Folia subrotundata vel late elliptica, supra distincte scabra, subtus adpresse velutina, costis et venis primariis glabris. Inflorescentia sparsim pilosa; corolla extus glabra.

Hondo. Awa province: in monte Kiyozumi, H. Sakurai.

Shikoku. Awa province, Kaifu, J. Nikai.

Ehretia Dicksoni var. tomentosa Nakai, var. nov.

Ehretia macrophylla var. tomentosa Gagnepain & Courchet in Lecomte, Fl.

Gén. Indo-Chine, IV. 212 (1914).

Folia rotundato-ovata vel late oblonga vel subrotundata, apice acuta, basi acuta vel rotundata vel subcordata, supra scabra, infra toto velutina. Inflorescentia velutina; corolla extus lanato-pilosa.

CHINA. Hainan, Ford, sine no.; Hoi how (comm. Hort. Bot. Hongkong,

no. 2183).

Ehretia corylifolia C. H. Wright (in Kew Bull. Misc. Inform. 1896, 25) a specie praecedente perdistincta foliis basi vulgo cordatis ovato-acuminatis utrinque tenuiter pubescentibus, serrulis parvis, floribus corymboso-scorpioidibus. In Yunnan vulgaris.

NOTES ON NORTH AMERICAN TREES, XII¹

C. S. SARGENT

Aesculus glabra var. monticola, n. var.

Differing from the type in its dwarf habit, small fruit and often 7 leaflets. Leaves 5–7, usually 5-foliate, their petioles glabrous, 7–15 cm. in length; leaflets oblong-obovate to elliptic, abruptly or gradually narrowed and long-pointed at apex, cuneate at base, coarsely often doubly serrate with acuminate teeth, glabrous with the exception of a few short hairs early in the season on the upper side of the midrib and principal veins, 10–12 cm. long and 4.5–5 cm. wide, their petiolules glabrous or sparingly pilose, 1–10 mm. in length. Flowers rather smaller but otherwise as in the type. Fruit subglobose, 1.5–2 cm. in diameter, usually 1-seeded; seeds subglobose or depressed and often nearly twice as broad as high, dark chestnut brown and marked by an oval or nearly circular hilum 6–7 mm. long.

A shrub 1-2 m. tall.

OKLAHOMA: La Flore County, northern slopes near the top of Rich Mountain at an altitude of 500 m. near Page, E. J. Palmer, no. 20967 (type), April 27, 1922, no. 21634, June 1, 1922, (with shorter, broader and more coarsely serrate leaflets, slightly scabrate above and more pubescent on the upper side of the midrib and veins and furnished below with small tufts of pale axillary hairs) and October 8, 1922, (fruit only).

From Aesculus glabra var. micrantha Sargent, the shrubby variety from Fulton, Arkansas, the Oklahoma shrub differs in its more pubescent

¹ For part XI, see vol. IV,

leaflets and much larger flowers. In the number of leaflets and in their shape and serratum it is nearer to the var. Buckleyi Sarg. than to the type.

\times Aesculus arnoldiana (A. glabra \times A. hybrida), n. hyb.

Leaves 5-foliolate, their petioles deeply grooved on the upper side, puberulous toward the apex, 8-15 cm. in length; leaflets elliptic, long-pointed and acuminate at apex, cuneate at base, finely, often doubly serrate, sparingly floccose-pubescent early in the season becoming glabrous or nearly glabrous above, pubescent along the under side of the midrib and of the from fifteen to twenty pairs of primary veins furnished in their axils with conspicuous tufts of pale hairs, dull dark green on the upper surface, pale yellow-green on the lower surface, 9-14 cm. long and 4-5 cm. wide; petiolules pubescent or puberulous, 5-10 mm. in length. Flowers mostly unisexual by abortion of the ovary, yellow, opening the end of May, on slender pubescent pedicels, in short broad densely flowered clusters, pubescent like the short peduncle; calyx campanulate, slightly pubescent; petals villose and glandular on the margin, those of the upper pair marked with red; stamens nearly as long or slightly longer than the petals, sparingly, villose. Fruit roughened by the scattered prickles and occasional by their bases, subglobose, 2-3 cm. in diameter, 1-3-seeded; seeds light chestnutbrown, up to 2 cm. in diameter, hilum 5-6 mm. in diameter.

