducts, the layers of annual growth strongly marked with several rows of similar ducts; medullary rays numerous, thin; color, brown, the sap-wood lighter; specific gravity, 0.5731; ash, 0.34; specific gravity of the lighter sap-wood, 0.5630; used in the manufacture of furniture, for the frames of carriages and wagons, in cooperage, for fuel, etc.

198.—**Fraxinus sambucifolia**, Lamarck,

Dict. ii, 549.—Muhlenberg & Willdenow in Neue Schriften Gesell. Nat. Fr. Berlin, iii, 393.—Willdenow, Spec. iv, 1099; Enum. 1059; Berl. Baumz. 150.—Vahl, Enum. i, 51.—Persoon, Syn. ii, 605.—Desfontaines, Hist. Arb. i, 103.—Bosc in Mem. Inst. 1808, 211.—Nouveau Duhamel, iv, 60.—Aiton, Hort. Kew. v, 475.—Michaux f. Hist. Arb. Am. iii, 122, t. 12; N. American Sylva, 3 ed. iii, 159, t. 122.—Pursh, Fl. Am. Sept. i, 8.—Rœmer & Schultes, Syst. i, 279.—Nuttall, Genera, ii, 231.—Barton, Compend. Fl. Philadelph. ii, 192.—Hayne, Dend. Fl. 224.—Torrey, Compend. Fl. N. States, 371; Fl. N. York, ii, 126.—Beck, Bot. 232.—Eaton, Manual, 6 ed. 148.—Don, Miller's Dict. iv, 54.—Loudon, Arboretum, ii, 1234, f. 1057, 1058.—Spach, Hist. Veg. viii, 299.—Hooker, Fl. Bor.-Am. ii, 50.—Eaton & Wright, Bot. 147.—A. De Candolle, Prodr. viii, 278.—Emerson, Trees Massachusetts, 338; 2 ed. ii, 381 & t.—Darlington, Fl. Cestrica, 3 ed. 239.—Cooper in Smithsonian Rep. 1858, 253.—Lesquereux in Owen's 2d Rep. Arkansas, 382.—Wood, Cl. Book, 598; Bot. & Fl. 277.—Gray, Manual N. States, 5 ed. 402; Syn. Fl. N. America, ii[1], 76.—Vasey, Cat. Forest Trees, 20.—Ridgway in Proc. U. S. Nat. Mus. 1882, 69.—Bell in Geological Rep. Canada, 1879-'80, 48[c].

F. nigra, Marshall, Arbustum, 51.

F. Novæ-Angliæ, Wangenheim, Amer. 51.

F. crispa, Hort.

F. sambucifolia, var. *crispa*, Loddiges, Cat. 1836.—Loudon, Arboretum, ii, 1234.

F. Americana, var. *sambucifolia*, Browne, Trees of America, 393.

BLACK ASH. HOOP ASH. GROUND ASH.

Southern Newfoundland, along the northern shores of the gulf of Saint Lawrence, southwesterly to the eastern shores of lake Winnipeg, south through the northern states to New Castle county, Delaware, the mountains of Virginia, southern Illinois, and northwestern Arkansas.

A tree 25 to 30 meters in height, with a trunk 0.30 to 0.60 meter in diameter; swamps and low river banks; the most northern representative of the genus in America.

Wood heavy, soft, not strong, tough, rather coarse-grained, compact, durable, separating easily into thin layers; layers of annual growth strongly marked by several rows of large open ducts; medullary rays numerous,

thin; color, dark brown, the sap-wood light brown, or often nearly white; specific gravity, 0.6318; ash, 0.72; specific gravity of the heavier sap-wood, 0.7465; largely used for interior finish, fencing, barrel hoops, in cabinet-making, and the manufacture of baskets.

NOTE.—*Fraxinus dipetala*, Hooker & Arnott, of the California Coast ranges and the western slopes of the southern Sierra Nevadas, and *F. cuspidata*, Torrey, of the valley of the Rio Grande, do not attain arborescent habit or dimensions.

The following, characterized by Bosc in Mem. Inst. 1808, mainly from the foliage of garden specimens of supposed North American origin, cannot be safely referred to our species: *F. alba, cinerea, elliptica, fusca, mixta, nigra, ovata, pannosa, pulverulenta, Richardi, rubicunda*, and *rufa*.

199.—Forestiera acuminata, Poiret,

Suppl. ii, 664.—Hayne, Dend. Fl. 194.—Nuttall in Trans. Am. Phil. Soc. new ser. v, 176.—Torrey in Nicollet's Rep. 154.—Engelmann & Gray in Jour. Boston Soc. Nat. Hist. v, 262.—Chapman, Fl. S. States, 370.—Lesquereux in Owen's 2d Rep. Arkansas, 382.—Wood, Cl. Book, 600; Bot. & Fl. 277.—Gray, Manual N. States, 5 ed. 402; Proc. Am. Acad. iv, 363 (excl. var.); Syn. Fl. N. America, ii[1], 76.—Koch, Dendrologie, ii, 224.—Vasey, Cat. Forest Trees, 20.

Adelia acuminata, Michaux, Fl. Bor.-Am. ii, 225, t. 48.

Borya acuminata, Willdenow, Spec. iv, 711.—Aiton, Hort. Kew. 2 ed. 366.—Elliott, Sk. ii, 675.—Eaton, Manual, 6 ed. 57.—Eaton & Wright, Bot. 159.

Borya ligustrina, Willdenow, Spec. iv, 711, in part.—Aiton, Hort. Kew. 2 ed. 366, in part.—Gray, Manual N. States, 2 ed. 358, in part.

Borya nitida, Willdenow, Enum. Suppl. 66.

Bigelovia acuminata, Smith in Rees' Cycl. xxxix, No. 4.

PRIVET.

Western Georgia, western Florida, through the Gulf states to the valley of the Colorado river, Texas, and northward through Arkansas to southern Missouri and Cahokia creek, Illinois (opposite Saint Louis).

A small tree, 6 to 8 meters in height, with a trunk rarely 0.20 meter in diameter; borders of swamps and streams, in low, wet soil; common in the Gulf region, near the coast, and reaching its greatest development in southern Arkansas.

Wood heavy, soft, not strong, brittle, close-grained, compact; medullary rays numerous, thin, rather conspicuous; color, light yellow streaked with brown; the sap-wood lighter; specific gravity, 0.6345; ash, 0.72.

200.—Chionanthus Virginica, Linnæus,

Spec. 1 ed. 8.—Marshall, Arbustum, 33.—Walter, Fl. Caroliniana, 60.—Wangenheim, Amer. 92.—Aiton, Hort. Kew. iii, 14; 2 ed. i, 23.—Lamarck, Ill. i, 30, t. 9, f. 1.—Willdenow, Spec. i, 46; Enum. 14; Berl. Baumz. 87.—Abbot, Insects Georgia, ii, t. 98.—Michaux, Fl. Bor.-Am. i, 3.—Vahl, Enum. i, 44.—Persoon, Syn. i, 9.—Desfontaines, Hist. Arb. i, 111.—Pursh, Fl. Am. Sept. i, 7.—Rœmer & Schultes, Syst. i, 72.—Nuttall, Genera, i, 5; Sylva, iii, 56, t. 88; 2 ed. ii, 122, t. 88.—Elliott, Sk. i, 6.—Hayne, Dend. Fl. 2.—Torrey, Fl. U. S. i, 7; Compend. Fl. N. States, 17.—Sprengel, Syst. i, 34.—Loddiges, Bot. Cab. t. 1264.—Guimpel, Otto & Hayne, Abb. Holz. 93, t. 73.—Beck, Bot. 232.—Eaton, Manual, 6 ed. 92.—Don, Miller's Dict. iv, 50.—Loudon, Arboretum, ii, 1206, f. 1029, 1030.—Spach, Hist. Veg. viii, 259.—Dietrich, Syn. i, 37.—Eaton & Wright, Bot. 193.—A. De Candolle, Prodr. viii, 295.—Browne, Trees of America, 371.—Darlington, Fl. Cestrica, 3 ed. 238.—Darby, Bot. S. States, 429.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 369.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 95.—Lesquereux in Owen's 2d Rep. Arkansas, 382.—Wood, Cl. Book, 599; Bot. & Fl. 276.—Porcher, Resources S. Forests, 494.—Gray, Manual N. States, 5 ed. 401; Hall's Pl. Texas, 19; Syn. Fl. N. America, ii[1], 77.—Koch, Dendrologie, ii, 262.—Young, Bot. Texas, 452.—Vasey, Cat. Forest Trees, 20.

C. trifida, Mœnch, Meth. 437.

C. Virginica, var. *latifolia*, Vahl, Enum. i, 44.—Aiton, Hort. Kew. 2 ed. i, 23.—Pursh, Fl. Am. Sept. i, 8.—Hayne, Dend. Fl. 2.—Don, Miller's Dict. iv, 50.

C. Virginica, var. *angustifolia*, Vahl, Enum. i, 44.—Aiton, Hort. Kew. 2 ed. i, 23.—Hayne, Dend. Fl. 2.—Watson, Dend. Brit. i, t. 1.—Don, Miller's Dict. iv, 50.

C. Virginica, var. *montana*, Pursh, Fl. Am. Sept. i, 8.—Torrey, Fl. U. S. i, 7; Compend. Fl. N. States, 17.—Beck, Bot. 232.—Eaton, Manual, 6 ed. 92.—Eaton & Wright, Bot. 194.—A. De Candolle, Prodr. viii, 295.

C. Virginica, var. *maritima*, Pursh, Fl. Am. Sept. i, 8.—Torrey, Fl. U. S. i, 7; Compend. Fl. N. States, 17.—Beck, Bot. 232.—Eaton, Manual, 6 ed. 92.—Don, Miller's Dict. iv, 50.—Eaton & Wright, Bot. 194.—A. De Candolle, Prodr. viii, 295.—Regel, Gartenflora, xvi, t. 564.

C. maritima, Loddiges, Cat. 1836.

C. heterophylla, Rafinesque, New Fl. & Bot. i, 86.

C. longifolia, Rafinesque, New Fl. & Bot. i, 87.

C. montana, Rafinesque, New Fl. & Bot. i, 88.

C. angustifolia, Rafinesque, New Fl. & Bot. i, 88.

FRINGE TREE. OLD MAN'S BEARD.

Lancaster county and the banks of the Brandywine, Chester county, Pennsylvania, south to Tampa bay, Florida, and through the Gulf states to southern Arkansas and the valley of the Brazos river, Texas.

A small tree, 6 to 10 meters in height, with a trunk 0.15 to 0.20 meter in diameter; generally along streams in low, rich soil; very common in cultivation.

Wood heavy, hard, close-grained, compact; layers of annual growth marked by several rows of large open ducts, connected as in that of *Bumelia* by branching groups of similar ducts; medullary rays numerous, obscure; color, light brown, the sap-wood lighter; specific gravity, 0.6372; ash, 0.51.

A decoction of the tonic and anti-periodic bark of the root sometimes employed in the treatment of intermittent fevers (*Am. Jour. Pharm.* xliv, 398.—*U. S. Dispensatory*, 14 ed. 1612).

201.—Osmanthus Americanus, Bentham & Hooker,

Genera, ii, 667.—Gray, Syn. Fl. N. America, ii[1], i, 78.

Olea Americana, Linnæus, Mant. 24.—Marshall, Arbustum, 98.—Lamarck, Dict. iv, 543; Ill. i, 28.—Aiton, Hort. Kew. i, 14; 2 ed. i, 22.—Willdenow, Spec. i, 45; Enum. 13.—Michaux, Fl. Bor.-Am. ii, 222.—Vahl, Enum. i, 41.—Persoon, Syn. i, 9.—Desfontaines, Hist. Arb. i, 112.—Nouveau Duhamel, v, 67.—Michaux f. Hist. Arb. Am. iii, 50, t. 6; N. American Sylva, ii, 3 ed. 128, t. 86.—Pursh. Fl. Am. Sept. i, 7.—Rœmer & Schultes, Syst. i, 70.—Rafinesque, Fl. Ludoviciana, 38.—Nuttall, Genera, i, 5.—Elliott, Sk. i, 5.—Sprengel, Syst. i, 34.—Croom in Am. Jour. Sci. 1 ser. xxvi, 315.—Dietrich, Syn. i, 37.—Don, Miller's Dict. iv, 48.—Spach, Hist. Veg. viii, 267.—Eaton, Manual, 6 ed. 239.—Dietrich, Syn. i, 37.—Eaton & Wright, Bot. 333.—A. De Candolle, Prodr. viii, 286.—Browne, Trees of America, 381.—Darby, Bot. S. States, 429.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 369.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 57.—Lesquereux in Owen's 2d Rep. Arkansas, 382.—Wood, Cl. Book, 599; Bot. & Fl. 276.—Porcher, Resources S. Forests, 493.—Gray, Manual N. States, 5 ed. 401.—Young, Bot. Texas, 451.—Vasey, Cat. Forest Trees, 20.