This tree which sprung up several years ago in the Aesculus Group of the Arboretum in the immediate neighborhood of flowering plants of its supposed parents is a tree from 6.5 to 7 m. high with a slender trunk covered with pale scaly bark. In general appearance it might be taken for a plant of A. glabra from which it differs in the shorter stamens, smaller only slightly roughened fruit and in the presence of glands mixed with the hairs on the margin of the petals showing the influence of one of the Eupaviae. None of the species of this group had flowered in the Arboretum when the seed which produced this tree germinated and the glands on the margin of the petals can only be accounted for by the influence of A. hybrida D. C., a hybrid it is believed between A. Hippocastanum and A. Pavia, one of the red-flowered Eupaviae.

Aesculus octandra var. vestita, n. var.

Differing from the type in the coating of pale tomentum or pubescence on the lower surface of the leaflets and on the petioles and branchlets. This form of the yellow flowered Buckeye which is widely distributed with the species appears to be more abundant westward than on the southern Appalachain Mountains where Aesculus octandra grows to its largest size and is most abundant.

In the herbarium of this Arboretum are the following specimens of this variety:

NORTH CAROLINA. Roan Mt., Gray, Sargent, Redfield and Canby, June 19, 1879; Buncombe County, Craggy Mt., T. G. Harbison, Sept. 7, 1906.

West Virginia. Mercer County, near Princeton, T. G. Harbison, September 7, 1906; Munroe County, Sweet Springs, C. S. Sargent, August 13, 1910; Greenbriar County, White Sulphur Springs, J. S. Ames, May 17, 1919.

Kentucky. Greenup County, Russell, no. 1566, October 2, 1922, May 2, 1923; Breathitt County, Portsmouth, no. 828, May 8, 1919; South Portsmouth, no. 828, May 8, 1919; Pike County, Pikeville, no. 947 (type), May 17, 1919, no. 1251, October 2, 1920; Boyd County, Ashland, no. 834, May 9, 1919, September 31, 1920; Lee County, Beatyville, no. 1145, May 20, 1920; Letchen County, Jenkins, 1315, September 24, 1921; all by R. E. Horsey.

OHIO. Scioto County, Portsmouth, R. E. Horsey, no. 460, September 21, 1915 and May 21, 1916.

Indiana. Crawford County, near Leavenworth, C. C. Deam, no. 18613, September 4, 1915; Dearborn, near Aurora, C. C. Deam, no. 16052, June 17, 1915.

Among cultivated plants the Aesculus neglecta Baenitz (Herb. Dendr. without number "Breslau: Goepperthain, 1903"), not Lindley, and Hort. Goettingen, A. Rehder, no. 1571, belong to this variety.

It has been cultivated in the Arboretum since 1898 when a plant was received from the Meehan Nursery at Germantown, Penn. (no. 8121); in 1900 a plant was received from the Spaeth Nursery at Berlin, Germany (no. 8123); and in 1907 the seeds collected on Craggy Mountain, North Carolina, by T. G. Harbison, produced a number of plants (no. 13276).

The covering of the lower surface of the leaflets of the tree from Pikeville, Kentucky, (Horsey no. 947), is distinctly tomentose, and similar tomentum occurs on several of the other specimens in this herbarium. On other specimens the lower surface of the leaflets is pubescent, sometimes only slightly so, showing the transition to the normal form of Aesculus octandra in which the lower surface of the leaflets is glabrous or occasionally slightly pubescent early in the season with deciduous hairs except along the under side of the midrib and principal veins. The amount of the pubescence on the petioles and branchlets also varies in different individuals.

Aesculus neglecta Lindley in Bot. Reg. xII. t. 1009 (1826).—Spach in Ann. Sci. Nat. sér. 2, II. 55 (1834).

Lindley's description of this species was made from a tree growing in the garden of the London Horticultural Society at Chiswick, which had been purchased from a Monsieur Catros of Bordeaux under the name Aesculus ohioensis. Spach took up Lindley's name and spoke of the tree as common in cultivation in 1834. Koehne in 1893 (Deutsche Dendr. 386) suggested that it was a hybrid of A. discolor and A. octandra, but the margins of the petals in Lindley's excellent plate show no trace of the glands among the hairs which indicate hybrid origin in Aesculus. The petals are pale yellow marked by small red blotches.

I have never seen a wild Buckeye with flowers which resemble those figured by Lindley, but Colonel Henry A. du Pont of Winterthur, Delaware, has recently called my attention to two trees planted by his grandfather the leaves and flowers of which cannot be distinguished from those represented by Lindley's plate.