DEVIL WOOD.

Southern Virginia, south to cape Canaveral and Tampa bay, Florida, and through the Gulf states to eastern Louisiana, near the coast.

A small tree, 10 to 15 meters in height, with a trunk sometimes 0.30 meter in diameter; borders of streams and pine-barren swamps, in moist, rich soil.

Wood heavy, very hard and strong, close-grained, unwedgeable, difficult to work, containing many radiating groups of open cells parallel to the thin, obscure, medullary rays; color, dark brown, the thick sap-wood light brown or yellow; specific gravity, 0.8111; ash, 0.46.

BORRAGINACEÆ.

202.—Cordia Sebestena, Linnæus,

Spec. 1 ed. 190.—Jacquin, Amer. t. 42.—Lamarck, Ill. i, 421, t. 96, f. 1.—Willdenow, Spec. i, 1073; Enum. 248.—Andrews, Bot. Rep. iii, 157, t. 157.—Poiret in Lamarck, Dict. vii, 45.—Persoon, Syn. i, 166.—Trattinick, Archiv. t. 354.—Rœmer & Schultes, Syst. iv, 452.—Sprengel, Syst. i, 649.—Bot. Mag. t. 794.—Aiton, Hort. Kew. 2 ed. ii, 8.—Descourtilz, Fl. Antilles, iv, 205, t. 277.—Chamisso in Linnæa, vi, 755.—Audubon, Birds, t. 177.—Don, Miller's Dict. iv, 375.—Dietrich, Syn. i, 611.—Nuttall, Sylva, iii, 81, t. 106; 2 ed. ii, 145, t. 106.—Cooper in Smithsonian Rep. 1858, 265.—Grisebach, Fl. British West Indies, 478.—Gray, Syn. Fl. N. America, ii[1], 180.

? *C. juglandifolia*, Jacquin, Amer. t. 43.

C. speciosa, Willdenow in Rœmer & Schultes, Syst. iv, 799.—A. De Candolle, Prodr. ix, 476.

Sebestena scabra, Rafinesque, Sylva Telluriana, 38.

GEIGER TREE.

Semi-tropical Florida, on the southern keys; rare; in the West Indies.

A small tree, sometimes 8 meters in height, with a trunk 0.06 to 0.08 meter in diameter; rich hummock soil; ornamental and becoming a large tree in cultivation.

Wood heavy, hard, close-grained, compact, satiny, containing few scattered, small, open ducts; medullary rays very numerous, thin, conspicuous; color, dark brown, the thick sap-wood light brown or yellow; specific gravity, 0.7108; ash, 4.22.

203.—Cordia Boissieri, A. De Candolle,

Prodr. ix, 478.—Torrey, Bot. Mex. Boundary Survey, 135.—Cooper in Smithsonian Rep. 1860, 442.—Gray, Syn. Fl. N. America, ii[1], 180.

Texas, valley of the Rio Grande, westward to New Mexico and southward into Mexico.

A small tree, rarely 8 meters in height, with a trunk 0.12 to 0.15 meter in diameter, or more often reduced to a low shrub.

Wood light, rather soft, close-grained, compact, containing many small scattered open ducts; medullary rays very numerous, thin, conspicuous; color, dark brown, the sap-wood light brown; specific gravity, 0.6790; ash, 3.53.

204.—Bourreria Havanensis, Miers,

Bot. Contrib. ii, 238.—Gray, Syn. Fl. N. America, ii[1], 181.

Ehretia Havanensis, Willdenow in Rœmer & Schultes, Syst. iv, 805.—Humboldt, Bonpland & Kunth, Nov. Gen. & Spec. vii, 206.—A. De Candolle, Prodr. ix, 508.

Ehretia tomentosa, Lamarck, Ill. i, 425.—Poiret, Suppl. ii, 1.—Sprengel, Syst. i, 648.—Dietrich, Syn. i, 630.

B. tomentosa, Don, Miller's Dict. iv, 390.

B. recurva, Miers, Bot. Contrib. ii, 238.

B. ovata, Miers, Bot. Contrib. ii, 238.

Ehretia Bourreria, Chapman, Fl. S. States, 329 [not Linnæus].—Vasey, Cat. Forest Trees, 19.

B. tomentosa, var. *Havanensis*, Grisebach, Fl. British West Indies, 482.

STRONG BARK.

Semi-tropical Florida, southern keys (Key Largo, Elliott's Key, etc.); in the West Indies.

A small tree, 10 or, exceptionally, 15 meters (Key Largo, *Curtiss*) in height, with a trunk 0.20 to 0.25 meter in diameter; the large specimens generally hollow and defective.

A form (generally shrubby in Florida) with scabrous or hispidulous leaves is—

var. radula, Gray, Syn. Fl. N. America, ii[1], 181.

Ehretia radula, Poiret, Suppl. ii, 2.—Dietrich, Syn. i, 630.—A. De Candolle, Prodr. ix, 506.—Chapman, Fl. S. States, 329.

B. radula, Don, Miller's Dict. iv, 390.—Chamisso in Linnæa, viii, 120.—Miers, Bot. Contrib. ii, 238.

Cordia Floridana, Nuttall, Sylva, iii, 83, t. 107; 2 ed. ii, 147, t. 107.—Cooper in Smithsonian Rep. 1858, 265.

Wood heavy, very hard, strong, very close-grained, compact, susceptible of a beautiful polish; medullary rays numerous, obscure; color, brown streaked with orange, the sap-wood not distinguishable; specific gravity, 0.8073; ash, 2.79.

205.—Ehretia elliptica, De Candolle,

Prodr. ix, 503.—Torrey, Bot. Mex. Boundary Survey, 136.—Cooper in Smithsonian Rep. 1858, 266.—Miers, Bot. Contrib. ii, 228, t. 85.—Gray, Syn. Fl. N. America, ii[1], 181.

KNACKAWAY. ANAQUA.

Texas, Corpus Christi to New Braunfels (*Mohr*), and southward to the valley of the lower Rio Grande.

A tree 10 to 15 meters in height, with a trunk sometimes 0.50 meter in diameter; generally along borders of streams, in rich loam, and reaching its greatest development between the Guadalupe and Nueces rivers, 50 to 75 miles from the Gulf coast.

Wood heavy, hard, not strong, very close-grained, compact, unwedgeable, containing many small open ducts arranged in numerous concentric rings within the layers of annual growth, these marked by several rows of larger ducts; medullary rays numerous, thin; color, light brown, the sap-wood a little lighter; specific gravity, 0.6440; ash, 1.31.

BIGNONIACEÆ.

206.—Catalpa bignonioides, Walter,

Fl. Caroliniana, 64.—De Candolle, Prodr. ix, 226.—Darlington, Fl. Cestrica, 3 ed. 182.—Cooper in Smithsonian Rep. 1858, 253.—Chapman, Fl. S. States, 285.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 50.—Wood, Cl. Book, 513; Bot. & Fl. 218.—Bureau, Mon. Bignoniaceæ, t. 25.—Gray, Manual N. States, 5 ed. 321, in part; Syn. Fl. N. America, ii[1], 319, in part.—Koch, Dendrologie, ii, 302.—Young, Bot. Texas, 385.—Vasey, Cat. Forest Trees, 19, in part.—Guibourt, Hist. Drogues, 7 ed. ii, 548.

Bignonia Catalpa, Linnæus, Spec. 1 ed. 622 (excl. syn.).—Lamarck, Dict. i, 417.—Marshall, Arbustum, 21.—Wangenheim, Amer. 58, t. 20, f. 45.—Willdenow, Spec. iii, 289; Enum. 649.—Michaux, Fl. Bor.-Am. ii, 25.—Desfontaines, Hist. Arb. i, 189.—Michaux f. Hist. Arb. Am. iii, 217, t. 6; N. American Sylva, 3 ed. ii, 55, t. 64.—Barton, Prodr. Fl. Philadelph. 66.—Rafinesque, Fl. Ludoviciana, 159.—Porcher, Resources S. Forests, 460.—Maout & Decaisne, Bot. English ed. 602 & f.

C. cordifolia, Jaume St. Hilaire in Nouveau Duhamel, ii, 13, in part (excl. t. 5).—Barton, Compend. Fl. Philadelph. i, 9.—Nuttall, Genera, i, 10.—Elliott, Sk. i, 24.—Torrey, Fl. U. S. i, 16; Compend. Fl. N. States, 20.—Beck, Bot. 245.—Eaton, Manual, 6 ed. 85.—Darlington, Fl. Cestrica, 2 ed. 363.—Spach, Hist. Veg. ix, 132.—Eaton & Wright, Bot. 184.—Darby, Bot. S. States, 439.

C. syringæfolia, Sims, Bot. Mag. t. 1094.—Schkuhr, Handb. t. 175.—Aiton, Hort. Kew. 2 ed. i, 24.—Pursh. Fl. Am. Sept. i, 10.—Eaton, Manual, 8; 6 ed. 85.—Meyer, Prim. Fl. Esseq. 3.—Hayne, Dend. Fl. 2.—Loddiges, Bot. Cab. t. 1285.—Sprengel, Syst. i, 70.—Sertum Botanicum, i, t.—Lindley, Fl. Med. 499; Penn. Cycl. vi, 363.—Don, Miller's Dict. iv, 230.—Loudon, Arboretum, iii, 1261 & t.—Dietrich, Syn. i, 82.—Nuttall, Sylva, iii, 77; 2 ed. ii, 140.—Torrey, Fl. N. York, ii, 25.—Browne, Trees of America, 406.

C. communis, Du Mont, Bot. Cult. 2 ed. iii, 242.

CATALPA. CATAWBA. BEAN TREE. CIGAR TREE. INDIAN BEAN.

Southwestern Georgia, valleys of the Little and Apalachicola rivers, western Florida, and through central Alabama and Mississippi.

A low, much-branched tree, 12 to 15 meters in height, with a trunk 0.50 to 0.75 meter in diameter; borders of streams and swamps, in rich loam; rare and local; long cultivated for ornament, and now extensively naturalized throughout the middle and southern Atlantic states.

Wood light, soft, not strong, coarse-grained, compact, very durable; layers of annual growth clearly marked by many rows of large open ducts; medullary rays numerous, obscure; color, light brown, the thin (one or two years') sap-wood lighter, often nearly white; specific gravity, 0.4474; ash, 0.38; used and highly valued for fence posts, rails, etc.; a reputed emetic.

A decoction of the seeds and dried bark occasionally used in cases of asthma and bronchitis (*Am. Jour. Pharm.* xlii, 204.—*U. S. Dispensatory*, 14 ed. 1608.—*Nat. Dispensatory*, 2 ed. 367).

207.—Catalpa speciosa, Warder;

Engelmann in Coulter's Bot. Gazette, v, 1.—Sargent in London Gard. Chronicle 1879, 784.—Ridgway in Proc. U. S. Nat. Mus. 1882, 70.—Barnes in Coulter's Bot. Gazette, ix, 74.

C. cordifolia, Jaume St. Hilaire in Nouveau Duhamel, ii, 13, in part, t. 5.—Nuttall in Trans. Am. Phil. Soc. 2 ser. v, 183.

C. bignonioides, Lesquereux in Owen's 2d Rep. Arkansas, 375 [not Walter.]—Gray, Manual N. States, 5 ed. 321, in part; Syn. Fl. N. America, ii[1], 319, in part.—Vasey, Cat. Forest Trees, 19, in part.—Broadhead in Coulter's Bot. Gazette, iii, 59.

WESTERN CATALPA.

Valley of the Vermilion river, Illinois, through southern Illinois and Indiana, western Kentucky and Tennessee, southeastern Missouri and western Arkansas.

A tree 20 to 35 or, exceptionally, 45 meters in height (*Ridgway*), with a trunk 1 to 2 meters in diameter; borders of streams and swamps, in rich bottom lands; common and reaching its greatest development in the valley of the lower Wabash river; cultivated and now widely naturalized through southern Arkansas, western Louisiana, and eastern Texas.