Eleuthère Irénée du Pont de Nemours, the founder of the Dupont Family in America, came from France in 1800 to America where he lived first at Hackensack, New Jersey, but in July 1802 moved to Delaware where he established his powder works and built a substantial stone mansion on the banks of the Brandywine in Christiana Hundred, about four miles from Wilmington at the place which has now for one hundred and twenty-one years been known as Eleutherean Mills.

A family tradition, preserved by the now oldest Du Pont who as a boy gathered nuts from the trees, records the fact that Mr. Antoine Bidermann who had married Du Pont's second daughter Evelina and had become associated with him in the powder business had gone to New Orleans sometime after 1820 to inspect therethe agency of the powder mills and had returned home on horseback through Mississippi, Alabama and Georgia, and that during this journey he had picked up the nuts from which the Eleutherean Mills trees had grown.

The soil on the steep slope in the rear of the Du Pont mansion is deep and rich, as is shown by the size and vigor of the native Oak-trees which are growing in it, and the two large Buckeyes on this slope, the trees which in the color of their flowers so closely resemble the flowers of Lindley's plate, are 32 and 28 metres high with a trunk girth at 3 feet from the ground of 2.35 and of 2.10 metres. The larger of these two trees is the tallest and largest Buckeye of any variety of which authentic measurements have been made.

The conclusion which an examination of these Eleutherean Mills Buckeyes has forced on me is that there are no real characters by which the plant I have named Aesculus georgiana can be distinguished from the Aesculus neglecta of Lindley which, if this view is accepted, becomes the type of the species of the Octandrae which in various forms is widely distributed in the Piedmont region of North and South Carolina and northern Georgia, occasionally ascending the Blue Ridge in North Carolina to altitudes of 3000 feet, and is common in central Georgia, ranging east into Richmond County and south into northern and central Alabama, and to an isolated station near Pensacola in Florida.

It varies from a tree 17 or 20 metres tall to a shrub which flowers and produces abundant fruit when not more than 1 metre high. The leaflets of the type and of one variety are glabrous on the lower surface, but in one form they are pubescent, and on another densely tomentose. The flowers of A. neglecta are borne in elongated slender clusters, but in the plants now considered its varieties the flower-clusters are often short and crowded and the petals are yellow, more or less marked with red or entirely red.

I have not seen specimens of wild trees which exactly resemble the type of A. neglecta as represented in Lindley's plate and by the two large trees at Eleutherean Mills, but three specimens presented to the Arboretum herbarium by Mr. W. W. Ashe resemble the type in their narrow elongated flower clusters and in the size and shape of the yellow flowers which, however, are without the red markings of those of the type; these specimens can perhaps be referred to A. neglecta rather than to any of its varieties. Mr. Ashe's specimens are labeled "Aesculus sp. nov. Alamance County, N. C., near Saxapahaw, about June 1, 1900, W. W. Ashe;" "A. sp. nov. near Williamsville, Dunham County, N. C., May 13, 1904, and Aesculus sp. nov., Chapel Hill, N. C., April 20, 1915, sent me by Dr. Coker at my request from tree on the Hillsboro road, W. W. Ashe."

The more distinct forms of Aesculus neglecta may be arranged as follows:

Aesculus neglecta Lindley. Leaflets glabrous on the lower surface; flowers in elongated rather open clusters; petals pale yellow or nearly white, marked by small red blotches.

Aesculus neglecta var. georgiana, n. var.

Aesculus georgiana Sargent in Trees and Shrubs, II. 359, t. 197 (1913); Man. Trees N. Am. ed. 2, 706, f. 635 (1922).

Differing from the type in the shorter, broader and more densely flowered corymbs; in the typical form calyx red on the upper side and pale yellow on the lower side; petals bright yellow, passing into forms with entirely red or yellow flowers.

Usually a low broad shrub, occasionally a tree from 14 to 20 metres in

height.

The type station for this variety is in De Kalb County, Georgia, near the base of Stone Mountain; it ranges northward in Georgia to the northern border of the state and is very abundant in Banks, Rabun and Habersham Counties; it occurs in Seneca and Oconee Counties, South Carolina, T. G. Harbison, no. 1, May 15, 1915, and nos. 7 and 9, April 9, 1918, and ranges northward in the Piedmont region to Durham County, North Carolina, T. G. Harbison, no. 6, April 22, 1918. It is the form which has been found in Alabama by C. Mohr, Madison Co., Mt. Sano, September 26, 1881, "large tree 80-85 feet high;" Tuscaloosa County, Tuscaloosa, rocky banks of the Warrior River, and in Eltowah County, Attalla, by T. G. Harbison, nos. 198, 209, October 8, 1910, "low shrub." It is this form with yellow flowers which occurs in western Florida near Pensacola growing as a small shrub, T. G. Harbison, April 11, 1915, March 21, 1916.