Wood light, soft, not strong, coarse-grained, compact, very durable in contact with the soil; layers of annual growth clearly marked by several rows of large open ducts; medullary rays numerous, obscure; color, brown, the thin sap-wood lighter; specific gravity, 0.4165; ash, 0.39; largely used for railway ties, fence posts, rails, etc., and adapted for cabinet work and interior finish.

208.—Chilopsis saligna, D. Don,

Edinburgh Phil. Jour. ix, 261.—Don, Miller's Dict. iv, 228.—Dietrich, Syn. iii, 566.—Gray in Bot. California, i, 587; Syn. Fl. N. America, ii[1], 320.—Vasey, Cat. Forest Trees, 19.—Rothrock in Wheeler's Rep. vi, 217.—Hemsley, Bot. Am.-Cent. ii, 494.—Rusby in Bull. Torrey Bot. Club, ix, 54.

Bignonia linearis, Cavanilles, Icon. iii, 35, t. 269.

C. linearis, De Candolle, Prodr. ix, 227.—Cooper in Smithsonian Rep. 1858, 266.

C. glutinosa, Engelmann in Wislizenus' Rep. 10.

DESERT WILLOW.

Valley of the Rio Grande, Texas (Laredo, *Letterman*), west through southern New Mexico and Arizona to the San Gorgonio pass and the San Felipe cañon, San Diego county, California; southward into northern Mexico.

A small tree, 6 to 8 meters in height, with a trunk sometimes 0.30 meter in diameter; *mesas* and banks of depressions and water-courses in the desert; the large specimens generally hollow and defective.

Wood light, soft, not strong, close-grained, checking in drying, containing many scattered, small, open ducts, the layers of annual growth marked by several rows of larger ducts; medullary rays numerous, obscure; color, brown streaked with yellow, the sap-wood much lighter; specific gravity, 0.5902; ash, 0.37.

209.—Crescentia cucurbitina, Linnæus,

Mant. 2 ed. 250.—Swartz, Obs. 234.—Willdenow, Spec. iii, 311.—Persoon, Syn. ii, 168.—Aiton, Hort. Kew. 2 ed. iv, 37.—Gærtner f. Fruct. Suppl. 230, t. 223.—Dietrich, Syn. iii, 567.—Don, Miller's Dict. iv, 232.—De Candolle, Prodr. ix, 246.—Seemann in Jour. Bot. & Kew Gard. Misc. vi, 274; ix, 142.—Walpers, Ann. v, 524.—Grisebach, Fl. British West Indies, 445.—Hemsley, Fl. Am.-Cent. ii, 489.

C. ovata, Burmann, Fl. Ind. 132.

C. latifolia, Lamarck, Dict. i, 558; Ill. iii, 96, t. 547.—Descourtilz, Fl. Antilles, iii, 143, t. 182.

C. lethifera, Tussac, Fl. Antilles, iv, 50, t. 17.

C. toxicaria, Tussac, Fl. Antilles, iv, 50, t. 17.

C. obovata, Bentham, Bot. Sulphur, 130, t. 46.

BLACK CALABASH TREE.

Semi-tropical Florida, near Miami, and on Little river (*Garber*, *Curtiss*); in the West Indies.

A small tree, in Florida rarely exceeding 6 meters in height, with a trunk 0.10 to 0.12 meter in diameter.

Wood heavy, hard, very close-grained, compact, containing many small, regularly-distributed, open ducts; medullary rays thin, hardly distinguishable; color, light brown tinged with orange, the sap-wood lighter; specific gravity, 0.6319; ash, 1.35.

VERBENACEÆ.

210.—Citharexylum villosum, Jacquin,

Coll. i, 72; Icon. Rar. t. 118.—Persoon, Syn. ii, 142.—Aiton, Hort. Kew. 2 ed. iv, 36.—Dietrich, Syn. iii, 614.—Schauer in De Candolle, Prodr. xi, 610.—Walpers, Rep. iv, 76.—Chapman, Fl. S. States, 309.—Vasey, Cat. Forest Trees, 19.—Gray, Syn. Fl. N. America, ii[1], 340.—Hemsley, Bot. Am.-Cent. ii, 537.

FIDDLE WOOD.

Semi-tropical Florida, cape Canaveral to the southern keys (Pumpkin Key, *Curtiss*); and through the West Indies to Mexico.

A small tree, rarely exceeding in Florida 6 meters in height, with a trunk 0.10 to 0.15 meter in diameter, or north of bay Biscayne reduced to a low, much-branched shrub; common and reaching within the United States its greatest development on the shores of bay Biscayne, Lost Man's river, etc.

Wood heavy, exceedingly hard, strong, close-grained, compact, susceptible of a fine polish, containing numerous small, regularly-distributed, open ducts; color, clear bright red, the sap-wood lighter; specific gravity, 0.8710; ash, 0.52.

211.—Avicennia nitida, Jacquin,

Amer. 177, t. 112, f. 1.—Persoon, Syn. ii, 143.—Chamisso in Linnæa, vii, 370.—Sprengel, Syst. ii, 768.—Martius, Mat. Med. Brasil. 49; Bot. Brasil. ix, 303.—Dietrich, Syn. iii, 619.—Schauer in De Candolle, Prodr. xi, 699.—Grisebach, Fl. British West Indies, 502.—Gray, Syn. Fl. N. America, ii[1], 341.

A. tomentosa, Meyer, Prim. Fl. Esseq. 221 [not Jacquin].—Nuttall, Sylva, iii, 79, t. 105; 2 ed. ii, 143, t. 105.—Cooper in Smithsonian Rep. 1858, 265.—Chapman, Fl. S. States, 310.—Vasey, Cat. Forest Trees, 19.

A. oblongifolia, Nuttall?; Chapman, Fl. S. States, 310.—Vasey, Cat. Forest Trees, 19.

BLACK MANGROVE. BLACK TREE. BLACK WOOD.

Florida coast, Saint Augustine to the southern keys, and from Cedar Keys to cape Sable; deltas of the Mississippi river; through the West Indies to Brazil.

A tree 6 to 9 meters in height, with a trunk 0.25 to 0.30 meter in diameter, or, exceptionally, 20 to 23 meters in height, with a trunk 0.60 meter in diameter; north of Mosquito inlet reduced to a low shrub; common along saline shores and swamps, throwing up many leafless, corky stems, and forming, with the red mangrove (*Rhizophora*), impenetrable thickets, or, more rarely, scattered and round-headed; reaching its greatest development in the United States on the west coast of Florida, north of cape Sable.

Wood very heavy, hard, rather coarse-grained, compact, the eccentric layers of annual growth marked by several rows of large open ducts; medullary rays numerous, thin; color, dark brown or nearly black, the sap-wood brown; specific gravity, 0.9138; ash, 2.51.

NYCTAGINACEÆ.

212.—Pisonia obtusata, Swartz,

Fl. Ind. Occ. 1960.—Jacquin, Hort. Schœnb. iii, 36, t. 314.—Lamarck, Ill. iii, 449, t. 861.—Dietrich, Syn. ii, 1226.—Choisy in De Candolle, Prodr. xiii[2], 443.—Chapman, Fl. S. States, 374.—Grisebach, Fl. British West Indies, 71.—Vasey, Cat. Forest Trees, 21.

PIGEON WOOD. BEEF WOOD. CORK WOOD. PORK WOOD.

Semi-tropical Florida, cape Canaveral to the southern keys; through the West Indies.

A tree 9 to 15 meters in height, with a trunk 0.25 to 0.45 meter in diameter; saline shores and beaches, reaching its greatest development in Florida on Elliott's and Old Rhodes Keys.

Wood heavy, rather soft, weak, coarse-grained, compact, containing numerous large open ducts; layers of annual growth and medullary rays hardly distinguishable; color, yellow tinged with brown, the sap-wood darker; specific gravity, 0.6529; ash, 7.62; probably of little value.

NOTE.—The semi-prostrate and vine-like trunks of *P. aculeata*, Linnæus, of the same region, although attaining a considerable size, cannot be properly considered arborescent.

POLYGONACEÆ.

213.—Coccoloba Floridana, Meisner;

De Candolle, Prodr. xiv, 165.—Chapman, Fl. S. States, 392.—Porcher, Resources S. Forests, 376.—Vasey, Cat. Forest Trees, 21.

C. parvifolia, Nuttall, Sylva, iii, 25, t. 89; 2 ed. ii, 95, t. 89 [not Poiret].—Cooper in Smithsonian Rep. 1858, 265.

PIGEON PLUM.

Semi-tropical Florida, cape Canaveral to the southern keys, and from cape Romano to cape Sable.

A tree 15 to 18 meters in height, with a trunk 0.30 to 0.60 meter in diameter; one of the largest and most common trees of the region.

Wood very heavy, exceedingly hard, strong, brittle, very close-grained, inclined to check in drying, containing few small, scattered, open ducts; layers of annual growth and numerous medullary rays obscure; color, rich dark brown tinged with red, the sap-wood lighter; specific gravity, 0.9835; ash, 5.03; valuable and somewhat used for cabinet-making.

The edible and abundant grape-like fruit, ripening in February and March, is eagerly devoured by raccoons and other animals.

214.—Coccoloba uvifera, Jacquin,

Amer. 112, t. 73.—Gærtner, Fruct. i, 214, t. 45, f. 3.—Aiton, Hort. Kew. ii, 34; 2 ed. ii, 421.—Lamarck, Ill. ii, 445, t. 316, f. 2.—Willdenow, Spec. ii, 457; Enum. 431.—Poiret in Lamarck, Dict. vi, 61.—Persoon, Syn. i, 442.—Titford, Hort. Bot. Am. 61.—Aiton, Hort. Kew. 2 ed. ii, 421.—Sprengel, Syst. ii, 252.—Descourtilz, Fl. Antilles, ii, 41, t. 77.—Bot. Mag. t. 3130.—Rafinesque, Fl. Telluriana, ii, 34.—Spach, Hist. Veg. x, 542.—Dietrich, Syn. Fl. ii, 1326.—Nuttall, Sylva, iii, 23, t. 88; 2 ed. ii, 93, t. 88.—Carson, Med. Bot. ii, 21, t. 67.—Meisner in De Candolle, Prodr. xiv, 152; Bot. Brasil. v[1], 42.—Cooper in Smithsonian Rep. 1858, 265.—Chapman, Fl. S. States, 391.—Porcher, Resources S. Forests, 376.—Grisebach, Fl. British West Indies, 161.

Polygonum uvifera, Linnæus, Spec. 1 ed. 365.

SEA GRAPE.

Semi-tropical Florida, Mosquito inlet to the southern keys, west coast, Tampa bay to cape Sable; through the West Indies to Brazil.

A low tree, rarely exceeding in Florida 4 meters in height, with a gnarled and contorted trunk often 0.90 to 1.20 meter in diameter, or reduced to a low, generally prostrate shrub; saline shores and beaches; common.

West Indian forms, differing in the shape of the leaves, etc., are—

var. **ovalifolia**, Meisner, *l. c.*

var. **Lœganensis**, Meisner, *l. c.*

C. Lœganensis, Jacquin, Amer. 113, t. 178, f. 33.

Wood very heavy, hard, very close-grained, inclined to check in drying, susceptible of a beautiful polish, containing few scattered, rather small, open ducts; layers of annual growth and numerous medullary rays hardly distinguishable; color, rich dark brown or violet, the sap-wood lighter; specific gravity, 0.9635; ash, 1.37; valuable for cabinet-making.

The edible fruit of agreeable subacid flavor.

LAURACEÆ.

215.—Persea Carolinensis, Nees,

Syst. Laurinarum, 150.—Spach, Hist. Veg. x, 492.—Dietrich, Syn. ii, 1339.—Cooper in Smithsonian Rep. 1858, 254.—Chapman, Fl. S. States, 63.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 63.—Wood, Cl. Book, 620; Bot. & Fl. 290.—Meisner in De Candolle, Prodr. xv[1], 50.—Gray, Manual N. States, 5 ed. 422; Hall's Pl. Texas, 473.—Young, Bot. Texas, 473.—Vasey, Cat. Forest Trees, 21.