Aesculus neglecta var. pubescens, nov. comb.

A. georgiana var. pubescens Sargent in Trees and Shrubs, II. 259 (1913); Man. Trees N. Am. ed. 2, 706 (1922).

Differing from the type and from the var. georgiana in the pubescence

covering the lower surface of the leaflets.

The type of this variety was raised at the Arboretum in 1905 from seeds collected by T. G. Harbison in De Kalb County, Georgia, near the base of Stone Mountain.

The following specimens in the Arboretum herbarium collected by T. G. Harbison are referred to this variety:

NORTH CAROLINA. Wake County, Raleigh, no. 7, April 21, 1918; Orange County, May 31, 1919; Macon County, Highlands, June 5, 1916.

South Carolina. Oconee County, Seneca, nos. 11, 6084, 6087, April 9, 1918, and April 29, 1922.

Georgia. Rabun County, no. 23, May 11, 1919, Clayton, May 10, 1914; Richmond County, near Augusta, C. S. Sargent, March 10, 1908, April 7 and 28, 1914; T. G. Harbison, no. 6081, April 28, 1912, nos. 1534, 1535, 1538, 1540, May 5, 1914, no. 6, October 5, 1914; De Kalb County, near Stone Mountain, T. G. Harbison, no. 661, September 7, 1911, nos. 905, 906, 907, April 30, 1912.

ALABAMA. Etowah County, Attalla, no. 200, October 8, 1910.

Aesculus neglecta var. tomentosa, n. var.

Differing from the type and from its vars. georgiana and pubescens in the thick coat of tomentum on the lower surface of the leaflets.

SOUTH CAROLINA. Oconee County, T. G. Harbison, nos. 6088, 6090, 6091, 6092, 6093, 6094, 6095, 6096, 6098, 6101, 6102, 6106, 6107, 6108, April 30, 1922.

This variety is an old inhabitant of European gardens where it has been cultivated as Aesculus Michauxii Hort., not Spach, A. Lyonii Hort., not Loudon, A. discolor Hort., not Pursh, A. humilis Hort., not Lindley, Pavia discolor in Herb. Kew Arb. 1010, not Pursh, Pavia rubra in Herb. Kew Arb. 3158, A. rubra carnea superba, Hort. Ellwanger & Barry, A. rubra carnea pubescens, Hort. Ellwanger & Barry.

Aesculus neglecta var. lanceolata, n. comb.

Aesculus georgiana var. lanceolata Sargent in Jour. Arnold Arb. 11. 120 (1920); Man. Trees N. Am. ed. 2, 707, f. 636 (1921).

Differing from the type in the lanceolate to slightly oblanceolate long pointed leaflets.

A single tree from 25 to 30 feet in height, with bright red flowers. Rich woods, near Clayton, Rabun Co., Georgia, T. G. Harbison, no. 19, May 9, 1917.

× Aesculus Du Pontii (Aesculus neglecta × Pavia), new hyb.

Leaves 5-foliolate, their petioles slender, glabrous, 8–14 cm. in length; leaflets oblong-obovate to elliptic, abruptly long-pointed at apex, gradually narrowed to the cuneate base, acutely serrate, glabrous with the exception of tufts of pale hairs in the axils of the 18–25 pairs of slender veins, dark green on the upper surface, pale yellow-green on the lower surface, 15–19 cm. long and 5–8 cm. wide, with a thin yellow midrib; petiolules slender, glabrous, 5–10 mm. in length. Flowers appearing the middle of May up to 2 cm. in length, on slightly villose pedicels in narrow pubescent clusters 10–12 cm. in length; calyx narrow campanulate, red, eglandular, glabrous

or slightly villose at the base, petals yellow or yellow slightly tinged with red, their margins glandular and villose.

A tree 29.15 metres in height, with a trunk 2.25 metres in girth at one metre above the ground, covered with scaly bark, stout yellow branch-

lets and pale brown winter buds 2 cm. long.