Laurus Borbonia, Linnæus, Spec. 1 ed. 370, in part.—Marshall, Arbustum, 73.—Walter, Fl. Caroliniana, 133.—Aiton, Hort. Kew. ii, 39; 2 ed. ii, 429.—Lamarck, Dict. iii, 450.—Willdenow, Spec. ii, 481.—Desfontaines, Hist. Arb. i, 65.—Nouveau Duhamel, ii, 163.

Laurus Carolinensis, Catesby, Carol. i, 63, t. 63.—Michaux, Fl. Bor.-Am. i, 245.—Persoon, Syn. i, 449.—Desfontaines, Hist. Arb. i, 65.—Poiret, Suppl. iii, 321.—Willdenow, Enum. Suppl. 22.—Michaux f. Hist. Arb. Am. iii, 180, t. 2; N. American Sylva, 3 ed. ii, 116, t. 82.—Pursh, Fl. Am. Sept. i, 276.—Elliott, Sk. i, 461.—Sprengel, Syst. ii, 665.—Torrey, Compend. Fl. N. States, 174.—Beck, Bot. 305.—Eaton, Manual, 6 ed. 199.—Loudon, Aboretum, iii, 1299, f. 1168, 1169.—Eaton & Wright, Bot. 293.—Browne, Trees of America, 414.—Darby, Bot. S. States, 491.—Schnizlein, Icon. t. 106, f. 5–12.

Laurus Carolinensis, var. *glabra*, Pursh, Fl. Am. Sept. i, 276.

Laurus Carolinensis, var. *obtusa*, Pursh, Fl. Am. Sept. i, 276.

Laurus Caroliniana, Poiret, Suppl. iii, 323.—Nuttall, Genera, i, 258.

P. Borbonia, Sprengel, Syst. ii, 268.

P. Carolinensis, var. *glabriuscula*, Meisner in De Candolle, Prodr. xv[1], 51.

RED BAY.

Southern Delaware?, south to bay Biscayne and cape Romano, Florida, and through the Gulf states to southern Arkansas and the valley of the Trinity river, Texas, near the coast.

A tree 15 to 20 meters in height, with a trunk 0.60 to 0.90 meter in diameter; borders of streams and swamps, in low, rich soil.

Wood heavy, hard, very strong, brittle, very close-grained, compact, susceptible of a beautiful polish, containing many evenly-distributed open ducts; medullary rays numerous, thin; color, bright red, the sap-wood much lighter; specific gravity, 0.6429; ash, 0.76; formerly somewhat used in ship-building, interior finish, and for cabinet work.

Var. palustris, Chapman,

Fl. S. States, 393.

Laurus Carolinensis, var. *pubescens*, Pursh, Fl. Am. Sept. i, 276.

P. Carolinensis, var. *pubescens*, Meisner in De Candolle, Prodr. xv[1], 51.

North Carolina to Alabama, generally near the coast.

A small tree, 9 to 12 meters in height, with a trunk rarely exceeding 0.30 meter in diameter; low, sandy banks of pine-barren streams and swamps; well distinguished from the species by the longer peduncles densely clothed, as are the young shoots and under sides of the leaves, with short, brown tomentum, and by the somewhat coarser-grained orange-colored wood.

Wood heavy, soft, strong, close-grained, compact, containing numerous rather large open ducts; medullary rays numerous, thin; color, orange streaked with brown; the sap-wood light brown or gray; specific gravity, 0.6396; ash, 0.37.

216.—Nectandra Willdenoviana, Nees,

Syst. Laurinarum, 290, 321.—Meisner in De Candolle, Prodr. xvi[2], 165.

Laurus sanguinea, Swartz, Fl. Ind. Occ. ii, 707.

Laurus Catesbyana, Michaux, Fl. Bor.-Am. i, 244.—Poiret, Suppl. iii, 321.—Pursh, Fl. Am. Sept. i, 275.—Elliott, Sk. i, 462.—Sprengel, Syst. ii, 265.—Eaton, Manual, 6 ed. 199.—Eaton & Wright, Bot. 294.—Darby, Bot. S. States, 491.

Laurus Catesbæi, Persoon, Syn. i, 499.—Nuttall, Genera, i, 258.

Gymnobalanus Catesbyana, Nees, Syst. Laurinarum, 483.

N. Bredemeieriana, Nees in Linnæa, xxi, 505.

Persea Catesbyana, Chapman, Fl. S. States, 393.—Vasey, Cat. Forest Trees, 21.

LANCE WOOD.

Semi-tropical Florida, cape Canaveral and cape Romano to the southern keys; through the West Indies to Central America.

A small tree, 6 to 9 meters in height, with a trunk rarely exceeding 0.15 meter in diameter; common and reaching its greatest development in Florida on the shores of bay Biscayne and in the neighborhood of cape Romano.

Wood heavy, hard, close-grained, checking in drying, containing many small, regularly-distributed, open ducts; medullary rays numerous, thin; color, rich dark brown, the sap-wood bright yellow; specific gravity, 0.7693; ash, 0.60.

217.—Sassafras officinale, Nees,

Handb. der Med. Pharm. Bot. ii, 418; Syst. Laurinarum, 488.—Hayne, Arzn. i, 12, t. 19.—Lindley, Fl. Med. 338.—Dietrich, Syn. ii, 1357.—Spach, Hist. Veg. x, 503.—Torrey, Fl. N. York, ii, 158.—Emerson, Trees Massachusetts, 359; 2 ed. ii, 359 & t.—Griffith, Med. Bot. 551.—Darlington, Fl. Cestrica, 3 ed. 251.—Spruce in Hooker's London Jour. Bot. vii, 278.—Cooper in Smithsonian Rep. 1858, 254.—Chapman, Fl. S. States, 394.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 63.—Lesquereux in Owen's 2d Rep. Arkansas, 384.—Wood, Cl. Book, 620; Bot. & Fl. 290.—Porcher, Resources S. Forests, 350.—Meisner in De Candolle, Prodr. xv[1], 171.—Gray, Manual N. States, 5 ed. 423; Hall's Pl. Texas, 19.—Koch, Dendrologie, ii, 364.—Young, Bot. Texas, 473.—Vasey, Cat. Forest Trees, 21.—Broadhead in Coulter's Bot. Gazette, iii, 59.—Bentley & Trimen, Med. Pl. iii, 220, t. 220.—Ridgway in Proc. U. S. Nat. Mus. 1882, 70.—Bell in Geological Rep. Canada, 1879–'80, 55[c].

Laurus Sassafras, Linnæus, Spec. 1 ed. 371.—Du Roi, Harbk. i, 356.—Kalm, Travels, English ed. i, 146, 341.—Marshall, Arbustum, 74.—Wangenheim, Amer. 82, t. 27, f. 56.—Walter, Fl. Caroliniana, 134.—Aiton, Hort. Kew. ii, 40; 2 ed. ii, 429.—Lamarck, Dict. iii, 454.—Abbot, Insects Georgia, i, t. 11.—B. S. Barton, Coll. 11, 19; ii, 27.—Willdenow, Spec. ii, 485; Enum. 435; Berl. Baumz. 208.—Michaux, Fl. Bor.-Am. i, 243.—Schkuhr, Handb. 349.—Persoon, Syn. i, 450.—Robin, Voyages, iii, 361.—Desfontaines, Hist. Arb. i, 66.—Titford, Hort. Bot. Am. 130.—Michaux f. Hist. Arb. Am. iii, 173, t. 1; N. American Sylva, 3 ed. ii, 113, t. 81.—Pursh, Fl. Am. Sept. i, 277.—Rafinesque, Fl. Ludoviciana, 25.—Bigelow, Med. Bot. ii, 142, t. 35; Fl. Boston. 3 ed. 170.—Nuttall, Genera, i, 259; Sylva, i, 88; 2 ed. i, 104.—Elliott, Sk. i, 464.—Nees, Pl. Offic. t. 131.—Torrey, Fl. U. S. i, 408; Compend. Fl. N. States, 174.—Descourtilz, Fl. Antilles, vii, 51, t. 464.—Audubon, Birds, t. 144.—Stephenson & Churchill, Med. Bot. iii, t. 126.—Beck, Bot. 305.—Eaton, Manual, 6 ed. 199.—Darlington, Fl. Cestrica, 2 ed. 254.—Eaton & Wright, Bot. 293.—Browne, Trees of America, 416.—Darby, Bot. S. States, 492.

Persea Sassafras, Sprengel, Syst. ii, 270.—Schnizlein, Icon. t. 106, f. 15–23.

SASSAFRAS.

Eastern Massachusetts, southwestern Vermont, and west through southern Ontario and central Michigan to southeastern Iowa, eastern Kansas, and the Indian territory; south to Hernando county, Florida, and the valley of the Brazos river, Texas.

A tree 12 to 15 meters in height, with a trunk 0.60 to 0.90 meter in diameter, exceptionally 24 to 27 meters in height, with a trunk 1.80 to 2.25 meters in diameter, or toward its northern limits reduced to a small tree or shrub; rich, sandy loam, reaching its greatest development in southwestern Arkansas and the Indian territory; at the south often taking possession, with the persimmon, of abandoned fields in the middle districts.

Wood light, soft, not strong, brittle, coarse-grained, very durable in contact with the soil, slightly aromatic, checking in drying; layers of annual growth clearly marked with three or four rows of large open ducts; medullary rays numerous, thin; color, dull orange-brown, the thin sap-wood light yellow; specific gravity, 0.5042; ash, 0.10; used for light skiffs, ox yokes, etc., and largely for fence posts and rails, and in cooperage.

The root, and especially its bark, enters into commerce, affording a powerful aromatic stimulant; the oil of sassafras, distilled from the root, is largely used in imparting a pleasant flavor to many articles of domestic use; the pith of the young branches infused with water furnishes a mucilage used as a demulcent in febrile and inflammatory affections (*Sharpe in Am. Jour. Pharm.* 1863, 53.—*Proctor in Proc. Am. Pharm. Assoc.* 1866, 217.—*U. S. Dispensatory*, 14 ed. 814.—*Nat. Dispensatory*, 2 ed. 1274; *Flückiger & Hanbury, Pharmacographia*, 483).

"*Gumbo filet*," a powder prepared by the Choctaw Indians of Louisiana from the mucilaginous leaves, is used at the south in the preparation of "gumbo" soup.

218.—Umbellularia Californica, Nuttall,

Sylva, i, 87; 2 ed. i, 102.—Watson, Bot. California, ii, 61.

Laurus regia, Douglas in Companion Bot. Mag. ii, 137.

Oreodaphne Californica, Nees, Syst. Laurinarum, 463.—Bentham, Pl. Hartweg. 334; Bot. Sulphur, 49.—Dietrich, Syn. ii, 1356.—Hooker & Arnott, Bot. Beechey, 389.—Torrey in Pacific R. R. Rep. iv, 133; v, 364; Mex. Boundary Survey, 184.—Newberry in Pacific R. R. Rep. vi, 24, 88, f. 3.—Cooper in Smithsonian Rep. 1858, 260.—Bot. Mag. t. 5320.

Tetranthera Californica, Hooker & Arnott, Bot. Beechey, 159.—Meisner in De Candolle, Prodr. xv[1], 192.—Torrey in Bot. Wilkes Exped. 451.

Drimophyllum pauciflorum, Nuttall, Sylva, i, 85, t. 22; 2 ed. i, 102, t. 22.

MOUNTAIN LAUREL. CALIFORNIA LAUREL. SPICE TREE. CAGIPUT. CALIFORNIA OLIVE. CALIFORNIA BAY TREE.

Rogue River valley, Oregon, south through the California coast ranges to San Diego county, and along the western slopes of the Sierra Nevada to the San Bernardino mountains.

An evergreen tree, 24 to 30 meters in height, with a trunk 1.20 to 1.80 meter in diameter, or toward its southern limits and at high elevations a small tree or shrub; most common and reaching its greatest development in the rich valleys of southwestern Oregon.

Wood heavy, hard, strong, close-grained, compact, susceptible of a beautiful polish, containing numerous small, regularly-distributed, open ducts; medullary rays numerous, thin; color, rich light brown, the sap-wood lighter; specific gravity, 0.6517; ash, 0.39; used on the Oregon coast in ship-building, for jaws, bitts, cleats, cross-trees, etc.; the most valuable material produced by the Pacific forests for interior and cabinet work.

The leaves yield a volatile oil, *Oreodaphne* (*Am. Jour. Pharm.* xlvii, 105).

EUPHORBIACEÆ.