This tree was planted by the fence near the right hand side (facing the house) of the entrance to Eleutherean Mills after 1820 by Eleuthère Irénée du Pont de Nemours and probably sprang from one of the seeds collected by Antoine Bidermann during his journey on horseback from New Orleans. This Buckeye, which is one of the most interesting of the trees which have been planted in the United States, may well preserve among tree lovers the name of a family which in at least four generations has made the neighborhood of Wilmington, Delaware, one of the chief centres of horticulture in the United States.

X Aesculus DuPontii var. Hessei (A. neglecta georgiana X Pavia), n.

hybr.

Leaves 5-foliolate, their petioles stout, puberulous early in the season, 7–15 cm. in length; leaflets elliptic to slightly obovate, gradually narrowed and long-pointed at apex, cuneate at base, usually doubly serrate with slender slightly incurved teeth, glabrous, dark green above, lighter and yellow-green below, 10–13 cm. long and 4–5 cm. wide, with a prominent yellow midrib and from 20–25 pairs of slender primary veins often furnished with small tufts of axillary hairs; petiolules puberulous, 3–9 mm. long. Flowers appearing late in May, up to 3 cm. in length, red or yellow tinged with red, on short villose pedicels in compact densely crowded villose clusters 12 or 13 cm. long; calyx narrow-campanulate, slightly villose toward the apex, usually red, the petals yellow more or less tinged with red, villose and glandular on the margin.

This shrub was presented to this Arboretum in 1909 by the Hesse Nursery at Weener, Germany, with two other hybrid Buckeyes, under the name of Aesculus (Pavia) nana rosea "de semis." The presence of both hairs and glands on the margin of the petals indicates its hybrid origin. The leaves cannot be distinguished from those of Aesculus Pavia, while the inflorescence and the flowers only differ from those of A. neglecta georgiana in the rather narrower calyx and in the glands on the margin of

the petals.

imes Aesculus mutabilis Schelle in Beissner, Schelle & Zabel, Handb. Laubholz.-Ben. 323 (1903) = A. discolor mollis imes neglecta georgiana.

Pavia mutabilis Spach in Ann. Sci. Nat. sér. 2, 11. 57 (1834). Aesculus discolor × lutea Koehne, Deutsch. Dendr. 386 (1893). Aesculus Pavia mutabilis Hort. Spaeth.

This tree was well described by Spach, although the pubescence along the sides of the under surface of the midrib and in a lesser degree of the veins of the leaflets of the Arboretum plants presented by the Spaeth Nursery at Berlin, Germany, are not tomentosae on the veins as Spach described it but villose. He failed, however, to notice the glands scattered among the hairs on the margin of the petals which indicate that it is a hybrid between a species of the Eupaviae and one of the Octandrae.

 \times Aesculus mutabilis var. penduliflora (A. discolor mollis \times neglecta), n. hyb.

Leaves 5-foliolate, their petioles glabrous, 10–16 cm. long; leaflets oblong-lanceolate, acuminate and long-pointed at apex, gradually narrowed and cuneate at base, finely serrate with gland-tipped teeth, dark green and glabrous except on the midrib and veins above, pale and soft pubescent below, 12–16 cm. long, 4–5 cm. wide, with 22 or 24 pairs of primary veins; petiolules pubescent, 7–10 mm. in length. Flowers opening early in June, on slender glandular pedicels 5–10 mm. long, in narrow slightly pendent sparsely flowered densely pubescent clusters 14–16 cm. in length; calyx tubular, reddish covered with red glands, 5–6 mm. in diameter; corolla yellow, glandular, the margin of the petals covered with hairs mixed with glands. Fruit nearly globose, smooth with a thin pericarp; seed subglobose, dark chestnut brown and lustrous, 2–2.5 cm. in diameter, the hilum oblong or oval, 8–10 mm. in length.

As it grows in this Arboretum this is a narrow slender tree now about 8 metres in height, with a trunk 25 cm. in diameter covered with thin dark brown scaly bark; it was presented to the Arboretum in 1902 by the Spaeth Nursery near Berlin, Germany, under the name of Aesculus humilis × lutea.

The shape of the leaflets and the elongated flower clusters point to the typical form of A. neglecta, while the pubescence on the lower surface of the leaflets and the color of the flowers suggest that A. discolor mollis may have been the other parent. The long narrow leaflets and the elongated and pendent clusters of brilliant flowers make this one of the most distinct and beautiful of the hybrid Buckeyes.

 \times Aesculus mutabilis var. induta (A. discolor mollis \times neglecta), n. hyb.

Differing from the type in the pale tomentum covering through the season the lower surface of the leaflets.