219.—Drypetes crocea, Poiteau,

Mem. Mus. i, 159, t. 8.—Nuttall, Sylva, ii, 66, t. 63; 2 ed. ii, 12, t. 63.—Cooper in Smithsonian Rep. 1858, 265.—Chapman, Fl. S. States, 410.—Grisebach, Fl. British West Indies, 32; Cat. Pl. Cuba, 15.—Müller in De Candolle, Prodr. xv[2], 455.

Schæfferia lateriflora, Swartz, Fl. Ind. Occ. i, 329.

D. sessiliflora, Baillon, Etud. Gen. Euphorbiaceæ, Atlas, 45, t. 24. f. 34-40.

D. glauca, Grisebach in Mem. Am. Acad. new ser. viii, 157 [not Vahl].

D. crocea, var. *longipes*, Müller in De Candolle, Prodr. xv[2], 456.

GUIANA PLUM. WHITE WOOD.

Semi-tropical Florida, bay Biscayne to the southern keys; in the West Indies.

A small tree, sometimes 9 meters in height, with a trunk 0.12 to 0.17 meter in diameter.

Wood heavy, hard, not strong, brittle, close-grained, checking in drying; medullary rays numerous, thin; color, rich dark brown, the sap-wood yellow; specific gravity, 0.9209; ash, 6.14.

Var. **latifolia**, Müller,

De Candolle, Prodr. xv², 456.

D. glauca, Nuttall, Sylva, ii, 68; 2 ed. ii, 14.—Chapman, Fl. S. States, 410.

D. alba, var. *latifolia*, Grisebach in Nachrich. d. Konigl. Gesell. Wiss. Univ. Götting. 1865, 165, in part.

Semi-tropical Florida, bay Biscayne to the southern keys; in the West Indies.

A tree sometimes 12 meters in height, with a trunk 0.30 to 0.35 meter in diameter.

Wood heavy, hard, not strong, brittle, very close-grained, checking in drying; medullary rays numerous, obscure; color, brown streaked with bright yellow, the sap-wood dull brown; specific gravity, 0.9346; ash, 8.29.

Perhaps a distinct species, the fruit and flowers not recently collected.

220.—Sebastiania lucida, Müller;

De Candolle, Prodr. xv², 1181.

Gymnanthes lucida, Swartz, Prodr. 96.

Excœcaria lucida, Swartz, Fl. Ind. Occ. ii, 1122.—Willdenow, Spec. iv, 865.—Poiret, Suppl. i, 155.—Persoon, Syn. ii, 634.—Nuttall, Sylva, ii, 60, t. 61; 2 ed. ii, 6, t. 61.—A. de Jussieu, Tent. Euphorb. t. 16, f. 55.—Richard, Fl. Cuba, 199.—Dietrich, Syn. v, 256.—Cooper in Smithsonian Rep. 1858, 265.—Chapman, Fl. S. States, 405.—Grisebach, Fl. British West Indies, 50.—Vasey, Cat. Forest Trees, 21.

CRAB WOOD. POISON WOOD.

Semi-tropical Florida, bay Biscayne to the southern keys; common; in the West Indies.

A small tree, sometimes 9 meters in height, with a trunk 0.15 to 0.20 meter in diameter; the large specimens generally hollow and decayed.

Wood very heavy, hard, very close-grained, compact, susceptible of a beautiful polish; medullary rays numerous, obscure; color, rich dark brown streaked with yellow, the sap-wood bright yellow; specific gravity, 1.0905; ash, 2.78; now largely manufactured into canes, and furnishing valuable fuel.

221.—*Hippomane Mancinella*, Linnæus,

Spec. 1 ed. 1191.—Jacquin, Amer. 250, t. 159.—Lamarck, Dict. ii, 694.—Aiton, Hort. Kew. iii, 378; 2 ed. v, 333.—Swartz, Obs. 369.—Willdenow, Spec. iv, 571.—Persoon, Syn. ii, 589.—Titford, Hort. Bot. Am. Suppl. 9, t. 12, f. 5.—Lamarck, Ill. iii, 374, t. 793, f. 1.—Sprengel, Syst. iii, 805.—Spach, Hist. Veg. ii, 524.—Nuttall, Sylva, ii, 54, t. 60; 2 ed. i, 202, t. 60.—Bentham, Bot. Sulphur, 163.—Richard, Fl. Cuba, 200.—Dietrich, Syn. v, 224.—Cooper in Smithsonian Rep. 1858, 265.—Baillon, Etud. Gen. Euphorbiaceæ, t. 6, f. 12-20.—Chapman, Fl. S. States, 404.—Porcher, Resources S. Forests, 120.—Grisebach, Fl. British West Indies, 50.—Regel, Gartenflora, xv, 163, t. 510.—Müller in De Candolle, Prodr. xv², 1201.—Schnizlein, Icon. t. 243, f. 3.—Maout & Decaisne, Bot. English ed. 693 & f.—Vasey, Cat. Forest Trees, 21.

Mancinella venenata, Tussac, Fl. Antilles, iii, 21, t. 5.

MANCHINEEL.

Semi-tropical Florida, on the southern keys; common; through the West Indies and Central America to the Pacific.

A small tree, in Florida rarely exceeding 4 meters in height, with a trunk 0.12 to 0.17 meter in diameter; abounding in white, milky, exceedingly caustic poisonous sap. "Rain washing the leaves becomes poisonous, and the smoke of the burning wood injures or destroys the eyes."—(*A. H. Curtiss*).

Wood light, soft, close-grained, compact, containing numerous evenly-distributed, small, open ducts; medullary rays numerous, obscure; color, dark brown, the thick sap-wood light brown or yellow; specific gravity (sap-wood), 0.5672; ash, 5.16.

URTICACEÆ.

222.—Ulmus crassifolia, Nuttall,

Trans. Am. Phil. Soc. 2 ser. v, 169.—Planchon in Ann. Sci. Nat. 3 ser. x, 279; De Candolle, Prodr. xvii, 162.—Walpers, Ann. iii, 426.—Cooper in Smithsonian Rep. 1858, 254.—Lesquereux in Owen's 2d Rep. Arkansas, 386.—Wood, Cl. Book, 633.—Gray, Hall's, Pl. Texas, 21.—Vasey, Cat. Forest Trees, 23.

U. opaca, Nuttall, Sylva, i, 35, t. 11; 2 ed. i, 51, t. 11.—Browne, Trees of America, 503.

CEDAR ELM.

Arkansas, south of the valley of the Arkansas river to the valley of the Rio Grande, Texas, extending west to Eagle Pass.

A tree 18 to 20 meters in height, with a trunk 0.60 to 0.90 meter in diameter, or toward its southern or southwestern limits much smaller; borders of streams, in rich soil; one of the most common and valuable timber trees of Texas west of the Trinity river, and reaching its greatest development in the valleys of the Guadalupe and Trinity rivers.

Wood heavy, hard, not strong, brittle, very close-grained, compact; layers of annual growth and medullary rays obscure; marked, in common with that of all the North American species, by concentric circles of irregularly-arranged groups of small open ducts; color, light brown tinged with red, the heavier sap-wood lighter; specific gravity, 0.7245; ash, 1.20; used in the manufacture of wagon hubs, saddle-trees, chairs, etc., and very largely for fencing.

223.—Ulmus fulva, Michaux,

Fl. Bor.-Am. i, 172.—Persoon, Syn. i, 291.—Willdenow, Enum. Suppl. 14.—Pursh, Fl. Am. Sept. i, 200.—Smith in Rees' Cycl. xxxix, No. 10.—Eaton, Manual, 31; 6 ed. 376.—Nuttall, Genera, i, 201.—Rœmer & Schultes, Syst. vi, 301.—Elliott, Sk. i, 333.—Hayne, Dend. Fl. 32.—Torrey, Fl. U. S. i, 299; Compend. Fl. N. States, 132; Fl. N. York, ii, 166; Fremont's Rep. 97.—Sprengel, Syst. i, 931.—Rafinesque, Med. Bot. ii, 271.—Beck, Bot. 333.—Hooker, Fl. Bor.-Am. ii, 142.—Bigelow, Fl. Boston. 3 ed. 114.—Eaton & Wright, Bot. 464.—Loudon, Arboretum, iii, 1407, f. 1247.—Dietrich, Syn. ii, 992.—Spach in Ann. Sci. Nat. xv, 363; Hist. Veg. xi, 107.—Emerson, Trees Massachusetts, 297; 2 ed. ii, 334 & t.—Browne, Trees of America, 501.—Griffith, Med. Bot. 551.—Planchon in Ann. Sci. Nat. 3 ser. x, 276.—De Candolle, Prodr. xvii, 161.—Scheele in Rœmer, Texas, 446.—Walpers, Ann. iii, 426.—Richardson, Arctic Exped. 436.—Darlington, Fl. Cestrica, 3 ed. 255.—Darby, Bot. S. States, 502.—Cooper in Smithsonian Rep. 1858, 254.—Chapman, Fl. S. States, 416.—Curtis in Rep. Geological Surv. N. Carolina, iii, 1860, 55.—Lesquereux in Owen's 2d Rep. Arkansas, 386.—Wood, Cl. Book, 633; Bot. & Fl. 299.—Porcher, Resources S. Forests, 310.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 208.—Gray, Manual N. States, 5 ed. 442.—Koch, Dendrologie, ii, 422.—Young, Bot. Texas, 496.—Hayden in Warren's Rep. Nebraska & Dakota, 2 ed. 121.—Vasey, Cat. Forest Trees, 22.—Bentley & Trimen, Med. Pl. iv, 233, t. 233.—Ridgway in Proc. U. S. Nat. Mus. 1882, 72.—Bell in Geological Rep. Canada, 1879-'80, 55c.

U. pubescens, Walter, Fl. Caroliniana, 111.

U. Americana, var. *rubra*, Aiton, Hort. Kew. i, 319; 2 ed. ii, 107.—Willdenow, Spec. i, 1325.—Hayne, Dend. Fl. 31.

? *U. crispa*, Willdenow, Enum. 295; Berl. Baumz. 520.

U. rubra, Michaux f. Hist. Arb. Am. iii, 278, t. 6; N. American Sylva, 3 ed. iii, 73, t. 128.

RED ELM. SLIPPERY ELM. MOOSE ELM.

Valley of the lower Saint Lawrence river to Ontario and northern Dakota, south to the Chattahoochee region of northern Florida, central Alabama and Mississippi, and the valley of the San Antonio river, Texas.

A tree 15 to 20 meters in height, with a trunk 0.45 to 0.60 meter in diameter; borders of streams and hillsides, in rich soil.

Wood heavy, hard, strong, very close-grained, compact, durable in contact with the ground, splitting readily when green; layers of annual growth clearly marked by several rows of large open ducts; medullary rays numerous, thin; color, dark brown or red, the thin sap-wood lighter; specific gravity, 0.6956; ash, 0.83; largely used for wheel stock, fence posts, rails, railway ties, sills, etc.

The inner bark mucilaginous, nutritious, and extensively used in various medicinal preparations (*Am. Jour. Pharm.* xxiv, 180.—*Philadelphia Med. Times*, 1874, 303.—*U. S. Dispensatory*, 14 ed. 913.—*Nat. Dispensatory*, 2 ed. 1480.—*Flückiger & Hanbury, Pharmacographia*, 501).

224.—Ulmus Americana, Linnæus,

Spec. 1 ed. 226.—Kalm, Travels, English ed. ii, 298.—Marshall, Arbustum, 156. —Wangenheim, Amer. 46.—Gærtner, Fruct. i, 225, t. 49, f. 5.—*Walter, Fl. Caroliniana, 111.—Aiton, Hort. Kew. i, 319; 2 ed. ii, 107.—Willdenow, Spec. i, 1325; Enum. 295; Suppl. 14;* Berl. Baumz. 519.—Nouveau Duhamel, ii, 147.—Schkuhr, Handb. 179.—Michaux, Fl. Bor.-Am. i, 173.—Persoon, Syn. ii, 191.—Desfontaines, Hist. Arb. ii, 442.—Michaux f. Hist. Arb. Am. iii, 269, t. 4; N. American Sylva, 3 ed. iii, 67, t. 126.—Pursh, Fl. Am. Sept. i, 199.—Smith in Rees' Cycl. xxxix, No. 7.—Eaton, Manual, 31; 6 ed. 376.—Barton, Compend. Fl. Philadelph. i, 150.—Nuttall, Genera, i, 201.—Rœmer & Schultes, Syst. vi, 300.—Elliott, Sk. i, 333.—Hayne, Dend. Fl. 31.—Torrey, Fl. U. S. i, 298; Compend. Fl. N. States, 132; Fl. N. York, ii, 165; Nicollet's Rep. 160; Emory's Rep. 412.—Sprengel, Syst. i, 930.—Beck, Bot. 333.—Loudon, Arboretum, iii, 1406, f. 1246.—Hooker, Fl. Bor.-Am. ii, 142.—Bigelow, Fl. Boston. 3 ed. 114.—Dietrich, Syn. ii, 992.—Eaton & Wright, Bot. 464.—Spach in Ann. Sci. Nat. 2 ser. xv, 364; Hist. Veg. xi, 108.—Emerson, Trees Massachusetts, 286; 2 ed. ii, 322 & t.—Browne, Trees of America, 499.—Planchon in Ann. Sci. Nat. 3 ser. x, 268; De Candolle, Prodr. xvii, 155.—Scheele in Rœmer, Texas, 446.—Walpers, Ann. iii, 424.—Buckley in Am. Jour. Sci. 2 ser. xiii, 398.—Richardson, Arctic Exped. 436.—Darlington, Fl. Cestrica, 3 ed. 255.—Darby, Bot. S. States, 502.—Cooper in Smithsonian Rep. 1858, 254.—Chapman, Fl. S. States, 416.—Curtis in Rep. Geological Surv. N. Carolina, iii, 1860, 55.—Lesquereux in Owen's 2d Rep. Arkansas, 386.—Wood, Cl. Book, 633; Bot. & Fl. 298.—Porcher, Resources S. Forests, 311.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 208.—Gray, Manual N. States, 5 ed. 442.—Hall's Pl. Texas, 21.—Koch, Dendrologie, ii, 421.—Young, Bot. Texas, 496.—Winchell in Ludlow's Rep. Black Hills, 68.—Vasey, Cat. Forest Trees, 22.—Hayden in Warren's Rep. Nebraska & Dakota, 2 ed. 121.—Macoun in Geological Rep. Canada, 1875-'76, 209.—Sears in Bull. Essex Inst. xiii, 177.—Ridgway in Proc. U. S. Nat. Mus. 1882, 71.—Bell in Geological Rep. Canada, 1879-'80, 48c.

U. mollifolia, Marshall, Arbustum, 156.

U. Americana, var. *pendula*, Aiton, Hort. Kew. i, 320; 2 ed. ii, 107.—Willdenow, Spec. i, 1326.—Pursh, Fl. Am. Sept. i, 200.—Eaton, Manual, 31.—Spach in Ann. Sci. Nat. 2 ser. xv, 364; Hist. Veg. xi, 109.

U. Americana, var. *alba*, Aiton, Hort. Kew. i, 320; 2 ed. ii, 107.—Hayne, Dend. Fl. 32.

U. pendula, Willdenow, Berl. Baumz. 519.—Hayne, Dend. Fl. 33.

U. alba, Rafinesque, Fl. Ludoviciana, 115; New Fl. & Bot. i, 38.

U. Americana, var. *scabra*, Spach in Ann. Sci. Nat. 2 ser. xv, 364; Hist. Veg. ix, 109.—Walpers, Ann. iii, 424.

U. Americana, var. *Bartramii*, Walpers, Ann. iii, 424.

U. Americana, var. ?*aspera*, Chapman, Fl. S. States, 416.

U. Floridana, Chapman, Fl. S. States, 416.

WHITE ELM. AMERICAN ELM. WATER ELM.

Southern Newfoundland to the northern shores of lake Superior and the eastern slope of the Rocky mountains, in about latitude 52° N.; south to cape Canaveral and Pease creek, Florida, extending west in the United States to the Black hills of Dakota, central Nebraska, the Indian territory, in about longitude 100° W., and the valley of the Rio Concho, Texas.

A large tree, 30 to 35 meters in height, with a trunk 1.80 to 2.70 meters in diameter; rich, moist soil, borders of streams, etc.; *toward its western and southwestern limits only in river bottoms.*

Wood heavy, hard, strong, tough, rather coarse-grained, compact, difficult to split; layers of annual growth clearly marked by several rows of large open ducts; medullary rays numerous, thin; color, light brown, the sapwood somewhat lighter; specific gravity, 0.6506; ash, 0.80; largely used for wheel stock, saddle-trees, flooring, in cooperage, and now largely exported to Great Britain and used in boat- and ship-building.

225.—Ulmus racemosa, Thomas,

Am. Jour. Sci. 1 ser. xix, 170 & t.—Beck, Bot. 334.—Eaton, Manual, 6 ed. 376.—Eaton & Wright, Bot. 464.—Nuttall, Sylva, i, 37, t. 12; 2 ed. i, 53, t. 12.—Torrey, Fl. N. York, ii, 166, t. 96.—Browne, Trees of America, 500.—Cooper in Smithsonian Rep. 1858, 254.—Wood, Cl. Book, 633; Bot. & Fl. 299.—Gray, Manual N. States, 5 ed. 442.—Vasey, Cat. Forest Trees, 22.—Sargent in Rep. Massachusetts Board Ag. 1878, 271.—Bell in Geological Rep. Canada, 1879-'80, 55c.—Chapman, Fl. S. States, Suppl. 649.

U. Americana, Planchon in De Candolle, Prodr. xvii, 155, in part.

ROCK ELM. CORK ELM. HICKORY ELM. WHITE ELM. CLIFF ELM.

Southwestern Vermont (*Robbins*), west through western New York, Ontario, and southern Michigan to northeastern Iowa (Waverly, *Bessey*), and south through Ohio to central Kentucky.

A large tree of great economic value, 20 to 30 meters in height, with a trunk sometimes 0.90 meter in diameter; low, wet clay, rich uplands, rocky declivities, or river cliffs; common and reaching its greatest development in southern Ontario and the southern peninsula of Michigan.

Wood heavy, hard, very strong, tough, very close-grained, compact, susceptible of a beautiful polish; layers of annual growth marked with one to two rows of small open ducts; medullary rays numerous, obscure; color, light clear brown often tinged with red, the thick sap-wood much lighter; specific gravity, 0.7263; ash, 0.60; largely used in the manufacture of heavy agricultural implements, wheel stock, and for railway ties, bridge timbers, sills, etc.

226.—Ulmus alata, Michaux,

Fl. Bor.-Am. i, 173.—Persoon, Syn. i, 291.—Michaux f. Hist. Arb. Am. iii, 275, t. 5; N. American Sylva, 3 ed. iii, 71, t. 127.—Pursh, Fl. Am. Sept. i, 200.—Nuttall, Genera, i, 201.—Rœmer & Schultes, Syst. vi, 209.—Elliott, Sk. i, 333.—Sprengel, Syst. i, 931.—Audubon, Birds, t. 18.—Eaton, Manual, 6 ed. 376.—Loudon, Arboretum, iii, 1408, f. 1248.—Dietrich, Syn. ii, 992.—Eaton & Wright, Bot. 464.—Penn. Cycl. xxv, 493.—Browne, Trees of America, 502.—Planchon in Ann. Sci. Nat. 3 ser. x, 270; De Candolle, Prodr. xvii, 155.—Walpers, Ann. iii, 425.—Darby, Bot. S. States, 503.—Cooper in Smithsonian Rep. 1858, 254.—Chapman, Fl. S. States, 417.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 55.—Lesquereux in Owen's 2d Rep. Arkansas, 386.—Wood, Cl. Book, 633; Bot. & Fl. 299.—Porcher, Resources S. Forests, 311.—Gray, Manual N. States, 5 ed. 443; Hall's Pl. Texas, 21.—Young, Bot. Texas, 496.—Vasey, Cat. Forest Trees, 22.—Broadhead in Coulter's Bot. Gazette, iii, 60.—Ridgway in Proc. U. S. Nat. Mus. 1882, 70.

U. pumila, Walter, Fl. Caroliniana, 111 [not Linnæus].

U. Americana, var. *alata*, Spach in Ann. Sci. Nat. 2 ser. xv, 364; Hist. Veg. xi, 109.

WAHOO. WINGED ELM.

Southern Virginia, south through the middle districts to the Chattahoochee region of western Florida; southern Indiana and Illinois, south to the Gulf coast, and southwest through southern Missouri, Arkansas, the eastern portions of the Indian territory to the valley of the Trinity river, Texas.

A small tree, 7 to 12 meters in height, with a trunk 0.30 to 0.60 meter in diameter; generally in dry, gravelly soil, or, rarely, along the borders of swamps and river bottoms; most common and reaching its greatest development in southern Missouri and Arkansas.

Wood heavy, hard, not strong, very close-grained, compact, unwedgeable; medullary rays distant, not conspicuous; color, brown, the sap-wood lighter; specific gravity, 0.7491; ash, 0.99; largely used for hubs, blocks, etc.

227.—Planera aquatica, Gmelin,

Syst. ii, 150.—Willdenow, Spec. iv, 967; Enum. Suppl. 14; Berl. Baumz. 281.—Persoon, Syn. i, 291.—Nuttall, Genera, i, 202.—Hayne, Dend. Fl. 202.—Eaton, Manual, 6 ed. 266.—Eaton & Wright, Bot. 360.—Spach in Ann. Sci. Nat. 2 ser. xv, 355; Hist. Veg. xi, 116.—Planchon in Ann. Sci. Nat. 3 ser. x, 261; De Candolle, Prodr. xvii, 167.—Walpers, Ann. iii, 428.—Cooper in Smithsonian Rep. 1858, 254.—Chapman, Fl. S. States, 417.—Wood, Cl. Book, 633; Bot. & Fl. 299.—Gray, Manual N. States, 5 ed. 443.—Koch, Dendrologie, ii, 424.—Young, Bot. Texas, 497.—Vasey, Cat. Forest Trees, 23.

Anonymos aquatica, Walter, Fl. Caroliniana, 230.

P. Gmelini, Michaux, Fl. Bor.-Am. ii, 248.—Desfontaines, Hist. Arb. ii, 446.—Rœmer & Schultes, Syst. vi, 305.—Elliott, Sk. i, 334.—Sprengel, Syst. i, 493.—Dietrich, Syn. i, 551.—Penn. Cycl. xxv, 490.—Darby, Bot. S. States, 503.

P. ulmifolia, Michaux f. Hist. Arb. Am. iii, 283, t. 7; N. American Sylva, 3 ed. iii, 80, t. 130.—Poiret, Suppl. iv, 429.—Nouveau Duhamel, vii, 65, t. 21.—Loudon, Arboretum, iii, 1413, f. 1251.—Browne, Trees of America, 515.—Curtis in Rep. Geological Surv. N. Carolina, iii, 1860, 81.

? *Ulmus nemoralis*, Aiton, Hort. Kew. i, 319; 2 ed. ii, 108.—Willdenow, Spec. i, 1326; Berl. Baumz. 520.—Desfontaines, Hist. Arb. ii, 442.—Pursh, Fl. Am. Sept. i, 200.—Smith in Rees' Cycl. xxxix, No. 8.—Nuttall, Genera, i, 201.—Beck, Bot. 334.—Eaton, Manual, 6 ed. 376.—Eaton & Wright, Bot. 464.

Ulmus aquatica, Rafinesque, Fl. Ludoviciana, 165.

P. Richardi, Sprengel, Syst. i, 493, in part.—Torrey & Gray in Pacific R. R. Rep. ii, 175 [not Michaux].

Valley of the Cape Fear river, North Carolina, south to the Chattahoochee region of western Florida, and through central Alabama and Mississippi to western Louisiana and the valley of the Trinity river, Texas, extending north through Arkansas and southern Missouri to the valley of the lower Wabash river and central Kentucky.

A small tree, 9 to 12 meters in height, with a trunk 0.30 to 0.60 meter in diameter; cold, deep, inundated river swamps; rare in the Atlantic and eastern Gulf states; very common and reaching its greatest development in the Red River valley and southern Arkansas.

Wood light, soft, not strong, close-grained, compact, containing few scattered open ducts; medullary rays numerous, thin; color, light brown, the sap-wood nearly white; specific gravity, 0.5294; ash, 0.45.