This variety is based on two of the three plants presented in 1909 to the Arboretum by the Hesse Nursery in Weener, Germany, as Aesculus (Pavia) rosea nana "de semis." It is probably the Aesculus neglecta Baenitz (Herb. Dendr. without number "Breslau: Südpark, 1905"), not Lindley. It was cultivated in 1904 in this Arboretum under the name of A. octandra hybrida (No. 1636–2) now dead.

CORRECTION

In the second edition of the Manual of the Trees of North America, 806 (December 1921), the Marlberry, a small tree of extreme southern Florida, was transferred from the genus Icacorea to Ardisia and called A. paniculata Nuttall. Nuttall, however, never made such a combination,

which must be credited to Sargent. The name, moreover, is not a valid one, having been used for another plant in 1814 by Roxburgh. correct name for the Florida tree appears to be Ardisia escallonioides Chamisso & Schlechtendal in Linnaea, vi. 393 (1831). (See C. Mez, Myrsinaceae in Engler, Pflanzenr. IV.-236, 81 [1902]).

NEW SPECIES, VARIETIES AND COMBINATIONS FROM THE HERBARIUM AND THE COLLECTIONS OF THE ARNOLD ARBORETUM1

ALFRED REHDER

Xolisma Raf.

Xolisma Rafinesque in Am. Month. Mag. IV. 193 (1819).—Britton in Mem. Torrey Bot. Club, IV. 135 (1894).—Britton & Brown, Ill. Fl. U. S. Can. II. 569 (1897).—Small, Fl. S. E. U. S. 889 (1903); in N. Am. Fl. XXIX. 65 (1914).

Andromeda Linnaeus, Spec. 393 (1753), in part. Lyonia Nuttall, Gen. 1. 266 (1818).—Sprengel, Syst. 11. 291 (1825).—Endlicher, Gen. 755 (1836–40).—De Candolle, Prodr. vii. pt. 11. 599 (1839).—Bentham & Hooker, Gen. Pl. 11. 587 (1876).—Drude in Engler & Prantl, Nat. Pflanzenfam. IV. 1, 44 (1889).—Fernald & Robinson in Gray's New Man. ed. 7, 635 (1908).—Not Rafinesque (1808), nor Elliott (1817).

In 1819 Rafinesque proposed the name Xolisma for Lyonia of Nuttall for the reason that the name Lyonia had been given by him in 1808 (in Med. Rep. N. Y. v. 353) to another genus, but that name was only a new name to replace Polygonella Michaux, which Rafinesque considered inappropriate; therefore it is not a valid name and will remain a synonym There is, however, another Lyonia proposed in 1817 of Polygonella. by Elliott (Sketch Bot. S. C. I. 316 [1817]) which antedates Lyonia of Nuttall and is a valid name for a new genus based on Ceropegia palustris Pursh (Cynanchum angustifolium Muhlb.); later the same genus was named Seutera by Reichenbach (Consp. 131 [1828]) and this name is taken up by Small, as according to the Philadelphia Code Lyonia Elliott is invalidated by the older homonym Lyonia Rafinesque of 1808, but according to the International Rules the latter name is not valid and therefore Lyonia Elliott remains the oldest and valid name for the genus of Asclepiadaceae, which makes it necessary to take up for Lyonia Nuttall the next oldest name which is Xolisma. The type species of this genus is Lyonia ferruginea Nuttall in which the character of the thickened sutures of the valves is most pronounced and the thickened part separates from the rest of the capsule, while in other species as in X. ligustrina, X. mariana, X. lucida and X. ovalifolia the thickened part, though clearly perceptible by its light color is apt to separate more irregularly from the rest of the valves and does not hold together so firmly like a separate valve as it does in X.

¹ Continued from vol. iv. p. 253.



Sargent, Charles Sprague. 1924. "Notes on North American Trees, XII." *Journal of the Arnold Arboretum* 5(1), 41–49. https://doi.org/10.5962/p.317983.

View This Item Online: https://www.biodiversitylibrary.org/item/33585

DOI: https://doi.org/10.5962/p.317983

Permalink: https://www.biodiversitylibrary.org/partpdf/317983

Holding Institution

Missouri Botanical Garden, Peter H. Raven Library

Sponsored by

Missouri Botanical Garden

Copyright & Reuse

Copyright Status: Public domain. The BHL considers that this work is no longer under copyright protection.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at https://www.biodiversitylibrary.org.