228.—Celtis occidentalis, Linnæus,

Spec. 2 ed. 1478.—Du Roi, Harbk. i, 141.—Marshall, Arbustum, 29.—Wangenheim, Amer. 48.—Gærtner, Fruct. i, 374, t. 77, f. 3.—Walter, Fl. Caroliniana, 250.—Aiton, Hort. Kew. iii, 437; 2 ed. v, 449.—Lamarck, Dict. iv, 137; Ill. iii, 437, t. 844, f. 1.—Abbot, Insects Georgia, i, t. 36.—Willdenow, Spec. iv, 944; Enum. 1046; Berl. Baumz. 82.—Nouveau Duhamel, ii, 36, t. 9.—Michaux, Fl. Bor.-Am. ii, 249.—Persoon, Syn. i, 292.—Desfontaines, Hist. Arb. ii, 448.—Michaux f. Hist. Arb. Am. iii, 225, t. 8; N. American Sylva, 3 ed. iii, 38, t. 114.—Pursh, Fl. Am. Sept. i, 200.—Eaton, Manual, 31; 6 ed. 36.—Nuttall, Genera, i, 202.—Rœmer & Schultes, Syst. vi, 306.—Hayne, Dend. Fl. 216.—Elliott, Sk. ii, 584.—Torrey, Fl. U. S. i, 300; Compend. Fl. N. States, 132; Fl. N. York, ii, 167; Bot. Wilkes Exped. 456.—Guimpel, Otto & Hayne, Abb. Holz. 119, t. 96.—Sprengel, Syst. i, 932.—Watson, Dend. Brit. ii, 147.—Beck, Bot. 334.—Rafinesque, New Fl. & Bot. i, 32.—Loudon, Arboretum, iii, 1417 & t.—Hooker, Fl. Bor.-Am. ii, 142.—Eaton & Wright, Bot. 186.—Spach in Ann. Sci. Nat. 2 ser. xvi, 40; Hist. Veg. xi, 133.—Penn. Cycl. xxv, 490.—Browne, Trees of America, 517.—Emerson, Trees Massachusetts, 306, t. 16; 2 ed. ii, 344 & t.—Planchon in Ann. Sci. Nat. 3 ser. x, 288; De Candolle, Prodr. xvii, 174.—Walpers, Ann. iii, 396.—Richardson, Arctic Exped. 436.—Darlington, Fl. Cestrica, 3 ed. 256.—Darby, Bot. S. States, 503.—Cooper in Smithsonian Rep. 1858, 254.—Chapman, Fl. S. States, 417.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 61.—Lesquereux in Owen's 2d Rep. Arkansas, 386.—Wood, Cl. Book, 634; Bot. & Fl. 299.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 208.—Porcher, Resources S. Forests, 312.—Gray, Manual N. States, 5 ed. 443; Hall's Pl. Texas, 21.—Koch, Dendrologie, ii, 432.—Hayden in Warren's Rep. Nebraska & Dakota, 2 ed. 121.—Vasey, Cat. Forest Trees, 23.—Burbank in Proc. Boston Soc. Nat. Hist. xviii, 215.—Putzbys in Fl. des Serres, xxii, 206.—Macoun in Geological Rep. Canada, 1875–'76, 209.—Ridgway in Proc. U. S. Nat. Mus. 1882, 72.

C. crassifolia, Lamarck, Dict. iv, 138.—Nouveau Duhamel, ii, 37.—Michaux f. Hist. Arb. Am. iii, 228, t. 9; N. American Sylva, 3 ed. iii, 40, t. 115.—Pursh, Fl. Am. Sept. i, 200.—Nuttall, Genera, i, 202.—Rœmer & Schultes, Syst. vi, 307.—Torrey, Fl. U. S. i, 300; Compend. Fl. N. States, 132; Fremont's Rep. 97; Emory's Rep. 412.—Sprengel, Syst. i, 932.—Beck, Bot. 334.—Eaton, Manual, 6 ed. 86.—Rafinesque, New Fl. & Bot. i, 34.—Loudon, Arboretum, iii, 1418, f. 1254.—Eaton & Wright, Bot 186.—Spach in Ann. Sci. Nat. 2 ser. xvi, 39; Hist. Veg. xi, 130.—Penn. Cycl. xxv, 490.—Browne, Trees of America, 519.—Emerson, Trees of Massachusetts, 309; 2 ed. ii, 347 & t.

C. obliqua, Mœnch, Meth. 344.

C. occidentalis, var. *scabriuscula*, Willdenow, Spec. iv, 995; Berl. Baumz. 2 ed. 82.—Hayne, Dend. Fl. 217.—Loudon, Arboretum, iii, 1417.

C. occidentalis, var. *tenuifolia*, Persoon, Syn. i, 292.

C. cordata, Persoon, Syn. i, 292.—Desfontaines, Hist. Arb. ii, 448.—Du Mont, Cour. Bot. Cult. vi, 389.

C. lævigata, Willdenow, Berl. Baumz. 2 ed. 81; Enum. Suppl. 68.—Rœmer & Schultes, Syst. vi, 306.—Sprengel, Syst. i, 932.—Rafinesque, New. Fl. & Bot. i, 34.—Loudon, Arboretum, iii, 1420.—Koch, Dendrologie, ii, 432.

C. pumila, Pursh, Fl. Am. Sept. i, 200.—Rœmer & Schultes, Syst. vi, 306.—Torrey, Fl. U. S. i, 300; Compend. Fl. N. States, 132.—Beck, Bot. 334.—Eaton, Manual, 6 ed. 86.—Rafinesque, New Fl. & Bot. i, 35.—Loudon, Arboretum, iii, 1420.—Eaton & Wright, Bot. 186.

C. alba, Rafinesque, Fl. Ludoviciana, 25; New Fl. & Bot. i, 32.—Planchon in De Candolle, Prodr. xvii, 177.

C. canina and *C. maritima*, Rafinesque in Am. Monthly Mag. & Crit. Rev. ii, 43, 44.

C. occidentalis, var. *cordata*, Willdenow, Berl. Baumz. 2 ed. 82.—Hayne, Dend. Fl. 217.—Rœmer & Schultes, Syst. vi, 306.—Loudon, Arboretum, iii, 1417.

C. tenuifolia, Nuttall, Genera, i, 202; Sylva, i, 135; 2 ed. i, 149.—Rafinesque, New Fl. & Bot. i, 36.

C. occidentalis, var. *integrifolia*, Nuttall, Genera, i, 202.—Chapman, Fl. S. States, 417.—Wood, Cl. Book, 634; Bot. & Fl. 299.

C. Mississippiensis, Bosc, Dict. Ag. new ed. x, 41.—Poiret, Suppl. iii, 688.—Spach in Ann. Sci. Nat. 2 ser. xvi, 42; Hist. Veg. xi, 136.—Planchon in Ann. Sci. Nat. 3 ser. x, 287; De Candolle, Prodr. xvii, 176.—Walpers, Ann. iii, 397.—Cooper in Smithsonian Rep. 1858, 254.—Lesquereux in Owen's 2d Rep. Arkansas, 386.—Gray, Manual N. States, 5 ed. 443; Hall's Pl. Texas, 21.—Vasey, Cat. Forest Trees, 23.—Ridgway in Proc. U. S. Nat. Mus. 1882, 72.

C. integrifolia, Nuttall in Trans. Am. Phil. Soc. new ser. v, 169.—Cooper in Smithsonian Rep. 1858, 254.

C. longifolia, Nuttall in Trans. Am. Phil. Soc. new ser. v, 169; Sylva, i, 134, t. 40; 2 ed. i, 148, t. 40.—Rafinesque, New Fl. & Bot. i, 33.—Planchon in De Candolle, Prodr. xvii, 177.

C. heterophylla, *C. patula*, *C. Floridiana*, *C. fuscata*, *C. salicifolia*, *C. morifolia*, *C. maritima*, Rafinesque, New Fl. & Bot. i. 31–37.

C. occidentalis, var. *grandidentata*, Spach in Ann. Sci. Nat. 2 ser. xvi, 40; Hist. Veg. xi, 133.—Walpers, Ann. iii, 396.

C. occidentalis, var. *serrulata*, Spach in Ann. Sci. Nat. 2 ser. xvi, 41; Hist. Veg. xi, 134.—Walpers, Ann. iii, 396.

C. crassifolia, var. *tiliæfolia*, Spach in Ann. Sci. Nat. 2 ser. xvi, 39; Hist. Veg. xi, 131.—Walpers, Ann. iii, 396.

C. crassifolia, var. *morifolia*, Spach in Ann. Sci. Nat. 2 ser. xvi, 39; Hist. Veg. xi, 131.—Walpers, Ann. iii, 396.

C. crassifolia, var. *eucalyptifolia*, Spach in Ann. Sci. Nat. 2 ser. xvi, 40; Hist. Veg. xi, 131.—Walpers, Ann. iii, 396.

C. Audibertiana, Spach in Ann. Sci. Nat. 2 ser. xvi, 41; Hist. Pl. xi, 135.—Planchon in De Candolle, Prodr. xvii, 174.

C. Audibertiana, var. *ovata*, Spach in Ann. Sci. Nat. 2 ser. xvi, 41; Hist. Veg. xi, 135.

C. Audibertiana, var. *oblongata*, Spach in Ann. Sci. Nat. 2 ser. xvi, 41; Hist. Veg. xi, 135.

C. Lindheimeri, Engelmann in herb. A. Braun. (Koch, Drendrologie, ii, 434).

C. Berlandieri, Klotsch in Linnæa, xviii, 541.—Planchon in De Candolle, Prodr. xvii, 178.

C. Texana, Scheele in Linnæa, xx, 146; Rœmer, Texas, 446; Appx. 146.

C. occidentalis, var. *crassifolia*, Gray, Manual N. States, 2 ed. 395; 5 ed. 443.—Wood, Cl. Book, 634; Bot. & Fl. 299.

C. occidentalis, var. *pumila*, Gray, Manual N. States, 2 ed. 397; 5 ed. 443.—Chapman, Fl. S. States, 417.—Curtis in Rep. Geological Surv. N. Carolina, iii, 1860, 62.—Watson in King's Rep. v, 321.

SUGARBERRY. HACKBERRY.

Valley of the Saint Lawrence river west to eastern Dakota, south through the Atlantic region to bay Biscayne and cape Romano, Florida, and the valley of the Devil's river, Texas.

A large tree, 18 to 30 or, exceptionally, 36 to 39 meters (*Ridgway*) in height, with a trunk 0.60 to 1.50 meter in diameter; most common and reaching its greatest development in the Mississippi River basin; rich bottoms or dry hillsides; sometimes reduced to a low shrub (*C. pumila*), and varying greatly in the size, shape, and texture of the leaves (*C. Mississippiensis lævigata, integrifolia, crassifolia*, etc.); the extremes connected by innumerable intermediate forms, which, thus considered, make one polymorphous species of wide geographical range.

Wood heavy, rather soft, not strong, coarse-grained, compact, satiny, susceptible of a good polish; layers of annual growth clearly marked by several rows of large open ducts, containing many small groups of smaller ducts arranged in intermediate concentric rings; medullary rays numerous, thin; color, clear light yellow, the sap-wood lighter; specific gravity, 0.7287; ash, 1.09; largely used for fencing and occasionally in the manufacture of cheap furniture.

Var. reticulata.

C. reticulata, Torrey in Ann. Lyc. N. York, ii, 247.—Eaton, Manual, 6 ed. 86.—Rafinesque, New Fl. & Bot. i, 35.—Eaton & Wright, Bot. 186.—Nuttall, Sylva, i, 133, t. 39; 2 ed. i, 146, t. 39.—Browne, Trees of America, 518.—Planchon in Ann. Sci. Nat. 3 ser. x, 293; De Candolle, Prodr. xvii, 178.—Walpers, Ann. iii, 396.—Torrey & Gray in Pacific R. R. Rep. ii, 175.—Cooper in Smithsonian Rep. 1858, 260; Am. Nat. iii, 407.—Gray in Proc. Am. Acad. vii, 401.—Watson in Pl. Wheeler, 16.—Vasey, Cat. Forest Trees, 23.—Hall in Coulter's Bot. Gazette, ii, 91.—Rothrock in Wheeler's Rep. vi, 238.—Rusby in Bull. Torrey Bot. Club, ix, 54.

C. Douglasii, Planchon in Ann. Sci. Nat. 3 ser. x, 293; De Candolle, Prodr. xvii, 178.—Walpers, Ann. iii, 396.

?*C. occidentalis*, var. *pumila*, Watson in King's Rep. v, 321 [not Gray].

C. brevipes, Watson in Proc. Am. Acad. 3 ser. xiv, 297.—Rothrock in Wheeler's Rep. vi, 238.

HACKBERRY. PALO BLANCO.

Western Texas (Dallas, *Ravenel*) to the mountains of southern Arizona, and through the Rocky mountains to eastern Oregon; in the Tehachipi pass, California (*Pringle*).

A small tree, 12 to 15 meters in height, with a trunk rarely 0.60 meter in diameter; borders of streams, generally in high mountain cañons, or in the more arid regions reduced to a low shrub; well characterized by its small, thick, coriaceous leaves, slightly pubescent on the underside along the prominent reticulated veins, and by the light-colored, deeply-furrowed bark, but connected with the typical *C. occidentalis* by intermediate forms not rare in western Texas.

Wood not distinguishable in structure or color from that of the species; specific gravity, 0.7275; ash, 1.22.

229.—Ficus aurea, Nuttall,

Sylva, ii, 4, t. 43; 2 ed. i, 154, t. 43.—Cooper in Smithsonian Rep. 1858, 265.—Chapman, Fl. S. States, 415.—Vasey, Cat. Forest Trees, 22.

F. aurea, var. *latifolia*, Nuttall, Sylva, ii, 4; 2 ed. i, 154.

Semi-tropical Florida, Indian river to the southern keys.

A large parasitic tree, germinating on the trunks and branches of other trees, and sending down to the ground long aerial roots, which gradually grow together, kill the inclosed tree, and form a trunk sometimes 0.90 to 1.20 meter in diameter.

Wood exceedingly light, soft, very weak, coarse-grained, compact, not durable; medullary rays thin, hardly distinguishable; color, light brown, the sap-wood lighter; specific gravity, 0.2616; ash, 5.03.

230.—Ficus brevifolia, Nuttall,

Sylva, ii, 3, t. 42; 2 ed. i, 153, t. 42.—Cooper in Smithsonian Rep. 1858, 265.—Chapman, Fl. S. States, 415.—Vasey, Cat. Forest Trees, 22.

Semi-tropical Florida, bay Biscayne to the southern keys (Key Largo, Pumpkin Key, *Curtiss*).

A tree sometimes 15 meters in height, with a trunk rarely exceeding 0.30 meter in diameter.

Wood light, soft, close-grained, compact, containing few large, open, scattered ducts and many groups of much smaller ducts arranged in concentric circles; medullary rays numerous, thin, conspicuous; color, light brown or yellow, the sap-wood lighter; specific gravity, 0.6398; ash, 4.36.

231.—Ficus pedunculata, Aiton,

Hort. Kew. iii, 450; 2 ed. v, 486.—Chapman, Fl. S. States, 415.—Grisebach, Fl. British West Indies, 151.

F. complicata, Humboldt, Bonpland & Kunth, Nov. Gen. & Spec. ii, 48.

Urostigma pedunculatum, Miquel in Hooker, London Jour. Bot. vi, 450.—Walpers, Ann. i, 677.

WILD FIG. INDIA-RUBBER TREE.

Semi-tropical Florida, bay Biscayne to the southern keys (Key Largo, Umbrella and Boca Chica Keys, etc. *Curtiss*); in the West Indies.

A tree sometimes 12 meters in height, with a trunk rarely exceeding 0.50 meter in diameter, or often shrubby and much branched from the ground; rare.

Wood light, soft, weak, close-grained, compact, containing many large, open, scattered ducts, with many groups of small ducts arranged in concentric circles; medullary rays numerous, obscure; color, light orange-brown, the sap-wood undistinguishable; specific gravity, 0.4739; ash, 4.92.

232.—Morus rubra, Linnæus,

Spec. 1 ed. 986.—Marshall, Arbustum, 93.—Wangenheim, Amer. 37, t. 15, f. 35.—Walter, Fl. Caroliniana, 241.—Aiton, Hort. Kew. iii, 343; 2 ed. v, 266.—Mœnch, Meth. 343.—Lamarck, Dict. iv, 377.—Abbot, Insects Georgia, ii, t. 70.—Michaux, Fl. Bor.-Am. ii, 179.—Willdenow, Spec. iv, 369; Enum. 967; Berl. Baumz. 252.—Nouveau Duhamel, iv, 91, t. 23.—Persoon, Syn. ii, 558.—Desfontaines, Hist. Arb. ii, 416.—Michaux f. Hist. Arb. Am. iii, 232, t. 10; N. American Sylva, 3 ed. iii, 42, t. 116.—Pursh, Fl. Am. Sept. ii, 639.—Eaton, Manual, 105; 6 ed. 230.—Barton, Prodr. Fl. Philadelph. 89.—Nuttall, Genera, ii, 209.—Hayne, Dend. Fl. 155.—Elliott, Sk. ii, 574.—Sprengel, Syst. i, 492.—Torrey, Compend. Fl. N. States, 352; Nicollet's Rep. 160; Fl. N. York, ii, 220; Emory's Rep. 412.—Rafinesque, Med. Bot. ii, 243; New Fl. & Bot. i, 43; Am. Manual Mulberry Trees, 13.—Beck, Bot. 316.—Dietrich, Syn. i, 551.—Loudon, Arboretum, iii, 1359 & t.—Seringe, Descr. & Cult. du Mûr. 223, t. 20.—Eaton & Wright, Bot. 323.—Spach, Hist. Veg. xi, 48.—Browne, Trees of America, 457.—Emerson, Trees Massachusetts, 280; 2 ed. i, 314.—Darlington, Fl. Cestrica, 2 ed. 285.—Darby, Bot. S. States, 503.—Cooper in Smithsonian Rep. 1858, 254.—Chapman, Fl. S. States, 415.—Gray in Pacific R. R. Rep. xii², 47; Manual N. States, 5 ed. 444.—Curtis in Rep. Geological Surv. N. Carolina, 1860, iii, 71.—Lesquereux in Owen's 2d Rep. Arkansas, 386.—Wood, Cl. Book, 635; Bot. & Fl. 300.—Porcher, Resources S. Forests, 305.—Engelmann in Trans. Am. Phil. Soc. new ser. xii, 208.—Koch Dendrologie, ii, 447.—Young, Bot. Texas, 494.—Bureau in De Candolle, Prodr. xvii, 245.—Hayden in Warren's Rep. Nebraska & Dakota, 2 ed. 121.—Vasey, Cat. Forest Trees, 22.—Riley in Special Rep. U. S. Dept. Ag. No. 11, 34.—Ridgway in Proc. U. S. Nat. Mus. 1882, 73.—Burgess in Coulter's Bot. Gazette, vii, 95.

M. Canadensis, Lamarck, Dict. iv, 380.—Seringe, Descr. & Cult. du Mûr. 224.

M. scabra, Willdenow, Enum. 967; Berl. Baumz. 152.—Nuttall, Genera, ii, 209.—Rafinesque, Am. Manual Mulberry Trees, 29.—Hayne, Dend. Fl. 154.—Sprengel, Syst. i, 492.—Loddiges, Cat. 1836.

M. tomentosa, Rafinesque, Fl. Ludoviciana, 113; Am. Manual Mulberry Trees, 30.

M. reticulata, *M. Canadensis*, *M. parvifolia*, and *M. riparia*, Rafinesque, Am. Manual Mulberry Trees, 29-31.

M. rubra, var. *Canadensis*, Loudon, Arboretum, iii, 1360.

M. Missouriensis, Audibert, Cat. Jard. Tonnelle.

M. rubra, var. *tomentosa*, Bureau in De Candolle, Prodr. xvii, 246.

M. rubra, var. *incisa*, Bureau in De Candolle, Prodr. xvii, 247.

RED MULBERRY.

Western New England and Long Island, New York, west through southern Ontario and central Michigan to the Black hills of Dakota, eastern Nebraska and Kansas, south to bay Biscayne and cape Romano, Florida, and the valley of the Colorado river, Texas.

A large tree, 18 to 20 meters in height, with a trunk 0.90 to 1.20 meter or, exceptionally, 2.15 meters in diameter (*P. J. Berckmans*, Augusta, Georgia); generally in rich bottom lands; most common and reaching its greatest development in the basins of the lower Ohio and the Mississippi rivers.

Wood light, soft, not strong, rather tough, coarse-grained, compact, very durable in contact with the soil, satiny, susceptible of a good polish; layers of annual growth clearly marked by several rows of large open ducts; medullary rays numerous, thin; color, light orange-yellow, the sap-wood lighter; specific gravity, 0.5898; ash, 0.71; largely used in fencing, cooperage, for snaths, and at the south in ship- and boat-building.

The large dark purple fruit sweet and edible.

233.—Morus microphylla, Buckley,

Proc. Philadelphia Acad. 1862, 8.—Gray in Proc. Philadelphia Acad. 1862, 167.—Young, Bot. Texas, 494.

M. parvifolia, Engelmann in herb.—Gray, Hall's Pl. Texas, 21.—Vasey, Cat. Forest Trees, 22.—Riley in Special Rep. U. S. Dept. Ag. No. 11, 34.

MEXICAN MULBERRY.

Valley of the Colorado river, through western Texas to the valley of the Gila river, New Mexico; and southward into Mexico.

A small tree, sometimes 7 meters in height, with a trunk rarely 0.30 meter in diameter, or often reduced to a low shrub; most common and reaching its greatest development in the mountain cañons of southern New Mexico; in Texas generally on limestone formations.

Wood heavy, hard, close-grained, compact; layers of annual growth marked with several rows of small open ducts; medullary rays numerous, thin; color, orange or, rarely, dark brown, the sap-wood light yellow; specific gravity, 0.7715; ash, 0.68.

The small acid fruit hardly edible.

234.—Maclura aurantiaca, Nuttall,

Genera, ii, 234; Trans. Am. Phil. Soc. 2 ser. v, 169; Sylva, i, 126, t. 37, 38; 2 ed. i, 140, t. 37, 38.—James in Long's Exped. ii, 158.—Delile in Bull. Soc. Ag. Her. 1835 & t.—Eaton, Manual, 6 ed. 217.—Seringe in Mem. Soc. Ag. Lyon, 1835, 125 & t; Descr. & Cult. du Mûr. 232, t. 273.—Lambert, Pinus, 2 ed. ii, Appx. 4, t. 3.—Loudon, Arboretum, iii, 1342, 1362, f. 1226–1228; Gard. Mag. xi, 312, f. 45–47.—Eaton & Wright, Bot. 311.—Spach, Hist. Veg. xi, 53.—Browne, Trees of America, 465.—Darby, Bot. S. States, 504.—Cooper in Smithsonian Rep. 1858, 254.—Miquel in Martius, Fl. Brasil. iv, 158.—Wood, Cl. Book, 635; Bot. & Fl. 299.—Porcher, Resources S. Forests, 101.—Koch, Dendrologie, ii, 437.—Bureau in De Candolle, Prodr. xvii, 227.—Dumen in Proc. California Acad. v, 398.—Vasey, Cat. Forest Trees, 22.—Guibourt, Hist. Drogues, 7 ed. ii, 325.—Riley in Special Rep. U. S. Dept. Ag. No. 11, 35.

Toxylon Maclura, Rafinesque, New Fl. & Bot. i, 43; Am. Manual Mulberry Trees, 13.

Ioxylon pomiferum, Rafinesque in Am. Monthly Mag. and Crit. Rev. ii, 118.

Broussonetia tinctoria, Torrey in Ann. Lyc. N. York, ii, 246 [not Kunth].

OSAGE ORANGE. BOIS D'ARC.

Southwestern Arkansas, south of the valley of the Arkansas river, southeastern portions of the Indian territory, and southward in northern Texas to about latitude 32° 50′ N. (Dallas, *Reverchon*, etc.).

A tree, sometimes 15 to 18 meters in height, with a trunk rarely exceeding 0.60 meter in diameter; rich bottom lands; most common and probably reaching its greatest development along the valley of the Red river in the Indian territory.

Wood heavy, exceedingly hard, very strong, flexible, close-grained, compact, very durable in contact with the ground, satiny, susceptible of a beautiful polish, containing numerous small open ducts, layers of annual growth clearly marked by broad bands of larger ducts; medullary rays thin, numerous, conspicuous; color, bright orange, turning brown with exposure, the sap-wood light yellow; specific gravity, 0.7736; ash, 0.68; largely used for fence posts, paving blocks, railway ties, wheel stock; extensively planted for hedges, especially in the western states.